



# Seismic Retrofit Program

## **Proposed Seismic Retrofit Program for Existing Wood-Frame Soft-Story Buildings**

Community Informational Meeting

October 13, 2016



# Seismic Retrofit Program

- Background
- City of Beverly Hills Seismic Retrofit Program Overview
- Soft-Story Ordinance Discussion
- Possible Impacts and Benefits to Tenants and Property Owners
- Potential Cost of Retrofit and Available Financial Assistance Options



# Seismic Retrofit Program

## Introduction

- **Beverly Hills is a resilient city**
  - ✓ A safe environment for its citizens, also committed to addressing resilience by strengthening the city's physical, social, and economic foundations.
- **Safety Element of General Plan**
  - ✓ Strategies adopted to develop the tools required to rebound from major crises including seismic hazards with the main purpose of reducing, but not necessarily preventing, the loss of life, injury and damage to property.



# Seismic Retrofit Program

## Public Outreach

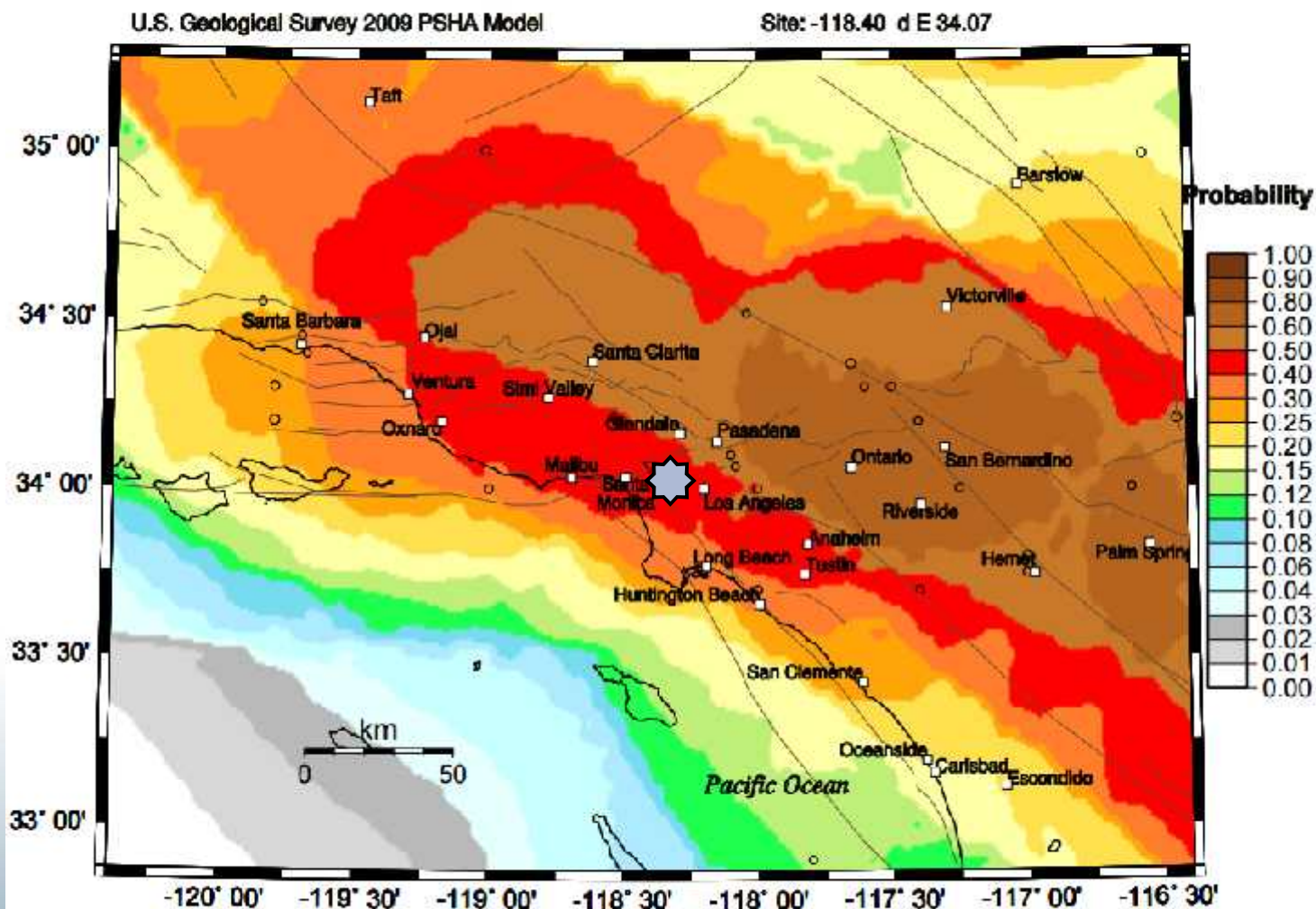
Seismic Retrofit Program presentation to:

- ✓ City Council on January 26, 2016
- ✓ AD HOC designated by City Council on May 23, 2016
- ✓ Human Relations Commission on September 15, 2016
- ✓ Health and Safety Commission on September 26, 2016
- ✓ Community Outreach Meeting on October 13, 2016
- ✓ Planning Commission on October 27, 2016
- ✓ City Council for approval and adoption – early 2017



# Probability of Next Earthquake

Probability of earthquake with  $M > 6.0$  within 25 years & 50 km



**USGS PREDICTS  
THERE IS A 50%  
PROBABILITY THAT A  
MAGNITUDE 6.0 WILL  
OCCUR IN THE NEXT  
25 YEARS CLOSE TO  
BEVERLY HILLS**



# California Code Requirements

## Additions

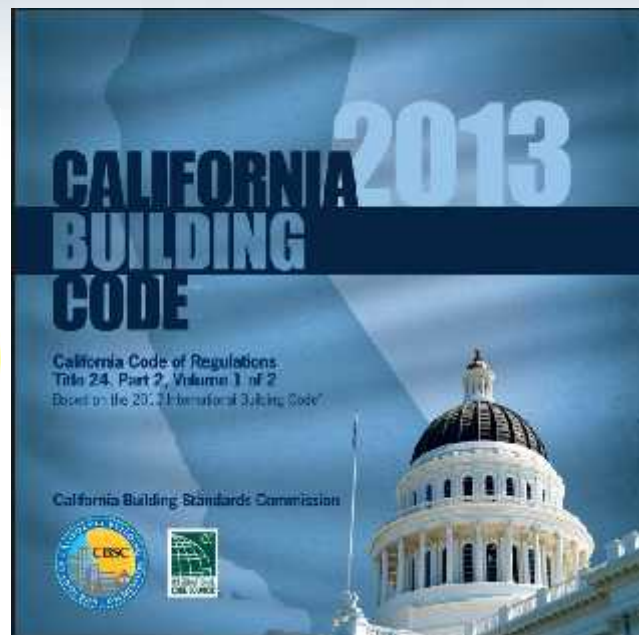
**3403.4 Existing structural elements carrying lateral load.** Where the addition is structurally independent of the existing structure, existing lateral load-carrying structural elements shall be permitted to remain unaltered. Where the addition is not structurally independent of the existing structure, the existing structure and its addition acting together as a single structure shall be shown to meet the requirements of Sections 1609 and 1613.

**Exception:** Any existing lateral load-carrying structural element whose demand-capacity ratio with the addition considered is no more than 10 percent greater than its demand-capacity ratio with the addition ignored shall be permitted to remain unaltered. For purposes of calculating demand capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with Sections 1609 and 1613. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of additions and alterations since original construction.

## Alterations

**3404.4 Existing structural elements carrying lateral load.** Except as permitted by Section 3404.5, where the alteration increases design lateral loads in accordance with Section 1609 or 1613, or where the alteration results in a structural irregularity as defined in ASCE 7, or where the alteration decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall be shown to meet the requirements of Sections 1609 and 1613.

**Exception:** Any existing lateral load-carrying structural element whose demand-capacity ratio with the alteration considered is no more than 10 percent greater than its demand-capacity ratio with the alteration ignored shall be permitted to remain unaltered. For purposes of calculating demand capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces per Sections 1609 and 1613. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces, and capacities shall account for the cumulative effects of additions and alterations since original construction.



UPGRADES ARE ONLY  
REQUIRED WHEN  
SIGNIFICANT  
CHANGES ARE MADE  
TO STRUCTURE

## Repairs

**3405.2 Substantial structural damage to vertical elements of the lateral force-resisting system.** A building that has sustained substantial structural damage to the vertical elements of its lateral force-resisting system shall be evaluated and repaired in accordance with the applicable provisions of Sections 3405.2.1 through 3405.2.3.

### Exceptions:

1. Buildings assigned to Seismic Design Category A, B, or C whose substantial structural damage was not caused by earthquake need not be evaluated or rehabilitated for load combinations that include earthquake effects.
2. One- and two-family dwellings need not be evaluated or rehabilitated for load combinations that include earthquake effects.

**3405.2.1 Evaluation.** The building shall be evaluated by a registered design professional, and the evaluation findings shall be submitted to the building official. The evaluation shall establish whether the damaged building, if repaired to its pre-damage state, would comply with the provisions of this code for wind and earthquake loads.

Wind loads for this evaluation shall be those prescribed in Section 1609. Earthquake loads for this evaluation, if required, shall be permitted to be 75 percent of those prescribed in Section 1613.

## Change in Occupancy

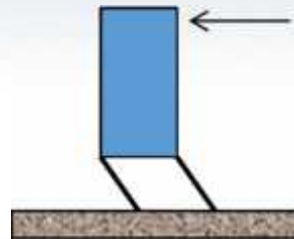
**3405.4 Seismic.** When a change of occupancy results in a structure being reclassified to a higher risk category, the structure shall conform to the seismic requirements for a new structure of the higher risk category.

### Exceptions:

1. Specific seismic detailing requirements of Section 1613 for a new structure shall not be required to be met where the seismic performance is shown to be equivalent to that of a new structure. A demonstration of equivalence shall consider the regularity, overstrength, redundancy and ductility of the structure.
2. When a change of use results in a structure being reclassified from Risk Category I or II to Risk Category III and the structure is located where the seismic coefficient,  $S_{DS}$ , is less than 0.33, compliance with the seismic requirements of Section 1613 are not required.

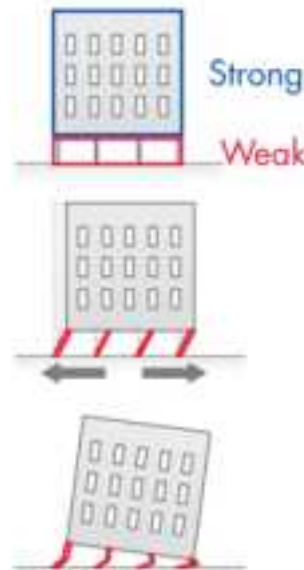


# Wood Soft-Story Buildings



ELEVATION

Soft-Story Building



A weak ground floor can collapse during an earthquake.





# Seismic Simulation for Soft-Story Structures





# Wood Soft-Story Retrofit Program

Jurisdiction	Approximate No. of Bldgs.	Building Type	Structural Evaluation	Complete Construction
Beverly Hills	~300	Mandatory, Prior to 1978	1 year after notification	2.5 years after notification
Los Angeles	~13,500	Mandatory, 4 units or more Prior to 1978	1 year after notification	7 years after notification
Santa Monica	Not reported	Updating Building Inventory and Existing Mandatory Ordinances		
West Hollywood	In Progress	Building Inventory and Ordinance Development Completed		
Burbank	Not Reported	Voluntary Ordinance – No Time Lines Provided		
Berkeley	~150	Mandatory, 5 units or more Prior to 1978		By Dec 31, 2018
San Francisco	~4,500	Mandatory, 5 units or more Prior to 1978	1 year after notification	2 years after permit application
Oakland	~1,400	Completed Building Inventory. Developing Ordinances		
Palo Alto	In Progress	Building Inventory and Ordinance Development in Process		
Alameda	~100	Mandatory Analysis, 5 units or more Prior to 1985	1.5 year after notification	
Fremont	Not Reported	Mandatory, 3 units or more Prior to 1978		4 to 5 years after notification



# Policy Considerations

Policy Items	Beverly Hills	Los Angeles	San Francisco
<b>Voluntary or Mandatory Retrofit</b>	Mandatory	Mandatory	Mandatory
<b>Timelines</b>	2.5 Yrs. for Wood	7 Yrs. for Wood	7 Yrs. for Wood
<b>Priority Tiers</b>	N/A	3 Tiers for Wood	4 Tiers for Wood
<b>Outreach</b>	In Progress	Press Releases, Meetings with Owner/Management Organizations and Participation in Engineering Conference	Press Releases, Meetings with Owner/Management Organizations and Ordinance Fair
<b>Incentives and Facilitation Programs</b>	Financial programs are being explored	Financial programs are being explored	Financial program was set up with AllianceNRG/Deutsche Bank
<b>Tenants</b>	Not to Share retrofit costs. Annual rent increase allowances are sufficient for landlords to recover the seismic retrofit cost.	Share 50% of retrofit costs with maximum of \$38/month for 10 years	Share 100% of retrofit costs over 20 years
<b>Architectural Improvements</b>	Waived with exception of ADA	Waived with exception of ADA	Waived with exception of ADA
<b>MEP Improvements</b>	Waived	Waived	Waived
			10



# Beverly Hills Timeline

Develop Risk Reduction Program

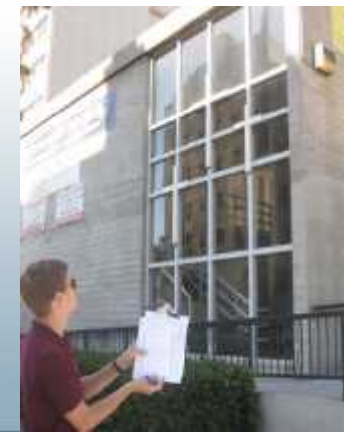
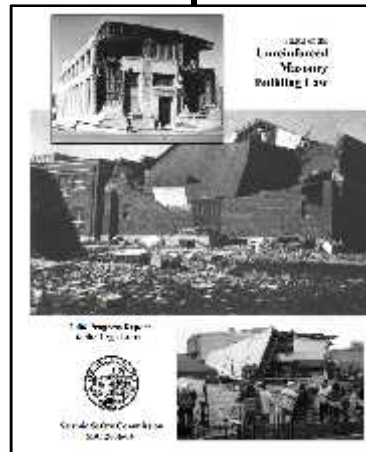
City Passed Unreinforced Masonry (URM)  
Ordinance

Northridge  
Earthquake

URM Retrofits Essentially  
Completed (91 Buildings)

Identify Potentially  
Vulnerable Buildings

1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016





# City of Beverly Hills Building Risk Assessment



**SITE SURVEY & RECORD RESEARCH**



**POLICIES**



**IMPLEMENT**



**PHASE 1**





# Preliminary Results

There are approximately 300 identified as vulnerable wood-frame soft-story buildings in the City of Beverly Hills making up approximately 1,800 living units.



# City of Beverly Hills

## Seismic Retrofit Program



**SITE SURVEY & RECORD RESEARCH**



**POLICIES**



**IMPLEMENT**



**PHASE 2**



# Wood Soft-Story Ordinance

NOTIFICATION



SCREENING



RETROFIT  
DESIGN



RETROFIT  
CONST.



CLOSE OUT

## TIME LIMITS FOR OWNER

Required Action by Owner	Submit Screening Form	Submit Retrofit Plans	Obtain Building Permit	Commence Construction	Complete Construction
Retrofit	180 days	365 days	1.5 years	2 years	2.5 years
	from date the notice is served to Owner				



# Wood Soft-Story Ordinance

## 9-5-401: Purpose

- ✓ To promote the public welfare and safety by reducing the risk of death or injury that may result from the effects of earthquakes.
- ✓ Creates minimum standards intended to mitigate the risk of collapse and improve the performance of these buildings during earthquakes, reducing, but not necessarily preventing, the loss of life, injury and damage to property.

## 9-5-403: Scope

- ✓ All existing buildings of wood-frame construction with soft, weak, or open-front wall lines permitted and built prior to 1978.



# Wood Soft-Story Ordinance

## 9-5-404: Compliance Requirements

- ✓ Buildings within the scope of the Article may not be added to or structurally altered or otherwise remodeled without first complying with the provisions of this Article unless the Building Official determines that the alterations are minor in nature. (If the retrofit work has commenced, then this provision shall not be applicable)
- ✓ If the building is not brought into compliance with this Article in the time frame indicated in ordinance, it shall be declared unsafe.

## 9-5-405: Time Period for Compliance/Prioritization

TIME LIMITS FOR OWNER

Required Action by Owner	Submit Screening Form	Submit Retrofit Plans	Obtain Building Permit	Commence Construction	Complete Construction
Retrofit	180 days	365 days	1.5 years	2 years	2.5 years
	from date the notice is served to Owner				



# Wood Soft-Story Ordinance

## 9-5-406: Administration

- ✓ Issuance of Order (To the owners of buildings identified by field survey)

## 9-5-407: Occupancy and Tenant Advisory

- ✓ Notification to Tenants and Occupants (Shall advise in writing to all occupants and tenants of the Building Official's determination)
- ✓ Tenant Habitability Plan



# Wood Soft-Story Ordinance

## 9-5-408: Historical Buildings

- ✓ Modifications to the standards set forth in this Article may be permitted when such modifications are consistent with the provision of the State Historical Building Code.

## 9-5-412: Violation/Penalty

- ✓ It shall be unlawful to use or occupy any building within the scope of this Article that fails to comply.



## Possible Impacts and Solutions Due to Retrofit Work

Tenants		Property Owners	
Possible Impacts	Alternate Solutions	Possible Impacts	Alternate Solutions
<ul style="list-style-type: none"> <li>Minor temporary parking inconvenience during the day</li> </ul>	<ul style="list-style-type: none"> <li>✓ Temporary off-site parking permits</li> <li>✓ Shuttle Service</li> <li>✓ Use of available space in the subject property</li> </ul>	<ul style="list-style-type: none"> <li>Retrofit Cost</li> </ul>	<ul style="list-style-type: none"> <li>✓ Available no upfront financial options</li> </ul>
<ul style="list-style-type: none"> <li>Temporary construction related nuisance (Noise, Dust,...)</li> </ul>	<ul style="list-style-type: none"> <li>✓ Contractor will be required to implement all required construction means and methods to reduce the impact</li> </ul>	<ul style="list-style-type: none"> <li>Time limits for compliance</li> </ul>	<ul style="list-style-type: none"> <li>✓ Expedited plan review and permitting process</li> <li>✓ Expedited inspection process</li> </ul>



# Benefits to the Residents and Property Owners

- Benefits to tenants, occupants, and community
  - ✓ Improves safe living conditions to occupants and surrounding areas
  - ✓ Minimizing damage to subject property
  - ✓ Minimizing loss of life and/or injury
  - ✓ Minimizing risk of damage to other properties and the community
  - ✓ Quicker recovery after earthquakes
  
- Benefits to property owners
  - ✓ Assurance that the building complies with required safety measures
  - ✓ Increases the value to the property
  - ✓ Potential for lower insurance premiums
  - ✓ Availability of financing programs to comply with the ordinance
  - ✓ Take advantage of operational tax write offs
  - ✓ Ultimate results in a building safer and more attractive to tenants
  - ✓ Help extend building life



# Potential Cost of Retrofit of Wood Soft-Story

The cost for the retrofit of existing wood-frame soft-story buildings is estimated to be between \$5,000 to \$10,000 per unit.\*

\* The estimated cost for the retrofit of existing wood-frame soft-story buildings in the City of Los Angeles is used as a benchmark.

## Plan Review and Permit Fees\*

No. of Units	Valuation		Plan Review Fee		Permit Fee	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
4	\$20,000	\$40,000	\$700	\$1,100	\$900	\$1,300
6	\$30,000	\$60,000	\$900	\$1,400	\$1,100	\$1,700
8	\$40,000	\$80,000	\$1,100	\$1,700	\$1,300	\$2,100

\*The plan review and permit fees are approximate and based on the aforementioned estimated retrofit cost.



# Potential Cost of Retrofit of Wood Soft-Story

The table below displays how the retrofit costs are off-set for building owners in jurisdictions that have a seismic retrofit program in place or currently working to establish one:

City	Retrofit Costs Recovery
Los Angeles	Share 50% of retrofit costs with maximum of \$38/month for 10 years
San Francisco	Share 100% of retrofit costs over 20 years
West Hollywood	Currently reviewing options for an equitable cost sharing plan
Santa Monica	Currently updating existing mandatory ordinances
Beverly Hills	Currently the Beverly Hills Municipal Code rent stabilization program provides cost recovery for building improvements through various rent increases.



# Available Financing Assistance Options

- ☐ Bank or equity loans
- ☐ **California Capital Access Program – Seismic Safety Financing Program** Administered by the California State Treasurer's Office
- ☐ **PACE Programs such as AllianceNRG and upcoming Ygrene:**



**Communities Serviced by AllianceNRG Programs in California**

- Provide financing assistance to property owners to make improvements to their property without putting any money down.
- Collect payments annually through property tax assessments
- Work directly with property owners from initial application process through the completion of the retrofit project.
- PACE programs are not City administered programs



**QUESTIONS?**