
SUMMARY REPORT OF URM RETROFIT LAWS

Selected California
Jurisdictions with
URM Building Best
Practices in
Earthquake Risk
Reduction

City of Seattle Department of
Planning and Development

Executive Summary

It is acknowledged Unreinforced Masonry (URM) buildings would pose a threat to life safety and property in the event of a significant seismic eruption. In an attempt to reduce this potential threat to life and property, the City of Seattle is in the process of developing a program to seismically retrofit URM buildings. Seattle has cast its reach to the State of California to learn from best practices adopted over a decade ago. This report encompasses a sample population of local jurisdictions in the State of California with a seismic retrofit URM program.

In 1986, the State of California mandated local jurisdictions (cities & counties), to identify all potentially hazardous buildings and then adopt policies and procedures reducing or eliminating potential hazardous conditions to life safety in areas with the greatest seismic activity. Each jurisdiction was allowed to customize their program to their specific circumstances. In part, California State Law requires local jurisdictions in Seismic Zone 4 (zone with the highest earthquake risk) to:

- Identify all potentially hazardous buildings within each jurisdiction by 1/1/1990
- Establish a mitigation program that includes notice to building owners. Local programs may include measures to strengthen buildings, change use to acceptable occupancy levels, demolish buildings, and provide tax incentives and low-cost loans for seismic rehabilitation.
- Report progress to the California Seismic Safety Commission

In addition, the Law recommended that local jurisdictions:

- Adopt mandatory strengthening programs by ordinance
- Establish seismic retrofit standards
- Enact measures to reduce the number of occupants in URM buildings.

California State Law defines “potentially hazardous building” as constructed before building code required earthquake-resistant design of unreinforced masonry. Warehouses and other buildings not used for human habitation are excluded unless emergency services equipment or supplies are stored there. Buildings having 5 or fewer living units are also excluded.

Some jurisdictions were more proactive and developed programs soon after enactment of the State Law. Others took advantage of their delayed response and developed programs based on lessons learned from other jurisdictions. This report is organized alphabetically by jurisdiction with sub-headings delineating pertinent components to help evaluate and compare each program. Web links have been provided in this report to allow the reader quick access to source documents of the summarized material.

It must be noted the State recognized a significant financial burden would fall on property owners to seismically retrofit their URM buildings. In the 1980’s, the underlying analysis supporting California’s URM Law estimated financial outlays would reach approximately \$4 billion in retrofit expenditures. It was further determined, if the seismic retrofit program was not enacted, associative costs after one major earthquake event would dwarf the retrofit expenditures, soaring to several hundred billion dollars. A detailed account of economic concerns, among other issues, can be found in a report entitled; “1995 Status of California’s Unreinforced Masonry Building Law” (pub no. 1995-05) prepared by California Seismic Safety Commission. (<http://www.seismic.ca.gov/pub.html>)

Risk Addressed

Following the passage of the California URM Law, local jurisdictions located within Seismic Hazard Zone 4 were required to inventory all URM buildings by 1/1/1990. This report profiles 12 of those jurisdictions from Eureka to the north to San Diego to the south. Seismic Hazard Zone 4 represents an expansive area with historic fault activity in California. Jurisdictions were responsible for identifying and maintaining the list of at-risk buildings. The City of San Diego was not originally

included within Zone 4 but elected to voluntarily adopt a URM loss reduction program to protect life safety. California has since added San Diego to the Zone 4 category.

The state granted local jurisdictions the power to establish a schedule of fees to recover costs associated with identifying potentially hazardous buildings and other functions to administer their program. None of the jurisdictions sampled in this report passed their inventory costs to owners.

Scope

The law requires jurisdictions within Zone 4 to identify all potentially hazardous buildings and to establish a mitigation strategy or program to eliminate risk to life safety and property. This included any URM building constructed before the adoption of building codes for the given jurisdiction. URM buildings excluded from the mandated inventory included structures with five or fewer dwelling units, warehouses or similar structures not used for human habitation, except warehouses or structures housing emergency services equipment and supplies. Any building classified as a "historical property" by a government agency falling under Section 37602 of the Health and Safety Code is exempt.

The common method employed to identify URM buildings was through field studies. Assigned departments would send out staff members to conduct visual surveys. The staff would look for visual cues such as header bricks, brick sills, brick arches, and wall anchors. This method recognized possible misidentification of buildings but enabled a cost effective approach to meet target dates. In some cases historical building permit records were accessed to aid or supplement visual assessments. With few exceptions, the initial URM inventory list became smaller during the evaluation period after further scrutiny of pre-identified buildings. Property owners could administratively appeal their building's URM designation with supporting documentation.

As to be expected, measures identifying URM buildings to participate in the program varied from jurisdiction to jurisdiction. In a number of locales all URM buildings or portions of buildings constructed with masonry walls, excluding a few building and use types, were required to enter into the program. Some jurisdictions were more explicit how URM buildings were selected and categorized within their program. The City of San Diego includes masonry (parapets, etc.) appendages to the building's exterior wall or roof to capture potential threats to adjacent walkways and properties.

Implementation

Four basic mitigation types arose out of the URM program throughout the State of California; Mandatory Strengthening, Voluntary Strengthening, Other types, and Notification only. Mandatory Strengthening requires owners to structurally improve performances of their building during seismic activity within prescribe time frames set by each jurisdiction. Time frames may vary by assigned building classification. This mitigation type is the most effective in obtaining compliance.

Voluntary Strengthening requires property owners to evaluate seismic risk to their buildings on standards established by the local Building Official but retrofit is not required. The Building Official reviews and approves evaluation report, the owner then responds in a timely manner in writing how the structure could be retrofitted. In some cases it has been left to the building owners' discretion if and when retrofitting will commence. Jurisdictions wanting to maintain a business friendly environment may opt for this option. This option has shown to be unpredictable in achieving compliance.

Other types of mitigation strategies have resulted in a wide range of effectiveness. One such example requires all URM buildings to be outfitted with a wall anchoring and parapet bracing system (if present) until such time as to trigger more extensive retrofitting. Another type includes cities requiring owners to post placards on URM buildings warning occupants and the public alike that the building is unsafe during earthquake activity. The least effective mitigation type is Notification only, in which jurisdictions simply mail out letters to owners stating that their building is of a type of construction that has been known to fail in earthquakes. At present, there are no measurable data to determine overall effectiveness of the last two types spurring owners into action.

Some jurisdictions rely on demolition to remove potentially hazardous buildings from their inventory. A greater number, however, seek to preserve URM buildings as evidenced by a statewide demolition rate of approximately 15% for all URM building in Zone 4 (2006).

Incentives and Assistance

Incentives have proven effective in encouraging voluntary participation in the seismic strengthening program over mandatory participation, though the pace may be slower depending on set time limits. A study in 2006 (last year data was collected) found eight jurisdictions with a voluntary program coupled with economic incentives had an average rate of 20% retrofits compared to a 14% rate for 31 jurisdictions with no incentives. Within California State demolition rates were higher in areas without incentives. If financial resources can be made available to lessen associated costs through low- to no-interest loans, among other incentives, a certain level of success should be expected encouraging property owners to voluntarily participate in a seismic retrofit program.

Popular incentives provided by local jurisdictions waived permit fees, some jurisdictions were more aggressive in passing bond measures to provide loans, and grants. Several jurisdictions adopted The Mills Act, a state law allowing cities to enter into contracts with the owners of historic structures. The contracts allow a reduction of property taxes in exchange for the continued preservation of the property. Property taxes are recalculated using a formula in the Mills Act and Revenue and Taxation Code. The City of St. Helena is one jurisdiction that successfully adopted a number of incentives including the Mills Act measure, to achieve 100% compliance. However, it must be noted during this period the economy was more robust allowing for greater government participation in defraying owner cost. At present, there is no definitive study interpreting results of jurisdictional incentives to help predict outcomes in other states. California's laws, seismic retrofit program and incentives are unique and should not be construed to be able to be replicated elsewhere.

Penalties and Enforcement

Jurisdictions set in place an array of penalties to spur timely compliance with the threat of punitive consequences for owners who were found in violation of the seismic retrofit program. Most jurisdictions considered pursuing legal action a last resort, preferring instead to work with owners to resolve issues or allowing additional time to obtain a complying URM building. As a percentage, owners who were subject to legal prosecution were few in number as reported by local jurisdictions. Having penalties in place proved a compelling incentive to spur action.

Owners of URM buildings subject to provisions of the seismic retrofit programs faced a number of penalties including; publically acknowledging the building is may be unsafe in the event of a major earthquake by placing a sign on the building, facing misdemeanor charges, paying fines, having a lien placed on the property, or losing title to the building to a local jurisdiction. Penalties provide a necessary leverage to ultimately protect life safety and property in the event of an earthquake disaster.

Conclusion

Mandatory Strengthening programs with accompanying penalties had the highest rate of compliance. Most recent data from the Seismic Safety Commission's 2006 report on the status of California's URM building law clearly illustrated the impact of mandatory programs. The report analysis and interprets survey results from participating jurisdictions in the State's effort to eliminate the hazardous condition URM building pose to life safety. In particular, "87% of the URM buildings in the Mandatory Strengthening program have either been retrofitted or demolished compared to 13 to 31 percent in the three other less effective program types". This difference is telling; Voluntary, Notification, and Other reduction programs have not proved effective in compelling owners to seismically strengthen their URM buildings.

Other key features in administering a successful seismic retrofit program would entail having a strong structure, with accessible leads working collaboratively with other agencies and the private sector to establish clear and concise retrofit standards and mitigation measures.

This summary report has relied on individuals in local jurisdictions to provide updates on their respective seismic retrofit programs. In some jurisdictions due in part to staff attrition and the current state of the economy some programs have been shelved. Several jurisdictions have obtained 100% compliance and no longer have access to in-house historical documentation. Any inconsistency between summary profiles can be attributed to limited access to information to complete profiles. Where we could not verify information we simply stated that information was presently unknown. The summary report represents the best available information.

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URM Best Practices in Earthquake Risk Reduction

Jurisdiction:	Berkeley
Name of policy:	Unreinforced Masonry Building Program
Risk addressed:	Unreinforced masonry (URM) buildings are at high risk of damage or collapse in earthquakes. Berkeley had identified about 700 at-risk URM buildings. After a secondary assessment, approximately 71 buildings were removed from the inventory.
Scope:	Includes URM buildings constructed before 1956 and approved as commercial or mixed use; URM buildings constructed before 1956 containing more than five living units or bedrooms; buildings with at least one brick infill wall located in high pedestrian traffic corridor; buildings with brick veneer greater than 10 feet above grade located in high pedestrian traffic corridor; or buildings with unreinforced parapet with/depth ratio greater than 1:1/2 located in high pedestrian traffic corridors.
Summary of policy:	In 1994, Berkeley identified about 700 URM structures, used for both commercial and residential purposes. In response to a state law, the City instituted an Unreinforced Masonry Safety program consisting of identifying such buildings and mandatory retrofit deadlines based on a building's designated risk category.
Implementation:	After the City of Berkeley identified URM structures, it is left to the property owners to submit seismic engineering evaluation report within two years of the adoption of the ordinance (11/14/1991) verifying the building meets criteria or how they plan to bring building into compliance. Owners are obligated to notify building tenants the structure is potentially hazardous and is included in the URM inventory list, within 30 days of ordinance adoption. The owner would then apply and obtain a building permit to seismically retrofit the structure within a prescribe period of time. All work must be completed within a set timeframe describe by ordinance.
Text of policy:	Seismic Hazard Mitigation Program for URM Buildings found in Title 19, Chapter 38 http://codepublishing.com/ca/berkeley/
Date(s) of adoption and changes:	Program's effective date is 11/14/91. Subsequent changes extended compliance times on 4/24/1994, 2/27/197, and 12/14/2000.
How was policy adopted:	By City Council action through the adoption of a local ordinance
Timeline for compliance:	Owners must complete an engineering report within two years of the adoption of the mandatory seismic retrofit program (11/15/91) and obtain a building permit for seismic retrofitting within the time frame set by the six risk categories. (Extended end dates appear in parentheses below). Risk category (RC) I (highest risk): Hospitals, fire and police stations, emergency centers, government administration buildings, or any building with an occupancy load greater than 1,000

- Complete retrofit = 3 years (3/1/1997)

RC II: Commercial buildings* with an occupancy load of 300 or more. Residential buildings**containing more than 100 living units or bedrooms. Mixed use occupancies; any building with a combined occupancy load greater than 300

- Complete retrofit = 4 years (3/1/1997)

RC III: Commercial buildings with an occupancy load greater of 100 or more. Residential buildings containing 50 or more living units/bedrooms. Mixed use occupancies: any building with a combined occupancy load greater than 100.

- Complete retrofit = 5 years (6/30/1997)

RC IV: Commercial buildings with an occupancy load of 50 or more. Residential buildings containing fewer than 50 living units/bedrooms. Mixed use occupancies: any building with a combined occupancy load greater than 50.

- Complete retrofit = 6 years, (12/31/1997)

RC V: Commercial buildings with an occupancy load of 50 or less. Residential buildings containing 20 or fewer living units/bedrooms. Mixed use occupancies: any building with a combined occupancy load of 50 or less.

- Complete retrofit = 7 years, (3/1/1998)

RC VI (lowest risk): Any nonresidential building used less than 20 hours per week, or any building with a masonry veneer of less than ten feet in height or with a masonry parapet exceeding 1:1/2 ratio or masonry in-fill that is located in a high pedestrian traffic corridor

- Complete retrofit = 10 years (3/1/2001)

Hardship extensions may be granted for up to 18 months. The building official may require immediate retrofit in specific circumstances.

*Commercial buildings include businesses, assembly buildings, educational and institutional occupancies.

**Residential buildings include hotels, motels, apartments or condominiums.

Incentives & assistance

None.

Penalties & enforcement

Each property not retrofitted in compliance with mandatory seismic retrofit program or with orders of the building official will be declared a public nuisance. A notice of violation shall be sent to the owner ordering abatement. The building official shall prepare and file a notice against the property title stating required compliance to the retrofit program and transfer of title or additional financing may require immediate compliance.

Accomplishments:

Since the program’s original inception in 1991, owners have improved seismic resistance or demonstrated adequate reinforcement in over 600 of 700 buildings initially designated as URMs in Berkeley. At the time of writing, only 22 buildings remain to be retrofitted or demolished.

Funding information: Some city funds can be used through the property transfer tax seismic rebate program as partial funding for upgrades. The city made a loan to one non-profit and waives building permit fees for certain non-profit buildings.

Administrative costs: Presently unknown.

Updates: There was no enforcement in the first 10 years. In 2001, Berkeley began officially alerting property owners who had not complied with this law. This led to significant increases in compliance. The most recent available information indicates 22 properties are yet to be retrofitted. The City has been threatening to issue administrative citations and to place liens on properties, but hopes these measures will not be necessary. Some of the remaining outstanding URM buildings are having difficulty meeting ADA requirements. Few property owners have claimed financial hardship as an obstacle to achieving compliance.

Although this program has brought substantial increases in safety, even upgraded URM buildings are still vulnerable to extensive damage in earthquakes.

Internet links: <http://www.cityofberkeley.info/planning/>

Contact person: There is no contact person who can provide current information with the seismic retrofit program. Joan MacQuarrie, Planning Department, 510-981-7441, Jom3@cityofberkeley.info, was recently assigned to oversee the project but was unable provide Dan Lambert, Planning Department, 510-981-7400, was reassigned to other project but possesses institutional knowledge.

Jurisdiction: Beverly Hills

Name of policy: Seismic Safety Program

Risk addressed: Beverly Hills seeks to promote public safety and welfare by reducing risk of death or injury posed by existing Unreinforced Masonry (URM) bearing wall buildings during an earthquake event. The City recognizes development standards associated with the program may not necessarily prevent loss of life or injury or prevent earthquake damage to rehabilitated buildings. The program is designed to lessen the effects resulting from earthquakes activity. Beverly Hills identified 104 URM buildings at risk of collapse during moderate to severe seismic activity. Of the 104 buildings all but one building has either been retrofitted, or has been removed as a part of the retrofitting program, or as a result of a tenant improvement.

Scope: All buildings having at least one URM bearing wall. Structures exempt from provisions of the program include; detached one- or two-family dwellings and apartment containing five or fewer residential dwelling units; school buildings inspected for building safety purposes by the state of California; and government recognized historic buildings seismically retrofitted to California Historic Code. URM buildings having been structurally upgraded in accordance with either L.A.'s Division 88 or the 1973, or later, Uniform Building Code shall not be subject to seismic safety program. The program does not require alterations to existing electrical, plumbing, mechanical or fire safety systems unless necessary to comply with other requirements found in the chapter.

Summary of policy: Effective 10/23/1992, owners of identified URM buildings would receive notification that their building was subject to the provisions seismic retrofit program, requiring timely responses to mitigate or remove potential threat to public safety and welfare. Buildings subject to the URM program fell into three risk categories; High, Medium, and Low risk buildings.

- High risk buildings = All nonessential buildings having an occupancy load of 100 or more occupants, except for certain building types defined in general provision section (see Beverly Hills Municipal Code (9-5-102).
- Medium risk building = All buildings, not classified as high risk, hazardous or essential having an occupancy load of 20 or more.
- Low risk building = All nonresidential buildings having an occupant load of less than 20 occupants.

Owners are given several options to comply with seismic retrofit program including appealing determination, structural retrofitting, demolition, and reconstruction.

Implementation: After enactment of the ordinance, the Division of Building and Safety mailed notices to owners of URM buildings identified as high, medium, and low risk. Depending on the building's classification, compliance was staggered, ranging from 180 days for high risk to 5 years for low risk buildings, to avoid construction conflicts. Once the

division determined that the URM building is within the purview of the seismic retrofit program, the division recorded a certificate with Los Angeles County's Records Office attesting that the building was subject to the retrofit program and that the owner was duly informed of their responsibilities.

The program required an Engineering Analysis to be submitted that included conclusions and recommendations to mitigate potential compromise of the structure during, or after, an earthquake. The engineering analysis, conclusions and recommendations were reviewed by the Building Official prior to approving the engineering report; the owner was required to notify tenants and prospective buyers, in writing (within 30 days) that the building was subject to the seismic safety program and of report's availability. The owner then was required to secure a building permit and complete the work or demolish the building within a prescribed time period.

Text of policy:

Seismic Safety Program can be found in Title 9, Chapter 5, articles 1 through 3 of the City Municipal Code
<http://www.sterlingcodifiers.com/codebook>

Date(s) of adoption and changes:

Effective date 10/23/1992.

How was policy adopted:

Beverly Hills' program was a result of a public involvement process that included the community and building owners. Throughout the policy development process, the draft program was reviewed by the many boards that advise the City Council. From beginning to finish, the public involvement and policy development process spanned approximately one year, and included little to no controversy. URM building owners were not able to obtain insurance, or loans for non-retrofitted buildings. This compelled building owners to advocate for establishment of a seismic safety program, focusing discussions on incentives and allowable deviations from code requirements as opposed to questioning whether a program was necessary. Two years after adoption, the Northridge Earthquake occurred solidifying the need for the program.

Timeline for compliance:

For all identified URM building classifications. Owners are initially required submit a structural analysis within 270 days of the date of notice was served. The analysis shall be prepared by a licensed professional (civil or structural engineer or architect). After Building and Safety Official approves analysis; building owners have 30 days to apprise property owners sharing a common boundary line of the URM building status; submit a construction management plan for all structural alterations, demolitions, reconstructions; and for the following:

Structural alterations

- Obtain building permit = within 1 year from date of service notice
- Commence construction = within 180 days from permit issuance
- Complete construction = within 2 years from permit issuance

Building demolition

- Obtain demolition permit = within 1 year from date of service notice
- Complete demolition = within 180 days from permit issuance

Wall anchors

- Obtain building permit = within 180 days from date of service notice
- Commence construction = within 270 days from date of service notice
- Complete construction = within 1 year from date of service notice

Prior to issuance of a permit to structurally alter or demolish URM buildings, owners must secure approval from architectural commission Historic structure will need

Hardship extensions may be granted to building owner by approval from the City Council.

Incentives & assistance

A number of incentives are provided for nonresidential buildings which are altered or reconstructed during the process of complying with the seismic safety program. Incentives range from waiver from fees development requirements:

- Development plan review requirements
- Park and recreation facilities tax
- Street and alley dedication and improvements
- Fine arts ornamentation requirements

As an incentive to maintain the scale of existing URM buildings, scheduled to be remodeled or reconstructed in accordance with the seismic safety measures parking may be waived if the building conforms to certain guidelines. Fees may be accessed if remodel or reconstruction permanently removes any existing on-site parking spaces.

The City did not require retrofitted buildings to meet ADA requirements, if all work being done was only to seismically upgrade the building. Oftentimes tenants were later required to meet ADA requirements as a result of further tenant improvement upgrades, as these upgrades were outside of the seismic safety program.

Penalties & enforcement

Each property owner who violates the seismic retrofit program or with orders of the building official will be guilty of a misdemeanor and will be subject to general state law. The city may seek injunctive relief to compel compliance.

Accomplishments:

Of the 104 URM buildings identified in the survey, 103 have either been retrofitted, or have been demolished. The one building remaining is vacant and the property owner intended to redevelop the site once the market improves. The final buildings to request exemptions from code requirements under the seismic program are currently under construction.

Funding information:

General Fund

Updates:

The City is currently developing a seismic retrofitting program for all buildings constructed prior to 1980. This primarily will include multi-family wood frame construction. The City has not had to exercise any of the punitive measures in the code. There is one non-compliant building remaining in the City. It is not occupied and the

owners intend to demolish it and reconstruct when the market improves. For now it remains vacant.

Internet links:

<http://www.beverlyhills.org/government/comdev/default.asp>

Contact person:

Peter Noonan, AICP, Associate Planner
(310) 285-1127

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Jurisdiction:	Eureka
Name of policy:	Earthquake Hazard Reduction in Existing Buildings Program
Risk addressed:	To promote public safety and welfare by reducing the risk of death and injury resulting from the effects of earthquakes on unreinforced masonry buildings. Eureka had about 27 at-risk URM buildings.
Scope:	All buildings constructed or under construction prior to the adoption and enforcement of earthquake resistant code requirements, or for which a building permit was issued prior to 1/1/1940, which have URM walls, foundations, piers or other structural elements. Residential structures containing five or fewer dwelling units, warehouses or similar uses not for human habitation, or state and federal buildings are exempt from the provisions of the URM building program. Buildings identified within the scope of this program shall be either rehabilitated or demolished.
Summary of policy:	<p>By ordinance, the City of Eureka created a program to cause property owners to submit to the Building Department a structural analysis in response to a notice that their building has been determined subject to the earthquake hazard reduction program. The notice states owner's rights and responsibility, and places the URM building into one of three classifications; high hazard, medium hazard, and low hazard buildings.</p> <ul style="list-style-type: none"> • High Hazard Buildings = Includes all URM buildings having an occupancy load of 300 or more; foundations including footings, piers, stemwalls, etc. which places any part of the mudsill (or equivalent) 12 inches or more above interior or exterior grade; walls constructed of URM and 15 feet or more in height measured from wall base to top of wall plate; URM parapets measuring 24 inches above roof surface or in a deteriorating condition as determined by the Building Official; buildings measuring over one-story in height; buildings deemed a hazard by Building Official; and essential buildings. • Medium Hazardous Building = All one-story URM buildings, not classified as a high hazard building, with an occupancy load between 100 and 299. • Low Hazard Building = All one-story URM buildings, not classified as high or medium building, having an occupancy load less than 100. <p>After Building Official evaluates engineering report, owner secures building permit and completes work within a prescribed period of time. Retrofitting will conform to 1997 Uniform Code for Building Conservation, or current adopted codes.</p>
Implementation:	Within 90 days of ordinance adoption 11-21-89 the Building official shall notify property owner in writing that the subject building is required to comply with the requirements of the earthquake hazard reduction program. The notice and order specifies seismic hazard classification of the building; owner's mitigation alternatives; time frames for compliance; and appeal process. At the time notification

is served, the Building Official files a document for recording with Humboldt County's Recorder, attesting that the building is subject to the provision of the URM program.

Text of policy: Earthquake Hazard Reduction in Existing Buildings Program can be found in Title XV, Chapter 150, Section 065 of the City Municipal Code
[http://www.amlegal.com/nxt/gateway.dll/California/eureka/cityof_eurekacaliforniamunicipalcode?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:eureka_ca](http://www.amlegal.com/nxt/gateway.dll/California/eureka/cityof_eurekacaliforniamunicipalcode?f=templates$fn=default.htm$3.0$vid=amlegal:eureka_ca)

Date(s) of adoption and changes: Program Was adopted by the City Council on November 21, 1989. The City Council adopted ordinance amendments to extend the timelines for Program compliance on January 6, 1994, February 5, 2002 and May 3, 2005.

How was policy adopted: By City Council action through the adoption of a local ordinance

Timeline for compliance: For all identified URM building classifications. Owners were initially required submit an engineering report prepared by a licensed professional (civil or structural engineer or architect) before by January 1, 1991. Compliance times were extended by the City Council on February 5, 2002 and May 3, 2005 to provide unreinforced masonry building owners additional time to comply with the mandatory provisions of the ordinance. Most of the unreinforced masonry buildings in Eureka are listed on the local register of historic places or are eligible for inclusion on the list. The City Council desires to gain voluntary compliance with if at all possible in lieu of demolition. The last ordinance amendment to the Program was on May 3, 2005 requiring owners to:

- Submit engineering analysis = no later than 1/1/2003
- Submit construction plans and permits = no later than 1/1/2004
- Obtain a completed and finalized building permit = no later than 1/1/2005
- Submit annual progress report identifying contact individual of record and project status = no later than 1/1/2003

Hardship extensions may be granted to building owner by approval from the City Council.

Incentives & assistance None. The Redevelopment Agency has a program to provide gap funding for unreinforced masonry buildings.

Penalties & enforcement Property owners who have not complied with any of the time frames set by the program shall post a sign in a conspicuous location, approved by the Building Official, alerting occupants and public that the building has deemed unsafe in the event of a major earthquake.

Owners who violate the seismic retrofit program or lawful order will be guilty of a misdemeanor, and will be subject to general state law. The city may seek injunctive relief to compel compliance. The City is currently considering utilizing the provisions of California Health and Safety Code Section 17980.1.

Accomplishments:

Since the program's original inception in 1989, owners have improved seismic resistance or demonstrated adequate reinforcement in 44 of the original 55 buildings initially designated as URMs in Eureka. At the time of writing, only 9 buildings remain to be retrofitted or demolished.

Funding information:

The City's Redevelopment Agency provides gap funding for seismic retrofit of unreinforced masonry buildings.

**Administrative costs:
Updates:**

Of the 9 buildings remaining to be retrofit; one building is currently being retrofit; one building owner has an approved seismic retrofit building permit ready to issue but has not obtained the permit or started work; one building owner submitted plans for a retrofit; and five building owners have taken no positive action to date. The City is considering utilizing the provisions of California Health and Safety Code Section 17980.1 to gain compliance with the remaining owners.

Internet links:

<http://www.ci.eureka.ca.gov/depts/building/default.asp>

Contact person:

Brian Gerving, Chief Building Official, Building Department 707-441-4155 bgering@ci.eureka.ca.gov

Jurisdiction:	Fremont
Name of policy:	Unreinforced Masonry Buildings Retrofit Program
Risk addressed:	Fremont, like many cities, mandated owners of unreinforced masonry buildings to seismically retrofit their structures to prevent loss of life or injury. At present, cannot confirm number of URM buildings
Scope:	Includes all buildings constructed of URM walls. With the exception of detached single family dwellings and buildings not subject to city building regulations.
Summary of policy:	The Building Official determines if a building is constructed of masonry walls and notifies owners to submit structural analysis. The Building Official will prepare an order requiring the owner to proceed to retrofit or demolish existing building. The owner shall complete seismic upgrades or demolition within a defined time frame. URM buildings with historic significance or within a Historic Overlay District would be subject to different provision within the Municipal Code.
Implementation:	Upon adoption of the ordinance, owners of each building within the scope of this program are notified of ordinance enactment requiring submittal of a structural analysis by a state licensed professional, with plans to complete necessary structural upgrade of said structure within prescribed time limits. Owners can elect to demolish buildings within the scope of the program with engineering report and plans.
Text of policy:	Earthquake hazard reduction requirements and minimum standards for existing URM buildings is found in Fremont Municipal Code, Title VII Building Regulation, Chapter 6. http://www.codepublishing.com/ca/fremont/
Date(s) of adoption and changes:	Adopted on 2/14/1995. Revised in May 2004.
How policy was adopted:	Adopted through code development process. The Redevelopment Board approved an incentive program by resolution to expedite owner compliance to the mandatory URM program. (See Incentive section)
Timeline for compliance:	Complete structural alterations or building demolition: Full compliance <ul style="list-style-type: none"> • Submit application for retrofit or demolition = 26 months (no later than 4/16/1997) • Obtain building permit = 3 years, 2 months (no later than 4/16/1998) • Commence construction or demolition = 3 years, 8 months (no later than 10/16/1998) • Complete demolition = 60 days from permit issuance • Complete structural repairs = 5 years, 11 months (no later than 1/16/2001) Phased compliance. <ul style="list-style-type: none"> • Submit application for retrofit or demolition = 26 months (no later than 4/16/1997) • Obtain building permit = 3 years, 2 months (no later than

- 4/16/1998)
- Initiate installation of all wall and parapet anchors = 3 years, 7 months (no later than 9/16/1998)
- Complete wall and parapet anchors = 4 years, 1 month (no later than 3/16/1999)
- Commence construction = 6 years, 1 month (no later than 3/16/2001)
- Complete structural repairs = 7 years, 1 month (no later than 3/16/2002)

Demolition of URM buildings deemed historic or located within the Historic Overlay District are subject to other Code provisions.

Incentives & assistance

Plan check and inspection fees waived subject to the following limitations:

- All work commences within established timeframe of chapter
- Waiver is limited seismic retrofitting
- Work outside scope of the retrofit will be assessed fees based on valuation of work
- Plan check fees beyond the third cycle of review and re-inspection fees not waived and assessed on a per-hour rate

Low interest loans for seismic upgrades.

Approved by Redevelopment Board by Resolution, originally as an incentive for mandatory URM program. The Commercial Rehabilitation Loan Program provides 0% interest loans for seismic retrofits. Loans are for a maximum of \$320,000 to commercial property owners in the Redevelopment Project Areas of Centerville, Irvington and Niles. Loans are made for a 15-year term and are secured by the property through a Deed of Trust. They also cover fees and other pre-development costs and provide a construction manager. The Redevelopment Project Areas cover about 10% of the City. Loans were about 4% when the program began.

Penalties & enforcement

Failure to comply with requirements of retrofit provisions shall result in the Building Official ordering building to be vacated and shall lead to initiating the abatement process which could lead to demolition. All costs associated with this process shall be borne by the owner; if unpaid a lien against to property shall be executed.

Accomplishments:

Presently unknown.

Funding information:

Tax increment funds.

Administrative costs:

Presently unknown.

Updates:

Presently unknown.

Internet links:

<http://www.fremont.gov/>

Additional comments:

None.

Contact person:

The contact person is unable to provide current information with the seismic retrofit program. Barbara Meerjans, Planning department, 510-494.4451, bmeerjans@fremont.gov

DRAFT

Jurisdiction:	Livermore
Name of policy:	Unreinforced Masonry Program
Risk addressed:	Unreinforced masonry buildings are at risk of collapse in earthquakes.
Scope:	Includes all URM buildings identified by the city. With the exception of residential buildings containing 5 or fewer living units; any building used solely for storage with no permanent occupancy and not located adjacent to another occupied building nor to a public way; and any vacant structure. Vacant and uses not permanently established in storage buildings would be subject to provisions of program at a time they are occupied or used for purposes not exempted.
Summary of policy:	URMs were identified and divided into 3 categories. Provisions within the program require all owners of identified URM buildings hire registered engineers to investigate and report the buildings' seismic vulnerabilities and, if needed, complete structural repairs by the end of 2001.
Implementation:	Owners of each building within the scope of this program are to be notified within 6 weeks of the enactment of the ordinance requiring submittal of a structural analysis (by a state licensed professional), and plans for complete necessary structural upgrades. Building owner are then required to notify tenants, in writing, that a structural investigation has been perform and is available for review within 30 days of the date the report was submitted to the city. Owners can elect to demolish buildings within the scope of the program with an engineering report.
Text of policy:	Unreinforced masonry building hazard reduction program found in Chapter 15.24, pages 15.53 – 15.56. http://www.codepublishing.com/CA/LivermorePDF/Livermorefullcode1110.pdf Original Ordinance 1345, 1990 http://64.165.218.12/WebLink8/DocView.aspx?id=4783&dbid=0
Date(s) of adoption and changes:	Adopted 10/8/1990. Revised on 1/12/1998 to extend timelines.
How policy was adopted:	Adopted through code development process.
Timeline for compliance:	Complete structural alterations or building demolition: Category I; buildings with average mortar strength of less than 30 pounds per square inch as determined by code. <ul style="list-style-type: none"> • Submit plans for structural repairs = 3 years, 10 months (by 1/1/1994) • Complete structural repairs = 4 years, 2 months (by 12/31/1994). <i>Completion date extended to 12/31/1998</i> Category II; all buildings over one story above grade and any one-story building containing over 50 occupants and all buildings with one or more walls of hollow clay tile masonry regardless of story height.

- Submit engineering report = 1 year, 8 months (by July 1, 1992)
- Submit plans for structural repairs = 6 years, 2 months (by 1/1/1997)
- Complete structural repairs = 7 years, 2 month (by 12/31/1997). *Completion date extended to 6/30/1999*

Category III; all buildings not identified in Categories I & II.

- Submit engineering report = 2 years, 2 months (by 1/1/1993)
- Submit plans for structural repairs = 10 years 2 months (by 1/1/2001)
- Complete structural repairs = 11 years, 1 month (by 12/31/2001).

Incentives & assistance

None.

Penalties & enforcement

Initial failure to complete upgrades after notice has been served, will result in the owner posting a sign on the building warning tenants and the public alike that the building may be unsafe in the event of a major earthquake.

Failure to comply with any provisions of the Municipal Code is considered a misdemeanor and the offending party may be subject to arrest. Additionally, if the owner fails to comply within the specified time identified by categories, the City may seek injunctive relief in superior court; commence proceedings to abate the violation by repair, rehabilitation, vacation, demolition; or place a lien on the property.

Accomplishments:

16 URMs demolished, 40 buildings retrofitted, 1 building vacant with permit for retrofit. 100% effective.

Funding information:

Funding was through Building Division, Community Development Department budget. No estimate of cost or staff time available.

Administrative costs:

Presently unknown.

Updates:

No need for updates or changes; all URMs are in compliance.

Internet links:

<http://www.ci.livermore.ca.us/>

Additional comments:

Lack of opposition to the ordinance was largely due in part to the activism of the then head of the Livermore Downtown Main Street Association, Barbara Mason, who promoted the program with local business owners.

Contact person:

Stephan Kiefer, Building Official; Phone 925-960-4414; email: sakiefer@ci.livermore.ca.us;
 Jim Russell, code consultant, 925-687-1974, jerussel.luddite@worldnet.att.net

Jurisdiction:	Los Angeles (City of)
Name of policy:	Earthquake Hazard Reduction in Existing Building Program
Risk addressed:	Los Angeles originally identified approximately 8,200 URM buildings most vulnerable to earthquake damage. Approximately 1,900 were exempted, because they were misidentified, leaving 6,300 URM buildings targeted for the program.
Scope:	Includes all buildings constructed or under construction prior to 10/6/1933, or for which a building permit was issued prior to 10/6/1933, which on the effective date of ordinance (7/29/1984) have unreinforced masonry bearing walls. Program shall not apply to detached one- or two-story family dwellings and detached apartment houses containing less than 5 dwelling units and used solely for residential purposes. Historic buildings shall comply with the requirements of Division 84 and the California Historic Building Code.
Summary of policy:	Los Angeles's Earthquake Hazard Reduction ordinance mandates building owners to strengthen or demolish existing buildings after structural analysis have been completed and evaluated by the department. Buildings were rated and classified into 4 risk groups based on occupant load as determined by the California Building Code (Section 1004.1). Special considerations were made for historic and vacant buildings to come into compliance. If owner fails to seismically strengthen URM building, after exhausting available administrative relief, the City may demolish building.
Implementation:	Upon adoption of the ordinance owners of each building within the scope of this program were required to submit a structural analysis by a state licensed professional. If building failed to meet minimum standards the owners were to include plans for structural alteration that would cause the building to be in compliance within minimum standards. Owners had to submit documentation demonstrating building's compliance, how they intended to comply, or plans to demolish the building. If the owner fails to submit a structural analysis the department will issue a Service of Order to compel compliance within 270 days.
Text of policy:	Commonly referred to as Division 88, representing the Chapter number found within Building Code, pages 184 -201. http://ladbs.org/LADBSWeb/LADBS_Forms/PlanCheck/2008LA AmendmentforBuildingCode.pdf Ordinance #159,068 http://clkrep.lacity.org/onlinedocs/1983/83-0898_ORD_159068_07-29-1984.pdf (The 2011 City of Los Angeles Building Code (LABC) will become effective starting January 1, 2011. The web link is expected to change which may require additional navigation.)
Date(s) of adoption and changes:	Division 88 was enacted in 1981. Standards were adopted on 6/8/1984, and became effective on 7/29/1984 (Ord. No. 159,068).
How policy was adopted:	Los Angeles took the lead in developing policies and adopting codes to improve life safety encompassing URM buildings in an

area prone to seismic activity. Los Angeles was one of the first jurisdictions to require owners to retrofit those buildings within a limited timeframe. It took a number of years to advance policies and codes in a highly charged political environment.

Timeline for compliance:

Complete structural alterations or building demolition:

- Obtain building permit = 1 year.
- Commence construction from time of permit issuance = 180 days
- Complete construction = 3 years

Wall anchor installation:

- Obtain building permit = 180 days.
- Commence construction from time of permit issuance = 270 days
- Complete construction = 1 year.

Time extension possible for wall anchor installations

Vacant buildings (special requirements):

One story buildings with wall anchors installed within 60 days of notice.

- Respond to compliance notice with plans and structural analysis = 180 days
- Obtain building permit to retrofit= 270 days.
- Commence construction from time of permit issuance = 90 days
- Complete construction = 18 months.

- Obtain building permit to demolish = 210 days
- Commence demolition from time of permit issuance = 21 days
- Complete demolition = 300 days after notice.

All other vacant buildings:

- Respond to compliance notice with plans and structural analysis = 60 days
- Obtain building permit to perform necessary alterations = 120 days.
- Commence construction from time of permit issuance = 21 days
- Complete demolition = 120 days after permit issuance
- Complete construction = 365 days after notice

Incentives & assistance

None.

Penalties & enforcement

Failure to complete upgrades in the specified time by owner, lessor, sublessor, manager or person in control of the subject building will be subject to a misdemeanor charge.

If the city serves a Service of Order against a building, the city files a certificate stating the building is subject to the provisions of the hazardous reduction program. City may order building to be vacated; if owner does not comply within 90 days after order to vacate, city can order demolition of building. City is empowered to demolish vacant buildings.

Accomplishments:

As of 2010, out of the 6,300 URM buildings targeted, only two

have yet to be retrofitted or demolished. The outstanding two cases are now in litigation and will be resolved in the very near future. Approximately 1,000 URM buildings were demolished, with the city directly responsible for removing 9 of the 1,000 buildings.

Funding information:

State funding was secured to create the inventory of URM buildings within Los Angeles. Permit fees would cover associate review and inspection costs.

Administrative costs:

The City absorbed associated administrative costs to operate the program.

Updates:

The original inventory of URM buildings was conducted in-house and was not exhaustive. On average at least one URM building is discovered each year in the city. It has been noted after recent earthquake activity within the city, the more money expended to structurally upgrade buildings the better they performed.

Internet links:

<http://ladbs.org/LADBSWeb/public-home.jsf>

Additional comments:

Overall the program was very effective in achieving compliance city-wide.

Contact person:

John Kelly, Los Angeles Department of Building and Safety, 213-482-0392 or john.kelly@lacity.org.

DRAFT

Jurisdiction:	Oakland
Name of policy:	Seismic Hazard Mitigation Program
Risk addressed:	Oakland identified 1,612 URM buildings at risk of collapse during moderate to severe seismic activity. Approximately 300 of the identified URM buildings were removed for a variety of reasons leaving 1,312 URM buildings subject to the retrofit program.
Scope:	Includes URM buildings constructed prior to 11/26/1948 Oakland Building Code. Excluding detached single family residences or duplexes; detached multifamily buildings containing five or fewer units; accessory buildings to the above; or buildings structurally upgraded after 11/26/1948 to comply with earthquake standards in the Building Code in effect at the time of application.
Summary of policy:	Oakland's URM ordinance mandates that building owners upgrade to a "bolts plus" standard. This standard reduces risk to passersby from falling building components, but may leave the buildings vulnerable to significant damage. The URM building program prioritized URM buildings into the levels based on soil type, number of stories, adjacency to pedestrian and vehicle traffic corridors, use of building, number of occupants, and complexity of retrofit. The city provided an incentive for owners to upgrade to the higher UCBC Appendix Chapter 1 standard by allowing buildings to be transferred to more lucrative uses, such as live-work lofts.
Implementation:	Oakland set deadlines for compliance with retrofit mandates based on use and occupancy. Building Services Division staff worked with owners to help them comply with this ordinance. When the number of non-retrofitted buildings had dropped to about 100, the city mailed enforcement notices and charged small fees, spurring some owners to take action. Many owners were impacted by Title 24 requirements to add handicap accessible ramps and bathrooms, which caused considerable expense and served as a disincentive.
Text of policy:	http://library.municode.com/index.aspx?clientId=16308&stateId=5&stateName=California
Date(s) of adoption and changes:	Ordinance number 11613 was adopted on 7/27/1993
How policy was adopted:	Oakland began to inventory its URM buildings in 1988, but had limited resources. After the 1989 Loma Prieta earthquake impacted the city, more resources for inventorying became available. Volunteers from AIA and SEOC participated in street level surveys of buildings to identify URMS and collect information about use, historic importance, and whether they had bearing walls. After the city's URMS were identified, two large community meetings and several stakeholder committee meetings were held to discuss with building owners how to address this risk. The city hired a consultant to examine how requiring retrofits might impact the city, including costs, engineering issues, impacts on use, and rental issues. Initially, building owners strongly opposed requiring retrofits (some suggested that economic impact of retrofit mandates would be more damaging than the impacts of Loma Prieta), but at the end of the process they were supportive of city programs.

Timeline for compliance:

Owners have up to 7 years to complete alterations, dependant on URM walls and identified priority levels risk.

URM bearing walls:

- Priority level 1 (high risk) = 1 year to submit building permit, 2 years to complete construction.
- Priority level 2 = 2 years to submit building permit, 3 years to complete construction
- Priority level 3 = 3 years to submit building permit, 4 years to complete construction

Frame building with URM infill walls & buildings with URM veneer:

- Priority level 1 = 3 year to submit building permit, 5 years to complete construction.
- Priority level 2 = 4 years to submit building permit, 6 years to complete construction
- Priority level 3 = 5 years to submit building permit, 7 years to complete construction

Time intervals are measured from date of notice.

Incentives & assistance

None.

Penalties & enforcement

Failure to file a building permit and engineering analysis report on time will result in a \$1,000 fine. The maximum fine shall be \$5,000 per building. Failure to complete upgrades in the specified time frame resulted in a \$2,000 per month fine not to exceed \$10,000.00. In addition to fines, the Building Official may take the following actions: Notify all parties with financial interest in property and tenants that the URM building has been identified as a potential hazardous and is in violation of meeting compliance provisions. File a statement describing potential hazards and violation with the County Recorder. Post a sign on building designating potential hazards. Revoke Certificate of occupancy and evacuate building 3 years after expiration of due date to complete work.

City can file a lien.

Additional penalties include: declaration that building is a public nuisance, injunctive relief, withhold or suspend existing permits on the subject building, may revoke or suspend the occupancy permit for any structure in violation, and charge the owner with an infraction.

Accomplishments:

As of 2010, 95% (1,252) of Oakland's URM buildings have been retrofit or demolished. Over two hundred buildings met the voluntary UCBC Appendix Chapter 1 standard.

Funding information:

Actual costs of seismic upgrades conducted shortly after ordinance was enacted were 40-50% lower than originally estimated because a number of contractors from all over the state focused on this type of work. This built efficiencies in their work and produced competition for jobs. The city unsuccessfully attempted to create a Mello-Roos assessment district to provide low-interest loans for URM upgrades but could not get underwriting for the program due to risks. In redevelopment areas, some funds to assist retrofits were available from other programs already in place.

All monetary penalties were set up to be credited to the Seismic Safety Division of the Office of Planning and Building to fund the implementation and enforcement of this program.

Administrative costs:

The City absorbed associated costs.

Updates:

Approximately 60 URM buildings have yet to come into compliance. Many of the buildings that remain to be addressed include property owners experiencing financial difficulties, vacant brownfield buildings, for which any action would trigger clean-up requirements that are more costly than the value of the property.

Once a URM building is identified, the City will not allow any permit work, including change of use application, to proceed until a seismic retrofit component is incorporated into the project. Penalties are used as leverage to compel property owner's compliance. To date, the City has avoided executing penalties against property owners.

Internet links:

<http://www2.oaklandnet.com/Government/o/CEDA/a/ContactUs/index.htm>

Additional comments:

Many communities mandated higher structural standards for URM retrofits than Oakland's bolts-plus standard. The bolts-plus standard leaves upgraded buildings vulnerable to significant damage in the next earthquake. Despite the success of this program, building owners may be reluctant to support similar programs to address other types of hazardous buildings. Oakland wants to maintain a business friendly environment, and additional regulations may make the city appear to regulate more strictly than surrounding communities.

Contact person:

Ray Derania, Community & Economic Development Agency, at 510-238-4780 or rderania@oaklandnet.com.
Shafi Refai, Community & Economic Development Agency, at 510-238-6436 or srefai@oaklandnet.com

Jurisdiction:	Palo Alto
Name of policy:	Seismic Hazards Identification Program
Risk addressed:	Mitigate hazardous conditions of structurally deficient buildings to occupants and pedestrians in the event of an earthquake.
Scope:	<p>Palo Alto took a more comprehensive approach in addressing seismic hazards within its jurisdiction by not establishing one specific program for URM buildings. The City's program included all buildings or portions of buildings constructed with unreinforced masonry walls; buildings constructed before 1/1/1935 containing 100 or more occupants; and buildings constructed prior to 8/1/1976 containing 300 or more occupants.</p> <p>Excluding URM buildings of less than 1,090 square feet containing 6 or fewer occupants; building that have been structurally upgraded to meet more stringent seismic standards. Buildings designated as historic buildings are subject to provision within Chapter 16.49.</p> <p>Of the 62 buildings originally identified within the scope of this program, 18 were identified as URM Buildings and received a classification title Category I. Category II buildings included all pre-1935 buildings other than URM with 100 or more occupants (18 structures). Category III structures consisted of buildings with 300 or more occupants constructed between 1/1/1935 and 8/31/1976 (26 structures).</p>
Summary of policy:	Identify seismic hazardous buildings and compel property owners to evaluate and retrofit said buildings in a timely manner. The Building Official shall establish and maintain a list of seismic hazardous buildings and shall notify owners in writing that their building(s) have been identified as a potential hazard and will need to mitigate said hazard. Three categories of hazardous buildings were established based on greatest risk to occupants and the public. Buildings with the greatest risk (all URM buildings) shall be required to obtain compliance at the earliest date.
Implementation:	The Building Inspection Division mails out notices to property owners of buildings in category I through III within 6 months of the enactment of the ordinance. Buildings designated as historic buildings will be notified within 18 months. The owner shall submit an Engineering Analysis which shall include conclusions and recommendations to mitigate the potential compromise of structure during an earthquake event. After Building Official completes evaluation of documents, the owner will provide the building inspection division with a letter of intent to complete seismic upgrades.
Text of policy:	Palo Alto Municipal Code, Title 16, Chapter 42, and can be found on the internet by going to the following website and clicking on the appropriate chapters: http://www.amlegal.com/library/ca/paloalto.shtml
Date(s) of adoption and changes:	Adopted on 2/3/1986 and became effective on 3/5/1986.
How policy was adopted:	A local Building Official was tracking California's statewide seismic

hazard reduction effort and took the lead in Palo Alto, convincing local politicians to become proactive in reducing or eliminating risks posed by URM buildings. An ordinance was soon adopted after involving property owners, local officials, professionals, and others to develop a seismic reduction program that all stakeholders could support.

Timeline for compliance:

Owners of buildings in categories I through III shall submit engineering report within prescribe time frame (below).

Category I (all URM buildings) after receiving notification = 1 ½ years to submit engineering report.

Category II (all pre-1935 buildings other than URM with 100 occupants or more) after receiving notification = 2 years to submit engineering report.

Category III (all buildings with 300 occupants or more constructed between 1/1/1935 and 8/31/1976) after receiving notification = 2 ½ years to submit engineering report.

Building owners shall notify tenants within 30 days of submitting the report to the city a structural investigation has been preformed and is available for review.

Building owners shall submit a letter to the building official indicating how they intend to remedy the identified seismic hazard within 1 year of submitting the report.

Incentives & assistance

None were originally offered in the program. In the 1990's incentives were established in the Downtown Area District (DAD) by passage of a zoning ordinance to stimulate development. In DAD transfer of development rights, floor area bonuses and parking waivers would be granted only within the district if seismic strengthening accompanied renovation or redevelopment.

Penalties & enforcement

If owner fails to comply with any order or following an appeal, the Building Official may seek injunctive relief. Building owners found not in compliance shall be guilty of a misdemeanor and, upon conviction, shall be fined up to \$500.00 and/or imprisoned for up to 6 months.

Accomplishments:

All 62 buildings identified within the comprehensive program are now in 100% compliance to at least.

Funding information:

No funding was provided.

Administrative costs:

The City absorbed all associated cost to administer program.

Updates:

Following passage of the 1986 seismic hazards identification program, zoning laws were modified to permit expansion of the floor area of downtown buildings included in the program if the owner performs the necessary seismic strengthening. Such retrofitted buildings are also exempt from on-site parking requirements.

The accomplishments of Palo Alto was featured in

Internet links:

http://www.cityofpaloalto.org/depts/pln/development_center/default.asp

Contact person:

Larry Perlin, CBO, Phone: 650-329-2550, email:
larry.perlin@cityofpaloalto.org

DRAFT

Jurisdiction:	St. Helena
Name of policy:	Retrofitting of Unreinforced Masonry Buildings
Risk addressed:	To reduce serious injury or death or impaired economic value due to damage or collapsed of URM buildings in the City of St. Helena. Thirty-one (31) URM buildings were initially identified within the scope of this program. Three additional buildings were added during the intervening years.
Scope:	All buildings or portions of buildings constructed with unreinforced masonry walls. Excluding single or two-family dwellings, detached apartment houses containing four or fewer units solely for residential uses and their accessory buildings, buildings that have been seismically retrofitted to comply with Codes since 1980, public schools, hospitals, and State or Federally owned buildings.
Summary of policy:	St. Helena seeks to preserve the historic character of the community by providing alternative construction regulations designed to reduce risk to public health and safety in a timely and economic manner.
Implementation:	The Building Official shall establish and maintain a list of URM buildings and shall notify owners in writing that their building(s) have been identified as potentially hazardous and are required to mitigate said hazard. The Building Official records a certificate with the County that may serve as an order of compliance. If the URM building is subject to Design Review, the owner will secure approval prior to issuance of any building permits. All URM buildings shall be retrofitted in accordance with the current CEBC, except for qualified historical buildings. The owner shall submit an engineering analysis with the applicable building permit demonstrating compliance with the current CEBC. The owner is then required to strengthen the building to meet the technical provisions as approved by the Building Official within 10 years from the date of notification. An active building permit may be extended not more than twice for a length of 180 days per extension. The owner may file an appeal with the Building Official for exemption from the URM program.
Text of policy:	St. Helena Municipal Code, Title 15, Chapter 40, and can be found on the internet by going to the following website and clicking on the appropriate chapters: http://www.codepublishing.com/CA/sthelenal/
Date(s) of adoption and changes:	May 12, 1998
How policy was adopted:	The City Council established a committee whose purpose was to develop a seismic mitigation program to reduce or eliminate hazardous conditions associated with URM buildings through ordinance. The committee included individuals representing property owners, local official and professionals.
Timeline for compliance:	All buildings receiving notification = 10 years to complete construction from the date of notification. An active building permit may be extended not more than twice for a

length of 180 days per extension.

Incentives & assistance

To help offset cost of mandatory seismic retrofit in a timely manner a number of incentives were provided.

- Establishment of property tax relief incentives including adopting the Mills Act for owners of URM buildings contributing to St. Helena National Register District.
- Reimbursement of architectural and engineering fees for seismic upgrades of historic buildings, or up to a maximum of \$1.00 per square foot, whichever is less.
- Waiver of nonstructural planning and plan review fees. Building permit fees waived for structural retrofit improvements.

To increase early participation, incentives were set to expire within prescribed time lines. Property owners who voluntarily retrofitted a URM building could seek reimbursement of fees retroactive to May 15, 1990.

- 1 - 3 years = All incentives available
- 4 years = Mills Act available, building fees reduced by 50%
- 5 - 8 years = Mills Act available
- 9 - 10 years = No incentives available.

The incentive program reimbursed 11 property owners who took advantage of the assistance for a total of \$77,094.08, reimbursing engineering and architectural fees.

Penalties & enforcement

If owner fails to comply with any order or following an appeal, the building Official may fine the owner up to \$10,000 per building. In addition to the monetary penalty the Building Official may notify all parties with financial interest that the building is hazardous; file and record a statement with the County Recorder stating the building's potential hazardous condition and noncompliance; Posting a sign on the building designating its hazardous condition; and engage the city council to mandate mitigation and place a lien on property for all cost incurred.

Accomplishments:

The adopted retrofit program was by far St. Helena's most meaningful and motivating initiative as stewards of the public trust and welfare. By 2009, all 31 URM buildings had been retrofitted along with the additional three discovered during the intervening years

Funding information:

The Department absorbed cost as part of its operating budget.

Administrative costs:

The City absorbed all associated cost to administer program. Review and inspection fees covered cost by the department once property owner responded to order of compliance.

Updates:

At the time the program was adopted, the economy was robust which may have contributed to its overall success. Many property owners took advantage to remodel these older structures to meet local market demands. Many of the URM buildings were located in the downtown corridor and listed as contributing historic buildings on the National Register or identified in the City's historic Inventory. After establishing a Downtown Historic Commercial District in 1998, the

City developed and adopted the Mills Act program in 2009.

Internet links:

<http://city.ci.st-helena.ca.us/section.cfm?id=27>

Additional comments:

Also contact Cindy Heitzman, former building official, now Executive Director of the California Preservation Foundation
cheitzman@californiapreservation.org

Contact person:

Kathy Woods, Building Permit Technician, 707-968-2792 and Eric Seabrook, Building Official, 707-967-2792
building@ci.st-helena.ca.us

DRAFT

Jurisdiction: San Diego

Name of policy: Unreinforced Masonry Building Program

Risk addressed: The City was not mandated by the State to adopt a strategy to minimize potential seismic hazards because its geographical area lay outside the mandated Zoned (4) area. The City elected to safeguard its population and established a URM program. Of the original 1,100 URM buildings identified through exterior visual surveys, approximately 858 fell within the reach of the program after further scrutiny.

Scope: Buildings constructed (or under construction) or received a building permit before March 24, 1939, and designated City-owned buildings with one or more URM bearing walls. Including parapets and other exterior wall or roof appendages or objects that have a potential to give way internally or onto adjacent properties, exits, or public ways or roofs of adjacent buildings.

Excluding single or two-family dwellings and detached apartment houses containing five or fewer units solely for residential uses and their accessory buildings. Buildings that have been seismically retrofitted to comply with Codes in place prior to 1/8/2008.

Summary of policy: The goal of the URM Program is to save lives by minimizing the possibility of potential collapse of URM buildings during an earthquake. The program established a two tiered system, one mandatory the other required a trigger (see timeline section). With the passage of the ordinance all URM buildings are required to comply with the mandatory provisions of the City of San Diego's URM regulations within 5 years. Mandatory provisions require URM building install wall anchoring and parapet bracing systems. Additional seismic strengthening may be required based upon triggering mechanism associated with remodeling, renovation or change of occupancy.

Implementation: The inventory of URM buildings was accomplished as a result of a limited visual survey of buildings in 1989 which were identified on SANBORN maps as containing any type of masonry construction in any form. The list has since been revised to reflect demolished buildings or buildings demonstrated not to contain load-bearing URM walls.

Upon adoption of the ordinance if owners did not voluntarily apply to seismically retrofit each building, the Building Official may serve an order of compliance. The order shall require submission of a structural survey and engineering report of the URM building. If the report shows the building does not meet applicable Codes, the owner submits a retrofit guideline document to the Building Official. The owner is then required to either demolish or strengthen the building to meet technical provisions of the full seismic retrofit program within a prescribed time from the date of service of the order.

Text of policy: San Diego Building Code Provisions based on the UMB ordinance are

San Diego Municipal Code, Chapter 14, Article 5, Division 37 and can be found on the internet by going to the following website and clicking on the appropriate chapters: [San Diego Municipal Code \[SDMC\] Chapter 14, Article 5, Division 37](#)

Date(s) of adoption and changes:

The "Earthquake Hazard Reduction in Existing Buildings" was adopted by City Council on November 9, 1992. The original Ordinance has undergone a series of updates during the intervening years (January 8, 1996, April 8, 2008) with the completion dates left unaffected.

How policy was adopted:

The City established a technical advisory committee made up of stakeholders including private citizens, structural engineers, architects, among others to assist in the formation of policies and procedures. To maintain a high level of transparency, a series of public meetings were held to help guide key decisions up through Council's final approval.

Timeline for compliance:

Seven building types were identified and regulated. The Building official will prepare and serve a service of compliance order to initiate the process.

Mandatory for all buildings:

- Wall anchorage and parapet bracing = 5 years to complete all construction.

Triggering mechanism required:

Essential or hazardous facilities:

- Submit Structural Survey and Engineering Report (SSER) = 120 days
- Submit retrofit guideline document = 240 days
- Complete construction or demolition = 5 years.

Remodels exceeding 100% of valuation and change to a higher hazard category:

- Submit SSER = 120 days
- Submit retrofit guideline document = 240 days
- Complete all phases of construction = 10 years.

Unsafe buildings (If building is deemed unsafe then the abatement process is initiated):

- Submit SSER and Engineering Report = 120 days
- Submit retrofit guideline document = 240 days
- Abatement process is followed.

Remodels exceeding 50% of valuation (not essential or hazardous):

- Complete construction = 5 years. Owners may submit SSER establishing existing anchoring system meets requirements.

Historic buildings:

- Shall comply with minimum structural provisions of the California Historical Building Code (SHBC, Title 24, Part 8).

Time intervals are measured from date of service of order notice.

Incentives & assistance

None.

Penalties & enforcement	If owner fails to comply with any order or following an appeal, the Building Official may have the building vacated and may order demolition.
Accomplishments:	Achieved 95% compliance in 2010. Approximately 50 URM buildings have yet to achieve compliance. Over 46% of the URM buildings have complied with the mandatory provisions of the ordinance (parapet bracing & roof to wall ties). Approximately 25% were demolished. Exact figures are unavailable at this time; percentages are extrapolated from a 2007 report.
Funding information:	No outside funding sources secured.
Administrative costs:	The City absorbed all associated cost to administer program. Review and inspection fees covered cost by the department once property owner responded to order of compliance.
Updates:	The City has reluctantly been forced take legal action against a few property owners to compel compliance. The City has worked hard to stay out of the legal process electing instead to negotiate a fair resolution.
Internet links:	http://www.sandiego.gov/development-services/industry/urm.shtml
Additional comments:	One needs patience throughout process; implementation can be challenging as well as working with property owners who resist compliance for any number of reasons.
Contact person:	For questions about the URM Program, you can contact Mehdi Shadyab, P.E., URM Program Coordinator at 619-446-5067

Jurisdiction:	San Francisco
Name of policy:	Unreinforced Masonry Building Program
Risk addressed:	San Francisco had about 2,000 unreinforced masonry buildings at risk of collapse in earthquakes.
Scope:	Buildings with one or more URM bearing walls. Excluding buildings housing Group R Occupancies containing less than five dwelling units or guest rooms and used solely for residential purposes; buildings accessory to and on the same lot as those described above; and buildings which have been brought into full compliance with the requirements of Section 3403.5 in effect on or after May 21, 1973.
Summary of policy:	Inventory following 1989 Loma Prieta earthquake identified buildings thought to be URMs. Buildings were classified into 4 risk categories depending upon soils, density, and use. Owners of URM buildings were required to have a structural analysis performed by a registered civil or structural engineer or licensed architect, and, if the building did not meet the minimum code standards specified, the owner must structurally strengthen the building or have the building demolished in accordance with the program implementation schedule. The schedule required that work on buildings in all categories be completed by February 2006, with a possibility of a maximum 2-year extension upon approval. Voters approved a bond measure to provide low-interest loans to owners of URM buildings.
Implementation:	Upon adoption of the ordinance the Building Official shall issue a notice to comply with Section 1604B-1, no later than February 15, 1993. The order shall require submission of a structural analysis and completion of an inventory form provided by the Building Official. The URM building shall be assigned a risk level based on public safety, occupancy, and soil conditions. The owner submits documents to the Building Official for evaluation. After evaluation process, the owner is then required to either submit plans to demolish or strengthen the building to meet the technical provisions of the retrofit guideline document within a prescribe number of years based on risk level from February 15, 1993.
Text of policy:	San Francisco Building Code Provisions based on the UMB ordinance are in Vol. I, Chapters 16B, 16C, 16D, & 17 and can be found on the internet by going to the following website and clicking on the appropriate chapters: http://www.amlegal.com/nxt/gateway.dll?f=templates&fn=default.htm&vid=amlegal:sf_building
Date(s) of adoption and changes:	Mandatory retrofit program launched in 1992. Inventory of URMs began in 1985. In 1989, voters approved a bond measure to provide low-interest loans for retrofits of URMs.
How policy was adopted:	Negotiations with building owners associations resulted in building owners being willing to support a mandatory URM retrofit program if the City passed a bond measure to provide low interest loans for such work.

Timeline for compliance:

Building Official must issue notices by 2/15/1993. Inventory forms must be submitted to Building Official by 2/15/1994, regardless of assigned risk level. Owners have up to 13 years to complete alterations, depends on four levels of risk, as measured from 2/15/1993.

Risk Level 1 (high) risk = assemblies with occupant load of 300 or more, schools, or buildings greater than 3 stories on poor soil (areas of poor soil are mapped)

- Submit building permit with plans or application for demolition =2 yrs.
- Permit processing and approval = 2.5 yrs.
- Complete structural alterations = 3.5yrs

Level 2 = non-Level 1 on poor soil in certain mapped locations.

- Submit building permit with plans or application for demolition =2.5yrs.
- Permit processing and approval = 3 yrs.
- Complete structural alterations =5 yrs.

Level 3 = buildings in Level 2 mapped areas not on poor soils.

- Submit building permit with plans or application for demolition =8 yrs.
- Permit processing and approval = 9 yrs.
- Complete structural alterations =11 yrs.

Level 4 = all other URMs

- Submit building permit with plans or application for demolition =10 yrs.
- Permit processing and approval = 11 yrs.
- Complete structural alterations = 13 yrs.

Phasing may be allowed with certain restrictions, but shall not exceed completion timelines for identified risk level.

Incentives & assistance

The City of San Francisco approved the sale of \$350 million in bonds to cover the cost of loans made to owners of unreinforced masonry buildings to pay for retrofitting. URM building owners pay for strengthening or demolition.

Penalties & enforcement

Whenever an inventory form has not been submitted or a notice issued by the Building Official to structurally alter or demolish an unreinforced masonry bearing wall building has not been complied with, within the risk level time limits, the Building Official shall have the power to barricade or abate the building and recover costs. Additional penalties may include per day monetary penalties and incarceration.

Accomplishments:

Approximately 1,850 URM buildings out of the original 2,000 are in complete compliance with the law as of June 2008 (last verifiable year). According to the Department of Building Inspection, many of these buildings have completed retrofits but have unresolved ADA access issues or fee payments obstacles. Approximately 100 URMs were demolished.

Few URM building owners took advantage of the loan program due

to complex loan qualification requirements.

Funding information: Presently unknown.

Administrative costs: Presently unknown.

Updates: Presently unknown..

Internet links: <http://www.sfgov.org/site/uploadedfiles/moed/pdf/generalloaninfo.pdf>

Additional comments: Gary Ho is currently working on updating the UMB information and hopes to have it completed by mid-April.

Contact person: Y.Y. Chew 415-558-6101, Mgr UMB Program
Serena Fong 415-558-6196 DBI UMB clerk
Gary Ho 415-558-6083, UMB plan checker

DRAFT

Jurisdiction:	Santa Monica
Name of policy:	Seismic Strengthening Provisions for Unreinforced Masonry Bearing Wall Buildings Program
Risk addressed:	Building damage and resulting social and economic disruption following an earthquake. The City of Santa Monica created a program to mitigate potential threats to life safety and property in the event of an earthquake.
Scope:	<p>All existing URM bearing wall buildings built under valid permit, including detached one- or two-family dwellings and detached apartments containing less than five dwelling units. Buildings occupied or identified as essential and hazardous facilities are subject to the provisions of retrofit program, as well. Modifications to strengthen buildings designated as historically or architecturally significant by a governing agency, shall follow provision of the State Historic Building Code prior obtaining a construction permit.</p> <p>As defined, URM bearing walls are any buildings with at least one masonry wall in which the reinforcing steel is less than 25% of the minimum steel ratios as provided in California Building Code for reinforce bearing masonry walls providing vertical support for the reaction of floor or roof-framing members.</p>
Summary of policy:	The Building Officer is charged with identifying and classifying all URM bearing wall buildings within the scope of this program, and informing owners of their rights and responsibilities in obtaining compliance. Administrative appeals are provided for owners challenging initial determination and compliance time limits throughout the process. Though not encouraged, under strict requirements demolition of URM buildings is an available option for owners. The program seeks to obtain 100% compliance without financially over burdening owners. Limited financial incentives are available for owners meeting performance time limits.
Implementation:	Managed by the Planning and Community Development Department's Building and Safety Division, the Building Officer delivers a compliance order, in person or by mail, to the last owner of record, initiating the seismic strengthening provisions. At the same time, the Building Officer records a certificate with the Office of the County Recorder, attesting that the URM building is subject to the provisions of the program and the buildings owner has been notified of their rights and obligation to comply.
Text of policy:	<p>Santa Monica Building Code provisions based on the UMB ordinance are found in Santa Monica Municipal Code, Article 8, Chapter 8.6, and can be found on the internet by going to the following website and clicking on the appropriate icons:</p> <p>http://www.qcode.us/codes/santamonica/</p>
Date(s) of adoption and changes:	The "Seismic Strengthening Provisions for Unreinforced Masonry Bearing Wall Buildings" was adopted by City Council on June 8, 1999.
How policy was adopted:	Negotiations with building owners associations resulted in building owners being willing to support a mandatory URM retrofit program if the City passed a bond measure to provide low interest loans for such

work.

Timeline for compliance:

After receiving notice the owner is required to meet the following time limits after the building has been determined to fall within the scope of the seismic strengthening program. Time limits shall commence on 9/29/1992, or from the date of initial determination, whichever is greater.

Install wall anchors:

(Building Type I, II, III, IV)

- File building permit and submit plans = 180 days
- Commence construction = 270 days
- Complete construction = 1 year

If wall anchors are installed, then make structural alterations

(Building Type I, II)

- File building permit and submit plans = 1 year, 9 months
- Commence construction = 2 years
- Complete construction = 4 years

(Building Type III, IV)

- File building permit and submit plans = 7 years, 9 months
- Commence construction = 8 years
- Complete construction = 10 years

If wall anchors are not installed, then make structural alterations

(Building Type I, II)

- File building permit and submit plans = 270 days
- Commence construction = 1 year
- Complete construction = 2 years

(Building Type III)

- File building permit and submit plans = 2 years, 9 months
- Commence construction = 3 years
- Complete construction = 4 years

(Building Type IV)

- File building permit and submit plans = 3 years, 9 months
- Commence construction = 4 years
- Complete construction = 5 years

Temporary holds may be granted based on recognized severe financial hardships.

Incentives & assistance

The City of Santa Monica authorized suspension of plan check and building permit fees that are necessary to comply with the provisions of the seismic strengthening program. Waiver of fees is granted only if the owner meets the aforementioned time limits.

Penalties & enforcement

If owner fails to comply with the notice issued by the Building Official to structurally alter or demolish URM bearing wall buildings, and has not complied within the prescribed time limits, the Building Officer shall have the power to vacate the building until that portion of the building is in compliance. After 90 days has elapsed (in nonconformance), the Building Officer may either initiate a "Dangerous Building" demolition process or complete necessary structural alterations and place a lien against the property to recover associative cost.

Accomplishments:

Approximately 1,850 URM buildings out of the original 2,000 are in

complete compliance with the law as of June 2008. According to the Department of Building Inspection, many of these buildings have completed retrofits but have unresolved ADA access issues or fee payments obstacles. Approximately 100 URM buildings were demolished.

Few URM building owners took advantage of the loan program due to complex loan qualification requirements.

Funding information:

The City of San Francisco approved the sale of \$350 million in bonds to cover the cost of loans made to owners of unreinforced masonry buildings to pay for retrofitting. URM building owners pay for strengthening or demolition.

Administrative costs:

The City of San Francisco approved the sale of \$350 million in bonds to cover the cost of loans made to owners of unreinforced masonry buildings to pay for retrofitting. URM building owners pay for strengthening or demolition.

Updates:

The CAPSS project resumed work in April of 2008. In July 2008, Mayor Gavin Newsom issued an Executive Directive asking the project to focus first on recommending ways to reduce risk in wood frame buildings with "soft" or weak first stories. This building type experienced some dramatic collapses in the Marina neighborhood during the 1989 Loma Prieta earthquake. Thousands of similar buildings throughout the city could be damaged by a larger or closer earthquake. The project will identify policies to make these buildings safer at the end of January 2009.
August 2010 - Finalize the Community Action Plan for Seismic Safety

Internet links:

<http://www01.smgov.net/planning/buildingsafety/buildingandsafety.htm>

Contact person:

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