



Office of the City Manager

CONSENT CALENDAR
December 18, 2007

To: Honorable Mayor and Members of the City Council

From: *PK* Phil Kamlarz, City Manager

Submitted by: Debra Pryor, Fire Chief, Berkeley Fire Department

Subject: Adoption of the Local Conditions and Findings for 2007 California Fire Code

RECOMMENDATION

Adopt a Resolution (Attachment 1) setting forth findings of local conditions that require more stringent regulations than those provided by the 2007 California Fire Code for submission to the California Building Standards Commission and rescinding Resolution number 61,782-N.S.

FISCAL IMPACTS

None.

CURRENT STATUS AND EFFECTS

On November 27, 2007, Council adopted the second reading of the 2007 California Fire Code with local amendments (Ordinance No. 7003-N.S.) There was an administrative oversight and the council packet and report did not contain the findings of the local conditions to justify more stringent building standards.

A city, county, or city and county may establish more restrictive building standards reasonably necessary because of local climatic, geological or topographical conditions. Findings of the local condition(s) and the adopted local building standard(s) must be filed with the California Building Standards Commission.

BACKGROUND

The City of Berkeley has climatic, geological, and topographical conditions that require local amendments to mitigate potential hazards, and to reduce loss of life caused by fires or natural disasters.

To address local fire and life safety impacts, the City of Berkeley has adopted local amendments to address sprinkler system and fire alarm requirements for existing hotels, fraternities, sororities, window bars, smoke detectors, and firefighter safety and operations in high-rise construction. Without the adoption of the local amendments, the new and past amendments cannot be enforced.

RATIONALE FOR RECOMMENDATION

Local Codes must be adopted every three years, or State Codes go into effect without local amendments. Adoption of local amendments and findings are needed to customize the State Codes to Berkeley's particular administrative, topographic, geologic and climatic conditions. The purpose of the non-administrative local amendments is to provide a higher level of safety than is reflected in the State-adopted 2007 Codes.

The fire and seismic danger and other local conditions, as described in detail in the attached resolution of findings, justify the Berkeley Code provisions that are stricter than the California Fire Code or additions not specifically addressed by the state.

FUTURE ACTION

The transition to a new model fire code will impact staff, architects and developers. All staff involved will have to receive training to understand and apply the new code. The fire department anticipated this need and has allocated funding this fiscal year to purchase new fire codebooks, inspection guides, and attend training seminars. Staff will provide a frequently asked questions link on the fire department's website to answer questions about the requirements in the new fire code.

ALTERNATIVE ACTIONS CONSIDERED

Adopt the State Codes with fewer, or no, local amendments; or take no action, and let the state mandated codes take effect without local amendments designed for Berkeley.

CONTACT PERSONS

Gil Dong, Assistant Fire Chief, Berkeley Fire Prevention and Office of Emergency Services
981-5502

Attachments

- 1 Resolution for Local Climatic, Geological, and Topographical Conditions

RESOLUTION NO. - N.S.

ADOPTING FINDINGS AS TO LOCAL CLIMATIC, GEOLOGICAL AND TOPOGRAPHICAL CONDITIONS RENDERING REASONABLY NECESSARY VARIOUS ENUMERATED LOCAL FIRE STANDARDS THAT ARE MORE STRINGENT THAN THOSE MANDATED BY THE CALIFORNIA FIRE CODE AND RESCINDING RESOLUTION NO. 61,782-N.S.

BE IT RESOLVED by the Council of the City of Berkeley as follows:

WHEREAS, the City is proposing to adopt various enumerated changes and modifications to the California Fire Code, as set forth below; and

WHEREAS, Health & Safety Code §17925 allows the local appeals board to make modifications or changes to the California Building Code and other regulations adopted pursuant to Health & Safety Code §17921(a) which result in more stringent local requirements; and

WHEREAS, Health & Safety Code §17925, §17958.5 and §17958.7 require that such changes be supported by findings made by the governing body that such more stringent local requirements are necessary because of "local climatic, geological or topographical conditions or factors;" and

WHEREAS, Health & Safety Code §13143.5 explicitly permits local agencies to adopt more stringent standards and regulations; and

WHEREAS, such findings must be made available as a public record and a copy thereof with each such modification or change shall be filed with the California Building Standards Commission:

NOW THEREFORE, BE IT RESOLVED by the City Council that it finds that each of the various proposed changes or modifications to the California Building Code which are listed enumerated below are reasonably necessary because of local conditions in the area encompassed by the City of Berkeley, as set forth below: in the area encompassed by the City of Berkeley, as set forth below:

A. LOCAL CONDITIONS

1. Climatic Conditions.

a. Discussion.

The City of Berkeley is located at the geographic center of the Bay Area. The western limits are defined by the Bay at near sea

level and the eastern limits by the abruptly rising Berkeley Hills to 1,200 feet. The eastern limit faces open parklands and open space (covered with vegetative fuel loading) to the east and is exposed to a unique danger from wildland fires during periods of hot, dry weather in the summer months. Many of the Berkeley homes in this area have wood shake and shingle roofs and are surrounded by brush type vegetation. The situation is made even worse by the negative effects of high wind conditions during the fire season. During May to October, critical climatic fire conditions occur where the temperature is greater than 80°F, the wind speed is greater than 15 mph, fuel moisture is less than or equal to 10.0 percent, wind direction is from north to the east-southeast and the ignition component is 65 or greater. These conditions occur more frequently during the fire season but this does not preclude the possibility that a serious fire could occur during other months of the year. The critical climate fire conditions create a situation conducive to rapidly moving, high intensity fires. Fires starting in the wildland areas along the eastern border are likely to move rapidly westward into Berkeley's urban areas.

In September 1923, critical climatic fire conditions were in effect and Berkeley sustained one of the most devastating fires in California's history. A fire swept over the range of the hills to the northeast of Berkeley and within two hours was attacking homes within the City limits. A total of 130 acres of built-up territory burned 584 Berkeley buildings which were totally destroyed and about 30 others which were seriously damaged. By far, the greater portion is single-family dwellings, but among the totals were 63 apartments, 13 fraternity, sorority and student's house clubs, and 6 hotels and boarding houses.

In December of 1980, during critical climatic fire conditions, a small fire started at Berkeley's northeast limits and within minutes five homes were totally destroyed by fire.

On October 20, 1991, a disastrous firestorm swept down from the Oakland hills. Within the first few hours, thousands of people were evacuated. Ultimately over 3,000 dwelling units were destroyed, of which more than 70 were in Berkeley. This fire matched the pattern established by the fires of 1923 and 1980. Additionally, the conditions that led to it were the same as the conditions that led to a 1970 fire that destroyed 70 homes in Oakland.

In addition, Berkeley frequently experiences cold winter days with accompanying temperature inversions which trap wood smoke near the ground and increase air pollution. These

stagnant air days are marked by increased acute respiratory disease, including asthma, and a small but consistent increase in deaths from heart and lung disease. During these periods the usual onshore flow of clean marine air ceases and wood smoke air pollution becomes an area-wide phenomenon. Studies by the Bay Area Air Quality Management District suggest that between 20 and 50% of air polluting small particles come from residential wood burning.

b. Summary.

Local climatic conditions of limited rainfall, low humidity, high temperatures and high winds along with existing building construction create extremely hazardous fire conditions that adversely affect the acceleration intensity and size of fires in the City. The same climatic conditions may result in the concurrent occurrence of one or more fires, which may spread in the more populated areas of the City without adequate fire department personnel to protect against and control such a situation.

2. Geological and Topographical Conditions

a. Discussion.

The City of Berkeley is in a region of high seismic activity and has the San Andreas earthquake fault to the west and the Calaveras earthquake fault to the east. Berkeley is traversed by the Hayward fault. All three faults are known to be active as evidenced by the damaging earthquakes they have produced in the last 100 years and can, therefore, be expected to do the same in the future. Of primary concern to Berkeley is the Hayward Fault, which has been estimated to be capable of earthquakes exceeding a magnitude of 7.0 on the Richter scale, and extends through mainly residential areas and passes through a small business district and the University of California. A large number of underground utilities cross the fault, including major water supply lines. Intensified damage during an earthquake may be expected in those areas of poorer ground along the Bay, west of Interstate 80 and in known slide areas, as well as hillside areas (occupied mainly by dwellings) located within or near the fault zone; some areas are steep and have been subjected to slides. The waterfront areas and areas in the Berkeley flatlands immediately adjacent to creeks and water streams present a major potential for soil liquefaction hazard. The Eastshore Freeway may liquefy and fail under heavy

shaking or it may be inundated by a tsunami. The north hill area is most susceptible to landslides because of the steepness of slopes, the presence of soft and unconsolidated sediments, plus extensive water content in the ground. Panoramic Way and other hill areas with narrow and winding streets may face the problem of isolation from the rest of the City. Great potential damage can be related to the likely collapse of freeway overpasses. In the event of a major earthquake, Berkeley's firefighting capability could be greatly affected by loss of its main water supply. There is existing evidence that movement has taken place in the reinforced concrete Claremont Water Tunnel, which normally supplies approximately 90% of the water used by Berkeley. There is also the strong possibility of inundation due to failure of water reservoirs in the hill area. For the purposes of disaster response planning, Berryman Reservoir in Berkeley is assumed to fail, and Summit Reservoir at Kensington in Berkeley is assumed to be badly leaking. Additional potential situations inherent in such an occurrence include broken natural gas mains and ensuing fire in the streets, building fires, as the result of broken service connections, the need for rescues for collapsed structures, and the rendering of first aid and other medical attention to a large number of people.

The City of Berkeley has many homes built throughout the urban portion of the Berkeley Hills that are reached by narrow and often winding paved streets which hamper access for fire apparatus and escape routes for residents. In addition, many of the hillside homes are on the extreme eastern edge of the City and require longer response times for the total required firefighting force. In the areas north and south of the University of California, there are large concentrations of apartments, rooming houses, and fraternity and sorority houses. A number of apartments in these areas are of wood frame construction and are up to five stories in height from grade level. The fire potential is moderately high on account of building congestion, heights, and wood shingle roof coverings and siding. Fires can be expected to involve large groups of buildings in these areas. In the central business district, the fire and life safety potential is high due, to the mix of unreinforced masonry buildings and aged high-rise construction. The problem is further exacerbated by the increasing housing and population density due to the intensification of mid-rise and high-rise construction, increasing the life safety risk and demands on fire and emergency services. It is noted that Berkeley probably has more physically impaired people per capita than any other community in the United States. It is estimated that of the approximately 103,000 people in Berkeley, 14% are

physically impaired. At least one half of this percent are severely physically impaired, i.e. not being able to see, hear, or walk. Emergency egress and rescue for these people are more difficult during a fire or other life safety emergency.

b. Summary.

Local geological and topographical conditions involving high seismic activity, many narrow and winding streets (with slide potential for blockage in the abruptly rising Berkeley hills) and large concentrations of residential type buildings create an extremely serious problem for the Fire Department when a major earthquake occurs. Many situations will result in limited or total blockage of fire department emergency vehicular traffic, overtaxed fire department personnel, and a total lack of resources for the suppression of fire in buildings and structures in the City of Berkeley.

B. REASONABLE NECESSITY

The proposed changes and modifications to the California Fire Code are reasonably necessary due to the local conditions set forth above because they reduce the risks to life and property which result from the City's climate and location astride an active earthquake fault. They are further justified for the reasons set forth below.

In adopting the California Fire Code as the Berkeley Fire Code, the City proposes to make certain substantive modifications whose effect is to impose more stringent requirements locally than are mandated by the California Fire Code. These are specifically listed below, but may be generally characterized as relating to: (1) roof accessibility (2) fusible links; (3) automatic sprinklers requirements; (4) fire alarm systems requirements; (5) fire flow requirements; and (6) high-rise air supply requirements. These more stringent local requirements are reasonably necessary to address risks created by local conditions set forth above for the following reasons:

1. Section 504.4 (Roof Accessibility) is added due to the increased risks caused by fires resulting from earthquakes and proximity to the wildland-interface. These risks, which are particularly severe in Berkeley due to its high population density, are shown by its past history of above average death and property loss due to fire in these types of occupancies in Berkeley. This amendment will provide reasonable firefighter access and egress to rooftops for firefighting operations.
2. Section 703.2.4 (Fusible Links) is added due to the increased risks caused by fires resulting from earthquakes and proximity to the wildland-interface.

These risks, which are particularly severe in Berkeley due to its high population density, are shown by its past history of above average death and property loss due to fire in these types of occupancies in Berkeley. This amendment will maintain the fire and smoke separation requirements and prevent spread of smoke and fire in apartments, boarding houses, and congregate living spaces.

3. Sections 903.3.1.2 through 903.2.21 (Fire Sprinkler Systems) are amended due to the increased risks caused by fires resulting from earthquakes and proximity to the wildland-interface. These risks, which are particularly severe in Berkeley due to its high population density, are shown by its past history of above average death and property loss due to fire in these types of occupancies in Berkeley. Automatic fire sprinkler systems significantly reduce the loss of life and fire spread with early suppression and control of a fire. Additionally, these amendments will maintain the standards established in 1992 after the 1990 fraternity fire and 1991 Berkeley Oakland firestorm.
4. Sections 907.2.8.1 through 907.3.17 (Fire Alarm Systems) are amended due to the increased risks caused by fires resulting from earthquakes and proximity to the wildland-interface. These risks, which are particularly severe in Berkeley due to its high population density, are shown by its past history of above average death and property loss due to fire in these types of occupancies in Berkeley. Automatic fire alarm systems significantly reduce the loss of life and fire spread with early detection and notification of firefighting personnel. Additionally, these amendments will maintain the standards adopted in 1998 as part of the Berkeley Fire Code.
5. Section B105.2 (Reduction in Fire Flow) is amended due to the geological conditions of the City with its proximity to the Hayward Fault and prediction by EBMUD that during an earthquake that many of the water mains will break during a 6.7M earthquake on the Hayward Fault.
6. Sections 914.3 through 914.3.7 (High-Rise Building Air Supply Requirements) are amended due to the increased risks caused by fires resulting from earthquakes. These risks, which are particularly severe in Berkeley due to its high population density, are shown by its past history of above average death and property loss due to fire in these types of occupancies in Berkeley. Automatic fire alarm systems significantly reduce the loss of life and fire spread with early detection and notification of firefighting personnel. Additionally, these amendments will maintain the standards adopted in 2002 as part of the Berkeley Fire Code to require air supply systems for firefighting operations.

BE IT FURTHER RESOLVED by the Council of the City of Berkeley that certain local amendments to the codes are not more stringent than the provisions of the

California Fire Code but rather cover matters not addressed by those Codes or as administrative in nature, as follows:

1. Appendix Chapter 1 (as amended with Section 101.1 through 110.4.2) provides administrative provisions, an appeal process, and additional definitions.
2. Section 2701.7 (Hazardous Materials Transport Restrictions, Section 3301.2 (Storage and Use of Explosives) and 3401.1 through 3402.13.1.4.1 (Storage, Transport, and Use of Flammable and Combustible Liquids) of the Berkeley Fire Code is a local amendment to the California Fire Code which adopts restrictions for the use of hazardous materials. Since these issues are not covered by the California Fire Code, this subsection does not change or modify California Fire Code requirements or standards, but simply imposes additional requirements necessitated by local conditions. This new subsection is necessitated by: the dense population of residential dwellings throughout the City; the narrow winding streets of the hazardous hill area; and the presence of a major transportation system underground (BART with its surge chambers and other openings at the street level in various areas of the city). These factors make it very important for purposes of fire safety to regulate hazardous material transportation to ensure that it does not intrude in these areas.

BE IT FURTHER RESOLVED, that Resolution NO. 61,782 – N.S is hereby rescinded.

