

APPENDIX G

Summary List of Mitigation Strategies with Regional Priorities and Hazards Mitigated

The following table compares the strategies from the 2005 plan with the strategies in the current 2010 plan.

The first column shows the strategy number in 2005. The second column shows the strategy number from 2010. Strategy numbers changed when strategies were added or deleted from the list. New strategies are indicated by the word “new”. Deleted strategies are listed at the end of each section with their 2005 strategy number.

The mitigation strategy shows added or changed wording in red. Significantly reworded strategies are indicated, as well as any significant wording deleted from the strategy. The original wording of the strategies can be viewed on the web at <http://quake.abag.ca.gov/mitigation/stratlist-2005.html>.

The Applicable Hazards column lists which hazards each strategy is meant to mitigate. The following list the abbreviations used for each hazard. Many mitigation strategies apply to multiple hazards.

EQ	Earthquake
LS	Landslide
WF	Wildfire
FL	Flood
SEC	Security
DF	Dam Failure
LF	Levee Failure
TS	Tsunami
DR	Drought
Ag	Agriculture
Flu	Pandemic Flu

The following table defines the priorities for mitigation used by the planning team to designate the regional priority for each mitigation strategy:

Existing Program	This is an official program or strategy that is widely occurring and generally received adequate funding
Existing program, underfunded	This is an existing program that has recently received less funding than needed to maintain the program or strategy to its full potential. Additional funding is needed to effectively carry out this strategy. In some cases the jurisdiction has deferred this strategy due to lack of funding.
Very high	This is a mitigation strategy which is generally occurring, but either does not require money to implement or is being carried out on an unofficial basis.
High	This is a program which is considered to be a high priority and for which funded is being actively sought and can be implemented as soon as funding becomes available.
Moderate	This is a strategy which is deemed beneficial, but for which funding is not actively being sought. Jurisdictions would consider implementing this strategy if

Under Study funding became available, but it is not deemed a high priority. The effectiveness and benefit of this strategy is being reviewed. No funding has been identified and no implementation plan has been evaluated.

Not Applicable, Not Appropriate, or Not Cost Effective No regional strategies were given this priority. Individual jurisdictions may designate certain strategies with this priority because the particular hazard, risk or vulnerability the strategy is meant to address does not exist in their community.

Not Yet Considered No regional strategies were given this priority. Individual jurisdictions may designate this priority if it is a strategy that has never been considered or thought of by the jurisdiction. In many cases these strategies provide the jurisdiction with new ideas for mitigation that they hadn't considered before.

Each jurisdiction also used this scale to designate their own mitigation priorities in their individual Annex.

The New vs. Existing Construction column indicates whether each mitigation strategy applies to existing or new construction, both, or whether the strategy does not implicitly deal with construction or development.

The last column indicates whether the strategy is a mitigation (mit.), preparedness (prep.), response (res.), or recovery (rec.) strategy. ABAG believes that there are strong linkages between all stages of disasters. For example, retrofitting structures (mitigation) minimizes the scope of the disaster response and the speeds disaster recovery. Conversely, pre-planning for recovery will likely identify mitigation projects that can be accomplished in advance of a disaster to help speed recovery.

Appendix A documents the process of updating the strategies and coming to consensus on the regional priorities.

Infrastructure Mitigation Strategies

2009-2010 Strategy Number	2005 Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Regional Priority	New vs. Existing Construction	Strategy Type
a-1	a-1	Assess the vulnerability of critical facilities owned by infrastructure operators subject to damage in natural disasters or security threats, including fuel tanks and facilities owned outside of the Bay Area that can impact service delivery within the region. Note - Infrastructure agencies, departments, and districts are those that operate transportation and utility facilities and networks.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Mit.
a-2	a-2	If a dam owner , comply with State of California and federal requirements to assess the vulnerability of dams to damage from earthquakes, seiches, landslides, liquefaction, or security threats.	EQ LS WF FL SEC DF	Existing program	n/a	Mit.

a-3	a-3	Encourage the cooperation of utility system providers and cities, counties, and special districts, and PG&E to develop strong and effective mitigation strategies for infrastructure systems and facilities.	EQ LS WF FL DR SEC	Existing program	Both	Mit.
a-4	a-4	Retrofit or replace critical lifeline infrastructure facilities and/or their backup facilities that are shown to be vulnerable to damage in natural disasters.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Mit.
a-5	a-5	Support and encourage efforts of other (lifeline infrastructure) agencies as they plan for and arrange financing for seismic retrofits and other disaster mitigation strategies. (For example, a city might pass a resolution in support of a transit agency's retrofit program.)	EQ LS WF FL DR SEC	Existing program	Ex.	Mit.
a-6	a-6	Develop a plan for speeding the repair and functional restoration of water and wastewater systems through stockpiling of shoring materials, temporary pumps, surface pipelines, portable hydrants, and other supplies, such as those available through the Water /Wastewater Agency Response Network (WARN). Communicate that plan to local governments and critical facility operators.	EQ LS WF FL DR SEC	Existing program	Ex.	Rec.
a-7	a-7	Engage in, support, and/or encourage research by others (such as USGS, universities, or Pacific Earthquake Engineering Research Center-PEER) on measures to further strengthen transportation, water, sewer, and power systems so that they are less vulnerable to damage in disasters.	EQ LS WF FL DR SEC	Existing program	Ex.	Mit.
a-8	a-8	Pre-position emergency power generation capacity (or have rental/lease agreements for these generators) in critical buildings of cities, counties, and special districts to maintain continuity of government and services.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Rec.
a-9	a-9	(REWORDED) Ensure that critical intersection traffic lights function following loss of power by installing battery back-ups, emergency generators, or lights powered by alternative energy sources such as solar. Proper functioning of these lights is essential for rapid evacuation, such as with hazmat releases resulting from natural disasters.	EQ LS WF FL SEC	Existing program, underfunded	Both	Res.
a-10	a-10	Develop unused or new pedestrian rights-of-way as walkways to serve as additional evacuation routes (such as fire roads in park lands).	EQ LS WF FL SEC	Existing program, underfunded	Both	Res.

a-11	a-11	Minimize the likelihood that power interruptions will adversely impact lifeline utility systems or critical facilities by ensuring that they have adequate back-up power.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Res.
a-12	a-12	Encourage replacing above ground electric and phone wires and other structures with underground facilities, and use the planning-approval process to ensure that all new phone and electrical utility lines are installed underground.	EQ LS WF FL SEC	Existing program, underfunded	Both	Mit.
a-13	a-13	If you own a dam, coordinate with the State Division of Safety of Dams to ensure an adequate timeline for the maintenance and inspection of dams, as required of dam owners by State law, and communicate this information to local governments and the public.	EQ LS WF FL SEC DF	Existing program	n/a	Mit.
a-14	a-14	Encourage communication between State Emergency Management Agency (CalEMA) , FEMA, and utilities related to emergencies occurring outside of the Bay Area that can affect service delivery in the region.	EQ LS WF FL DR SEC	Existing program	n/a	Mit.
a-15	a-15	Ensure that transit operators, private ambulance companies, cities, and/or counties have mechanisms in place for medical transport during and after disasters that take into consideration the potential for reduced capabilities of roads following these same disasters.	EQ LS WF FL SEC	Existing program	Ex.	Res.
a-16	new	Recognize that heat emergencies produce the need for non-medical transport of people to cooling centers by ensuring that (1) transit operators have plans for non-medical transport of people during and after such emergencies including the use of paratransit and (2) cities, counties, and transit agencies have developed ways to communicate the plan to the public.	Heat	Existing program, underfunded	Ex.	Res.
a-17	a-16	Effectively utilize the Regional Transportation Management Center (TMC) in Oakland , the staffing of which is provided by Caltrans, the CHP and MTC. The TMC is designed to maximize safety and efficiency throughout the highway system. It includes the Emergency Resource Center (ERC) which was created specifically for primary planning and procedural disaster management. RESPONSIBLE AGENCY: MTC only.	EQ LS WF FL SEC	Existing program	n/a	Res.
a-18	new	Develop (with the participation of paratransit providers, emergency responders, and public health professionals) plans and procedures for paratransit system response and recovery from disasters.	EQ LS WF FL Heat SEC	Existing program, underfunded	Ex.	Res. + Rec.

a-19	new	Coordinate with other critical infrastructure facilities to establish plans for delivery of water and wastewater treatment chemicals.	EQ LS WF FL SEC	Existing program	Ex.	Mit.
a-20	new	Establish plans for delivery of fuel to critical infrastructure providers.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Mit.
a-21	new	As an infrastructure operator, designate a back-up Emergency Operations Center with redundant communications systems.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.
a-22	new	Monitor scientific studies of the Sacramento-San Joaquin Delta and policy decisions related to the long-term disaster resistance of that Delta system to ensure that decisions are made based on comprehensive analysis and in a scientifically defensible manner. Levee failure due to earthquakes, flooding, and climate change (including sea level rise and more frequent and more severe flooding) are all of concern. The long-term health of the Delta area is critical to the Bay Area's water supply, is essential for the San Francisco Bay and estuary's environmental health, provides recreation opportunities for Bay Area residents, and provides the long-term sustainability of Delta communities. While only part of the Delta is within the nine Bay Area counties covered by this multi-jurisdictional LHMP, the Delta is tied to the infrastructure, water supply, and economy of the Bay Area.	EQ FL LF	Existing program, underfunded	Both	Mit.
INFR - b - Earthquakes						
b-1	b-1	Expedite the funding and retrofit of seismically-deficient city- and county-owned bridges and road structures by working with Caltrans and other appropriate governmental agencies.	EQ	Existing program, underfunded	Ex.	Mit.
b-2	b-2	Establish a higher priority for funding seismic retrofit of existing transportation and infrastructure systems (such as BART) than for expansion of those systems.	EQ	Existing program, underfunded	Both	Mit.
b-3	b-3	Include "areas subject to high ground shaking, earthquake-induced ground failure, and surface fault rupture" in the list of criteria used for determining a replacement schedule for pipelines (along with importance, age, type of construction material, size, condition, and maintenance or repair history).	EQ	Existing program	Both	Mit.
b-4	b-4	Install specially-engineered pipelines in areas subject to faulting, liquefaction, earthquake-induced landsliding, or other earthquake hazard.	EQ	Existing program, underfunded	Both	Mit.

b-5	b-5	Replace or retrofit water-retention structures that are determined to be structurally deficient, including levees, dams, reservoirs and tanks.	EQ DF LF	Existing program, underfunded	Ex.	Mit.
b-6	b-6	Install portable facilities (such as hoses, pumps, emergency generators, or other equipment) to allow pipelines to bypass failure zones such as fault rupture areas, areas of liquefaction, and other ground failure areas (using a priority scheme if funds are not available for installation at all needed locations).	EQ	Existing program, underfunded	Ex.	Mit.
b-7	b-7	Install earthquake-resistant connections when pipes enter and exit bridges and work with bridge owners to encourage retrofit of these structures.	EQ	Existing program, underfunded	Both	Mit.
b-8	b-8	Comply with all applicable building and fire codes, as well as other regulations (such as state requirements for fault, landslide, and liquefaction investigations in particular mapped areas) when constructing or significantly remodeling infrastructure facilities.	EQ	Existing program	Both	Mit.
b-9	b-9	Clarify to workers in critical facilities and emergency personnel, as well as to elected officials and the public, the extent to which the facilities are expected to perform only at a life safety level (allowing for the safe evacuation of personnel) or are expected to remain functional following an earthquake.	EQ	Existing program	Ex.	Mit.
b-10	b-10	Develop a water-based transportation “system” across the Bay for use in the event of major earthquakes. Implementation of such a system could prove extremely useful in the event of structural failure of either the road-bridge systems or BART and might serve as an adjunct to existing transportation system elements in the movement of large numbers of people and/or goods.	EQ	Existing program	Both	Mit.
INFR - c - Wildfire						
c-1	c-1	Ensure a reliable source of water for fire suppression (meeting acceptable standards for minimum volume and duration of flow) for existing and new development.	WF	Existing program, underfunded	Both	Mit.
c-2	c-2	Develop a coordinated approach between fire jurisdictions and water supply agencies to ^{identify} needed improvements to the water distribution system, initially focusing on areas of highest wildfire hazard (including wildfire threat areas and in wildland-urban-interface areas).	WF	Existing program, underfunded	Ex.	Mit.
c-3	c-3	Develop a defensible space vegetation program that includes the clearing or thinning of (a) non-fire resistive vegetation within 30 feet of access and evacuation roads and routes to critical facilities, or (b) all non-native species (such as eucalyptus and pine, but not necessarily oaks) within 30 feet of access and evacuation roads and routes to critical facilities.	WF	Existing program, underfunded	Ex.	Mit.

c-4	c-4	For new development , ensure all dead-end segments of public roads in high hazard areas have at least a “T” intersection turn-around sufficient for typical wildland fire equipment.	WF	Existing program	New	Mit.
c-5	c-5	For new development , enforce minimum road width of 20 feet with an additional 10-foot clearance on each shoulder on all driveways and road segments greater than 50 feet in length in wildfire hazard areas.	WF	Existing program	New	Mit.
c-6	c-6	Require that development in high fire hazard areas provide adequate access roads (with width and vertical clearance that meet the minimum standards of the <i>Fire Code</i> or relevant local ordinance), onsite fire protection systems, evacuation signage, and fire breaks.	WF	Existing program	New	Mit.
c-7	c-7	Ensure adequate fire equipment road or fire road access to developed and open space areas.	WF	Existing program	Both	Mit.
c-8	c-8	Maintain fire roads and/or public right-of-way roads and keep them passable at all times.	WF	Existing program, underfunded	Ex.	Mit.
INFR - d - Flooding						
d-1	d-1	Conduct a watershed analysis of runoff and drainage systems to predict areas of insufficient capacity in the storm drain and natural creek system.	FL	Existing program, underfunded	Both	Mit.
d-2	d-2	Develop procedures for performing a watershed analysis to examine the impact of development on flooding potential downstream, including communities outside of the jurisdiction of proposed projects.	FL	Existing program, underfunded	New	Mit.
d-3	d-3	Conduct a watershed analysis at least once every ten years unless there is a <u>major development in the watershed</u> or a <u>major change in the Land Use Element of the General Plan of the cities or counties within the watershed.</u>	FL	Existing program, underfunded	Both	Mit.
d-4	d-4	Assist, support, and/or encourage the U.S. Army Corp of Engineers, various Flood Control and Water Conservation Districts, and other responsible agencies to locate and maintain funding for the development of flood control projects that have high cost-benefit ratios (such as through the writing of letters of support and/or passing resolutions in support of these efforts).	FL	Existing program	Both	Mit.
d-5	d-5	Pursue funding for the design and construction of storm drainage projects to protect vulnerable properties, including property acquisitions, upstream storage such as detention basins, and channel widening with the associated right-of-way acquisitions, relocations, and environmental mitigations.	FL	Existing program, underfunded	Both	Mit.

d-6	d-6	Continue to repair and make structural improvements to storm drains, pipelines, and/or channels to enable them to perform to their design capacity in handling water flows as part of regular maintenance activities. (This strategy has the secondary benefit of addressing fuel, chemical, and cleaning product issues.)	FL	Existing program, underfunded	Ex.	Mit.
d-7	d-7	Continue maintenance efforts to keep storm drains and creeks free of obstructions, while retaining vegetation in the channel (as appropriate) to allow for the free flow of water.	FL	Existing program, underfunded	Ex.	Mit.
d-8	d-8	Enforce provisions under creek protection, stormwater management, and discharge control ordinances designed to keep watercourses free of obstructions and to protect drainage facilities to conform with the Regional Water Quality Control Board's Best Management Practices.	FL	Existing program, underfunded	Ex.	Mit.
d-9	d-9	Develop an approach and locations for various watercourse bank protection strategies, including for example, (1) an assessment of banks to inventory areas that appear prone to failure, (2) bank stabilization, including installation of rip rap, or whatever regulatory agencies allow (3) stream bed depth management using dredging, and (4) removal of out-of-date coffer dams in rivers and tributary streams.	FL	Existing program, underfunded	Ex.	Mit.
d-10	d-10	Use reservoir sediment or reed removal as one way to increase storage for both flood control and water supply.	FL	Existing program, underfunded	Ex.	Mit.
d-11	d-11	Identify critical locally-owned bridges affected by flooding and either elevate them to increase stream flow and maintain critical ingress and egress routes or modify the channel to achieve equivalent objectives.	FL	Existing program, underfunded	Ex.	Mit.
d-12	d-12	Provide or support the mechanism to expedite the repair or replacement of levees that are vulnerable to collapse from earthquake-induced shaking or liquefaction, rodents, and other concerns, particularly those protecting critical infrastructure.	FL LF	Existing program, underfunded	Ex.	Mit.
d-13	d-13	Ensure that utility systems in new developments are constructed in ways that reduce or eliminate flood damage.	FL	Existing program	New	Mit.
d-14	d-14	Determine whether or not wastewater treatment plants are protected from floods, and if not, investigate the use of flood-control berms to not only protect from stream or river flooding, but also increase plant security.	FL	Existing program, underfunded	Ex.	Mit.
d-15	d-15	Work cooperatively with water agencies, flood control districts, Caltrans, and local transportation agencies to determine appropriate performance criteria for watershed analysis.	FL	Existing program, underfunded	Both	Mit.

d-16	d-16	Work for better cooperation among the patchwork of agencies managing flood control issues.	FL	Existing program	Both	Mit.
d-17	d-17	Improve monitoring of creek and watercourse flows to predict potential for flooding downstream by working cooperatively with land owners and the cities and counties in the watershed.	FL	Existing program, underfunded	Both	Mit.
d-18	new	Using criteria developed by EPA for asset management, inventory existing assets, the condition of those assets, and improvements needed to protect and maintain those assets. Capture this information in a Geographic Information System (GIS) and use it to select locations for creek monitoring gauges.	FL	Existing program, underfunded	Ex.	Mit.
INFR - e - Landslides						
e-1	e-1	Include “areas subject to ground failure” in the list of criteria used for determining a replacement schedule (along with importance, age, type of construction material, size, condition, and maintenance or repair history) for pipelines.	LS	Existing program	Ex.	Mit.
e-2	e-2	Establish requirements in zoning ordinances to address hillside development constraints in areas of steep slopes that are likely to lead to excessive road maintenance or where roads will be difficult to maintain during winter storms due to landsliding.	LS	Existing program	New	Mit.
INFR - f - Building Reoccupancy						
f-1	f-1	Ensure that critical buildings owned or leased by special districts or private utility companies participate in a program similar to San Francisco’s Building Occupancy Resumption Program (BORP). The BORP program permits owners of buildings to hire qualified engineers to create facility-specific post-disaster inspection plans and allows these engineers to become automatically deputized as City/County inspectors for these buildings in the event of an earthquake or other disaster. This program allows rapid reoccupancy of the buildings. Note - A qualified (deleted structural) engineer is a California licensed engineer with relevant experience.	EQ LS WF FL SEC	Existing program	Ex.	Res.
INFR - g - Public Education						
g-1	g-1	Provide materials to the public related to planning for power outages.	EQ LS WF FL SEC	Existing program	Ex.	Prep.
g-2	g-2	Provide materials to the public related to family and personal planning for delays due to traffic or road closures, or due to transit system disruption caused by disasters.	EQ LS WF FL SEC	Existing program	Ex.	Prep.

g-3	g-3	Provide materials to the public related to coping with reductions in water supply or contamination of that supply BEYOND regulatory notification requirements.	EQ LS WF FL DR SEC	Existing program	Ex.	Prep.
g-4	g-4	Provide materials to the public related to coping with disrupted storm drains, sewage lines, and wastewater treatment (such as materials developed by ABAG's Sewer Smart Program).	EQ LS WF FL DR SEC	Existing program	Ex.	Prep.
g-5	g-5	Facilitate and/or coordinate the distribution of emergency preparedness or mitigation materials that are prepared by others, such as by making the use of the internet or other electronic means , or placing materials on community access channels or in city or utility newsletters, as appropriate.	EQ LS WF FL DR SEC	Existing program	Ex.	Mit. + Res.
g-6	new	Sponsor the formation and training of Community Emergency Response Teams (CERT) for the employees of your agency. [Note – these programs go by a variety of names in various cities and areas.]	EQ LS WF FL DR SEC	Existing program	n/a	Res.
g-7	new	Develop and distribute culturally appropriate materials related to disaster mitigation and preparedness, such as those on the http://www.preparenow.org website related to infrastructure issues.	EQ LS WF FL DR SEC	Existing program	Ex.	Mit. + Prep.

Health Mitigation Strategies

2009-2010 Strategy Number	2005 Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Regional Priority	New vs. Existing Construction	Strategy Type
HEAL - a - Hospitals and Other Critical Health Care Facilities (including those facilities licensed by OSHPD, as well as water agencies, public & private hospitals as noted). To be filled out by cities, counties, and county health departments.						

a-1	a-1	Work to ensure that cities, counties, county health departments, and hospital operators coordinate with each other (and that hospitals cooperate with the California Office of Statewide Health Planning and Development - OSHPD) to comply with current state law that mandates that critical facilities are structurally sound and have nonstructural systems designed to remain functional following disasters by 2013. In particular, this coordination should include understanding any problems with obtaining needed funding. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Mit.
a-2	a-2	Encourage hospitals in your community to work with OSHPD to formalize arrangements with structural engineers to report to the hospital, assess damage, and determine if the buildings can be reoccupied. The program should be similar to San Francisco's Building Occupancy Resumption Program (BORP) that permits owners of buildings to hire qualified structural engineers to create building-specific post-disaster inspection plans and allows these engineers to become automatically deputized as inspectors for these buildings in the event of an earthquake or other disaster. OSHPD, rather than city/county building departments, has the authority and responsibility for the structural integrity of hospital structures. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Res.
a-3	a-3	Ensure health care facilities are adequately prepared to care for victims with respiratory problems related to smoke and/or particulate matter inhalation. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ WF SEC	Existing program	Both	Res.
a-4	a-4	Ensure these health care facilities have the capacity to shut off outside air and be self-contained. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ WF SEC	Existing program	Both	Res.
a-5	a-5	Ensure that hospitals and other major health care facilities have auxiliary water and power sources. RESPONSIBLE AGENCIES: Cities, counties, county health departments, water suppliers, and hospitals	EQ LS WF FL SEC	Existing program, underfunded	Both	Mit.
a-6	a-6	Work to ensure that county health departments work with health care facilities to institute isolation capacity should a need for them arise following a communicable disease epidemic. Isolation capacity varies from a section of the hospital for most communicable diseases to the entire hospital for a major pandemic flu. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ WF FL SEC	Existing program, underfunded	Both	Res.

a-7	a-7	Develop printed materials, utilize existing materials (such as developed by FEMA, the American Red Cross, and others, including non-profit organizations), conduct workshops, and/or provide outreach encouraging employees of these critical health care facilities to have family disaster plans and conduct mitigation activities in their own homes. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ LS WF FL SEC	Existing program	n/a	Mit. + Prep.
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HEAL - b - Ancillary Health-Related Facilities (including medical offices, pharmacies, free-standing or specialty clinics, etc.)						
b-1	b-1	Identify these ancillary facilities in your community. These facilities are not regulated by OSHPD in the same way as hospitals. RESPONSIBLE AGENCIES: Cities, counties, and county health departments	EQ LS WF FL SEC	High	Ex.	Mit.
b-2	b-2	Encourage these facility operators to develop disaster mitigation plans. RESPONSIBLE AGENCIES: Cities, counties, and county health departments	EQ LS WF FL SEC	High	Ex.	Mit.
b-3	b-3	Encourage these facility operators to create, maintain, and/or continue partnerships with local governments to develop response and business continuity plans for recovery. RESPONSIBLE AGENCIES: Cities, counties, and county health departments	EQ LS WF FL SEC	High	Ex.	Res. + Rec.
HEAL - c - Interface with National and State Health Care Initiatives and Hazardous Materials Response Teams						
c-1	c-1	Designate locations for the distribution of antibiotics to large numbers of people should the need arise, as required to be included in each county's Strategic National Stockpile Plan. RESPONSIBLE AGENCIES: County Health Departments	FLU SEC	Existing program	Ex.	Res.
c-2	c-2	Ensure that you know the Metropolitan Medical Response System (MMRS) cities in your area. Fremont, Oakland, San Francisco, and San Jose (plus Sacramento and Stockton) are the MMRS cities in or near the Bay Area . MMRS cities are provided with additional federal funds for organizing, equipping, and training groups of local fire, rescue, medical, and other emergency management personnel to respond to a mass casualty event. (The coordination among public health, medical, emergency management, coroner, EMS, fire, and law enforcement is a model for all cities and counties.) RESPONSIBLE AGENCIES: Cities, counties, county health departments, and	EQ LS WF FL SEC	Existing program	n/a	Res.

		hospitals				
c-3	c-3	Know that National Disaster Medical System (NDMS) uniformed or non-uniformed personnel are within one-to-four hours of your community. These federal resources include veterinary, mortuary, and medical personnel. Teams in or near the Bay Area are headquartered in the cities of Santa Clara and Sacramento. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals	EQ LS WF FL SEC	Existing program	Ex.	Res.
c-4	c-4	Plan for hazmat related-issues due to a natural or technological disaster. Hazmat teams should utilize the State of California Department of Health Services laboratory in Richmond for confirmation of biological agents and Lawrence Livermore National Laboratory or Sandia (both in Livermore) for confirmation of radiological agents. RESPONSIBLE AGENCIES: Cities, counties, county health departments, and hospitals.	EQ WF FL SEC	Existing program	Ex.	Res.
c-5	d-1	Create discussion forums for food and health personnel (including, for example, medical professionals, veterinarians, and plant pathologists) to develop safety, security, and response strategies for food supply contamination (at the source, in processing facilities, in distribution centers, and in grocery stores). RESPONSIBLE AGENCIES: County environmental health departments	FL SEC	Existing program	Both	Res.
c-6	new	Ensure mental health continuity of operations and disaster planning is coordinated among county departments, (including Public Health and Emergency Services), private sector mental health organizations, professional associations, and national and community-based non-profit agencies involved in supporting community mental health programs. First, such planning should ensure that the capability exists to provide both immediate on-site mental health support at facilities such as evacuation centers, emergency shelters, and local assistance centers, as well as to coordinate on-going mental health support during the long-term recovery process. Second, this planning should ensure that mental health providers, in collaboration with the county agencies responsible for providing public information, are prepared to provide consistent post-disaster stress and other mental health guidance to the public impacted by the disaster.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Res. + Rec.
deleted	d-2	(duplicate information to c-2)				
deleted	d-3	(duplicate information to c-3)				

deleted	d-4	(duplicate information to c-4)				
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Housing Mitigation Strategies

2009-2010 Strategy Number	2005 Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Regional Priority	New vs. Existing Construction	Strategy Type
HSNG - a - Multi-Hazard						
a-1	a-1	Assist in ensuring adequate hazard disclosure by working with real estate agents to improve enforcement of real estate disclosure requirements for residential properties with regard to seven official natural hazard zones: 1) Special Flood Hazard Areas (designated by FEMA), 2) Areas of Potential Flooding from dam failure inundation, 3) Very High Fire Hazard Severity Zones, 4) Wildland Fire Zones, 5) Earthquake Fault Zones (designated under the Alquist-Priolo Earthquake Fault Zoning Act), and the 6) Liquefaction and Landslide Hazard Zones (designated under the Seismic Hazard Mapping Act).	EQ LS WF FL SEC DF	Existing program	Ex.	Mit.
a-2	a-2	Create incentives for private owners of historic or architecturally significant residential buildings to undertake mitigation to levels that will minimize the likelihood that these buildings will need to be demolished after a disaster, particularly if those alterations conform to the federal Secretary of the Interior's <i>Guidelines for Rehabilitation</i> .	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Mit.
a-3	new was GOV T b-4	Develop a plan for short-term sheltering of residents of your community in conjunction with the American Red Cross.	EQ LS WF FL SEC	Existing program	Ex.	Res.
a-4	new was GOV T b-4	Develop a plan for interim housing for those displaced by working with the Regional Catastrophic Planning Grant Program (CPGP) that funded this effort in 2009. (Estimated completion is 2011.)	EQ LS WF FL SEC	Under Study	Ex.	Res. + Rec.

HSNG - b - Single-Family Homes Vulnerable to Earthquakes						
b-1	b-1	Utilize or recommend adoption of a retrofit standard that includes standard plan sets and construction details for voluntary bolting of homes to their foundations and bracing of outside walls of crawl spaces (“cripple” walls), such as Plan Set A developed by a committee representing the East Bay-Peninsula-Monterey Chapters of the International Code Council (ICC), California Building Officials (CALBO), the Structural Engineers Association of Northern California (SEAONC), the Northern California Chapter of the Earthquake Engineering Research Institute (EERI-NC), and ABAG’s Earthquake Program.	EQ	Existing program, underfunded	Ex.	Mit.
b-2	b-2	Require engineered plan sets for seismic retrofitting of heavy two-story homes with living areas over garages, as well as for split level homes (that is, homes not covered by Plan Set A), until standard plan sets and construction details become available.	EQ	Existing program	Ex.	Mit.
b-3	b-3	Require engineered plan sets for seismic retrofitting of homes on steep hillsides (because these homes are not covered by Plan Set A).	EQ	Existing program	Ex.	Mit.
b-4	b-4	Encourage local government building inspectors to take classes on a periodic basis (such as the FEMA-developed training classes offered by ABAG) on retrofitting of single-family homes, including application of Plan Set A .	EQ	Existing program	Ex.	Mit.
b-5	b-5	Encourage private retrofit contractors and home inspectors doing work in your area to take retrofit classes on a periodic basis (such as the FEMA-developed training classes offered by ABAG or additional classes that might be offered by the CALBO Training Institute) on retrofitting of single-family homes.	EQ	Existing program	Ex.	Mit.
b-6	b-6	Conduct demonstration projects on common existing housing types demonstrating structural and nonstructural mitigation techniques as community models for earthquake mitigation.	EQ	Moderate	Ex.	Mit.
b-7	b-7	Provide retrofit classes or workshops for homeowners in your community, or help promote utilization of subregional workshops in the South Bay, East Bay, Peninsula, and North Bay as such workshops become available through outreach	EQ	Existing program, underfunded	Ex.	Mit.

		using existing community education programs.				
b-8	b-8	Establish tool-lending libraries with common tools needed for retrofitting for use by homeowners with appropriate training.	EQ	Moderate	Ex.	Mit.
b-9	b-9	(reworded) Provide financial incentives to owners of single-family homes to retrofit if those retrofits comply with Plan Set A or IEBC 2006 in addition to that provided by existing State law that makes such retrofits exempt from increases in property taxes.	EQ	Existing program, underfunded	Ex.	Mit.
HSNG - c - Soft-Story Multifamily Residential Structures Vulnerable to Earthquakes						
c-1	c-1	Require engineered plan sets for voluntary or mandatory soft-story seismic retrofits by private owners until a standard plan set and construction details become available.	EQ	Existing program	Ex.	Mit.
c-2	c-2	Adopt the 2009 (changed date) International Existing Building Code or the latest applicable standard for the design of voluntary or mandatory soft-story building retrofits for use in city/county building department regulations. In addition, allow use of changes to that standard recommended by SEAOC for the 2012 IEBC.	EQ	Existing program	Ex.	Mit.
c-3	c-3	Work to educate building owners, local government staff, engineers, and contractors on privately-owned soft-story retrofit procedures and incentives using materials such as those developed by ABAG and the City of San Jose (see http://quake.abag.ca.gov/eqhouse.html .)	EQ	Moderate	Ex.	Mit.
c-4	c-4	Conduct an inventory of privately-owned existing or suspected soft-story residential structures as a first step in establishing voluntary or mandatory programs for retrofitting these buildings.	EQ	Existing program, underfunded	Ex.	Mit.
c-5	c-5	Use the soft-story inventory to require private owners to inform all existing tenants (and prospective tenants prior to signing a lease agreement) that they may live in this type of building.	EQ	High	Ex.	Mit.
c-6	c-6	Use the soft-story inventory to require private owners to inform all existing and prospective tenants that they may need to be prepared to live elsewhere following an earthquake if the building has not been retrofitted.	EQ	Moderate	Ex.	Mit.
c-7	c-7	Investigate and adopt appropriate financial, procedural, and land use incentives (such as parking waivers) for private owners of soft-story buildings to facilitate retrofit such as those described by ABAG (see http://quake.abag.ca.gov/fixit).	EQ	High	Ex.	Mit.
c-8	c-8	(reworded) Explore development of State regulations or legislation to require or encourage private owners of soft-story structures to strengthen them.	EQ	Moderate	Ex.	Mit.
c-9	c-9	Provide technical assistance in seismically strengthening privately-owned soft-story structures.	EQ	Under Study	Ex.	Mit.

HSNG - d - Unreinforced Masonry Housing Stock						
d-1	d-1	Continue to actively implement existing State law that requires cities and counties to maintain lists of the addresses of unreinforced masonry buildings and inform private property owners that they own this type of hazardous structure.	EQ	Existing program	Ex.	Mit.
d-2	d-2	Accelerate retrofitting of privately-owned unreinforced masonry structures that have not been retrofitted, for example, by (a) actively working with owners to obtain structural analyses of their buildings, (b) helping owners obtain retrofit funding, (c) adopting a mandatory versus voluntary, retrofit program, and/or (d) applying penalties to owners who show inadequate efforts to upgrade these buildings.	EQ	Existing program, underfunded	Ex.	Mit.
d-3	d-3	Require private owners to inform all existing tenants (and prospective tenants prior to signing a lease agreement) that they live in an unreinforced masonry building and the standard to which it may have been retrofitted.	EQ	Existing program, underfunded	Ex.	Mit.
d-4	d-4	As required by State law, require private owners to inform all existing tenants that they may need to be prepared to live elsewhere following an earthquake even if the building has been retrofitted, because it has probably been retrofitted to a life-safety standard, not to a standard that will allow occupancy following major earthquakes.	EQ	Existing program	Ex.	Mit.
HSNG - e - Other Privately-Owned Structurally Vulnerable Residential Buildings and Earthquakes						
e-1	e-1	Identify and work toward tying down mobile homes used as year-round permanent residences using an appropriate cost-sharing basis (for example, 75% grant, 25% owner).	EQ	Existing program, underfunded	Ex.	Mit.
e-2	e-2	Inventory non-ductile concrete, tilt-up concrete (such as converted lofts) , and other privately-owned potentially structurally vulnerable residential buildings.	EQ	Existing program, underfunded	Ex.	Mit.
e-3	e-3	Adopt the 2009 International Existing Building Code or the latest applicable standard for the design of voluntary or mandatory retrofit of privately-owned seismically vulnerable buildings.	EQ	Existing program	Ex.	Mit.
e-4	e-4	Adopt one or more of the following strategies as incentives to encourage retrofitting of privately-owned seismically vulnerable residential buildings: (a) waivers or reductions of permit fees, (b) below-market loans, (c) local tax breaks, (d) grants to cover the cost of retrofitting or of a structural analysis, (e) land use (such as parking requirement waivers) and procedural incentives, or (f) technical assistance.	EQ	Existing program, underfunded	Ex.	Mit.
HSNG - f - New Construction and Earthquakes						
f-1	f-1	Continue to require that all new housing be constructed in compliance with (deleted "structural") requirements of the most recently	EQ	Existing program	New	Mit.

		adopted version of the <i>California Building Code</i> .				
f-2	f-2	Conduct appropriate employee training and support continued education to ensure enforcement of building codes and construction standards, as well as identification of typical design inadequacies of housing and recommended improvements.	EQ	Existing program	Both	Mit.

HSNG - g - Wildfire and Structural Fires						
g-1	g-1	Increase efforts to reduce hazards in existing private development in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat through improving engineering design and vegetation management for mitigation, appropriate code enforcement, and public education on defensible space mitigation strategies.	WF	Existing program	Ex.	Mit.
g-2	g-2	Tie public education on defensible space and a comprehensive defensible space ordinance to a field program of enforcement.	WF	Existing program	Both	Mit.
g-3	g-3	Require that new homes in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat be constructed of fire-resistant building materials (including roofing and exterior walls) and incorporate fire-resistant design features (such as minimal use of eaves, internal corners, and open first floors) to increase structural survivability and reduce ignitability. Note - See Structural Fire Prevention Field Guide for Mitigation of Wildfires at http://osfm.fire.ca.gov/structural.html .	WF	Existing program	New	Mit.
g-4	g-4	Create or identify “model” properties showing defensible space and structural survivability in neighborhoods that are wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat.	WF	Moderate	Both	Mit.
g-5	g-5	Consider fire safety, evacuation, and emergency vehicle access when reviewing proposals to add secondary units or additional residential units in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat.	WF	Existing program	Ex.	Mit.
g-6	g-6	Adopt and amend as needed updated versions of the <i>California Building and Fire Codes</i> so that optimal fire-protection standards are used in construction and renovation projects of private buildings .	WF	Existing program	Both	Mit.
g-7	g-7	Create a mechanism to enforce provisions of the <i>California Building and Fire Codes</i> and other local codes that require the installation of smoke detectors and fire-extinguishing systems on existing residential buildings by making installation a condition of (a) finalizing a permit for any work valued at over a fixed amount and/or (b) on any building over 75 feet in height, and/or (b) as a condition for the transfer of property.	WF	Existing program	Ex.	Mit.

g-8	g-8	Work to ensure a reliable source of water for fire suppression in rural-residential areas through the cooperative efforts of water districts, fire districts, and residents.	WF	Existing program, underfunded	Both	Mit.
g-9	g-9	Expand vegetation management programs in wildland-urban- interface fire-threatened communities or in areas exposed to high-to-extreme fire threat to more effectively manage the fuel load through roadside collection and chipping, mechanical fuel reduction equipment, selected harvesting, use of goats or other organic methods of fuel reduction, and selected use of controlled burning.	WF	Existing program, underfunded	Both	Mit.
g-10	g-11	Establish special funding mechanisms (such as Fire Hazard Abatement Districts or regional bond funding) to fund reduction in fire risk of existing properties through vegetation management that includes reduction of fuel loads, use of defensible space, and fuel breaks.	WF	Existing program, underfunded	Both	Mit.
g-11	g-12	Work with residents in rural-residential areas to ensure adequate plans are developed for appropriate access and evacuation in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat. For example, in some areas, additional roads can be created, and in other areas, the communities will need to focus on early warning and evacuation because additional roads are not feasible.	WF	Existing program, underfunded	Both	Mit.
g-12	g-13	Require fire sprinklers in new homes located more than 1.5 miles or a 5-minute response time from a fire station or in an identified high hazard wildland-urban-interface wildfire area.	WF	Existing program	New	Mit.
g-13	g-14	Require fire sprinklers in all new or substantially remodeled multifamily housing, regardless of distance from a fire station.	WF	Existing program	Both	Mit.
g-14	g-15	Require sprinklers in all mixed use development to protect residential uses from fires started in non-residential areas.	WF	Existing program	New	Mit.
g-15	g-16	Compile a list of privately-owned high-rise and high-occupancy buildings which are deemed, due to their age or construction materials, to be particularly susceptible to fire hazards, and determine an expeditious timeline for the fire-safety inspection of all such structures.	WF	Existing program	Ex.	Mit.
g-16	g-17	Conduct periodic fire-safety inspections of all multi-family buildings, as required by State law.	WF	Existing program	Ex.	Mit.

g-17	g-18	Ensure that city/county-initiated fire-preventive vegetation-management techniques and practices for creek sides and high-slope areas do not contribute to the landslide and erosion hazard. For example, vegetation in these sensitive areas could be thinned, rather than removed, or replanted with less flammable materials. When thinning, the non-native species should be removed first. Other options would be to use structural mitigation, rather than vegetation management in the most sensitive areas.	WF LS	Existing program, underfunded	Both	Mit.
g-18	g-19	Create a mechanism to require the bracing of water heaters and flexible couplings on gas appliances, and/or (as specified under “ b. Single-family homes vulnerable to earthquakes ” above) the bolting of homes to their foundations and strengthening of cripple walls to reduce fire ignitions due to earthquakes.	EQ WF	Existing program	Ex.	Mit.
g-19	g-20	Work with the State Fire Marshall, the California Seismic Safety Commission, Pacific Earthquake Engineering Research Center (PEER), and other experts to identify and manage gas-related fire risks of soft-story residential or mixed use buildings that are prone to collapse and occupant entrapment consistent with the natural gas safety recommendations of Seismic Safety Commission Report SSC-02-03. Note - See http://www.seismic.ca.gov/pub/CSSC_2002-03_Natural%20Gas%20Safety.pdf . Also note - any valves that are installed may need to have both excess flow and seismic triggers (“hybrid” valves).	EQ WF	Moderate	Ex.	Mit.
g-20	new	Work with insurance companies to create a public/private partnership to give a discount on fire insurance premiums to “Forester Certified” Fire Wise landscaping and fire-resistant building materials on private property.	WF	Existing program, underfunded	Ex.	Mit.
HSNG - h - Flooding						
h-1	h-1	To reduce flood risk, thereby reducing the cost of flood insurance to private property owners, work to qualify for the highest-feasible rating under the Community Rating System of the National Flood Insurance Program.	FL	Existing program	Both	Mit.
h-2	h-2	Balance the housing needs of residents against the risk from potential flood-related hazards.	FL	Existing program	New	Mit.
h-3	h-3	Ensure that new private development pays its fair share of improvements to the storm drainage system necessary to accommodate increased flows from the development, or does not increase runoff by draining water to pervious areas or detention facilities.	FL	Existing program	New	Mit.
h-4	h-4	Provide sandbags and plastic sheeting to residents in anticipation of rainstorms, and deliver those materials to vulnerable populations upon request.	FL	Existing program	Ex.	Res.

h-5	h-5	Provide public information on locations for obtaining sandbags and/or deliver those sandbags to those various locations throughout a city and/or county prior to and/or during the rainy season.	FL	Existing program	Ex.	Res.
h-6	h-6	Apply floodplain management regulations for private development in the floodplain and floodway.	FL	Existing program	New	Mit.
h-7	h-7	Ensure that new subdivisions are designed to reduce or eliminate flood damage by requiring lots and rights-of-way be laid out for the provision of approved sewer and drainage facilities, providing on-site detention facilities whenever practicable.	FL	Existing program	New	Mit.
h-8	h-8	Encourage home and apartment owners to participate in home elevation programs within flood hazard areas.	FL	Existing program	Ex.	Mit.
h-9	h-9	As funding opportunities become available, encourage home and apartment owners to participate in acquisition and relocation programs for areas within floodways.	FL	Moderate	Ex.	Mit.
h-10	h-10	Encourage owners of properties in a floodplain to consider purchasing flood insurance. For example, point out that most homeowners' insurance policies do not cover a property for flood damage.	FL	Existing program	Ex.	Mit.
HSNG - i - Landslides and Erosion						
i-1	i-1	Increase efforts to reduce landslides and erosion in existing and future development by improving appropriate code enforcement and use of applicable standards for private property , such as those appearing in the <i>California Building Code</i> , <i>California Geological Survey Special Report 117 – Guidelines for Evaluating and Mitigating Seismic Hazards in California</i> , <i>American Society of Civil Engineers (ASCE) report Recommended Procedures for Implementation of DMG Special Publication 117: Guidelines for Analyzing and Mitigating Landslide Hazards in California</i> , and the <i>California Board for Geologists and Geophysicists Guidelines for Engineering Geologic Reports</i> . Such standards should cover excavation, fill placement, cut-fill transitions, slope stability, drainage and erosion control, slope setbacks, expansive soils, collapsible soils, environmental issues, geological and geotechnical investigations, grading plans and specifications, protection of adjacent properties, and review and permit issuance.	LS	Existing program	Both	Mit.
i-2	i-2	Increase efforts to reduce landslides and erosion in existing and future private development through continuing education of design professionals on mitigation strategies.	LS	Existing program, underfunded	Both	Mit.
HSNG - j - Building Reoccupancy						

j-1	j-1 same as econ i-5	Develop and enforce a repair and reconstruction ordinance to ensure that damaged buildings are repaired in an appropriate and timely manner and retrofitted concurrently. This repair and reconstruction ordinance should apply to all public and private buildings, and also apply to repair of all damage, regardless of cause. See http://quake.abag.ca.gov/recovery/info-repair-ord.html.	EQ LS WF FL SEC	Existing program	Ex.	Mit.
j-2	new same as econ i-6	Establish preservation-sensitive measures for the repair and reoccupancy of historically significant privately-owned structures, including requirements for temporary shoring or stabilization where needed, arrangements for consulting with preservationists and expedited permit procedures for suitable repair or rebuilding of historically or architecturally valuable structures.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Rec.
HSNG - k - Public Education						
k-1	k-1	Provide information to residents of your community on the availability of interactive hazard maps showing your community on ABAG's web site.	EQ LS WF FL SEC	Existing program	Both	Mit.
k-2	k-2	Develop printed materials, utilize existing materials (such as developed by FEMA and the American Red Cross), conduct workshops, and/or provide outreach encouraging residents to have family disaster plans that include drop-cover-hold earthquake drills, fire and storm evacuation procedures, and shelter-in-place emergency guidelines.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Prep.
k-3	k-3	Inform residents of comprehensive mitigation activities, including elevation of appliances above expected flood levels, use of fire-resistant roofing and defensible space in high wildfire threat and wildfire-urban-interface areas, structural retrofitting techniques for older homes, and use of intelligent grading practices through workshops, publications, and media announcements and events.	EQ LS WF FL SEC	Existing program, underfunded	Both	Mit.
k-4	k-4	Develop a public education campaign on the cost, risk, and benefits of earthquake, flood, and other hazard insurance as compared to mitigation.	EQ LS FL SEC	Existing program, underfunded	Both	Mit.
k-5	k-5	Use disaster anniversaries, such as April (the 1906 earthquake), September (9/11), and October (Loma Prieta earthquake and Oakland Hills fire), to remind the public of safety and security mitigation activities.	EQ LS WF FL SEC	Existing program	Both	Mit.
k-6	k-6	Sponsor the formation and training of Community Emergency Response Teams (CERT) for residents in your community. [Note – these programs go by a variety of names in various cities and areas.]	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.

k-7	k-7	Include flood fighting technique session based on California Department of Water Resources training to the list of available public training classes offered by CERT.	FL	Existing program, underfunded	n/a	Res.
k-8	k-8	Institute the neighborhood watch block captain and team programs outlined in the Citizen Corps program guide.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Res.
k-9	k-9	Assist residents in the development of defensible space through the use of, for example, “tool libraries” for weed abatement tools, roadside collection and/or chipping services (for brush, weeds, and tree branches) in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat.	WF	Existing program, underfunded	Ex.	Mit.
k-10	k-10	Train homeowners to locate and shut off gas valves if they smell or hear gas leaking.	EQ LS WF FL SEC	Existing program	Ex.	Res.
k-11	k-12	Develop a program to provide at-cost NOAA weather radios to residents of flood hazard areas that request them, with priority to neighborhood watch captains and others trained in their use.	FL	Moderate	n/a	Res.
k-12	k-13	Make use of the materials on the ABAG web site at http://quake.abag.ca.gov/fixit and other web sites to increase residential mitigation activities related to earthquakes. (ABAG plans to continue to improve the quality of those materials over time.)	EQ	Existing program	Ex.	Mit.
k-13	k-14	Develop a “Maintain-a-Drain” campaign, similar to that of the City of Oakland, encouraging private businesses and residents to keep storm drains in their neighborhood free of debris.	FL	Existing program	Ex.	Mit.
k-14	k-15	Encourage the formation of a community- and neighborhood-based approach to wildfire education and action through local Fire Safe Councils and the <i>Fire Wise Program</i> . This effort is important because grant funds are currently available to offset costs of specific council-supported projects.	WF	Existing program, underfunded	Ex.	Mit.
k-15	k-16	Inform shoreline-property owners of the possible long-term economic threat posed by rising sea levels.	FL	Under Study	Ex.	Mit.
k-16	k-17	Distribute appropriate materials related to disaster mitigation and preparedness to residents. Appropriate materials are (1) culturally appropriate and (2) suitable for special needs populations. For example, such materials are available on the http://www.preparenow.org website and from non-governmental organizations that work with these communities on an on-going basis.	EQ LS WF FL SEC	Existing program	Ex.	Mit. + Prep.

deleted	g-10	DELETED - REPLACED BY DISCUSSION OF REVERSE 911 in GOVT c-14.				
deleted	k-11					

Economy Mitigation Strategies

2009-2010 Strategy Number	2005 Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Regional Priority	New vs. Existing Construction	Strategy Type
ECON - a - Multi-Hazard						
a-1	a-1	Assist in ensuring adequate hazard disclosure by working with real estate agents to improve enforcement of real estate disclosure requirements for commercial and industrial properties with regard to seven official natural hazard zones: 1) Special Flood Hazard Areas (designated by FEMA), 2) Areas of Potential Flooding from dam failure inundation, 3) Very High Fire Hazard Severity Zones, 4) Wildland Fire Zones, 5) Earthquake Fault Zones (designated under the Alquist-Priolo Earthquake Fault Zoning Act), and the 6) Liquefaction and Landslide Hazard Zones (designated under the Seismic Hazard Mapping Act).	EQ LS WF FL SEC DF	Existing program	Ex.	Mit.
a-2	a-2	Create incentives for private owners of historic or architecturally significant commercial and industrial buildings to undertake mitigation to levels that will minimize the likelihood that these buildings will need to be demolished after a disaster, particularly if those alterations conform to the federal Secretary of the Interior's <i>Guidelines for Rehabilitation</i> .	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Rec.
ECON - b - Soft-Story Commercial Buildings Vulnerable to Earthquakes						
b-1	b-1	Require engineered plan sets for voluntary or mandatory soft-story seismic retrofits by private owners until a standard plan set and construction details become available.	EQ	Existing program	Ex.	Mit.
b-2	b-2	Adopt the 2009 (changed date) International Existing Building Code or the latest applicable standard for the design of voluntary or mandatory soft-story building retrofits for use in city/county building department regulations. In addition, allow use of changes to that standard recommended by SEAOC for the 2012 IEBC.	EQ	Existing program	Ex.	Mit.

b-3	b-3	Work to educate building owners, local government staff, engineers, and contractors on privately-owned soft-story retrofit procedures and incentives using materials such as those developed by ABAG and the City of San Jose (see http://quake.abag.ca.gov/eqhouse.html .)	EQ	Moderate	Ex.	Mit.
b-4	b-4	Conduct an inventory of privately-owned existing or suspected soft-story commercial or industrial structures as a first step in establishing voluntary or mandatory programs for retrofitting these buildings.	EQ	High	Ex.	Mit.
b-5	b-5	Use the soft-story inventory to require private owners to inform all existing tenants (and prospective tenants prior to signing a lease agreement) that they may work in this type of building.	EQ	High	Ex.	Mit.
b-6	b-6	Use the soft-story inventory to require private owners to inform all existing and prospective tenants that they may need to be prepared to work elsewhere following an earthquake if the building has not been retrofitted.	EQ	Moderate	Ex.	Mit.
b-7	b-7	Investigate and adopt appropriate financial, procedural, and land use incentives (such as parking waivers) for private owners of soft-story buildings to facilitate retrofit such as those described by ABAG (see http://quake.abag.ca.gov/fixit).	EQ	High	Ex.	Mit.
b-8	b-8	(reworded) Explore development of State regulations or legislation to require or encourage private owners of soft-story structures to strengthen them.	EQ	Moderate	Ex.	Mit.
b-9	b-9	Provide technical assistance in seismically strengthening privately-owned soft-story structures.	EQ	Under Study	Ex.	Mit.
ECON - c - Unreinforced Masonry Buildings in Older Downtown Areas						
c-1	c-1	Continue to actively implement existing State law that requires cities and counties to maintain lists of the addresses of unreinforced masonry buildings and inform private property owners that they own this type of hazardous structure.	EQ	Existing program	Ex.	Mit.
c-2	c-2	Accelerate retrofitting of privately-owned unreinforced masonry structures that have not been retrofitted, for example, by (a) actively working with owners to obtain structural analyses of their buildings, (b) helping owners obtain retrofit funding, (c) adopting a mandatory (rather than voluntary) retrofit program, and/or (d) applying penalties to owners who show inadequate efforts to upgrade these buildings.	EQ	Existing program, underfunded	Ex.	Mit.
c-3	c-3	Require private owners to inform all existing tenants (and prospective tenants prior to signing a lease agreement) that they work in an unreinforced masonry building and the standard to which it may have been retrofitted.	EQ	Existing program, underfunded	Ex.	Mit.

c-4	c-4	As required by State law, require private owners to inform all existing tenants that they may need to be prepared to work elsewhere following an earthquake even if the building has been retrofitted, because it has probably been retrofitted to a life-safety standard, not to a standard that will allow occupancy following major earthquakes.	EQ	Existing program	Ex.	Mit.
ECON - d - Privately-Owned Structurally Vulnerable Buildings						
d-1	d-1	Inventory non-ductile concrete, tilt-up concrete, and other privately-owned structurally vulnerable buildings.	EQ	Existing program, underfunded	Ex.	Mit.
d-2	d-2	Adopt the 2009 International Existing Building Code or the latest applicable standard for the design of voluntary or mandatory retrofit of privately-owned seismically vulnerable buildings.	EQ	Existing program	Ex.	Mit.
d-3	d-3	Adopt one or more of the following strategies as incentives to encourage retrofitting of privately-owned seismically vulnerable commercial and industrial buildings: (a) waivers or reductions of permit fees, (b) below-market loans, (c) local tax breaks, (d) grants to cover the cost of retrofitting or of a structural analysis, (e) land use (such as parking requirement waivers) and procedural incentives, or (f) technical assistance.	EQ	Existing program, underfunded	Ex.	Mit.
ECON - e - Wildfire and Structural Fires						
e-1	e-1	Increase efforts to reduce hazards in existing private development in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat through improving engineering design and vegetation management for mitigation, appropriate code enforcement, and public education on defensible space mitigation strategies.	WF	Existing program	Ex.	Mit.
e-2	new	Tie public education on defensible space and a comprehensive defensible space ordinance to a field program of enforcement.	WF	Existing program	Both	Mit.
e-3	e-2	Require that new privately-owned business and office buildings in high fire hazard areas be constructed of fire-resistant building materials and incorporate fire-resistant design features (such as minimal use of eaves, internal corners, and open first floors) to increase structural survivability and reduce ignitability.	WF	Existing program	New	Mit.
e-4	e-3	Adopt and amend as needed updated versions of the <i>California Building and Fire Codes</i> so that optimal fire-protection standards are used in construction and renovation projects of private buildings.	WF	Existing program	Both	Mit.

e-5	e-4	Create a mechanism to enforce provisions of the <i>California Building and Fire Codes</i> and other local codes that require the installation of smoke detectors and fire-extinguishing systems on existing privately-owned buildings by making installation a condition of (a) finalizing a permit for any work valued at over a fixed amount and/or (b) on any building over 75 feet in height, and/or (b) as a condition for the transfer of property.	WF	Existing program	Ex.	Mit.
e-6	e-5	(reworded to more closely match the HSNB strategy) Expand vegetation management programs in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat to more effectively manage the fuel load through roadside collection and chipping, mechanical fuel reduction equipment, selected harvesting, use of goats or other organic methods of fuel reduction, and selected use of controlled burning.	WF	Existing program, underfunded	Ex.	Mit.
e-7	e-6	Establish special funding mechanisms (such as Fire Hazard Abatement Districts or regional bond funding) to fund reduction in fire risk of existing properties through vegetation management that includes reduction of fuel loads, use of defensible space, and fuel breaks.	WF	Existing program, underfunded	Both	Mit.
e-8	e-7	Establish special funding mechanisms (such as Fire Hazard Abatement Districts or regional bond funding) to fund fire-safety inspections of private properties, roving firefighter patrols on high fire-hazard days, and public education efforts.	WF	Existing program, underfunded	Both	Mit.
e-9	e-8	Compile a list of privately-owned high-rise and high-occupancy buildings that are deemed, due to their age or construction materials, to be particularly susceptible to fire hazards, and determine an expeditious timeline for the fire-safety inspection of all such structures.	WF	Existing program	Ex.	Mit.
e-10	e-9	Conduct periodic fire-safety inspections of all privately-owned commercial and industrial buildings.	WF	Existing program	Ex.	Mit.
e-11	e-10	Work with the State Fire Marshall, the California Seismic Safety Commission, Pacific Earthquake Engineering Research Center (PEER), and other experts to identify and manage gas-related fire risks of privately-owned soft-story mixed use buildings that are prone to collapse and occupant entrapment consistent with the natural gas safety recommendations of Seismic Safety Commission Report SSC-02-03. Note - See http://www.seismic.ca.gov/pub/CSSC_2002-03_Natural%20Gas%20Safety.pdf . Also note - any valves that are installed may need to have both excess flow and seismic triggers ("hybrid" valves).	EQ WF	Moderate	Ex.	Mit.

e-12	e-11	Ensure that city/county-initiated fire-preventive vegetation-management techniques and practices for creek sides and high-slope areas do not contribute to the landslide and erosion hazard.	WF	Existing program	Both	Mit.
e-13	e-12	Work with insurance companies to create a public/private partnership to give a discount on fire insurance premiums to “Forester Certified” <i>Fire Wise</i> landscaping and fire-resistant building materials on private property .	WF	Existing program, underfunded	Ex.	Mit.

ECON - f – Flooding						
f-1	f-1	To reduce flood risk, thereby reducing the cost of flood insurance to private property owners, work to qualify for the highest-feasible rating under the Community Rating System of the National Flood Insurance Program.	FL	Existing program	Ex.	Mit.
f-2	f-2	Balance the needs for private commercial and industrial development against the risk from potential flood-related hazards.	FL	Existing program	New	Mit.
f-3	f-3	Ensure that new private development pays its fair share of improvements to the storm drainage system necessary to accommodate increased flows from the development, or does not increase runoff by draining water to pervious areas or detention facilities.	FL	Existing program	New	Mit.
f-4	f-4	Provide sandbags and plastic sheeting to private businesses in anticipation of rainstorms, and deliver those materials to vulnerable populations upon request.	FL	Existing program	Ex.	Res.
f-5	f-5	Provide information to private business on locations for obtaining sandbags and deliver those sandbags to those various locations throughout a city and/or county.	FL	Existing program	Ex.	Res.
f-6	f-6	Apply floodplain management regulations for private development in the floodplain and floodway.	FL	Existing program	New	Mit.
f-7	f-7	Encourage private business owners to participate in building elevation programs within flood hazard areas .	FL	Existing program	Ex.	Mit.
f-8	f-8	As funding becomes available, encourage private business owners to participate in acquisition and relocation programs for areas within floodways.	FL	Moderate	Ex.	Mit.
f-9	f-9	Require an annual inspection of approved flood-proofed privately-owned buildings to ensure that (a) all flood-proofing components will operate properly under flood conditions and (b) all responsible personnel are aware of their duties and responsibilities as described in their building’s <i>Flood Emergency Operation Plan</i> and <i>Inspection & Maintenance Plan</i> .	FL	Existing program	Ex.	Mit.

ECON - g – Landslides and Erosion						
g-1	g-1	Increase efforts to reduce landslides and erosion in existing and future development by improving appropriate code enforcement and use of applicable standards for private property , such as those appearing in the <i>California Building Code</i> , California Geological Survey <i>Special Report 117 – Guidelines for Evaluating and Mitigating Seismic Hazards in California</i> , American Society of Civil Engineers (ASCE) report <i>Recommended Procedures for Implementation of DMG Special Publication 117: Guidelines for Analyzing and Mitigating Landslide Hazards in California</i> , and the California Board for Geologists and Geophysicists <i>Guidelines for Engineering Geologic Reports</i> . Such standards should cover excavation, fill placement, cut-fill transitions, slope stability, drainage and erosion control, slope setbacks, expansive soils, collapsible soils, environmental issues, geological and geotechnical investigations, grading plans and specifications, protection of adjacent properties, and review and permit issuance.	LS	Existing program	Both	Mit.
g-2	g-2	Increase efforts to reduce landslides and erosion in existing and future private development through continuing education of design professionals on mitigation strategies.	LS	Existing program, underfunded	Both	Mit.
ECON – h – New Construction and Earthquakes						
h-1	h-1	Continue to require that all new privately-owned commercial and industrial buildings be constructed in compliance with (deleted "structural") requirements of the most recently adopted version of the <i>California Building Code</i> .	EQ	Existing program	New	Mit.
h-2	h-2	Conduct appropriate employee training and support continued education to ensure enforcement of construction standards for private development .	EQ	Existing program	New	Mit.
h-3	h-3	Work with private building owners to help them recognize that many strategies that increase earthquake resistance also decrease damage in an explosion. In addition, recognize that ventilation systems can be designed to contain airborne biological agents.	EQ SEC	Existing program, underfunded	Ex.	Mit.
ECON – i – Building Reoccupancy						

i-1	i-1	Institute a program to encourage owners of private buildings to participate in a program similar to San Francisco's Building Occupancy Resumption Program (BORP). This program permits owners of private buildings to hire qualified structural engineers to create building-specific post-disaster inspection plans and allows these engineers to become automatically deputized as City/County inspectors for these buildings in the event of an earthquake or other disaster.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Rec.
i-2	i-2	Actively notify private owners of historic or architecturally significant buildings of the availability of the local BORP-type program and encourage them to participate to ensure that appropriately qualified structural engineers are inspecting their buildings, thus reducing the likelihood that the buildings will be inappropriately evaluated following a disaster.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Rec.
i-3	i-3	Actively notify owners of educational facility buildings of the availability of the local BORP-type program and encourage them to participate to ensure that appropriately qualified structural engineers are inspecting their buildings, thus reducing the likelihood that the buildings will be inappropriately evaluated following a disaster.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Rec.
i-4	i-4	Allow private building owners to participate in a BORP-type program as described above, but not actively encourage them to do so.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Rec.
i-5	i-5	Develop and enforce a repair and reconstruction ordinance to ensure that damaged buildings are repaired in an appropriate and timely manner and retrofitted concurrently. This repair and reconstruction ordinance should apply to all public and private buildings, and also apply to repair of all damage, regardless of cause. See http://quake.abag.ca.gov/recovery/info-repair-ord.html.	EQ LS WF FL SEC	Existing program	Ex.	Rec.
i-6	i-6	Establish preservation-sensitive measures for the repair and reoccupancy of historically significant privately-owned structures, including requirements for temporary shoring or stabilization where needed, arrangements for consulting with preservationists and expedited permit procedures for suitable repair or rebuilding of historically or architecturally valuable structures.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Rec.
ECON – j – Public Education						
j-1	j-1	Provide information to private business owners and their employees on the availability of interactive hazard maps on ABAG's web site.	EQ LS WF FL SEC	Existing program	Ex.	Mit.

j-2	j-2	Develop printed materials, utilize existing materials (such as developed by FEMA and the American Red Cross), conduct workshops, and/or provide outreach encouraging private businesses' employees to have family disaster plans that include drop-cover-hold earthquake drills, fire and storm evacuation procedures, and shelter-in-place emergency guidelines.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Prep.
j-3	j-3	Develop and print materials, conduct workshops, and provide outreach to Bay Area private businesses focusing on business continuity planning.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Rec.
j-4	j-4	Inform Bay Area private business owners of mitigation activities, including elevation of appliances above expected flood levels, use of fire-resistant roofing and defensible space in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat, structural retrofitting techniques for older buildings, and use of intelligent grading practices through workshops, publications, and media announcements and events.	WF FL	Existing program, underfunded	Ex.	Mit.
j-5	j-5	Sponsor the formation and training of Community Emergency Response Teams (CERT) training for other than your own employees through partnerships with local private businesses. [Note – these programs go by a variety of names in various cities and areas.]	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.
j-6	j-6	Assist private businesses in the development of defensible space through the use of, for example, “tool libraries” for weed abatement tools, roadside collection and/or chipping services (for brush, weeds, and tree branches) in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat.	WF	Existing program, underfunded	Ex.	Mit.
j-7	j-7	Make use of the materials developed by others (such as found on ABAG's web site at http://quake.abag.ca.gov/business) to increase mitigation activities related to earthquakes by groups other than your own agency . ABAG plans to continue to improve the quality of those materials over time.	EQ	Existing program	Ex.	Mit.
j-8	j-8	Develop a “Maintain-a-Drain” campaign, similar to that of the City of Oakland, encouraging private businesses and residents to keep storm drains in their neighborhood free of debris.	FL	Existing program	Ex.	Mit.
j-9	j-9	Encourage the formation of a community- and neighborhood-based approach to wildfire education and action through local Fire Safe Councils and the <i>Fire Wise Program</i> . This effort is important because grant funds are currently available to offset costs of specific council-supported projects.	WF	Existing program, underfunded	Ex.	Mit.

j-10	j-10	Encourage private businesses and laboratories handling hazardous materials or pathogens increase security to a level high enough to create a deterrent to crime and terrorism, including active implementation of “cradle-to-grave” tracking systems.	SEC EQ	Existing program, underfunded	Ex.	Mit.
j-11	j-11	Encourage joint meetings of security and operations personnel at major private employers to develop innovative ways for these personnel to work together to increase safety and security.	SEC EQ	Existing program, underfunded	Ex.	Mit.
j-12	j-12	Inform private shoreline-property owners of the possible long-term economic threat posed by rising sea levels.	FL	Under Study	Ex.	Mit.
j-13	j-13	Distribute appropriate materials related to disaster mitigation and preparedness to private business owners. Appropriate materials are (1) culturally appropriate and (2) suitable for special needs populations. For example, such materials are available on the http://www.preparenow.org website and from non-governmental organizations that work with these communities on an on-going basis.	EQ LS WF FL SEC	Existing program	Ex.	Mit. + Prep.

Government Strategies

2009-2010 Strategy Number	2005 Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Regional Priority	New vs. Existing Construction	Strategy Type
GOVT - a - Focus on Critical Facilities (...Owned by the Local Government Filling Out This Form)						
a-1	a-1	Assess the vulnerability of critical facilities (such as city halls, fire stations, operations and communications headquarters , community service centers, seaports, and airports) to damage in natural disasters and make recommendations for appropriate mitigation.	EQ LS WF FL	Existing program, underfunded	Ex.	Mit.
a-2	a-2	Retrofit or replace critical facilities that are shown to be vulnerable to damage in natural disasters.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Mit.
a-3	a-3	Clarify to workers in critical facilities and emergency personnel, as well as to elected officials and the public, the extent to which the facilities are expected to perform only at a life safety level (allowing for the safe evacuation of personnel) or are expected to remain functional following an earthquake.	EQ	Existing program	Ex.	Mit.

a-4	a-4	Conduct comprehensive programs to identify and mitigate problems with facility contents, architectural components, and equipment that will prevent critical buildings from being functional after major natural disasters. Such contents and equipment includes computers and servers, phones, files, and other tools used by staff to conduct daily business.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Mit.
a-5	a-5	Encourage joint meetings of security and operations personnel at critical facilities to develop innovative ways for these personnel to work together to increase safety and security.	EQ LS WF FL SEC	Existing program	Ex.	Mit.
a-6	a-6	When installing micro and/or surveillance cameras around critical public assets tied to web-based software, and develop a surveillance protocol to monitor these cameras, investigate the possibility of using the cameras for the secondary purpose of post-disaster damage assessment.	EQ LS WF FL SEC	Moderate	Ex.	Res.
a-7	a-7	Identify and undertake cost-effective retrofit measures related to security on critical facilities (such as moving and redesigning air intake vents and installing blast-resistant features) when these buildings undergo major renovations related to other natural hazards.	EQ LS WF FL SEC	Moderate	Ex.	Mit.
a-8	a-8	Coordinate with the State Division of Safety of Dams to ensure that cities and counties are aware of the timeline for the maintenance and inspection of dams whose failure would impact their jurisdiction.	EQ LS WF FL SEC DF	Existing program, underfunded	n/a	Mit.
a-9	a-9	As a secondary focus, assess the vulnerability of non-critical facilities to damage in natural disasters based on occupancy and structural type, make recommendations on priorities for structural improvements or occupancy reductions, and identify potential funding mechanisms.	EQ LS WF FL SEC	Moderate	Ex.	Mit.
a-10	a-10	Ensure that new government-owned facilities comply with and are subject to the same or more stringent regulations as imposed on privately-owned development.	EQ LS WF FL SEC	Existing program	New	Mit.
a-11	a-11	Comply with all applicable building and fire codes, as well as other regulations (such as state requirements for fault, landslide, and liquefaction investigations in particular mapped areas) when constructing or significantly remodeling government-owned facilities.	EQ LS WF FL SEC	Existing program	Both	Mit.
a-12	a-12	Prior to acquisition of property to be used as a critical facility, conduct a study to ensure the absence of significant structural hazards and hazards associated with the building site.	EQ LS WF FL SEC	Existing program	Both	Mit.

a-13	new	Ensure that any regulations imposed on private-owned businesses related to repair and reconstruction (see "Economy Section") are enforced and imposed on local government's own buildings and structures.	EQ LS WF FL SEC	Existing program	Both	Mit.
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GOVT - b - Maintain and Enhance Local Government's Emergency Recovery Planning

b-1	b-1	Establish a framework and process for pre-event planning for post-event recovery that specifies roles, priorities, and responsibilities of various departments within the local government organization, and that outlines a structure and process for policy-making involving elected officials and appointed advisory committees.	EQ LS WF FL SEC	Existing program	n/a	Rec.
b-2	b-2	Prepare a basic Recovery Plan that outlines the major issues and tasks that are likely to be the key elements of community recovery, as well as integrate this planning into response planning (such as with continuity of operations plans).	EQ LS WF FL SEC	Existing program, underfunded	n/a	Rec.
b-3	b-3	Establish a goal for the resumption of local government services that may vary from function to function.	EQ LS WF FL SEC	Existing program	n/a	Rec.
b-4	b-25	Develop a continuity of operations plan that includes back-up storage of vital records, such as plans and back-up procedures to pay employees and vendors if normal finance department operations are disrupted, as well as other essential electronic files.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Rec.
b-5	new	Plan for the emergency relocation of government-owned facilities critical to recovery, as well as any facilities with known structural deficiencies or in hazardous areas.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Rec.

GOVT - c - Maintain and Enhance Local Government's Emergency Response Capacity

c-1	new (old b-4 moved to HSN G a-3)	Develop a plan for short-term and intermediate-term sheltering of your employees.	EQ LS WF FL SEC	Existing program	Ex.	Res.
c-2	new	Encourage your employees to have a family disaster plan.	EQ LS WF FL SEC	Existing program	n/a	Prep.

c-3	new	Offer CERT/NERT-type training to your employees.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.
c-4	b-5 (a)	Periodically assess the need for new or relocated fire or police stations and other emergency facilities.	EQ LS WF FL SEC	Existing program	Both	Mit.
c-5	b-5 (b)	Periodically assess the need for changes in staffing levels, as well as for additional or updated supplies, equipment, technologies, and in-service training classes.	EQ LS WF FL SEC	Existing program	n/a	Mit.
c-6	b-6	Ensure that fire, police, and other emergency personnel have adequate radios, breathing apparatuses, protective gear, and other equipment to respond to a major disaster.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Prep.
c-7	b-7	Participate in developing and maintaining a system of interoperable communications for first responders from cities, counties, special districts, state, and federal agencies.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Prep.
c-8	b-8	Harden emergency response communications, including, for example, building redundant capacity into public safety alerting and/or answering points, replacing or hardening microwave and simulcast systems, adding digital encryption for programmable radios, and ensuring a plug-and-play capability for amateur radio.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Prep.
c-9	b-9	Purchase command vehicles for use as mobile command/EOC vehicles if current vehicles are unsuitable or inadequate.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Prep.
c-10	b-10	Maintain the local government's emergency operations center in a fully functional state of readiness.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.
c-11	b-11	Expand or participate in expanding traditional disaster exercises involving city and county emergency personnel to include airport and port personnel, transit and infrastructure providers, hospitals, schools, park districts, and major employers.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Prep.
c-12	b-12	Maintain and update as necessary the local government's Standardized Emergency Management System (SEMS) Plan and the National Incident Management System (NIMS) Plan, and submit an appropriate NIMSCAST report.	EQ LS WF FL SEC	Existing program	n/a	Res.

c-13	b-13	Continue to participate not only in general mutual-aid agreements, but also in agreements with adjoining jurisdictions for cooperative response to fires, floods, earthquakes, and other disasters.	EQ LS WF FL SEC	Existing program	n/a	Res.
c-14	b-14 & b-22	Install alert and warning systems for rapid evacuation or shelter-in-place. Such systems include outdoor sirens and/or reverse-911 calling systems.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.
c-15	b-15	Conduct periodic tests of the alerting and warning system. (deleted some wording)	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.
c-16	b-16	Regulate and enforce the location and design of street-address numbers on buildings and minimize the naming of short streets (that are actually driveways) to single homes.	EQ LS WF FL SEC	Existing program	Both	Mit.
c-17	b-17	Monitor weather during times of high fire risk using, for example, weather stations tied into police and fire dispatch centers.	WF	Existing program	n/a	Mit.
c-18	b-18	Establish regional protocols on how to respond to the NOAA Monterey weather forecasts, such as the identifying types of closures, limits on work that could cause ignitions, and prepositioning of suppression forces. A multi-agency coordination of response also helps provide unified messages to the public about how they should respond to these periods of increased fire danger. Response should also be modified based on knowledge of local micro-climates. Local agencies with less risk then may be available for mutual aid.	WF	Existing program	n/a	Res.
c-19	b-19	Increase local patrolling during periods of high fire weather.	WF	Existing program, underfunded	n/a	Mit.
c-20	b-20	Create and maintain an automated system of rain and flood gauges that is web enabled and publicly-accessible. Work toward creating a coordinated regional system.	FL LS	Existing program, underfunded	n/a	Mit.
c-21	b-21	Place remote sensors in strategic locations for early warning of hazmat releases or use of weapons of mass destruction, understanding that the appropriate early warning strategy depends on the type of problem.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.
c-22	b-23	Review and update, as necessary, procedures pursuant to the <i>State Dam Safety Act</i> for the emergency evacuation of areas located below major water-storage facilities.	EQ LS FL SEC DF	Existing program	Ex.	Res.

c-23	a-8	Improve coordination among cities, counties, and dam owners so that cities and counties can better plan for evacuation of areas that could be inundated if a dam failed, impacting their jurisdiction.	EQ LS FL DF SEC	Existing program	Ex.	Res.
c-24	b-24	Develop procedures for the emergency evacuation of areas identified on tsunami evacuation maps as these maps become available.	EQ TS	Existing program	Ex.	Res.
c-25	new	Support and encourage planning and identification of facilities for the coordination of distribution of water, food, blankets, and other supplies, coordinating this effort with the American Red Cross.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.
GOVT - d - Participate in National, State, Multi-Jurisdictional and Professional Society Efforts to Identify and Mitigate Hazards						
d-1	c-1	Promote information sharing among overlapping and neighboring local governments, including cities, counties, and special districts, as well as utilities.	EQ LS WF FL SEC	Existing program	n/a	Mit.
d-2	c-2	Recognize that emergency services is more than the coordination of police and fire response; it also includes planning activities with providers of water, food, energy, transportation, financial, information, and public health services.	EQ LS WF FL SEC	Existing program	n/a	Prep.
d-3	c-3	Recognize that a multi-agency approach is needed to mitigate flooding by having flood control districts, cities, counties, and utilities meet at least annually to jointly discuss their capital improvement programs for most effectively reducing the threat of flooding. Work toward making this process more formal to insure that flooding is considered at existing joint-agency meetings.	FL	Existing program, underfunded	n/a	Mit.
d-4	c-4	As new flood-control projects are completed, request that FEMA revise its flood-insurance rate maps and digital Geographic Information System (GIS) data to reflect flood risks as accurately as possible.	FL	Existing program	Both	Mit.
d-5	c-5	Participate in FEMA's National Flood Insurance Program.	FL	Existing program	n/a	Mit.
d-6	c-6	Participate in multi-agency efforts to mitigate fire threat, such as the Hills Emergency Forum (in the East Bay), various <i>FireSafe</i> Council programs, and city-utility task forces. Such participation increases a jurisdiction's competitiveness in obtaining grants.	WF	Existing program, underfunded	Both	Mit.
d-7	c-7	Work with major employers and agencies that handle hazardous materials to coordinate mitigation efforts for the possible release of these materials due to a natural disaster such as an earthquake, flood, fire, or landslide.	EQ LS WF FL SEC	Existing program	Both	Mit.

d-8	c-8	Encourage staff to participate in efforts by professional organizations to mitigate earthquake and landslide disaster losses, such as the efforts of the Northern California Chapter of the Earthquake Engineering Research Institute, the East Bay-Peninsula Chapter of the International Code Council, the Structural Engineers Association of Northern California, and the American Society of Grading Officials.	EQ LS	Existing program	Both	Mit.
d-9	c-9	Conduct and/or promote attendance at local or regional hazard conferences and workshops for elected officials and staff to educate them on the critical need for programs in mitigating earthquake, wildfire, flood, and landslide hazards.	EQ LS WF FL SEC	Existing program, underfunded	Both	Mit.
d-10	c-10	Cooperate with researchers working on government-funded projects to refine information on hazards, for example, by expediting the permit and approval process for installation of seismic arrays, gravity survey instruments, borehole drilling, fault trenching, landslide mapping, flood modeling, and/or damage data collection.	EQ LS WF FL SEC	Existing program	Both	Mit.
GOVT - d - Take a Lead in Loss and Risk Assessment Activities						
e-1	e-1	Work with the cities, counties, and special districts in the Bay Area to encourage them to adopt a Local Hazard Mitigation Plan and to assist them in integrating it into their overall planning process. RESPONSIBILITY: ABAG only; all others are "not applicable."	EQ LS WF FL DR TS SEC Flu Ag Heat	Existing program, underfunded	Both	Mit.
e-2	e-2	Improve the risk assessment and loss estimation work in the <i>Taming Natural Disasters</i> report and multi-jurisdictional plan related to natural disasters. RESPONSIBILITY: ABAG only; all others are "not applicable."	EQ LS WF FL DR TS Flu Ag Heat	Existing program, underfunded	Both	Mit.

Education Strategies

2009-2010 Strategy Number	2005 Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Regional Priority	New vs. Existing Construction	Strategy Type
EDUC - a - Focus on Critical Facilities (...Owned by School Districts)						

a-1	a-1	Assess the vulnerability of critical public education facilities to damage in natural disasters and make recommendations for appropriate mitigation.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Mit.
a-2	a-2	Retrofit or replace critical public education facilities that are shown to be vulnerable to damage in natural disasters.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Mit.
a-3	a-3	Conduct comprehensive programs to identify and mitigate problems with facility contents, architectural components, and equipment that will prevent critical public education buildings from being functional after major disasters.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Mit.
a-4	a-4	As a secondary focus, assess the vulnerability of non-critical educational facilities (that is, those that do not house students) to damage in natural disasters based on occupancy and structural type, make recommendations on priorities for structural improvements or occupancy reductions, and identify potential funding mechanisms.	EQ LS WF FL SEC	Moderate	Ex.	Mit.
a-5	new	Assess the vulnerability of critical private education, pre-school, and day care facilities to damage in natural disasters and make recommendations for appropriate mitigation.	EQ LS WF FL SEC	Moderate	Ex.	Mit.
a-6	a-5	(Major Rewording) Work with CalEMA and the Division of the State Architect to ensure that there will be an adequate group of Safety Assessment Program (SAP) inspectors trained and deployed by CalEMA to schools for post-disaster inspection. In addition, if a school district is uncomfortable with delays in inspection due to too few SAP inspectors available in catastrophic disasters, formalized arrangements can also be created with those inspectors certified by the Division of the State Architect as construction inspectors to report to the district, assess damage, and determine if the buildings can be reoccupied.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Rec.
EDUC - b - Use of Educational Facilities as Emergency Shelters						
b-1	b-1	Work cooperatively with the American Red Cross, cities, counties, and non-profits to set up memoranda of understanding for use of education facilities as emergency shelters following disasters.	EQ LS WF FL SEC	Existing program	Ex.	Res.

b-2	b-2	Work cooperatively to ensure that school district personnel and relevant staff understand and are trained that being designated by the American Red Cross or others as a potential emergency shelter does NOT mean that the school has had a hazard or structural evaluation to ensure that it can be used as a shelter following any specific disaster.	EQ LS WF FL SEC	Existing program	n/a	Res.
b-3	b-3	Work cooperatively to ensure that school district personnel understand and are trained that they are designated as disaster service workers and must remain at the school until released.	EQ LS WF FL SEC	Existing program	n/a	Res.
EDUC - c - Actions Related to Disaster Preparedness and Recovery Planning						
c-1	new	Encourage employees of schools to have family disaster plans and conduct mitigation activities in their own homes.	EQ LS WF FL SEC	Existing program	n/a	Prep.
c-2	c-2	Develop plans, in conjunction with fire jurisdictions, for evacuation or sheltering in place of school children during periods of high fire danger, thereby recognizing that overloading of streets near schools by parents attempting to pick up their children during these periods can restrict access by fire personnel and equipment.	EQ LS WF FL SEC	Existing program	Ex.	Res.
c-3	c-3	Offer the 20-hour basic CERT training to teachers and after-school personnel.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.
c-4	c-4	Offer the 20-hour basic Student Emergency Response Training (SERT, rather than CERT) training to middle school and/or high school students as a part of the basic science or civics curriculum, as an after school club, or as a way to earn public service hours.	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.
c-5	c-5	Offer the 20-hour basic CERT training course through the Adult School system and/or through the Community College system (either using instructors with teaching credentials or by making facilities available for classes not run by school personnel themselves).	EQ LS WF FL SEC	Existing program, underfunded	n/a	Res.
c-6	c-6	Develop and maintain the capacity for schools to take care of the students for the first 48 hours after a disaster, and notify parents that this capacity exists.	EQ LS WF FL SEC	Existing program	n/a	Res.
c-7	new	Develop a continuity of operations and disaster recovery plan using models such as that developed by the University of California Berkeley. (The American Red Cross has a role in promoting this activity, as well, in schools that	EQ LS WF FL SEC	High	n/a	Rec.

		they plan to use as shelters.)				
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EDUC - d- Actions Related to Schools as Conduits for Information to Families About Emergencies						
d-1	c-1	Utilize the unique ability of schools to reach families through educational materials on hazards, mitigation, and preparedness, particularly after disasters and at the beginning of the school year. These efforts will not only make the entire community more disaster-resistant, but speed the return of schools from use as shelters to use as teaching facilities, particularly if coordinated with cities, counties, the American Red Cross and others.	EQ LS WF FL SEC	Very High	n/a	Mit. + Prep.
d-2	c-7	Develop and distribute culturally appropriate materials related to disaster mitigation and preparedness, such as those on the http://www.preparenow.org website.	EQ LS WF FL SEC	Existing program	n/a	Mit. + Prep.

Environment Strategies

2009-2010 Strategy Number	2005 Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Regional Priority	New vs. Existing Construction	Strategy Type
ENVI - a - Environmental Sustainability and Pollution Reduction						
a-1	a-1	Continue to enforce State-mandated requirements, such as the <i>California Environmental Quality Act</i> , to ensure that mitigation activities for hazards, such as seismic retrofits and vegetation clearance programs for fire threat, are conducted in a way that reduces environmental degradation such as air quality impacts, noise during construction, and loss of sensitive habitats and species, while respecting the community value of historic preservation.	EQ LS WF FL DR SEC	Existing program	Ex.	Mit.
a-2	a-2	Encourage regulatory agencies to work collaboratively with safety professionals to develop creative mitigation strategies that effectively balance environmental and safety needs, particularly to meet critical wildfire, flood, and earthquake safety levels.	EQ WF FL SEC	Existing program	Both	Mit.

a-3	a-3	Continue to enforce and/or comply with State-mandated requirements, such as the <i>California Environmental Quality Act</i> and environmental regulations to ensure that urban development is conducted in a way to minimize air pollution. For example, air pollution levels can lead to global warming, and then to drought, increased vegetation susceptibility to disease (such as pine bark beetle infestations), and associated increased fire hazard.	LS WF FL DR SEC	Existing program	New	Mit.
a-4	a-4	Develop and implement a comprehensive program for watershed management optimizing ecosystem health with water yield to balance water supply, flooding, fire, and erosion concerns.	LS WF FL DR SEC	Under study	Both	Mit.
a-5	a-5	Balance the need for the smooth flow of storm waters versus the need to maintain wildlife habitat by developing and implementing a comprehensive Streambed Vegetation Management Plan that ensures the efficacy of flood control efforts, mitigates wildfires and maintains the viability of living rivers.	LS WF FL DR	Existing program	Both	Mit.
a-6	a-8	Comply with applicable performance standards of any <i>National Pollutant Discharge Elimination System</i> municipal stormwater permit that seeks to manage increases in stormwater run-off flows from new development and redevelopment construction projects.	FL	Existing program	Both	Mit.
a-7	a-9	Enforce and/or comply with the grading, erosion, and sedimentation requirements by prohibiting the discharge of concentrated stormwater flows by other than approved methods that seek to minimize associated pollution.	LS FL	Existing program	Both	Mit.
a-8	a-10	Explore ways to require that hazardous materials stored in the flood zone be elevated or otherwise protected from flood waters.	FL	Existing program	Both	Mit.
a-9	a-11	Enforce and/or comply with the hazardous materials requirements of the State of California Certified Unified Program Agency (CUPA).	EQ LS WF FL SEC	Existing program	Both	Mit.
a-10	a-12	Provide information on hazardous waste disposal and/or drop off locations.	EQ LS WF FL SEC	Existing program	n/a	Mit.
a-11	new	When remodeling existing government and infrastructure buildings and facilities, remove asbestos to speed up clean up of buildings so that they can be reoccupied more quickly.	EQ LS WF FL SEC	Under study	Ex.	Mit.

a-12	a-13	Develop and implement a program to control invasive and exotic species that contribute to fire and flooding hazards (such as eucalyptus, cattails, and cordgrass). This program could include vegetation removal, thinning, or replacement in hazard areas where there is a direct threat to structures.	WF FL	Existing program, underfunded	n/a	Mit.
a-13	a-14	Enforce provisions under creek protection, stormwater management, and discharge control ordinances designed to keep watercourses free of obstructions and to protect drainage facilities to conform to the Regional Water Quality Control Board's Best Management Practices.	FL	Existing program, underfunded	n/a	Mit.
ENVI - b - Climate Change						
b-1	a-6 + a-7	Stay informed of scientific information compiled by regional and state sources on the subject of rising sea levels and global warming, especially on additional actions that local governments can take to mitigate this hazard including special design and engineering of government-owned facilities in low-lying areas, such as wastewater treatment plants, ports, and airports.	LS WF FL DR	Existing program	Both	Mit.
b-2	new	Inventory global warming emissions in your own local government's operations and in the community, set reduction targets and create an action plan.	LS WF FL DR	Existing program, underfunded	n/a	Mit.
b-3	new	Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities.	LS WF FL DR	Existing program, underfunded	Both	Mit.
b-4	new	Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit.	LS WF FL DR	Existing program, underfunded	n/a	Mit.
b-5	new	Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology.	LS WF FL DR	Existing program, underfunded	n/a	Mit.
b-6	new	Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money.	LS WF FL DR	Existing program, underfunded	Both	Mit.
b-7	new	Purchase only Energy Star equipment and appliances for local government use.	LS WF FL DR	Existing program, underfunded	Both	Mit.
b-8	new	Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system.	LS WF FL DR	Existing program, underfunded	Both	Mit.

b-9	new	Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel.	LS WF FL DR	Existing program, underfunded	n/a	Mit.
b-10	new	Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production.	LS WF FL DR	Existing program, underfunded	n/a	Mit.
b-11	new	Increase recycling rates in local government operations and in the community.	LS WF FL DR	Existing program, underfunded	n/a	Mit.
b-12	new	Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO2.	LS WF FL DR	Existing program, underfunded	n/a	Mit.
b-13	new	Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.	LS WF FL DR	Existing program, underfunded	n/a	Mit.
ENVI - c - Agricultural and Aquaculture Resilience						
c-1	b-1	Maintain a variety of crops in rural areas of the region to increase agricultural diversity and crop resiliency. RESPONSIBLE AGENCIES: County Offices of the Agricultural Commissioner.	Ag DR SEC	Moderate	n/a	Mit.
c-2	b-2	Promote and maintain the public-private partnerships dedicated to preventing the introduction of agricultural pests into regionally-significant crops, such as the glassy-winged sharpshooter into vineyards. RESPONSIBLE AGENCIES: County Offices of the Agricultural Commissioner.	Ag DR SEC	Existing program	n/a	Mit.
c-3	b-4	Encourage livestock operators to develop an early-warning system to detect animals with communicable diseases (due to natural causes or bioterrorism). RESPONSIBLE AGENCIES: County Health Department and Office of the County Agricultural Commissioner.	Ag Flu SEC	Existing program	n/a	Mit.
deleted	b-3	(deleted since not a disaster-related strategy)				

Land Use Strategies

2009-2010 Strategy Number	2005 Original Strategy Number	Specific Mitigation Strategy	Applicable Hazards	Regional Priority	New vs. Existing Construction	Strategy Type
LAND - a - Earthquake Hazard Studies for New Private Developments						
a-1	a-1	Enforce and/or comply with the State-mandated requirement that site-specific geologic reports be prepared for development proposals within Alquist-Priolo Earthquake Fault Zones, and restrict the placement of structures for human occupancy. (This Act is intended to deal with the specific hazard of active faults that extend to the earth's surface, creating a surface rupture hazard.)	EQ	Existing program	New	Mit.
a-2	a-2	Require preparation of site-specific geologic or geotechnical reports for development and redevelopment proposals in areas subject to earthquake-induced landslides or liquefaction as mandated by the State Seismic Hazard Mapping Act in selected portions of the Bay Area where these maps have been completed, and condition project approval on the incorporation of necessary mitigation measures related to site remediation, structure and foundation design, and/or avoidance.	EQ	Existing program	Both	Mit.
a-3	a-3	Recognizing that some faults may be a hazard for surface rupture, even though they do not meet the strict criteria imposed by the Alquist-Priolo Earthquake Fault Zoning Act, identify and require geologic reports in areas adjacent to locally-significant faults.	EQ	Existing program	New	Mit.
a-4	new	Ensure that development proposed near faults with a history of complex surface rupture (multiple traces, warping, thrusting, etc.) has larger setbacks than the minimum fifty feet.	EQ	Under study	New	Mit.
a-5	new	Consider imposing requirements similar to the Alquist-Priolo Earthquake Fault Zoning Act for structures without human occupancy if these buildings are still essential for the economic recovery of the community or region.	EQ	Under study	New	Mit.
a-6	a-4	Recognizing that the California Geological Survey has not completed earthquake-induced landslide and liquefaction mapping for much of the Bay Area, identify and require geologic reports in areas mapped by others as having significant liquefaction or landslide hazards.	EQ	Existing program	New	Mit.

a-7	a-5	Support and/or facilitate efforts by the California Geological Survey to complete the earthquake-induced landslide and liquefaction mapping for the Bay Area.	EQ	Existing program	n/a	Mit.
a-8	a-6	Require that local government reviews of geologic and engineering studies are conducted by appropriately trained and credentialed personnel.	EQ	Existing program	n/a	Mit.
LAND - b - Wildland and Structural Fires						
b-1	b-1	Review new development proposals to ensure that they incorporate required and appropriate fire-mitigation measures, including adequate provisions for occupant evacuation and access by emergency response personnel and equipment.	WF	Existing program	New	Mit.
b-2	b-2	Develop a clear legislative and regulatory framework at both the state and local levels to manage the wildland-urban-interface consistent with <i>Fire Wise</i> and sustainable community principles.	WF	Existing program	Both	Mit.
LAND - c - Flooding						
c-1	c-1	Establish and enforce requirements for new development so that site-specific designs and source-control techniques are used to manage peak stormwater runoff flows and impacts from increased runoff volumes.	FL	Existing program	New	Mit.
c-2	c-2	Incorporate FEMA guidelines and suggested activities into local government plans and procedures for managing flood hazards.	FL	Existing program	n/a	Mit.
c-3	c-3	Provide an institutional mechanism to ensure that development proposals adjacent to floodways and in floodplains are referred to flood control districts and wastewater agencies for review and comment (consistent with the NPDES program).	FL	Existing program	New	Mit.
c-4	c-4	Establish and enforce regulations concerning new construction (and major improvements to existing structures) within flood zones in order to be in compliance with federal requirements and, thus, be a participant in the Community Rating System of the <i>National Flood Insurance Program</i> .	FL	Existing program	New	Mit.
c-5	new	Encourage new development near floodways to incorporate a buffer zone or setback from that floodway to allow for changes in stormwater flows in the watershed over time.	FL	High	New	Mit.
c-6	new	For purposes of creating an improved hazard mitigation plan for the region as a whole, ABAG, and Bay Area cities and counties, jointly request geographically defined repetitive flooding loss data from FEMA for their own jurisdictions.	FL	High	Ex.	Mit.

LAND - d - Landslides and Erosion						
d-1	d-1	Establish and enforce provisions (under subdivision ordinances or other means) that geotechnical and soil-hazard investigations be conducted and filed to prevent grading from creating unstable slopes, and that any necessary corrective actions be taken prior to development approval.	LS	Existing program	New	Mit.
d-2	d-2	Require that local government reviews of these investigations are conducted by appropriately trained and credentialed personnel.	LS	Existing program	New	Mit.
d-3	d-3	Establish and enforce grading, erosion, and sedimentation ordinances by requiring, under certain conditions, grading permits and plans to control erosion and sedimentation prior to development approval.	LS	Existing program	New	Mit.
d-4	d-4	Establish and enforce provisions under the creek protection, storm water management, and discharge control ordinances designed to control erosion and sedimentation.	LS	Existing program	Both	Mit.
d-5	d-5	Establish requirements in zoning ordinances to address hillside development constraints, especially in areas of existing landslides.	LS	Existing program	New	Mit.
LAND - e - Hillside - Multi-Hazard						
e-1	e-1	For new development, require a buffer zone between residential properties and landslide or wildfire hazard areas.	LS WF	Existing program	New	Mit.
e-2	e-2	Discourage, add additional mitigation strategies, or prevent new construction or major remodels on slopes greater than a set percentage, such as 15%, due to landslide or wildfire hazard concerns.	LS WF	Existing program	Both	Mit.
LAND - f - Smart Growth to Revitalize Urban Areas and Promote Sustainability						
f-1	f-1	Prioritize retrofit of infrastructure that serves urban areas (or urban services areas) over constructing new infrastructure to serve outlying areas.	EQ LS WF FL DR SEC	Existing program	New	Mit.
f-2	f-2	Work to retrofit homes in older urban neighborhoods to provide safe housing close to job centers.	EQ LS WF FL DR SEC	Existing program, underfunded	Ex.	Mit.
f-3	f-3	Work to retrofit older downtown areas and redevelopment districts to protect architectural diversity and promote disaster-resistance.	EQ LS WF FL SEC	Existing program, underfunded	Ex.	Mit.

f-4	f-4	Work with non-profits and through other mechanisms to protect as open space those areas susceptible to extreme hazards (such as through land acquisition, zoning, and designation as priority conservation areas) .	EQ LS WF FL SEC	Existing program, underfunded	New	Mit.
f-5	f-5	Strive to preserve existing buffers between development and existing users of large amounts of hazardous materials, such as major industry, due to the potential for catastrophic releases or fires due to an earthquake, accident , or terrorism. (Flooding might also result in release or spread of these materials; however, it is unlikely.) In areas where buffers do not exist or cannot be created, provide alternative mitigation.	EQ LS WF FL SEC	Existing program	New	Mit.
LAND - g - Hazard Abatement Districts						
g-1	new	Use hazard abatement districts as a funding mechanism to ensure that mitigation strategies are implemented and enforced over time.	EQ LS WF FL	Under study	Both	Mit.