



# INCENTIVES TO IMPROVE CALIFORNIA'S EARTHQUAKE SAFETY: AN "AGENDA IN WAITING"

SEISMIC SAFETY COMMISSION  
1755 Creekside Oaks Drive, Suite 100  
Sacramento, CA 95833  
(916) 263-5506  
(916) 263-0594 FAX  
[www.seismic.ca.gov](http://www.seismic.ca.gov)



SSC 99-02

## ACKNOWLEDGMENTS

The Commission laid the foundation for this report. The members prepared 58 ideas that provided a valuable initial focus for this report on seismic safety incentives. The Commissioners' contributions plus their interest in and close attention given to the report as it developed played important roles in the review and adoption process.

In addition to the Commissioners, the following people and organizations kindly provided thoughts, materials, and comments on various versions of this report: the California Preservation Foundation; the California Earthquake Authority; the State of California Trade and Commerce Agency; James E. Russell, Building Codes Consultant; Institute for Business and Home Safety; Mary C. Comerio, Professor of Architecture, University of California at Berkeley; the State of California Business, Transportation and Housing Agency; the California Healthcare Association; the City of Long Beach; EQE International; the Urban Financial Services Group; the County of Santa Barbara; California State Senator Jackie Speier; American Technology Alliances; Corliss Lee, former Commissioner; California Energy Commission; and Guna Selvaduray, Professor of Engineering, San Jose State University.

Several of the Commission's staff members were especially helpful. Richard J. McCarthy, Executive Director, provided continually useful guidance. Chris Lindstrom offered valuable legislative materials and tactical insights. Fred Turner supplied useful materials and insights. Carmen Marquez provided valuable support throughout the project, and most importantly, she took the report from a final draft to this published version.

The Commission gratefully acknowledges the assistance of Jim Buika, Project Monitor and Earthquake Program Specialist, FEMA IX.

### Seismic Safety Commission:

Richard Alarcon, *Senate*  
Alternate Chris Modrzejewski

Elaine White Alquist, *Assembly*  
Alternate Bill Gates

Jerry C. Chang  
*Soils Engineer*

Lloyd S. Cluff  
*Utilities*

Robert Downer  
*Insurance*

Scott P. Haggerty  
*County Government*

Jeffrey Johnson  
*Seismology*

Donald O. Manning  
*Fire Protection*

Gary L. McGavin  
*Architectural Planning*

Daniel Shapiro  
*Structural Engineering*

Lowell E. Shields  
*Mechanical Engineering*

James E. Slosson  
*Geology*

Patricia Snyder, Chair  
*Social Services*

Keith M. Wheeler  
*Emergency Services*

### Seismic Safety Commission Staff:

Richard J. McCarthy,  
*Executive Director*

Karen Cogan

Kathy Goodell

Chris Lindstrom

Carmen Marquez

Henry Reyes

Fred Turner

Funding By The  
Mitigation Directorate  
Federal Emergency Management Agency  
500 C Street, SW  
Washington, DC 20472

Contract No. EMW-95-C-4678  
National Earthquake Technical Assistance Program  
Task Order No. 244

Prepared By  
Robert A. Olson, Principal  
Hazard Mitigation Technical Assistance Partnership Inc.  
100 Egloff Circle  
Folsom, CA 95630  
(916) 989-6201

Under Contract to:  
URS Greiner Woodward Clyde Federal Services  
200 Orchard Ridge Drive, Suite 101  
Gaithersburg, MD 20878  
(301) 258-0780

**Disclaimer:**

The Federal Emergency Management Agency and the California Seismic Safety Commission are pleased to have cooperated in the preparation of this report. The Commission adopted this report at its meeting on June 10, 1999.



## CONTENTS

<i>1.0 BACKGROUND</i>	<i>1</i>
1.1 Purposes and Organization of This Report	1
1.2 Report Process	1
1.3 Report Organization	2
<i>2.0 INCENTIVES AS POLICY TOOLS</i>	<i>2</i>
2.2 Some Federal Insights	3
2.3 Senate Bill 1489: Adoption is Not Always Easy	4
2.4 Energy Incentives: Lessons Learned in California	5
<i>3.0 THE COMMISSION'S INITIAL INCENTIVES PROGRAM</i>	<i>6</i>
3.2 Providing Tax Incentives	7
3.3 Identifying and Implementing Insurance Incentives	7
3.4 Educating and Informing Others	8
3.5 Recognizing and Publicizing Voluntary Commitments	8
3.6 Liability as an "Incentive"	8
<i>4.0 OTHER PRIMARY INCENTIVES</i>	<i>9</i>
4.1 Geosciences	9
4.2 Research and Technology	9
4.3 Education and Information	9
4.4 Economics	9
4.5 Land Use	10
4.6 Existing Buildings	10
4.7 New Construction	11
4.8 Utilities and Transportation	11
4.9 Preparedness	12
4.10 Emergency Response	12
4.11 Recovery	12
<i>5.0 IMPLEMENTATION CONSIDERATIONS</i>	<i>12</i>
5.1 Future Tasks	12
5.2 Other Considerations	13
<i>REFERENCES</i>	<i>15</i>
<i>APPENDIX I</i>	<i>17</i>
Suggested Initiatives for the <i>California Earthquake Loss Reduction Plan</i>	17
<i>APPENDIX II: Incentive Format</i>	<i>19</i>
<i>APPENDIX III EXAMPLE: Economic Incentive</i>	<i>20</i>



# INCENTIVES FOR CALIFORNIA'S SEISMIC SAFETY

*"The bill [Senate Bill 1489, 1996, Rogers] was endorsed by the California Seismic Safety Commission which historically has called for the removal of tax disincentives and establishment of incentives for capital investment in seismic retrofit."*

## 1.0 BACKGROUND

### 1.1 Purposes and Organization of This Report

Increasing attention has been given in recent years to the roles incentives play in helping to achieve public policy goals. As in other fields, this also is true in seismic safety. Especially since the 1994 Northridge earthquake and the publication of the California Seismic Safety Commission's (Commission) policy guidance document, *California Earthquake Loss Reduction Plan, 1997-2001* (CELRP), the members of the Commission have sought to increase the roles various kinds of incentives can play in earthquake hazard mitigation and preparedness. The Commission set the policy context by noting that "The plan rests on the fact that increased levels of seismic performance--through the upgrading of existing vulnerable structures, better design of new construction, and increased preparedness in all areas--provide the most cost-effective method to reduce loss and improve recovery from earthquakes."

One of the Commission's main roles in California is to act as a policy initiator, and to serve that role this report was designed to be a "bridge" that connects ideas and recommendations to policy-related actions (e.g., legislation, regulatory changes, program "partnerships" of various types). Therefore, the principal purpose of this report is to support the Commission's decision-making by providing it with a "menu" or "digest" of ideas from which the

Commission could select one or more to pursue in greater detail. The references identify several publications that were used to distill and synthesize this document's recommendations.

This report also can be used by the Commission following earthquakes to provide guidance to the Legislature, Governor, and others on needed actions. This could include, for example, sponsoring state legislation, suggesting local ordinances and needed federal legislation, recommending new or modifying regulatory and administrative measures and procedures, and informing a wider audience about the range and importance of incentives to further reduce earthquake risk. In this role, the report serves as an "agenda in waiting" for appropriate "windows of opportunity." It is well understood that major policy advances frequently occur in the early aftermath of significantly damaging earthquakes.

### 1.2 Report Process

Based on its earlier interests in incentives, the Commission initiated an internal process that resulted in members' and staff ideas for 58 incentives (or the need to remove disincentives). The Commission's desire to focus on the further development of incentives led to its request to the Federal Emergency Management Agency (FEMA) for technical assistance. This resulted in Task Order 244 under the National Earthquake Technical Assistance Program (NETAP) being given to FEMA's consultants, URS Greiner Woodward Clyde Federal Services and one of its sub-consultants, The Hazard Mitigation Technical Assistance Partnership, Inc.

The consultant's work first involved analyzing the Commission's 58 ideas. These were grouped by the CELRP's 11 program elements: Geosciences; Research and Technology; Education and Information; Economics; Land Use; Existing Buildings; New Construction; Utilities and Transportation; Preparedness; Emergency Response; and Recovery.

An interpretation of the Commission's original contributions shows that:

- The Commission recognizes that economic and financial incentives are very important to reducing risk.
- The Commission also believes that providing incentives to reduce the risk from existing buildings must be addressed strongly.
- The Commission realizes that incentives are needed to sustain education and information programs for both mitigation and preparedness purposes.
- Other types of incentives are spread almost evenly over the other eight plan elements.
- This grouping does not reflect priorities, relationships among incentives, or the possibility of combining several (e.g., a “tax” package).

While the Commission’s 58 ideas did not reflect suggested priorities, there were several common themes, items that needed to be explored further before the scope of appropriate incentives could be defined, and several others, while not specific incentives, are being fed into the CELRP revision process. Further work involved collecting and analyzing applicable documents, conducting limited interviews, developing a conceptual approach, preparing drafts (one of which was circulated to several state, local, and federal agencies for comments), and several meetings with the Commission and its staff.

The Commissioner’s original submissions are available from the Commission’s offices. Many of the members’ ideas were combined to form elements of this report. Others were considered more appropriate to become initiatives in future editions of the CELRP.

This report was conceived as “Phase One” of a possible two-phase effort. Using this as a foundation, Phase Two would build on this report, first, by the Commission deciding

which incentives it desired to pursue, and, second, the consultants preparing very detailed information to support policy-initiation activities. Thus, the Commission can continue to use report as an “action plan,” work with and monitor others’ efforts to implement recommended incentives, evaluate effectiveness, and modify existing incentives to better meet seismic safety needs.

### 1.3 Report Organization

The following section (2.0) summarizes the roles and issues associated with incentives as policy tools. Section 3.0 presents the Commission’s initial six item incentives program: Leveraging Lending and Financing Practices; Providing Tax Incentives; Identifying and Implementing Insurance Incentives; Educating and Informing Others; Recognizing and Publicizing Voluntary Commitments; and Considering Liability as an “Incentive.” Section 4.0 identifies a broader range of more particular incentives. The concluding Section 5.0 focuses on issues related to the design, implementation, and evaluation of seismic safety incentives.

Appendix I contains the Commission’s initiatives that were referred from the members’ original 58 ideas to the CELRP so they can be addressed during the plan’s periodic revisions. Using the example of pending legislation, Appendix II offers an Incentive Format that can be used to develop the supporting information for Phase Two’s more specific proposals. An example has been completed for pending legislation related to extending the property tax incentive. Many documents were consulted during the course of this work, and they are listed in the References so as to serve as resources of more detailed information about some of the general strategies presented here.

## 2.0 INCENTIVES AS POLICY TOOLS

### 2.1 Roles of Incentives in Achieving Public Policy Goals

Incentives are interesting—and perhaps underutilized—public policy tools. However, such methods are increasingly important in the current climate of governance which



emphasizes greater roles of state and local governments and resources-optimizing intergovernmental and public-private sector partnerships.

Incentives are used to establish or modify contexts and relationships (especially financial) so that desired actions be taken that otherwise might not have been. The result is that people will take the desired actions because the “benefits” now outweigh the “costs.” For example, similar to many of the Commission’s ideas expressed in this report, the Institute for Business & Home Safety (IBHS):

...Is working with FEMA to recommend incentives that will spur property owners to take action to reduce losses before disaster strikes. IBHS is recommending to FEMA that the following incentives be granted to “qualified” owners of homes and buildings to offset the costs of retrofitting:

#### Insurance Incentives:

- Discount or credits on homeowners insurance premiums
- Lower deductibles and coinsurance percentages
- Increased availability of insurance in disaster-prone areas

#### Public Sector incentives:

- Elimination of property taxes on the value of retrofit improvements
- Federal and state income tax credits
- Elimination of sales tax on materials used in retrofitting
- Low interest loans for the cost of retrofit work (state and local governments)
- Reduced or eliminated Permit and Plan Check fees

#### Other Private Sector Incentives:

- Low interest loans for the cost of retrofit work (banks and lending companies)
- Low interest new construction loans for contractors who build disaster resistant structures
- Reduced origination fees for loans
- Employee bonuses given by employers for employees who take disaster safety precaution in their home
- Discounts on building materials
- Reduced utility (gas and electric) changes

As one Seismic Safety Commissioner noted, “These are ‘real’ incentives and, if implemented, have the potential for great impact in the hazard mitigation area. [These] incentives can be readily implemented because, generally speaking, they don’t take money from the government or the private sector that otherwise, absent these incentives, would accrue to them.” [Commissioner Gates, personal communication, 6/2/99]

## 2.2 Some Federal Insights

Two 1998 documents issued by the U.S. General Accounting Office (GAO) emphasize the potential roles incentives could play in reducing disaster assistance costs. In 1998 testimony before a congressional subcommittee a GAO representative discussed promoting the use of federal incentives to encourage hazard mitigation. He noted:

...Specific initiatives for improving mitigation included linking mitigation actions with the receipt of federal disaster and other assistance and prohibiting federally insured lenders from issuing conventional mortgages to households or businesses in an earthquake-prone area unless state or local governments have adopted or enforced appropriate seismic building standards.

GAO provided additional insights a few weeks later when in another document another GAO representative emphasized the importance of mitigation-focused incentives as one approach for lowering federal disaster assistance costs. The report noted:

For example...providing federal income tax credits for investments to improve the performance of existing facilities. Furthermore, to the extent that the availability of federal relief inhibits mitigation, amending post-disaster federal financial assistance could help prompt cost-effective mitigation. The National Performance Review, for example, recommended providing relatively more disaster assistance to states that had adopted mitigation measures than to states that had not.

Further insights into an emerging Federal Government role in creating incentives for hazard mitigation was provided in a 1997 report by the National Academy of Public Administration (NAPA) titled *Reducing Seismic Risks in Existing Buildings*. NAPA's approach recommends an emphasis on incentives and voluntary compliance rather than on mandates. Specific incentives discussed include:

- lower interest rates on federal loans for improvements to existing buildings, if the projects include seismic rehabilitation
- bonuses on top of building-related loans, if building owners are undertaking seismic rehabilitation
- federal income-tax credits for expenditures on seismic rehabilitation
- accelerated depreciation of costs of seismic rehabilitation and the same treatment for the costs of demolition of properties that cannot be upgraded

to meet seismic standards at a reasonable cost

- more favorable federal mortgage insurance terms for properties that meet seismic safety standards
- certification of loans for seismic rehabilitation as eligible projects that would systematically be considered investments in the community under the CRA (Community Reinvestment Act)
- federal tax exemptions for public purpose bonds used for seismic rehabilitation
- decoupling of Americans with Disabilities Act (ADA) requirements from upgrades for seismic safety, so seismic rehabilitation projects do not automatically trigger costly access requirements

### 2.3 Senate Bill 1489: Adoption is Not Always Easy

This report opened with a laudable quote from a California Engineering Foundation (CEF) report, and it is in the State of California that the Commission will be concentrating its primary efforts to expand the range of incentives. Partly as a word of caution, therefore, it is worth citing portions of CEF's report regarding the legislative history of Senate Bill 1489:

This bill would have allowed any private capital invested in seismic retrofit of an existing building to be depreciated over a three-year period rather than thirty-nine years as is current (1996) state and federal tax policy. The bill also provided that any "triggering" costs, i.e., those changes that must be incorporated in a building as part of any other structural changes, be included in the total capital outlay for rapid depreciation.

...The California Department of Finance opposed the bill and said that for every \$100 million of capital investment made

for seismic retrofit, the state would lose \$2 million in tax dollars if it were depreciated in three years (as the bill provided) instead of thirty nine years...

Senator Rogers requested a special study by the Senate Office of Research (SOR) to determine the amount of voluntary, private sector-financed, seismic retrofit taking place in California after the 1989 Loma Prieta and 1994 Northridge earthquakes.

The SOR report was provided to the Senate Revenue and Taxation Committee to demonstrate that there was little or no retrofit taking place, and thus, rapid capital recovery would have **no negative impacts** on state revenue but actually would generate taxable cash flow that would increase state and federal tax revenues.

The bill was defeated in the *Senate Revenue and Taxation Committee* as urged by the *California Department of Finance*. Senator Rogers discovered that...the Department uses a **static** rather than a **dynamic** model of analyzing tax related legislative initiatives. In addition, the Department assumes that the investment would have been made without the stimulus of rapid write-off, a position refuted by the SOR study findings.

#### 2.4 Energy Incentives: Lessons Learned in California

Another interesting California example relates to the history of the state's alternative energy (wind, solar, etc.) tax credits. Staff members of the California Energy Commission provided useful lessons learned about the effectiveness of energy-related incentives that were common in the late 1970s and in the 1980s. No significant

incentives exist today, but the major lessons from this earlier experience include the following:

- Efforts were needed to make the design and construction professions aware of energy conservation measures and new technologies. Substantial effort was needed to work with building officials on energy-related building code matters.
- At their peaks, the combined federal and state income tax credits totaled a "hefty" 55% of the costs incurred by consumers. While consumers benefited, the real goal of the incentive was to promote the entry into the energy field of new products, systems, and companies. When the tax credits were reduced over time to only a 10% state credit, there was little or no further interest in the incentive. Moreover, as expiration ("sunset") dates approached, lending institutions become more cautious about financing projects subsidized by incentives because this would change the financial status of the borrowers.
- Energy tax credits should be based on performance standards for products and systems that are independently verified and/or certified. This was not done earlier, and many machines or systems did not perform well, especially in the solar and wind fields. Related to this were inflated costs due to energy conservation being a "hot" item and the vendors' need to cover the costs of sales "gimmicks" (e.g., trips to resorts).
- To encourage the development of new industries in about the 1970s, investment tax credits allowed 80% of a qualified company's eligible costs to be recovered, leaving only 20% of the start-up costs "at risk." This helped foster the growth of companies that developed alternative energy technologies.
- Absolutely essential for solar and photovoltaic generating plant

development were property tax exemptions (which expired in 1990). This incentive helped allow them to compete with fossil fuel plants, which do not pay taxes on fuel.

### 3.0 THE COMMISSION'S INITIAL INCENTIVES PROGRAM

#### 3.1 Leveraging Lending and Financing Practices

Especially for existing buildings, perhaps one of the most challenging ways to improve their earthquake safety is to influence the complex financial relationships that are involved. Drawing on other experiences, it is clear that seismic safety improvements can be "built in" as eligible costs in loan packages and other financing mechanisms that seek a broader range of improvements to the building stock.

Such transactions between lenders, guarantors, and borrowers are project-specific (e.g., redevelopment area, historic building, multiple building owner) and result from private negotiations over terms and conditions. Therefore, while on the surface such processes do not readily lend themselves to policy intervention by government agencies such as the Commission, over the long term the ability to influence such processes could be significant.

Seismic retrofit may persuade lenders to change the pricing of the financing packages or modify conditions on the loan, such as requiring the purchase of insurance. The appraisal community also should be involved as its reports are central to valuing buildings for lending purposes. There may be ways to factor into appraisers' analyses the earthquake resistance of commercial and residential buildings.

To help illustrate the importance of this recommendation, sections of a 1994 *Western City* magazine article, "Hayward Is Banking on Seismic Safety", it stated in part that:

...An economic development-based revitalization plan, which would resolve the issue of seismic retrofit, but which also would help generate additional income to property owners to offset the cost of the loans they would have to obtain.

Banks had money... The banks all agreed to modify their lending policies to accommodate commercial properties and to form a lender pool wherein each lender would commit dollars to each loan based upon each bank's percentage of the total dollar commitment.

Documentation acceptable to everyone had to be developed. New federal banking regulations had to be met. The divergent underwriting policies of the various banks had to be synthesized. Loan packaging and review procedures were developed. Approval was obtained from the banking regulators for the appraisal process. Environmental site assessment issues were successfully addressed. These and a multitude of other issues were examined and resolved.

The final issue, loan pricing, was a concern to everyone. A formula had to be found that was affordable, yet profitable to the banks; this was less difficult than anticipated... A pricing formula was established based on the banks' cost of funds, which produced below-market interest rates.

Banks were comfortable with a long amortization schedule resulting in smaller monthly payments.

Early Action: The Commission could lead by hosting a workshop to explore the various aspects of these complex relationships. The results might disclose where some delicate policy interventions might reinforce the inclusion of seismic safety considerations in lending and financing negotiations.

### 3.2 Providing Tax Incentives

Several measures have been proposed to modify tax laws and regulations to make investments in seismic safety more attractive. In some cases, this means eliminating current practices that act as disincentives. For example, according to the IBHS current tax codes do not allow deductions for retrofit, but they do allow tax deductions for catastrophic losses.

The State of Oregon has been considering several tax incentives. Proposed legislation would allow partial tax credits to be taken by homeowners for premiums paid for hazard insurance (flood or earthquake) on their personal residences. Another idea is to provide an income tax credit of up to 35% of the costs of seismic rehabilitation of existing buildings as long as the investment is 20% or greater than the building's value. The credit could be carried forward for up to 10 years. A further locally administered tax incentive would allow 35% of the cost of seismic rehabilitation to be abated from real property taxes for up to 10 years as long as the work equals or exceeds 20% of the building's value.

Early Actions: First, the Commission has proceeded to continue an existing incentive with legislation to amend Section 74.5 of the Revenue and Taxation Code so the current sunset date of July 1, 2000 is removed or extended. Second, possibly through hearings or committee work, explore with legislation or regulatory changes in mind the implications of changing federal and state tax codes to allow either or both the expensing of seismic safety improvements to buildings in the years in which the work was done or providing for accelerated depreciation of such expenses.

### 3.3 Identifying and Implementing Insurance Incentives

Much has been said and written, including the Commission's own ideas, that reflect the desire to modify insurance programs so that loss-reducing measures are somehow

reflected as rewards in rate-setting and other insurance practices. Somewhat akin to good driver, non-smoker, or more recently long-term care discounts, the desire is to extend the same concept to properties that have been effectively seismically retrofitted or rehabilitated to lessen future losses (and the repair and replacement costs to insurance companies).

The process for initiating changes in this arena could be complicated because of the various responsibilities and interests of the potentially affected stakeholders. Typical California stakeholders include the Insurance Commissioner/Department of Insurance (DOI), California Earthquake Authority (CEA), industry associations, the underwriting policies and practices of the many companies competing for business here, and, of course, the Commission.

While it may select to pursue one or two items, the Commission will have to sustain a long-term process, probably supported by independent expertise, which addresses the particular issues associated with each change it seeks to achieve. For example, the Commission could explore how the Community Rating System (CRS) might be applied to earthquake insurance ratings. While CRS is known for its applications to coastal and river flooding, credits can be given for mitigating "special hazards," such as tsunamis.

Early Action: The commission should enter into an agreement with DOI and the CEA to establish a cooperative partnership to help implement common cost-effective objectives set forth in the Commission's CELRP. The goal of the agreement—currently in draft form—will be to further develop incentives by collaborating on legislative matters, helping to promote DOI's existing grant program, and pursuing a variety of topics related directly to many of the subjects discussed in this report. Examples include retrofit programs, standards, and verification procedures; information dissemination and education; training of contractors and building inspectors; developing benefit-cost data and methods for the state's fiscal agencies; and

finding ways to demonstrate the benefits of mitigation.

### 3.4 Educating and Informing Others

Within the context of improving incentives for seismic safety, several recommendations were made to educate and inform consumers. The underlying theme is the need to provide knowledge about the scope and availability of incentives so consumers can make informed choices and consider how the incentives might effect their financial calculations regarding investing in seismic safety. The process for strengthening educational and informational programs lends itself to Commission leadership.

It is clear that a major and sustained educational and informational (“sales”) effort will be needed to increase the knowledge about incentives and the willingness to invest in especially voluntary seismic safety measures. This program will have to be strongly user-oriented. Who should do it and how to pay for it is a question.

Early Action: Possibly through committee work or hearings, identify how greater synergy can be achieved and sustained for both mitigation and preparedness efforts by better integrating the informational and educational efforts of public, private, and charitable organizations.

### 3.5 Recognizing and Publicizing Voluntary Commitments

The Commission identified several measures that seek to increase voluntary commitment to seismic safety by recognizing exemplary efforts to reduce earthquake risk. The Commission also implicitly understands the need to widely publicize such “awards” to encourage others to take similar actions. While various types of recognition can be defined (e.g., certificates, plaques), perhaps the more important part of this effort will be the publicity given to the recipients of the Commission’s awards.

It will be important to ensure that informational materials communicate the message to others through their networks (e.g., professional and trade, local government, industry, and other associations or groups). This will take some effort and will vary with each recipient, but the potential positive influence is much greater if the information efforts are sustained and appear in familiar and often-consulted outlets (e.g., trade publications, “how we did it” packages tailored for targeted users).

Early Action: The Commission work with the Office of the Governor to establish a “Governor’s Award for Earthquake Safety.” It can be given to those who demonstrate exemplary efforts in the fields of hazard mitigation or earthquake preparedness.

### 3.6 Liability as an “Incentive”

When confronted with general knowledge of an area’s earthquake risk, and more importantly, specific knowledge about buildings’ vulnerability to damage and the consequent potential loss of life and occurrence of injury, the liability exposure to owners can become a major but perhaps grudgingly accepted reason to improve seismic safety.

This is a complex legal issue that should be answered on a case-by-case basis. For example, a recent FEMA publication, *Planning For Seismic Rehabilitation: Societal Issues* notes that:

...throughout these legal discussions is the fundamental “reasonable person” principle. For example, judgments would be made on what a “reasonable person” would do or be expected to do under the following illustrative circumstances: the apparent probability that the harm-causing event will occur, whether the person involved actually knew or should have known the risk, the magnitude of the expected resulting harm, and the effort required to institute proper precautions.

Nevertheless, the acceptance of potential liability by owners, coupled with other more

positive incentives (e.g., tax credits, low interest loans) can be a powerful incentive to implement seismic safety improvements, especially the strengthening, replacement, or removal of hazardous buildings.

#### 4.0 OTHER PRIMARY INCENTIVES

The previous section identified some early actions the Commission has taken or will take to develop improved seismic safety initiatives. This section contains additional suggestions taken from a variety of sources, including the Commission's original work, that have been organized following the 11 noted CELRP categories. While there is some redundancy and common themes, this list provides further items for consideration. Each item needs to be explored in more detail before it can be moved into the policy process.

##### 4.1 Geosciences

- Provide property tax and property insurance premium reductions when building foundations are retrofitted in high-risk areas.
- Develop a "package" of incentives (e.g., tax deductions, public relations/awards) so the petroleum industry would be willing to publicly release important geophysical data (perhaps limited to the top 500 to 1,000 feet of a profile) that could be used for earthquake protection. This subject also is important to the tsunami community, and the Commission could join with the Steering Committee of the National Tsunami Hazard Reduction Program to undertake a joint effort to explore this issue.
- Encourage geoscience professionals to improve their knowledge and capabilities by having state and local agencies (e.g., California Division of Mines and Geology, registration

boards, and local building, planning and community development departments) provide the public with lists of those who regularly take part in continuing education programs.

##### 4.2 Research and Technology

- Provide incentives (e.g., patents, grants, consulting fees) to earth science researchers and universities to develop cost effective methods for mitigating foundation and slope failures affecting existing buildings and systems.

##### 4.3 Education and Information

- Recognize achievements (or weaknesses) by some visible programs, such as a "seismic safety report card."
- Provide a more integrated approach to stimulate and sustain mitigation and preparedness efforts (e.g., educational materials, fairs, equipment, outreach programs, awards and certificates, training) so that the involved groups' resources are optimized and mutually reinforcing.

##### 4.4 Economics

- Design income tax deductions for individuals who contribute time, materials, equipment, and other resources to earthquake preparedness programs.
- Reduce residential (and small commercial structure) homeowner and property insurance rates when approved and certified loss reduction measures have been taken (e.g., bolting structure to concrete sills, replacing hazardous foundations, adding shear strength to walls).
- Encourage or authorize local governments, especially those participating in the "Project Impact" communities or similar programs, to reduce or waive ("forgive") permit and related fees for retrofitting existing

buildings. For example, following the Loma Prieta earthquake the City of Oakland permitted changes in use of unreinforced masonry buildings if they were retrofitted to a “tougher” voluntary standard, but would not allow changes in use of a building if it were only retrofitted to meet a mandatory but weaker standard.

- Encourage local governments (e.g., counties, cities, special districts) and the state’s Franchise Tax Board to develop tax incentives for the earthquake retrofitting of existing buildings.
- Work with the CEA and the insurance industry to extend premium incentives to residential buildings that conform to adequate earthquake standards in force at the time of construction or upon retrofitting.
- Provide insurance rate and/or mortgage incentives for buildings that meet adequate structural, non-structural, and contents earthquake protection on the premise that losses to them will be substantially less than not being so protected.
- Review federal and state policies that extend current post-disaster economic benefits (e.g., low interest loans, grants) to pre-earthquake mitigation actions on the premise that rehabilitation is less expensive than repair or replacement.

#### 4.5 Land Use

- Develop lower property insurance premiums for structures designed at or retrofitted to meet higher standards to account for “near source” strong motion shaking on the basis that losses and repair costs will be lower.

- Using measures like “pollution credits” and other trade-off mechanisms, provide for reduced densities in especially high-risk areas through local community planning and building regulating functions.
- Review the life safety and property damage-reducing implications of waiving permits and requirements in post-earthquake situations as these practices may, in fact, create exposure in the future.
- Determine if modifying California’s redevelopment law to add URM and other classes of earthquake hazardous buildings to the definition of blighted conditions would provide redevelopment agencies greater flexibility to use their resources to support the retrofitting or rehabilitation of buildings.
- Explore if the concept of “mitigation banking”—used often to mitigate environmental and habitat effects—might be adaptable to seismic safety. Such banks “sell” mitigation credits by providing higher quality mitigation in defined areas rather than requiring relatively minor activities in large numbers of individual locations. The state’s Bay Conservation and Development Commission appears to be in the early phases of such a program, and it has a long history of considering earthquake issues within its area of jurisdiction.

#### 4.6 Existing Buildings

- Recognize superior seismic retrofitting or rehabilitation of existing buildings by issuing certificates of earthquake performance that could be used by the insurance and lending industries to adjust rates and terms based on the presence of such certificates, and provide long-term support of the program with a continuing public information program.



- Develop and post a “Good Housekeeping Seal of Approval” on buildings, including residential structures, which have been seismically retrofitted, especially in communities that are participating in the Project Impact or similar programs.
- Develop incentives to allow for cost effective incremental or partial retrofitting where it may be possible to achieve an 80% loss reduction for 50% of the cost even though some retrofit actions will not meet the code requirements for new buildings. For example, the City of Los Angeles’ “Tie-Down LA” mitigation program offers less than market interest rate loans for qualifying work on single-family and multiple-family dwellings.
- To lessen overall project costs, seek methods to exempt the “triggering” of other code requirements (e.g., electrical, fire, ADA, infrastructure) when making seismic retrofit improvements so financial feasibility is improved when the work done meets the needs of the current occupant, especially when the retrofit is done voluntarily. This will need careful attention because these other requirements represent other groups’ definitions of important public policies.
- Seek reduced costs for liability insurance and other specific incentives, especially for hospitals and schools buildings, that would encourage the lateral bracing and anchorage of non-structural elements (e.g., ceilings, partitions, glass, roof tiles) and mechanical and electrical equipment (e.g., generators, HVAC units, ducts, pipes).

- Waive plan check and/or permit fees charged to homeowners when they retrofit their dwellings, possibly through providing local, state, and federal subsidies, insurance rate reductions, or fee reimbursements.
- In congested urban and downtown areas, waive zoning and other requirements (e.g., on-site parking requirements) for building owners who seismically retrofit their buildings voluntarily or by local mandate.
- Explore removing required posting from unreinforced masonry buildings (“URMs”) when they have been retrofitted, or perhaps eliminating the requirement because of uneven local enforcement in California.

#### 4.7 New Construction

- Like that for existing buildings, recognize superior construction (i.e., beyond minimum code requirements) of new buildings by issuing certificates of earthquake performance that could be used by the insurance and lending industries to adjust rates and terms based on the presence of such certificates, and provide long-term support of the program with a continuing public information program.
- Recognize local building departments’ superior enforcement of building codes by using the results of the Insurance Services Office’s (ISO) Building Code Effectiveness Grading Program, especially where ISO recommends earthquake insurance discounts (e.g., 24% and 13%).

#### 4.8 Utilities and Transportation

- Expand existing benefits programs by providing employees with monthly public transit passes or free shuttle services, especially after earthquakes, so highway demand is reduced for at least the time of recovery, and to help the

long-term development of public transit systems by reducing dependency on and the direct and indirect costs associated with automobile use.

#### 4.9 Preparedness

- Stimulate preparedness by ensuring that the Commission’s CELRP is widely disseminated with the intent that influential groups and organizations “adopt causes” listed as important to the state’s seismic safety.
- Ask the Federal Emergency Management Agency (FEMA) to agree that those working on implementing initiatives before earthquakes get highest priority consideration for post-earthquake Hazard Mitigation Grant Program (HMGP) funds.
- Find effective mechanisms to link schools’ compliance with the Standardized Emergency Management Systems (SEMS) and other requirements with Community Emergency Response Team (CERT) programs as a way of simulating preparedness and disseminating information. If successful, currently pending legislation (Senate Bill 195, Senator Baca, introduced January 19, 1999) might provide a mechanism. This bill would fund the preparation of “comprehensive school safety plans.”
- Pursue enactment of legislation providing economic incentives to corporations for strengthening their preparedness. Japan provides reduced taxation and/or accelerated depreciation for companies purchasing or installing containers for emergency response equipment; fire extinguishers; portable water pumps for fire suppression; water

wells and filters for emergency potable water supplies; sensors and shut-off valves; film for glass; anchoring of non-structural items; and completing structural retrofit projects.

#### 4.10 Emergency Response

- Support CERT programs by providing recognition, training, and equipment, preferably via new funding sources or contributions.

#### 4.11 Recovery

- Enact state legislation that encourages or requires local earthquake mitigation and preparedness activities by identifying the types of activities that would qualify (i.e., “count”) towards meeting the locals’ share following federally declared disasters.
- Seek insurance premium reductions for local agencies that have adequate disaster preparedness and recovery plans.

### 5.0 IMPLEMENTATION CONSIDERATIONS

Specific incentives will be adopted and implemented in a variety of ways. Regardless, the Commission should remain aware of the full range of seismic safety incentives available to various stakeholders, monitor and evaluate their effectiveness over the long-term, and be prepared to add, delete, or modify incentives so they remain effective seismic safety tools.

#### 5.1 Future Tasks

Some future tasks to help fulfill this responsibility include:

- Continuing over the long-term to provide sustained attention to incentives and to act as the critical interface between private and federal, state, and local sources of such incentives.
- Monitoring, evaluating and adjusting incentives so they remain effective, and so that the benefits and costs are

distributed in ways that achieve the incentives' intended goals.

- Considering a geographic emphasis (i.e., seismic zone and/or microzonation characteristics) in the formulation of selected incentives so they are applied on the basis of seismic risk.
- Considering factors related to building use and/or occupancy when designing particular incentives so that certain types of buildings (e.g., non-ductile concrete) or uses (e.g., multi-family apartments) clearly are the foci of the incentive.
- Further analyzing the subject of incentives to identify and develop explicit strategies to overcome particular, and perhaps subtle, disincentives to avoid increasing seismic risk (e.g., poor communication of loss and risk information). In a comparable manner, the Commission could focus specifically on developing disincentives to discourage social and economic activities that create conditions of unacceptable long-term earthquake risk.
- Undertaking a comprehensive and in-depth evaluation of incentives used in other fields to determine the goals desired, the kinds of incentives used, and their effectiveness in achieving their stated goals. For example, the results of recent research on intergovernmental roles and incentives related to energy conservation, radon reduction, and termite control could be helpful.
- Extending contacts far beyond those people concerned about seismic safety, but who are actively involved in advocating, enacting, and managing other programs so that seismic safety considerations are

included as part of more comprehensive efforts. For example, the City of Los Angeles has a variety of economic development incentives (e.g., business expense deductions; hiring, sales or use tax credits; utility services discounts; operating loss carryovers; net interest deductions for lenders; and several forms of tax exemptions) that are related to Federal Empowerment Zone, State Enterprise Zone, and a City Tax Free Zone programs. Another example is the California Commerce and Trade Agency's *California Main Street* program, which aims at revitalizing downtown areas by partially using incentives.

## 5.2 Other Considerations

The complex policy issue of effective incentives touches on other considerations, often broader than seismic safety. The items below are to help serve as reminders about a few of these other concerns that the Commission should keep in mind as it proceeds.

Overall, while this work focused on incentives (i.e., actions that can be taken to create a greater willingness to invest in seismic safety), it is reasonable to assume that many approaches, especially regarding strengthening existing buildings, have and will depend on a combination of mandatory and voluntary programs with effective incentives playing a facilitating role such as making mandatory requirements easier to afford and more politically acceptable.

These other considerations include:

- A concern that little data is available to clearly demonstrate the extent of actual damage reduction to be achieved by retrofitting various types of buildings, including residences. This is especially important for property insurance rating considerations.
- Positive responses from state agencies and other organizations, such as those from the CEA, the California Trade and

Commerce Agency, and the California Preservation Foundation, that reflect a strong desire to work with the Commission on developing effective incentives and processes that help achieve multiple program objectives.

- The Commission should recognize how important non-seismic safety incentives (e.g., 20% federal historic preservation tax credits) might work in combination with earthquake-related incentives to make undertaking multi-objective projects more feasible than single purpose approaches.
- One way of encouraging pre-earthquake mitigation is to “weigh” tax incentives so greater benefits are received if the work is done before rather than after an event by ensuring that the economic benefits accrued for post-disaster work are less advantageous to property owners.
- In many ways, the issue of “affordable financing” made available to property owners, especially for smaller residential and commercial properties, is the primary need to spur building mitigation programs at the local level. Closely related to this is the need for the financing to be available long enough so lenders can factor it into loan decisions.

## REFERENCES

- California Preservation Foundation. 1996. *20 Tools That Protect Historic Resources After an Earthquake: Lessons learned from the Northridge earthquake*. Oakland, CA.
- Earthquake Engineering Research Institute. June 1998. *Incentives and Impediments to Improving the Seismic Performance of Buildings*. Oakland.
- Eichenfield, Jeff. June 30, 1992. *Preparing for Earthquakes: It's Your Business*. The Alameda Main Street Project, Alameda, CA.
- Federal Emergency Management Agency. August 1994. *Seismic Retrofit Incentive Programs: A Handbook for Local Governments* (FEMA 254). Washington, DC
- Federal Emergency Management Agency. March 1998. *Planning for Seismic Rehabilitation: Societal Issues* (FEMA 275). Washington, DC.
- Institute for Business & Home Safety (IBHS). *Incentives*. Boston, MA 1998.
- Kuntz, Dr. Robert J., P.E. October 1997. *Performance Based Design: Public Policy, Economics and Education*. California Engineering Foundation, Rancho Cordova, CA.
- League of California Cities. April 1994. *Banking on Seismic Retrofit*, Western City LXX, No. 4. Sacramento.
- May, Peter J., Raymond J. Burby, and Howard Kunreuther. November 1998. Policy Design for Earthquake Hazard Mitigation: Lessons from Energy Conservation, Radon Reduction, and Termite Control. *Earthquake Spectra* 14:4:629-650. Earthquake Engineering Research Institute. Oakland.
- National Academy of Public Administration. November 1997. *Reducing Seismic Risks in Existing Buildings: Options for Applying Federal Standards for Seismic Safety through Federal-Aid and Regulatory Programs*. Washington, DC
- Pacific Earthquake Engineering Research Center. September 1998. *Pacific Earthquake Engineering Research Invitational Workshop Proceedings, May 14-15, 1998: Defining the links Between Planning, Policy Analysis, Economics and Earthquake Engineering* (PEER 98/04). University of California, Berkeley.
- Seismic Safety Commission. 1998. *The Commercial Property Owner's Guide to Earthquake Safety* (SSC No. 98-01). Sacramento.
- Seismic Safety Policy Advisory Commission, Oregon Emergency Management. May 12, 1998. *Transcript: A Work Session on Seismic Rehabilitation of Existing Buildings*. Salem.
- Seismic Safety Commission. November 4, 1997. Budget Change Proposal correspondence and documentation addressed to Ms. Louise Heredia-Sauseda, Department of Finance from Richard J. McCarthy, Executive Director. Sacramento.
- Selvaduray, Guna S. "Industrial Earthquake Preparedness in Shizouka and the Role of the Prefectural Government." *Earthquake Spectra* 1:2:307-318 February 1985. Earthquake Engineering Research Institute. Oakland.
- State of Oregon, Seismic Rehabilitation Task Force. September 30, 1996. *Seismic Rehabilitation of Existing Buildings in Oregon, Report to the Sixty-ninth Oregon Legislative Assembly*. Salem.
- The Bernstein Law Firm, PLLC, Ad Hoc Panel on a National Pre-Disaster Mitigation Plan. March 30, 1998. *Report and Commentary on Pre-Disaster Mitigation*. Washington, DC
- United States General Accounting Office. March 26, 1998. *Disaster Assistance: Information on Federal Costs and Approaches for Reducing Them* (GAO/T-RCED-98-139). Washington, DC.
- U.S. General Accounting Office. January 28, 1998. *Disaster Assistance: Information on*

*Federal Disaster Mitigation Efforts*  
(GAO/T-RCED-98-67). Washington, DC.

## APPENDIX I

### Suggested Initiatives for the *California Earthquake Loss Reduction Plan*

The following suggestions made originally within the context of developing incentives for seismic safety are more appropriate to consider for inclusion in future editions of the *California Earthquake Loss Reduction Plan* (CELRP). Some reflect themes and ideas similar to those contained in the main body of this report.

The CELRP is published pursuant to 1985 legislation known as The California Earthquake Hazards Reduction Act (Government Code Chapter 12, Section 8870 et seq.). In sum, it “requires the Seismic Safety Commission to prepare and administer a program setting forth priorities, funding sources, amounts, schedules, and other resources needed to reduce statewide earthquake hazards significantly by the year 2000.”

The ideas are:

1. Help owners of large buildings avoid the need for and cost of post-earthquake structural inspections by convincing them to install and maintain strong motion instruments so the data can be used to determine if an inspection is needed and if “hidden” damage is sufficient to warrant evacuation of the building or the dispatching of emergency responders to the site.
2. Establish a list of “trained” practitioners (e.g., contractors, engineers, architects) who have been certified as having completed special training to assist the California Earthquake Authority (CEA) to perform the residential retrofit work under CEA’s grant program.
3. Increase the visibility and promotion of “Earthquake Preparedness Month” (April), possibly by conducting an “earthquake fair” at the State Capitol in conjunction with the Commission’s annual Legislative Day.
4. Establish a multi-agency “Earthquake Speakers Bureau” to promote seismic safety throughout the state (e.g., providing speakers, advising the media of key events, preparing feature stories and press releases).
5. Identify and form informal “partnerships” with other groups to enhance their efforts to increase seismic safety by sponsoring seminars, publications, and other activities.
6. Promote the adoption of seismic safety legislation and programs by using existing ones as models, and which would be accompanied by lessons learned about the programs during the implementation.
7. Working with the California Department of Insurance (DOI) and the California Earthquake Authority (CEA), find ways to encourage mitigation through insurance programs and underwriting practices.
8. Support others’ efforts to translate earthquake risk and preparedness information into user friendly and possibly interactive manners.
9. Seek reductions in the amount of paperwork and compatibility of documentation (including electronic filing) and information requests (e.g., forms) between the Governor’s Office of Emergency Services (OES) and FEMA that improve administrative processes and lower program management costs for applicants.
10. Develop and demonstrate benefit/cost methodologies that can be used by decision-makers to systematically evaluate the economics of mitigation practices.
11. Develop a building rating system (i.e., A, B, C, etc.) that can be used by lenders and insurers to establish rates based on expected building performance in earthquakes inasmuch as better buildings will suffer lower losses.
12. Develop measures with private industry that will provide sufficient portable rest rooms and other emergency sanitation measures within two hours after damaging earthquakes for use by victims and emergency workers.

13. To help increase response time, ensure that reimbursement systems and commitments are in place to pay broadly defined mutual aid costs (e.g., engineers to rapidly evaluate buildings, fire protection services) incurred by such providers after earthquakes.

14. Require a “seismic disclosure” for any existing building, including its non-structural elements, at the time of its transfer or sale, regardless of the age of the building.

15. Further the development and support of “One Stop Recovery Centers” to aid recovery assistance and program management, including extending the time that such centers operate.

16. Strengthen efforts to assure effective communications during the lengthy recovery period between victims (e.g., homeowners, assistance providers, insurance adjusters).



## **APPENDIX II: Incentive Format**

[Note: this may be modified to use for “packages” of similar incentives (e.g., tax incentives, insurance incentives) based on the CSSC’s decisions.]

**Incentive title** (What is the label?)

**Objective** (What is the desired outcome?)

**Scope/Intent** (What is the general approach?)

**Policy mechanism** (How does the CSSC put the incentive in place?)

**Target stakeholders** (Who does the CSSC want to benefit from using this incentive, and who pays if it is adopted?)

**Arguments for and against** (What pro and con cases can be made and by whom?)

**State fiscal impact** (What are its fiscal and budgetary implications?):

**First year estimated costs**

**Annual costs**

**Order of magnitude benefits**

**Who “pays?”**

**Who “benefits?”**

**Example implementation considerations:**

- A. Is the technical knowledge available?
- B. Is there an existing administrative mechanism, or will a new one be needed?
- C. What will be the further role of the Commission?
- D. How is “demand” created and the beneficiaries informed and supported?

**Overall feasibility** (Can we estimate the possibilities of adoption and implementation?)

**Priority** (How important is this incentive, and what level of effort is the CSSC willing to spend to secure its adoption?)

**APPENDIX III EXAMPLE:  
Economic Incentive**

**Incentive title:** Property tax exemption for seismic improvements to buildings.

**Objective:** Obtain continuation of Section 74.5 of the Revenue and Taxation Code, which currently expires on July 1, 2000.

**Scope/Intent:** To retain incentive that exempts property tax increases because of seismic safety improvements made to real properties.

**Policy mechanism:** State legislation (introduced as AB1291, 1999)

**Target stakeholders:** Beneficiaries primarily intended to be owners of single family dwellings, but all commercial and non-owner occupied properties are eligible.

**Arguments for and against:**

**For:** retains existing incentive passed by voter initiative, contributes to local efforts to reduce future damages, gives financial benefit now when work is done, reduces disaster assistance costs to government/insurers/owners, employs construction trades.

**Against:** reduces local government income for property-tax financed public services.

**State fiscal impact:** to be determined later; CSSC has no information about the impacts of this program since its first enactment (e.g., numbers of retrofits, total costs and values, types of buildings)

**Implementation considerations:**

A. Is the technical knowledge available? Yes, for simpler buildings; complicated buildings may require engineering analyses and advice.

B. Is there an existing administrative mechanism, or will a new one be needed? Exists through county assessors' offices.

C. What will be the further role of the Commission? CSSC should monitor implementation closely to avoid the perceived earlier problem of lack of use, probably partially attributable to information not reaching owners.

D. How is "demand" created and the beneficiaries informed and supported? Need to get word out, possibly via inserts in property tax bills, work with local government, building owners associations, and others to be identified.

**Overall feasibility:** Highly feasible because an existing benefit is being extended.

**Priority:** Critical because of short time available to obtain legislative and gubernatorial approvals. Better to keep this on the books rather than re-starting initiative.