

Risk Reduction and Management Plan

Preparing and adopting a comprehensive, multi-year plan to guide risk reduction and management efforts is essential to long-term progress. A risk reduction and management plan will serve to keep the work needed in the public eye for the long-term and provide a means for measuring progress and maintaining focus. It should be built on the policy guidance developed through strategic planning and serve as a detailed, programmatic guide for what needs to be done and who should do it.

The strategic planning process should produce a long-term mission statement and goals, a strategy for reaching those goals, and an initial prioritized set of concrete objectives and action items. The mission and goals will presumably not be changed often after they are formulated and approved. Much of the board's subsequent effort will carry out the strategy, revise it as necessary, implementing the initial action items, and develop new action items and priorities as experience warrants. The data collection and workshop phases provide information and perceptions regarding strengths, weaknesses, opportunities and obstacles for earthquake safety. The results are summarized, reviewed by workshop attendees, and then refined and adopted by the board. These materials, and the action items will serve as the foundation for writing and adopting a detailed programmatic plan—an earthquake risk reduction and management plan.

This plan should seek to describe and implement action items to meet the goals and objectives in a way that is consistent with the strategy adopted by the board. It should be detailed and specific and may require gathering more data and involve persons and

organizations that did not participate in the data collection or workshop deliberations. This chapter will describe the plan's contents, format, creation, and monitoring.

Contents

The earthquake risk reduction and management plan should be comprehensive. It should seek progress in a number of topical and geographic areas. For example, action items can call on geologists to identify hazards, for agencies to retrofit certain vulnerable buildings, and for emergency response agencies to improve and exercise response plans. The plan should include both risk reduction and risk management activities. For example, an owner may choose to strengthen a building to lessen the expected life loss (risk reduction) and purchase insurance and write a plan for business resumption to manage the remaining risk. The plan also should provide sequencing by calling certain action items to go before others. It may emphasize public awareness in one area and geologic mapping in another. A comprehensive plan will provide the "big picture" so that numerous organizations can act both independent of and in coordination with each other when pursuing efforts with their own resources.

A comprehensive plan is necessary because earthquakes differ from other hazards in a number of significant ways. Earthquake damage may be widespread, but also extremely variable. While many dozens of jurisdictions will be affected, each jurisdiction will have pockets of severe damage intermingled with areas without notable damage. Earthquakes affect the ability of a community to

respond by damaging lifelines, infrastructure, and communications systems.

Ground shaking triggers secondary natural hazards such as landslides, liquefaction and tsunamis and can damage structures whose failure can cause flooding or the release of hazardous materials. Emergency response planning and training are especially important because of the sudden and unpredictable nature of earthquakes as well as the potentially large number of damage incidents over a wide area and the disruption to normal communication. Carrying out a comprehensive plan will benefit communities in a variety of other ways in addition to improving its ability to withstand earthquakes. Emergency responders will be better prepared for incidents that are more frequent and isolated, and facilities will be better built and resist wind and geologic hazards as well as earthquakes.

Format

Developing the details for implementing the plan is essential to making progress. The plan can be built around individual action items or tasks. An action item is a self-contained activity or set of activities that is aimed at dealing with one seismic issue. They are essentially the same as the action items developed through strategic planning, but done in more detail. Each action item should state an objective, describe the problem and the expected outcome, identify the responsible parties, the amount and source of funding, the interim products, and a schedule for completion.

Action items should recommend activities both for the government and private-sector organizations to focus on during the specified period. Experience has proven that it is most effective to include the following components:

- *Description of the issue*—Each action item should explain the seismic safety

issue that justifies use of a government's or private-sector institution's resources.

- *Statement of the objective*—The action item should include an objective that explains what is to be accomplished, sets a date it should be completed, and identifies the agency responsible.
- *Milestones*—Each action item should include a timeline for achievable steps to help measure progress. Where the problems addressed require extensive additional study, the initial estimates of time may be only best guesses.
- *Resources needed*—The action item should include cost estimates. For some tasks, the estimates may be only best guesses because the problems to be addressed by the task will require extensive study. In others, the resources needed will have been identified and in some cases be within the responsible agency's budget.
- *Responsible entities*—Each action item must identify not only the lead agency responsible for the overall objective but also the participating agencies and organizations. The lead agency generally is responsible for coordinating the activities of the other agencies and organizations. In some instances the board may be the lead agency. Each action item should also designate an accountable individual who is ultimately responsible for the organization's participation and for the successful completion of the milestones.
- *Status*—Each action item should state the status of its compliance with its implementation schedule or milestones that have been established for it.
- *References*—The action item should provide references to any statutes, reports, or other materials that may be relevant to the issue.

Figure 9-1 is an example of an action item taken from an existing board's earthquake risk reduction and management plan.

Figure 9-1—Sample action item from a programmatic plan

Action Item

Clarify Hazard Mitigation Liability Issues

Governmental actions dictating strengthening and mitigation of seismic hazards, as well as innovative methods of maintaining the structural integrity and functionality of buildings during and immediately after an earthquake, raise legitimate concerns of tort liability in both the public and private sectors.

Buildings constructed to out-of-date standards pose the greatest life-safety risk in an earthquake. Local governments have the authority and the responsibility to protect their populations from hazardous buildings. Design professionals have the capability to design and construct buildings that maintain their structural integrity during and immediately after an earthquake. Proper building practices, retrofitting existing buildings posing a high likelihood of collapse during seismic events, and innovative structural designs and components in new buildings will significantly reduce earthquake-related casualties.

The tort liability issue of whether one has met the legal standard of due care to a foreseeable plaintiff has inhibited innovation by those involved in the retrofitting of potentially hazardous buildings, as well as the development of seismically resistant new buildings. Local governments and design professionals need a clearly defined legal benchmark to use when their professional judgment calls for deviation from existing building codes in their efforts to mitigate seismic hazards.

Objective

By December 1993, the Seismic Safety Commission clarifies tort liability issues affecting the mitigation of seismic hazards, including employing innovative methods to maintain integrity and functionality of buildings during an earthquake and to what extent they may be avoided, mitigated, or imposed on either local governments or design or construction professionals.

Milestones

1. By December 1992, the Seismic Safety Commission convenes a workshop to clarify to what extent tort liability may be avoided,

mitigated, or imposed on either local governments or design professionals for strengthening and mitigating seismic hazards and the use of innovative methods of maintaining the structural integrity and functionality of buildings during and immediately after an earthquake.

2. By September 1993, the Seismic Safety Commission provides the legislature, the governor, and local governments a report on the issue, including suggestions on how local governments and design professionals may exercise their creativity and judgment without undue apprehension of incurring a large tort liability judgment.

3. By January 1994, the Seismic Safety Commission after consultation with local jurisdictions, the governor, the legislature, as well as supporting and concerned organizations and agencies, submits proposed legislation, if needed, to clarify the tort liability concerns of local governments and design professionals.

Resources Needed

State: The Seismic Safety Commission will conduct the workshops, research, and legislative advocacy with existing staff and fiscal resources.

Responsible Agencies

- Seismic Safety Commission (Tim Cronin, Staff Counsel)
- State Bar of California (Larry Walsh, Director of Real Property Section)
- California Trial Lawyers' Association (Nancy Peverini, Associate Legislative Counsel)
- Association of Bay Area Governments (Ken Moy, Attorney)
- County Supervisors Association of California (Fred Keeley, Santa Cruz County Supervisor)
- League of California Cities
- Structural Engineers Association of California
- California Council/American Institute of Architecture (Aimee Hall, Legislative Assistant)
- Earthquake Engineering Research Institute (Frank E. McClure, Structural Engineer)

Status

To be started.

Organization

Organizing action items by related topics will make the plan easier to understand and monitor. The following categories are suggested:

- *Existing vulnerable facilities*—Action items that encourage reducing vulnerability in existing facilities and lifelines might consist of establishing seismic evaluation and retrofit standards for buildings, improving the seismic safety of public schools, publicly owned buildings, essential services buildings, and hospitals, as well as improving the performance of transportation and utility systems.
- *New facilities*—Action items that encourage reducing vulnerability in new facilities and lifelines can include improving seismic standards for new construction, mapping geologic hazards, and establishing seismic design review policies.
- *Emergency management*—Action items that encourage improvements in emergency management include improvements in emergency planning, communications equipment, training, mutual aid, emergency medical care, and shelter for earthquake victims.
- *Disaster recovery*—Action items that expedite the recovery process include providing post-event housing, estimating economic and governmental effects, and implementing recovery guidelines.
- *Research, public information, education, and legal support*—Action items include implementing a research plan, providing legal analysis of issues, conducting public information campaigns, and developing an information resources center. Earthquake-related research, public information, and education can help achieve the risk reduction and management action items in all the other categories.

Administration

A plan should lay out an administrative and management framework, including:

- *Implementing actions*—Describe actions the board will take to monitor, promote, and carryout the plan.
- *Annual work plan*—Describe and summarize the milestones to be met during each calendar year.
- *Legislation*—Describe legislation needed to enact parts of the plan.
- *Funding*—Funding for some of the action items may come from the Federal Emergency Management Agency or another funding authority that uses a comprehensive coordinated agreement or similar agreement. The action item format should provide the information (task descriptions, deliverables, schedule, cost) needed to complete these agreements.

Planning Process

A seismic risk reduction and management plan will necessarily involve dozens of agencies—governmental, private sector, and volunteer. The public sector and local government ultimately have the principal responsibility for earthquake safety. Because success will depend on their support and active participation, all sectors should be considered important contributors. The process used by other boards can help.¹

An “open” planning process involving all stakeholders is strongly recommended. The process should seek the following:

- Outside views on action items. Success of the plan will depend on organizations and information not available in the workshop.
- A consensus about what needs to be done by whom and the priorities.
- A commitment from responsible entities to implement each action item for which they are responsible.

Starting with the guidance from strategic planning, the planning process should be methodical yet flexible

¹ L. T. Tobin, F. Turner, J. F. Goodfellow, and B. L. Stoner, “California at Risk: Where Do We Go from Here?,” *Earthquake Spectra*, Vol. 8, No 1, 1992, p. 19.

and open in its involvement of parties interested in the outcome. Public involvement should be both informal and formal. Ample time must be provided for interested individuals and organizations to review draft materials. Ample notice must be given before meetings and hearings. An open process will allow time to publicize actions items so that elected officials, community leaders, professional organizations, and the media will understand what is needed and the priorities.

The planning effort should aim to build a support and commitment by creating interest and understanding and a sense of ownership among the persons who will carry it out. Care should be taken to ensure that the plan does not even appear to be dictated from a higher legal or intellectual authority. It is more important to get a commitment from the persons who can make a difference in earthquake risk than it is to make the plan a state-of-the-art document.

Care should be taken to develop a mailing list of the stakeholders identified during the strategic planning process. Other professional organizations, government organizations, and private-sector agencies should be called to identify persons to represent their interests and report back. Draft plan materials should be provided these persons for review and comment.

Workshops and open meetings can be held to air differences, to facilitate interdisciplinary discussion, and to explore technical details and relationships in depth.

Setting Priorities

Even though strategic planning will have identified priorities, the board will have to revisit the issue once the detailed action items have been developed. Once a draft plan has taken shape, use the board's judgment and perspective to set priorities. Six criteria can be applied:

- *Lives saved*—The potential for saving lives and preventing injuries.
- *Damage reduction*—The potential for reducing property damage and economic losses.
- *Socioeconomic continuity*—The potential for reducing social and economic disruption.
- *Opportunity*—The ease with which the activity can be implemented and the degree to which it complements other activities (the opportunity to build and leverage resources of others through relatively small investments).
- *Cost*—The probable cost of the activity.

Take the time to review each action item to be certain it meets a "common-sense test." Decision makers and the public should see it as being sensible, practical, and feasible. Moreover, unless the board has the wherewithal to do an action item, it should not be selected as a priority.

Approval

Before the plan is adopted, a formal public hearing should be held to be certain that organizations participate in an official capacity. The hearing process also fosters the official commitment of the organizations with the resources or legal authority to carry out the plan. Even though hearings are an opportunity to hear from those who disagree or who have new ideas, it is not a substitute for a careful open, review process.

Promoting the Plan

The board should commit itself to its plan by submitting it to the governor, legislature, and other organizations. Making the plan widely available will increase support and recognition for it, as well as for the board and the individual action items.

Many people and agencies must cooperate to make earthquake safety a reality. Concerted efforts and oversight by the board can promote long-term progress toward improved seismic

safety. The board can use reports, hearings, workshops, etc., to focus attention on government and the private-sector implementation measures that are needed. The board can sponsor legislation at the national, state, and local levels. It can provide testimony to legislative committees and city councils. The board can invite leaders of various organizations to meet with it—or send representatives to meet with them. A plan that assigns responsibility for specific tasks to agencies and recommends organizations will allow the board to coordinate and orchestrate the activities of the participants.

Monitoring Progress

A seismic risk reduction and management plan should include a mechanism for monitoring, measuring, and evaluating its effectiveness in meeting its objectives. The foundation for measuring progress is in each action item and its milestones. Only detailed milestones with reasonably achievable dates can be reviewed. A multi-year plan should be reviewed and revised yearly to allow for mid-course corrections. Timetables should be set as gauges for evaluating progress and opportunities for improvement,

regardless of whether schedules or deadlines are met.

The board can use periodic public hearings to assess progress. The meeting format will serve to reward those who are on or ahead of schedule and encourage those who are behind. Anticipation of a hearing will serve to encourage progress, even if it is at the last minute. A periodic review can also ensure that items will not be forgotten and that those that have fallen behind will be revised. A hearing format can also create media interest. Since external accountability is important, the plan should include an annual report to the legislature and governor.

Even if the plan is successfully implemented, events beyond the board's control will create reasons for revision. Periodic strategic planning, described in the previous section, and the results of the monitoring will identify new action items and revisions needed to items. A comprehensive, multi-year plan, prepared openly with the full involvement of affected organizations and individuals will be a major asset in helping a state address seismic safety. The plan should be a living document that is promoted, monitored, and revised continually.