

MEMORANDUM

TO: PUBLIC SAFETY COMMITTEE

FROM: DAVID M. REYES, DIRECTOR OF THE PLANNING & COMMUNITY DEVELOPMENT DEPARTMENT

DATE: DECEMBER 4, 2017

SUBJECT: SEISMIC RETROFITTING OF SOFT-STORY BUILDINGS

BACKGROUND:

Buildings that provide resistance to the destructive forces of earthquakes and aftershocks are an essential component of building safety in Southern California. Building Codes are periodically updated in order to provide the necessary structural resiliency and to increase occupant safety.

In 1986, California enacted Senate Bill 547, Government Code Section 8875 et seq., which required local governments in high seismic areas to inventory unreinforced masonry (URM) buildings and establish a URM loss reduction program. Pursuant to this legislation, much of the Southern California region, including Pasadena, was required to develop a URM retrofit program. By 1989, the City developed a list of over 800 buildings believed to be URM and had a structural engineering firm survey those buildings. By October 1993, the original number of URM buildings had been reduced to 416 through voluntary retrofits, demolitions and city inspections to verify actual building conditions. In 1993, the City passed Ordinance No. 6560 which formally declared URMs to be a potential hazard and mandated that all URMs be retrofitted, vacated and boarded up, or demolished by August 1, 2007

In 2004, the State mandated a placarding program which required owners of URM buildings to place a placard at the building's entrance informing people entering the building that the building does not meet building standards. The program outlined a series of tenant protection and relocation clauses for property owners who failed to

comply with the mandated retrofitting. There are currently no URM buildings within the City.

Existing Vulnerable Buildings

Although the mandatory URM retrofit program was successful, there are still other categories of vulnerable buildings which exist throughout Southern California, such as wood 'soft-story buildings'. Wood soft-story buildings are wood-frame buildings with more than one story that typically have extensive ground story windows, garage doors, or open-air spaces (such as parking) with little or no enclosing solid wall. These designs result in a relatively soft or weak lateral load resisting system in the lower story. Examples of wood soft-story buildings include residential units above large glass-fronted commercial ground floors or units located above carports on the ground level. Wood soft-story buildings are of particular concern due to inadequate strength and lack of shear walls located at the ground floor. The large openings make the ground floor weaker and less resilient than the stories above, and make the ground floor more vulnerable to collapse during an earthquake. The 1989 Loma Prieta earthquake in the San Francisco Bay area and the 1994 Northridge earthquake highlighted problems related to soft-story construction practices. Wood soft-story buildings accounted for significant human loss and property damage during these earthquakes.

Most wood soft-story buildings were constructed between the 1920s and 1970s. Staff estimates as many as 493 wood soft-story buildings with approximately 4,500 units, were constructed in Pasadena during this time period. In 1978, California building code standards pertaining to wood construction were changed and thus reduced the seismic risk of wood soft-story buildings. There is currently no state mandate to retrofit soft-story buildings, although some jurisdictions such as Los Angeles, Santa Monica, West Hollywood, and San Francisco have implemented local mandatory retrofit programs.

The main tool available to the City to reduce the risks associated with these structural vulnerabilities is to adopt an ordinance which mandates the strengthening of soft-story buildings through seismic retrofitting. Both California state laws regulating Building Code adoption and California Health and Safety Code Section 19101 and 19162-63.6 authorize local jurisdictions to establish such mandatory seismic retrofit standards so long as the requirements are justified by local climatic, geological and topographical conditions. In its 2002 Safety Element of the General Plan, the City expressed a desire to consider development of a mitigation program which required seismic retrofitting of non-URM vulnerable buildings, such as wood soft-story buildings.

Before recommending any such program, the City should consider several factors such as the cost of the retrofit, tenant displacement during the repairs, possible loss of parking spaces, time period for completion of the repairs, possible incentives or financial assistance, whether to exempt certain types of soft-story buildings, etc. Pasadena can benefit from studying what other local jurisdictions have implemented. Preliminary analysis of these issues is provided below.

Cost of Retrofit

The cost of retrofitting a soft-story building will vary depending on several factors including age and condition of the building, the number of stories, and its existing structural strength. Although the costs of retrofitting are difficult to estimate, several cities, such as Los Angeles, Santa Monica, West Hollywood, San Francisco and Berkeley, have generally estimated retrofit costs as being anywhere from \$5,000 to \$15,000 per unit and \$40,000 to \$160,000 per building.

Tenant Displacement during Repairs

Although it is anticipated that most retrofits can be completed without the need to relocate tenants, it is possible that some retrofits may be so extensive that tenant relocation will be necessitated. In those circumstances, the property owner would be solely responsible to make arrangements for tenant relocation and any associated costs.

Time Period for Completion of the Repairs

Because this is not a state mandated retrofit, the time period for completion of the repairs is solely up to the discretion of the City. If a mandatory retrofit program is implemented, the City may want to consider the above mentioned factors in determining an appropriate time period for completion of the repairs. The City of Los Angeles, for example, allows property owners seven years to complete the repairs from the date of their Order to Comply. The City of San Francisco has a tiered system, based on the type of structure and number of units, and allows four to seven years for completion. Pasadena may also want to consider implementation of additional deadlines for completion of certain milestones, such as for the submittal of the initial structural evaluation report, submittal of construction plans, application for building permit, etc.

Possible Loss of Parking Spaces

Depending upon the design of the retrofit and the existing siting of the building, the required retrofit could result in parking deficiencies. The City will need to consider if it will allow parking reductions in order to accommodate the retrofit. The City of Santa Monica, for example, allows a reduction of up to 20% or 1 parking space, whichever is greater, if the property owner can show that there is no practical method to complete the retrofit without the reduction.

Financial Programs

Cities with rent control, such as Los Angeles, Santa Monica and San Francisco, have identified allowable rent increases and tenant pass-through clauses as possible incentives for completion of the required retrofits. In addition, the City of San Francisco has partnered with a private bank to provide a 100% financing option, and the City of

Los Angeles promotes a possible financing option via the California State Treasurer's Office; the program is California Capital Access Program (CalCAP). Santa Monica promotes the availability of seven private loan financiers and it's also scheduled to host a Seismic Retrofit Fair later this year where soft-story building owners will be able to connect with architects, engineers and contractors experienced in soft-story retrofits. Finally, many cities have signed up with PACE programs, which now allow banks to finance retrofit projects.

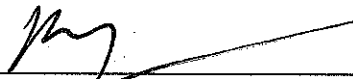
Possible Exemptions to the Required Retrofit

Because this is not a state mandated program, the City has discretion in determining whether to exempt certain structures from the retrofit requirement. The City of Los Angeles, for example, exempts residential buildings with three or fewer units, and the City of San Francisco exempts two-story buildings with four or fewer units. Pasadena may also consider exempting buildings which have been seismically strengthened to meet prior building codes. For example, a soft-story apartment building from 1968 that was seismically strengthened in 2000 may be exempted although its retrofit may not meet the most recent building code requirements. In the process of developing a program, Staff will assess the number of buildings that may be exempted due to prior seismic retrofits.

NEXT STEPS:

Staff believes it is appropriate to recommend a seismic retrofit program for soft-story buildings in the City of Pasadena. During the next calendar year staff will develop recommendations which will be presented to the City Council through the Public Safety Committee. It is anticipated that this effort will involve appropriate community outreach.

Respectfully submitted,



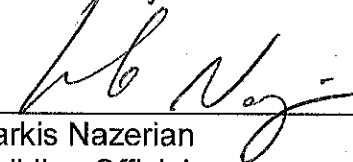
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