RESOLUTION NO. _____

A RESOLUTION OF THE CITY OF SANTA CLARA, CALIFORNIA, FINDING AND DETERMINING THE NEED FOR MODIFICATIONS TO THE CALIFORNIA FIRE CODE, 2025 EDITION

BE IT RESOLVED BY THE CITY OF SANTA CLARA AS FOLLOWS:

WHEREAS, the State of California recently adopted and amended the 2024 International Fire Code, establishing the 2025 California Fire Code;

WHEREAS, the 2025 California Fire Code will automatically go into effect on January 1, 2026;

WHEREAS, the 2025 California Fire Code is contained within, and is a subset of, the California Building Standards Code, which may be amended by a local jurisdiction to establish more restrictive standards, pursuant to California Health and Safety Code, §18941.5 and §17958, et seq.;

WHEREAS, restrictive standards established by a local jurisdiction pursuant to this authority must be reasonably necessary because of local climatic, geological, or topographical conditions;

WHEREAS, restrictive standards established by a local jurisdiction must be supported by the findings required by Health and Safety Code §17958, et seq.;

WHEREAS, the City of Santa Clara Fire Department has worked with other Santa Clara County Fire Agencies in the Santa Clara County Fire Code Work Group to develop necessary amendments to the California and International Fire Code; and,

WHEREAS, the City of Santa Clara ("City") finds it necessary to amend the 2025 California Fire Code, as adopted and amended by the State of California, in order to maintain a reasonable degree of fire and life safety within the City because of local climatic, geological, and/or topographical conditions.

NOW THEREFORE, BE IT FURTHER RESOLVED BY THE CITY OF SANTA CLARA AS

FOLLOWS:

1. Legislative Findings. Modifications and changes contained in the Santa Clara Municipal and Environmental Code, 2025, are required in order to provide specific and greater protections to the public health, safety and welfare than are afforded by the California Fire Code due to geological, climatic, and topographic conditions.

A. **Administrative**: This amendment is necessary for administrative clarification and does not modify a California Building Standard pursuant to California Health and Safety Code Sections 17958, 17958.5 and 17958.7. This amendment established administrative standards for the effective enforcement of the Fire Code within the City of Santa Clara.

B. **Geological/Seismic**: This amendment is justified based on the City's unique local geological and seismic conditions. Santa Clara is in the seismically active and geologically diverse Santa Clara Valley, where a variety of natural conditions create potential hazards that may threaten people, property, and infrastructure. The City of Santa Clara is situated between San Francisco Bay and the San Andreas Fault Zone, on alluvial soils, and within proximity to multiple active and potentially active faults, including the San Andreas, Hayward, and Calaveras. Regional and state sources identify extensive seismic hazard zones, particularly liquefaction-prone areas, across the northern Santa Clara Valley. USGS scenario mapping for M6.7–M7 Hayward and Calaveras fault events demonstrates elevated probabilities of liquefaction and associated ground failure. These geologic conditions heighten the likelihood of strong ground shaking, differential settlement, particularly for older or taller structures and facilities. In Santa Clara, geological and associated hazards include the following:

- **Active Faults**: The San Andreas Fault (west of the City) and the Hayward and Calaveras Faults (east of the City) are major regional seismic sources capable of

producing large, damaging earthquakes. Local Santa Clara Valley fault zones may also generate significant seismic activity.

    - **Ground Shaking**: Santa Clara is located within a very high seismic risk zone and is subject to strong ground shaking from both local and regional earthquakes.
    - **Liquefaction**: Areas underlain by young alluvial soils with shallow groundwater—particularly along the Guadalupe River, Coyote Creek, and other low-lying portions of the Valley—are highly susceptible to liquefaction.
    - **Surface Rupture & Ground Failure**: While direct fault rupture is less likely within the City's core, mapped fault traces in the region still pose risk. Ground cracking, lateral spreading, and settlement could occur during major seismic events, potentially damaging critical infrastructure and utilities.

- **Dam/Reservoir Failure**: Santa Clara County's reservoirs, including Anderson, Lexington, Stevens Creek, and Calero, present flood risks in the event of dam or spillway failure.
- **Industrial Hazards**: The City's industrial areas contain the largest concentration of hazardous materials in the region. An earthquake could rupture storage vessels, pipelines, or process systems, leading to the release of toxic or flammable substances, as well as secondary fires and explosions. Fires in these areas would be particularly difficult to control due to the volatility of stored chemicals and the scale of industrial operations.
- **Water Infrastructure Impairment**: Earthquakes can rupture underground water mains, break service laterals, and damage pump stations or reservoirs. These failures can significantly reduce firefighting capacity at the very time demand is greatest, leaving

hydrants underperforming or dry. Simultaneous failures of storage tanks and distribution lines may further deplete reserves, with full restoration potentially taking days or weeks.

- **Roadway Infrastructure**: Collapse of bridges or overpasses, along with debris-blocked roadways, could delay or prevent emergency apparatus from reaching multiple fire scenes. Such isolation may fragment or overwhelm initial response capacity.
- **Electrical and Gas Utility Failures**: Earthquakes can trigger widespread failures of electrical distribution and natural gas systems, greatly increasing ignition potential. Historical precedent from the 1906 San Francisco and 1994 Northridge earthquakes demonstrates that utility failures are leading causes of post-earthquake fire outbreaks.
- **Limited Firefighting Resources**: A widespread disaster would quickly overwhelm local fire suppression resources. Mutual aid and state or federal assistance may be delayed due to regional impacts, leaving portions of the City without adequate protection during the critical early hours, and days following a major event.

C. **Climatic**: This amendment is justified based on a local climatic conditions. Santa Clara weather patterns, particularly during late summer and fall, that have the potential to create several fire hazards and directly impact public health and safety. These conditions, combined with the ongoing effects of drought and climate change, heighten the community's vulnerability to both fire and flood risks an adversely affect fire department response capabilities. Climatic Characteristics and Hazards:

- **Extended Drought Cycles**: The City and region continue to experience cyclical, extended periods of drought. This recurring pattern has already contributed to increased wildfire frequency and severity across California and is expected to continue.

As drought conditions worsen, vegetation becomes more flammable and structural fires burn more intensely.

- **Temperature Extremes**: Santa Clara has recorded temperatures as high as 109°F and as low as 19°F. Average summer highs range from 78–82°F, while winter lows average 28–35°F. High temperatures accelerate fire spread by drying vegetation, decreasing fuel moisture, and increasing ignition potential. Low winter temperatures can also create strain on utilities, increasing the risk of electrical malfunctions and fire incidents.

- **Relative Humidity**: Average relative humidity ranges from 50% during the day to 70% at night. In summer, daytime levels can drop to around 40%, creating very dry conditions that increase fire ignition and spread. Conversely, winter humidity can exceed 80%, which, when coupled with heavy rainfall, increases flood risk and further strains fire department resources.

- **Wind Patterns and Gusts**" Prevailing winds generally range from 5–15 mph, with gusts recorded up to 30 mph in summer and extreme events reaching 60 mph. Winds have a dramatic effect on structure fires in dense neighborhoods such as Santa Clara. They can:

    - Carry embers and burning brands to ignite secondary fires, creating a risk of conflagration;

    - Drive flames horizontally, producing a "blowtorch effect" that intensifies fire spread within structures; and

    - Complicate aerial suppression efforts, further delaying containment.

- **Climate Change Impacts**: As global warming intensifies, these climatic hazards are expected to worsen. Hotter summers, longer dry seasons, and more erratic storm patterns will amplify both fire risk and post-fire flooding hazards, stretching already limited fire suppression resources.

- **Limited Firefighting Resources**: A widespread disaster would quickly overwhelm local fire suppression resources. Regional mutual aid or state and federal assistance may be delayed due to regional impacts, leaving portions of the City without adequate fire protection during the crucial first hours, and days of an event.

- **Combustible Roofing and Structural Materials**: Many residential dwellings in the City are constructed with combustible roofing and wood-frame materials. Earthquake-induced damage, combined with downed power lines, ruptured gas mains, and compromised electrical systems, creates a high likelihood of roof and structural fires. Once initiated, these fires can spread rapidly in dense neighborhoods.

- **Wind and Weather Factors**: Hot, dry, and windy conditions—common during Santa Clara's late summer and fall, would accelerate fire spread, intensify fire behavior, and complicate suppression efforts. Many residential dwellings in the City are constructed with combustible roofing and wood-frame materials. Once initiated, these fires can spread rapidly in dense neighborhoods during severe weather events.

D. **Topographic**: This amendment is justified on the basis of a local topographic condition. While Santa Clara natural terrain is generally flat, its proximity to the San Francisco Bay and the presence of major transportation corridors create unique hazards. The City is bisected by U.S. Highway 101 and bordered by other heavily traveled arterials that general chronic traffic congestion. These factors combined to form an aerially created obstructive

topographical condition that significant influences emergency access, evacuation, and response times. Topographic Characteristics and Hazards:

- **Flat Terrain Adjacent to San Francisco Bay**: The City's low-lying location near the Bay results in unique challenges such as flooding, high groundwater tables, and soil instability. Flooding events can obstruct access routes and overwhelm stormwater systems, delaying emergency apparatus and evacuation efforts. Flat terrain also allows fire and smoke to spread laterally across large areas without the natural breaks or buffers that hillside topography sometimes provides.
- **Major Highway Barriers**: U.S. Highway 101 and other major corridors bisect the City, creating barriers to cross-town emergency response. During peak traffic hours or following seismic or weather-related incidents, overpasses and interchanges may become impassable, isolating neighborhoods and delaying critical fire and EMS response.
- **Traffic Congestion as an Artificial Topography**: Santa Clara's dense development and commuter traffic produce chronic roadway congestion. From a fire protection standpoint, this congestion functions as an artificial topographical barrier, obstructing apparatus movement and prolonging response times. In large-scale emergencies, simultaneous evacuations and inbound response traffic could compound the problem, leaving some areas inaccessible.
- **Railroad and Utility Corridors**: The City is further segmented by active railroad lines and overhead utility corridors. These linear features act as additional barriers that slow emergency response, create bottlenecks, and increase the potential for secondary hazards such as train derailments, electrical fires, or hazardous materials releases.

- **Proximity of High-Density Development**: Flat topography combined with dense residential, commercial, and industrial development increases the risk of fire spread across property lines. The absence of natural slope separation or buffer zones places additional importance on building fire-resistive construction and fire protection systems.

1. The legislative finding for each modification and changes for each modification are made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code, as set forth in the staff report dated October 7, 2025, and Exhibit 1 attached hereto, entitled “Santa Clara Municipal and Environmental Code, 2025, Analysis of Amendments to the California Fire Code” and by this reference incorporated herein.

2. Effective date. This Resolution shall become effective on the same date as Ordinance No._____, which adopts and amends the California Building Standards Code, as the Santa Clara Municipal Fire & Environmental Code, 2025.

3. Transmission. The City Clerk is hereby authorized and directed to transmit a certified copy of this Resolution to the California Building Standards Commission of the State of California.

I HEREBY CERTIFY THE FOREGOING TO BE A TRUE COPY OF A RESOLUTION PASSED AND ADOPTED BY THE CITY OF SANTA CLARA, CALIFORNIA, AT A REGULAR MEETING THEREOF HELD ON THE ___ DAY OF _____, 2025, BY THE FOLLOWING VOTE:

AYES: COUNCILORS:

NOES: COUNCILORS:

ABSENT: COUNCILORS:

ABSTAINED: COUNCILORS:

ATTEST: _____

NORA PIMENTEL, MMC
ASSISTANT CITY CLERK
CITY OF SANTA CLARA

Attachments incorporated by reference:
1. 2025 Environmental-Fire Code Amendment

EXHIBIT 1
Santa Clara Municipal and Environmental Code, 2025,
Analysis of Amendments to the California Fire Code

Amendment 1
California Fire Code §202 — Corrosive liquid. Corrosive liquid is:
1. any liquid which, when in contact with living tissue, will cause destruction or irreversible alteration of such tissue by chemical action; or
2. any liquid having a pH of 2 or less or 12.5 or more; or
3. any liquid classified as corrosive by the U.S. Department of Transportation; or
4. any material exhibiting the characteristics of corrosivity in accordance with Title 22, California Code of Regulations §66261.22.

Amendment 2
California Fire Code §202 — Secondary containment. The level of containment that is external to and separate from primary containment and is capable of safely and securely containing the material, without discharge, for a period of time reasonably necessary to ensure detection and remedy of the primary containment failure.

Amendment 3
California Fire Code §202 — Health hazard - Other. A hazardous material which affects target organs of the body, including but not limited to, those materials which produce liver damage, kidney damage, damage to the nervous system, act on the blood to decrease hemoglobin function, deprive the body tissue of oxygen or affect reproductive capabilities, including mutations (chromosomal damage), sensitizers or teratogens (effect on fetuses).

Amendment 4
California Fire Code §202 — Large-scale fire testing. Testing a representative energy storage system that induces a significant fire into the device under test and evaluates whether the fire will spread to adjacent energy storage system units, surrounding equipment, or through an adjacent fire-resistance-rated barrier.

Amendment 5
California Fire Code §202 — Spill control. That level of containment that is external to and separate from the primary containment and is capable of safely and securely containing the contents of the largest container and prevents the materials from spreading to other parts of the room.

Amendment 6
California Fire Code §202 — Workstation. A defined space or an independent principal piece of equipment using flammable or unstable (Class 3 or 4 as ranked by NFPA 704) hazardous materials where a specific function, laboratory procedure or research activity occurs. Approved or

listed hazardous materials storage cabinets, flammable liquid storage cabinets or gas cabinets serving a workstation are included as part of the workstation. A workstation is allowed to contain ventilation equipment, fire protection devices, detection devices, electrical devices and other processing and scientific equipment.

Amendment 7

California Fire Code §202 — Unified Program Agency. The City of Santa Clara Fire Department has been designated the Certified Program Agency by the State of California Environmental Protection Agency's (CalEPA). The CUPA protects Californians from hazardous waste and hazardous materials by ensuring consistency throughout the state regarding the implementation of administrative requirements, permits, inspections, and enforcement at the local regulatory level.

Amendment 8

California Fire Code §407.6 — Hazardous Materials Business Plan (HMBP). Where required by the fire code official, facilities shall submit a Hazardous Materials Business Plan (HMBP) as required by California Health & Safety Code (HSC), Chapter 6.95, Sections 25500 through 25545, and Title 19, Division 2, Chapter 4. The HMBP shall be electronically submitted in accordance with the fire code official's requested timeframe and no less frequently than is required by the HSC.

Amendment 9

California Fire Code §407.7 — Facility/Equipment closure plans. The permit holder or applicant shall submit to the fire code official a facility/equipment closure plan in accordance with Section 5001.6.3 to terminate storage, dispensing, handling or use of hazardous materials.

Amendment 10

California Fire Code §503.1 — Where required. Fire apparatus access roads shall be provided and maintained in accordance with Sections 503.1.1 through 503.1.3 and the Santa Clara Fire Department Apparatus Access and Water Supply standard.

Amendment 11

California Fire Code §503.2.1 — Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6096 mm) for engines, and 26 feet (7925 mm) for aerial fire apparatus exclusive of shoulders, except for approved gates or barricades in accordance with Sections 503.5.1 and 503.6. The unobstructed vertical clearance shall be a minimum of 13 feet 6 inches (4115 mm), or as determined by the fire code official.

Amendment 12

California Fire Code §503.2.4 —Turning radius. The required turning radius of a fire apparatus access road shall be a minimum of 30 feet (9144 mm) inside, and a minimum of 50 feet (15240 mm) outside.

Amendment 13

California Fire Code §503.5 — Required gates or barricades. The fire code official is authorized to require the installation and maintenance of gates or other approved barricades

across fire apparatus access roads, trails, or other accessways, not including the public streets, alleys, or highways. The minimum width for commercial applications is 20 feet (6096 mm), and 14 feet (4268 mm) for single-family dwellings. Electric gate operators, where provided shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed, and installed to comply with the requirements of ASTM F2200.

Amendment 14

California Fire Code §503.6 — Security gates. The installation of security gates across a fire apparatus access road shall be approved by the fire code official. Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times. Electric gate operators, where provided, shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F2200. The minimum width for commercial applications is 20 feet (6096 mm), and 14 feet (4268 mm) for single-family dwellings.

Amendment 15

California Fire Code §505.1 — Address identification. New and existing buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 6 inches (153 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained. The following is a guideline for adequate address number dimensions:

1. The number posted up to 49 feet from the public street shall be of one solid color which is contrasting to the background and be at least six (6) inches high with a half (½) inch stroke.
2. The number posted from 50 to 100 feet from the public street shall be of one solid color which is contrasting to the background and be at least six (6) inches high with a one (1) inch stroke.
3. The number posted over 100 to 199 feet from the public street shall be of one solid color which is contrasting to the background and be at least ten (10) inches high with a one and a half (1½) inch stroke.

Amendment 16

California Fire Code §505.3 — Site directories. When required by the fire code official, approved site directories, illustrating and identifying buildings, important site features, and access roads shall be installed and maintained at multi-building complexes.

Amendment 17

California Fire Code §703.3 — Fire-resistant penetrations and joints. In high-rise buildings, in buildings assigned to *Risk Category* III or IV, or in fire areas containing Group R

occupancies with an occupant load greater than 100, and other occupancies as determined necessary, special inspections for through-penetrations, membrane penetration firestops, fire resistant joint systems and perimeter fire containment systems that are tested and listed in accordance with the California Building Code Sections 714.4.1.2, 714.5.1.2, 715.3.1 and 715.4 shall be in accordance with Section 1705A.18.1 or 1705A.18.2, or successor provisions thereof.

Amendment 18

California Fire Code §901.6.2 — Integrated testing. Where two or more fire protection or life safety systems are interconnected, the intended response of subordinate fire protection and life safety systems shall be verified when required testing of the initiating system is conducted. In addition, integrated testing shall be performed in accordance with Sections 901.6.2.1 and 901.6.2.2. A permit shall be obtained from the fire code official in accordance with Section 105.5.

California Fire Code §901.6.2.1 — High-rise buildings. For high-rise buildings, integrated testing shall comply with NFPA 4, with an integrated test performed prior to issuance of the certificate of occupancy and at intervals not exceeding 10 years, unless otherwise specified by an integrated system test plan prepared in accordance with NFPA 4. If an equipment failure is detected during integrated testing, a repeat of the integrated test shall not be required, except as necessary to verify operation of fire protection or life safety functions that are initiated by equipment that was repaired or replaced. For existing buildings, the testing timeframe shall be specified by the integrated systems test plan prepared in accordance with NFPA 4 as approved by the fire code official.

California Fire Code §901.6.2.2 — Smoke control systems. Where a fire alarm system is integrated with a smoke control system as outlined in Section 909, integrated testing shall comply with NFPA 4, with an integrated test performed prior to issuance of the certificate of occupancy and at intervals not exceeding 10 years, unless otherwise specified by an integrated system test plan prepared in accordance with NFPA 4. If an equipment failure is detected during integrated testing, a repeat of the integrated test shall not be required, except as necessary to verify operation of fire protection or life safety functions that are initiated by equipment that was repaired or replaced. For existing buildings, the testing timeframe shall be specified by the integrated systems test plan prepared in accordance with NFPA 4 as approved by the fire code official.

Amendment 19

California Fire Code §901.6.3 — Records. Records of all system inspections, tests and maintenance required by the referenced standard shall be maintained on the premises for a minimum of five years. When required, records shall be uploaded to an electronic inspection database of the fire departments choosing at no cost to the jurisdiction.

Amendment 20

California Fire Code §903.2 — Where required. Approved automatic sprinkler systems in new and existing buildings and structures shall be provided in the locations described in this Section or Sections 903.2.1 through 903.2.12 whichever is the more restrictive and Sections 903.2.14 through 903.2.21.

For the purposes of this section, firewalls and fire barriers used to separate building areas shall comply with the California Building Code and shall have no openings or penetrations.

1. New Buildings and Structures: An automatic sprinkler system shall be installed throughout all new buildings and structures greater than 1,200 square feet.

   Exception: Group S-2 or U occupancies used exclusively for vehicle parking or photovoltaic arrays, provided the total area does not exceed 5000 square feet.

2. Manufactured Homes: An approved automatic fire sprinkler system shall be installed in new manufactured homes, as defined in California Health and Safety Code Sections 18007 and 18009 and multifamily manufactured homes with two dwelling units, as defined in California Health and Safety Code Section 18008.7 in accordance with Title 25 of the California Code of Regulations.

3. Existing Buildings and Structures - Additions: An automatic sprinkler system shall be provided throughout existing Group A, B, E, F, I, L, M, R, S and U buildings and structures, when additions are made that increase the buildings square foot by more than 1200 square feet or the building total square footage exceeds 3,600 square feet.

4. Change of Occupancy or Use: Any change of occupancy or change in use of any building when that change in use would place the building into a more hazardous division of the same occupancy group.

Amendment 21

California Fire Code §909.22.1 — Schedule: A routine maintenance and operational testing program shall be initiated immediately after the smoke control system has passed the acceptance tests. A written schedule for routine maintenance and operational testing shall be established and operational testing must occur at least annually.

Amendment 22

California Fire Code §1202.1 — Definitions. The following terms are defined in Chapter 2:
BATTERY SYSTEM, STATIONARY STORAGE.
BATTERY TYPES.
CAPACITOR ENERGY STORAGE SYSTEM.
CRITICAL CIRCUIT.
EMERGENCY POWER SYSTEM.
ENERGY STORAGE MANAGEMENT SYSTEMS.
ENERGY STORAGE SYSTEM (ESS).
ENERGY STORAGE SYSTEM, ELECTROCHEMICAL.
ENERGY STORAGE SYSTEM, MOBILE.
ENERGY STORAGE SYSTEM, WALK-IN UNIT.
ENERGY STORAGE SYSTEM CABINET.
ENERGY STORAGE SYSTEM COMMISSIONING.
ENERGY STORAGE SYSTEM DECOMMISSIONING.
FUEL CELL POWER SYSTEM, STATIONARY.
LARGE-SCALE FIRE TESTING

PORTABLE GENERATOR.
STANDBY POWER SYSTEM.

Amendment 23

California Fire Code §1207.1.7 — Large-scale fire test. Where required in Section 1207, large-scale fire testing, as defined in Chapter 2, shall be conducted in accordance with NFPA 855 and UL 9540A. Such testing shall be performed or witnessed and reported by an approved testing laboratory. Where required elsewhere in Section 1207, large scale fire testing shall be conducted in accordance with NFPA 855, and UL 9540A. The testing shall be conducted or witnessed and reported by an approved testing laboratory and show that a fire involving one ESS will not propagate to an adjacent ESS, and where installed within buildings, enclosed areas and walk-in units will be contained within the room, enclosed area or walk-in unit for a duration equal to the fire-resistance rating of the room separation specified in Section 1207.7.4. The test report shall be provided to the fire code official for review and approval in accordance with Section 104.2.2 and 104.2.3 (Materials based on the NFPA 855 2023 Ed.).

Amendment 24

California Fire Code §1207.5.2 — Maximum allowable quantities. Fire areas within rooms, areas and walk-in units containing electrochemical ESS shall not exceed the maximum allowable quantities in Table 1207.5. The allowable number of fire areas, maximum allowable quantity, and fire-resistance rating of fire-barriers shall comply with Table 1207.5.1.

Exceptions: Where approved by the fire code official, rooms, areas and walk-in units containing electrochemical ESS that exceed the amounts in Table 1207.5 shall be permitted based on a hazardous mitigation analysis in accordance with Section 1207.1.4 and large-scale fire testing complying with Section 1207.1.5.

1. Lead-acid and nickel-cadmium battery systems installed in facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76.
2. Dedicated-use buildings in compliance with Section 1207.7.1.

TABLE 1207.5.1
DESIGN AND NUMBER OF ESS FIRE AREAS

STORY		PERCENTAGE OF MAXIMUM ALLOWABLE QUANTITY PER FIRE AREA	NUMBER OF FIRE AREAS PER STORY	FIRE-RESISTANCE RATING FOR FIRE BARRIERS IN HOURS
Above grade plan	Higher than 9	25	1	3
	7-9	50	2	2
	6	50	2	2
	5	50	2	2

	4 3 2 1	75 100 100 100	4 6 6 6	2 2 2 2
Below grade plan	1 2 Lower than 2	100 50 Not Allowed	4 2 Not Allowed	3 3 Not Allowed

Amendment 25

California Fire Code §1207.5.5 — Fire suppression systems. Rooms and areas within buildings and walk-in units containing electrochemical ESS shall be protected by an automatic fire suppression system designed and installed in accordance with one of the following:

1. An automatic sprinkler system designed and installed in accordance with Section 903.3.1.1 with a minimum density of 0.3 gpm/ft2 (1.14 L/min) based on the fire area or 2,500 square-foot (232 m2) design area, whichever is larger.
2. Where approved, an automatic sprinkler system designed and installed in accordance with Section 903.3.1.1 with a sprinkler hazard classification based on large-scale fire testing complying with Section 1207.1.5.
3. The following alternative automatic fire-extinguishing systems designed and installed in accordance with Section 904, provided that the installation is approved by the fire code official based on large-scale fire testing complying with Section 1207.1.5:

    3.1. NFPA 12, Standard on Carbon Dioxide Extinguishing Systems.
    3.2. NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection.
    3.3. NFPA 750, Standard on Water Mist Fire Protection Systems.
    3.4. NFPA 2001, Standard on Clean Agent Fire-Extinguishing Systems.
    3.5. NFPA 2010, Standard for Fixed Aerosol Fire-Extinguishing Systems.

    Exception: Fire suppression systems for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that operate at less than 50 VAC and 60 VDC shall be provided where required by NFPA 76.

Amendment 26

California Fire Code §1207.11.3 — Location. ESS shall be installed only in the following locations:

1. Detached garages and detached accessory structures.
2. Attached garages separated from the dwelling unit living space and sleeping units in accordance with Section R302.6.
3. Outdoors or on the exterior side of the exterior walls not less than 3 feet (914 mm) from doors and windows directly entering the dwelling unit and not below or above any emergency escape and rescue openings.
4. Enclosed utility closets, basements, storage, or utility spaces within dwelling units with finished or noncombustible walls and ceilings. Walls and ceilings of unfinished wood-framed construction shall be provided with not less than 5/8-inch (15.9 mm) Type X gypsum wallboard.
5. ESS shall not be installed in sleeping rooms, closets, spaces opening directly into sleeping rooms or in habitable spaces of dwelling units.

Amendment 27

California Fire Code §1207.11.6 — Fire detection. ESS installed in Group R-3 and R-4 occupancies shall comply with the following:

1. Rooms and areas within dwellings units, sleeping units, basements and attached garages in which ESS are installed shall be protected by smoke alarms in accordance with Section 907.2.11.
2. A listed heat alarm interconnected to the smoke alarms shall be installed in locations within dwelling units, sleeping units and attached garages where smoke alarms cannot be installed based on their listing.

    Exceptions:
    1. A listed heat detector may be used in place of a heat alarm, so long as it is interconnected with devices that provide an audible alarm at all sleeping areas.
    2. A fire sprinkler associated with an approved automatic sprinkler system that triggers an audible alarm upon activation of the waterflow switch, may be used in place of a heat alarm.

Amendment 28

California Fire Code §3305.5 — Fire watch. Where required by the fire code official or the site safety plan established in accordance with Section 3303.1, a fire watch shall be provided for building demolition and for building construction. Fire watch is not intended to facilitate occupancy during ongoing construction in a new building.

Amendment 29

California Fire Code §3303.7 Fire Walls. When fire walls are required in combustible construction, the wall construction shall be completed (with all openings protected) immediately after the building is sufficiently weather-protected at the location of the wall(s).

Amendment 30

California Fire Code §3307.1 — Required access. Approved vehicle access for firefighting shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 100 feet (30 480 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather conditions. Vehicle access shall be maintained until permanent fire apparatus access roads are available.

All construction sites shall be accessible by fire department apparatus by means of roadways having an all-weather driving service of not less than 20ft. of unobstructed width prior to the beginning of vertical construction. The roads shall have the ability to withstand the live loads of fire apparatus and have a minimum 13 ft. 6 in. of vertical clearance. Dead end fire access roads in excess of 150 ft. in length shall be provided with approved turnarounds. When approved by the Fire Code Official, temporary access roadways may be utilized until such time that the permanent roadways are installed. As a minimum, the roadway shall consist of a compacted sub-base and six (6) inches of road base material (Class 2 aggregate base rock) both compacted to a minimum 95% and sealed. The perimeter edges of the roadway shall be

contained and delineated by curb and gutter or other approved method. The use of geotextile reinforcing fabric underlayment or soils lime-treatment may be required if so determined by the project civil engineer. Provisions for surface drainage shall also be provided where necessary. The integrity of the roadway shall be maintained at all times.

Amendment 31
California Fire Code § 3313 – Completion Before Occupancy

CALIFORNIA FIRE CODE §3313.1 — Completion before occupancy. In buildings where an automatic sprinkler system is required by this code or the California Building Code, it shall be unlawful to occupy any portion of a building or structure until the automatic sprinkler system installation has been tested and approved.

In new buildings of combustible construction where, automatic fire sprinkler systems are required to be installed, the system shall be placed in service as soon as possible. Immediately upon the completion of sprinkler pipe installation on each floor level, the piping shall be hydrostatically tested and inspected. After inspection approval from the fire department, each floor level of sprinkler piping shall be connected to the system supply riser and placed into service with all sprinkler heads uncovered. Protective caps may be installed on the active sprinklers during the installation of drywall, texturing and painting, but shall be removed immediately after this work is completed.

California Fire Code §3313.2 — Fire protection. All wood frame construction projects exceeding three stories in height, except R-3 occupancies, shall be provided with a listed fire alarm system during construction. The fire alarm system shall be monitored by a listed monitoring company. A permit for the installation and subsequent modifications of the system are required. The design and installation shall comply with the fire department's standards.

California Fire Code §3313.3 — Construction site security. Construction projects exceeding three stories in height, or when determined necessary by the fire code official shall have an electronic security system installed, except for R-3 occupancies, during construction. The electronic data is required to be maintained 24-hours a day, seven days a week. The data is required to be maintained for a minimum of 30-days off-site and made available to the fire department upon request. The electronic security camera layout plan shall be incorporated into the construction safety plan and is required to be approved prior to the start of construction.

California Fire Code §3313.4 — Phased occupancy requests. When occupancy of one phase of a construction project is requested prior to the completion of the entire project, a phased occupancy plan is required to be submitted to the fire department for approval. A fire protection engineering firm or fire protection engineer is required to develop the plan, supervise the implementation, and conduct field compliance inspections on a frequency determined necessary by the fire code official, but not less than once a week.

Amendment 32

California Fire Code §4103.1 — Portable unvented heaters. Portable unvented fuel-fired heating equipment shall be prohibited in occupancies in Groups A, B, E, I, R-1, R-2, R2.1, R-3, R3.1 and R-4 and ambulatory care facilities.

Exceptions:

1. Portable unvented fuel-fired heaters listed in accordance with UL 647 are permitted to be used in one and two-family dwellings, where operated and maintained in accordance with the manufacturer's instructions.
2. Portable outdoor gas-fired heating appliances in accordance with Section 4103.1.2.

Amendment 33

California Fire Code §4103.1.2.1.1 — Prohibited locations. The storage or use of portable outdoor gas-fired heating appliances is prohibited in any of the following locations:

1. Inside of any occupancy where connected to the fuel gas container.
2. Inside of tents, canopies and membrane structures.
3. On exterior balconies and rooftops.

Amendment 34

California Fire Code §5001.2.2.2 — Health Hazards. The material categories listed in this section are classified as health hazards. A material with a primary classification as a health hazard can also pose a physical hazard.

1. Highly toxic and toxic materials.
2. Corrosive materials.
3. Health hazards - Other

Amendment 35

California Fire Code §5001.5.1 — Hazardous materials business plan (HMBP). Where required by the fire code official, facilities shall submit a Hazardous Materials Business Plan (HMBP) as required by California Health & Safety Code (HSC), Chapter 6.95, Sections 25500 through 25545, and Title 19, Division 2, Chapter 4. The HMBP shall be electronically submitted in accordance with the fire code official's requested timeframe and no less frequently than is required by the HSC.

Amendment 36

California Fire Code §5002.1 — Definitions. The following terms are defined in Chapter 2:

BOILING POINT.
CEILING LIMIT.
CHEMICAL.
CHEMICAL NAME.
CLOSED CONTAINER.
CONTAINER.
CONTROL AREA.
CYLINDER.
DAY BOX.

DEFLAGRATION.
DESIGN PRESSURE.
DETACHED BUILDING.
DISPENSING.
EXCESS FLOW CONTROL.
EXHAUSTED ENCLOSURE.
EXPLOSION.
FLAMMABLE VAPORS OR FUMES.
GAS CABINET.
GAS ROOM.
HANDLING.
HAZARDOUS MATERIALS.
HEALTH HAZARD.
HEALTH HAZARD – OTHER.
IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).
INCOMPATIBLE MATERIALS.
LIQUID.
LOWER EXPLOSIVE LIMIT (LEL).
LOWER FLAMMABLE LIMIT (LFL).
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA.
NORMAL TEMPERATURE AND PRESSURE (NTP).
OUTDOOR CONTROL AREA.
PERMISSIBLE EXPOSURE LIMIT (PEL).
PESTICIDE.
PHYSICAL HAZARD.
PRESSURE VESSEL.
SAFETY CAN.
SAFETY DATA SHEET (SDS).
SECONDARY CONTAINMENT.
SEGREGATED.
SOLID.
SPILL CONTROL.
STORAGE, HAZARDOUS MATERIALS.
SYSTEM.
TANK, ATMOSPHERIC.
TANK, PORTABLE.
TANK, STATIONARY.
TANK VEHICLE.
UNAUTHORIZED DISCHARGE.
USE (MATERIAL).
VAPOR PRESSURE.

Amendment 37

California Fire Code §5003.1.3 — Quantities not exceeding the maximum allowable quantity per control area. The storage, use and handling of hazardous materials in quantities

not exceeding the maximum allowable quantity per control area indicated in Tables 5003.1.1(1) through 5003.1.1(4) shall be in accordance with Sections 5001 and 5003.

5003.1.3.1 Toxic, Highly Toxic, Moderately and Similarly Used or Handled Materials. The storage, use and handling of toxic, highly toxic and moderately toxic gases in amounts exceeding Table 6004.2.1.4 shall be in accordance with this chapter and Chapter 60. Any toxic, highly toxic or moderately toxic material that is used or handled as a gas or vapor shall be in accordance with the requirements for toxic, highly toxic or moderately toxic gases.

Amendment 38

California Fire Code §5003.1.5 — Health Hazards - Other. The storage, use and handling of materials classified as other health hazards including carcinogens, irritants and sensitizers in amounts exceeding 810 cubic feet for gases, 55 gallons for liquids and 5,000 pounds for solids shall be in accordance with Section 5003.

Amendment 39

California Fire Code §5003.1.6 — Additional Spill Control and Secondary Containment Requirements. In addition to the requirements set forth in Section 5004.2. An approved containment system is required for any quantity of hazardous materials that are liquids or solids at normal temperature and pressure (NTP), where a spill is determined to be a plausible event and where such an event would endanger people, property or the environment. The approved containment system may be required to include a combination of spill control and secondary containment meeting the design and construction requirements set forth in Section 5004.2.

Amendment 40

California Fire Code §5003.2.2.1 — Design and Construction. Piping, tubing, valves, fittings and related components used for hazardous materials shall be in accordance with the following:

1. Piping, tubing, valves, fittings and related components shall be designed and fabricated from materials compatible with the material to be contained and shall be of adequate strength and durability to withstand the pressure, structural and seismic stress, and exposure to which they are subject.
2. Piping and tubing shall be identified in accordance with ASME A13.1 and the Santa Clara Fire Department Marking Requirements and Guidelines for Hazardous Materials and Hazardous Waste to indicate the material conveyed.
3. Readily accessible manual valves or automatic remotely activated fail-safe emergency shutoff valves shall be installed on supply piping and tubing at the following locations:
    1. The point of use.
    2. The tank, cylinder or bulk use.
4. Manual emergency shutoff valves and controls for remotely activated emergency shutoff valves shall be identified and the location shall be clearly visible accessible and indicated by means of a sign.
5. Backflow prevention or check valves shall be provided when the backflow of hazardous materials could create a hazardous condition or cause the unauthorized discharge of hazardous materials.
6. Where gases or liquids having a hazard ranking of:
    1. Health Class 3 or 4

2. Flammability Class 4
3. Reactivity Class 4

in accordance with NFPA 704 are carried in pressurized piping above 15 pounds per square inch gauge (psig)(103 Kpa), an approved means of leak detection, emergency shutoff or excess flow control shall be provided. Where the piping originates from within a hazardous material storage room or area, the excess flow control shall be located within the storage room or area. Where the piping originates from a bulk source, the excess flow control shall be located as close to the bulk source as practical.

Exceptions:
1. Piping for inlet connections designed to prevent backflow.
2. Piping for pressure relief devices.

7. Secondary containment or equivalent protection from spills or leaks shall be provided for piping for liquid hazardous materials and for highly toxic and toxic corrosive gases above threshold quantities listed in Tables 6004.2 and 6004.3. Secondary containment includes but is not limited to double-walled piping.

Exceptions:
1. Secondary containment is not required for toxic corrosive gases if the piping is constructed of inter materials.
2. Piping under sub-atmospheric conditions if the piping is equipped with an alarm and fail-safe-to-close valve activated by a loss of vacuum.

8. Expansion chambers shall be provided between valves whenever the regulated gas may be subjected to thermal expansion. Chambers shall be sized to provide protection for piping and instrumentation and to accommodate the expansion of regulated materials.

Amendment 41

California Fire Code §5003.2.2.2 — Additional Regulation for Supply Piping for Health Hazard Materials. Supply piping and tubing for gases and liquids having a health hazard ranking of 3 or 4 shall be in accordance with ASME B31.3 and the following:

1. Piping and tubing utilized for the transmission of toxic, highly toxic, or highly volatile corrosive liquids and gases shall have welded or brazed connections throughout except for connections within an exhausted enclosure if the material is a gas, or an approved method of drainage or containment is provided for connections if the material is a liquid.
2. Piping and tubing shall not be located within corridors, within any portion of a means of egress required to be enclosed in fire-resistance-rated construction or in concealed spaces in areas not classified as Group H Occupancies.
3. All primary piping for toxic, highly toxic and moderately toxic gases shall pass a helium leak test of 1x10-9 cubic centimeters/second where practical, or shall pass testing in accordance with an approved, nationally recognized standard. Tests shall be conducted by a qualified "third party" not involved with the construction of the piping and control systems.

Exception: Piping and tubing within the space defined by the walls of corridors and the floor or roof above or in concealed space above other occupancies when installed in

accordance with Section 415.11.7.4 of the California Building Code as required for Group H, Division 5 Occupancies.

Amendment 42
California Fire Code §5003.5.2 — Ventilation Ducting. Ducts venting hazardous materials operations shall be labeled with the hazard class of the material being vented and the direction of flow.

Amendment 43
California Fire Code §5004.2.1 — Spill Control for Hazardous Material Liquids. Rooms, buildings, or areas used for storage of hazardous material liquids shall be provided with spill control to prevent the flow of liquids to adjoining areas. Floors in indoor locations and similar surfaces in outdoor locations shall be constructed to contain a spill from the largest single vessel by one of the following methods:

1. Liquid-tight sloped or recessed floors in indoor locations or similar areas in outdoor locations.
2. Liquid-tight floors in indoor and outdoor locations or similar areas provided with liquid-tight raised or recessed sills or dikes.
3. Sumps and collection systems
4. Other approved engineered systems.

Except for surfacing, the floors, sills, dikes, sumps, and collection systems shall be constructed of noncombustible material, and the liquid-tight seal shall be compatible with the material stored. When liquid-tight sills or dikes are provided, they are not required at perimeter openings having an open-grate trench across the opening that connects to an approved collection system.

Amendment 44
California Fire Code §5402.1 — Definitions. The following terms are defined in Chapter 2:

CORROSIVE.
CORROSIVE LIQUIDS

Amendment 45
California Fire Code §5601.1.3 — Fireworks. The possession, manufacture, storage, sale, handling, and use of fireworks, including those fireworks classified as Safe and Sane by the California State Fire Marshal, are prohibited.

Exceptions:

1. Storage and handling of fireworks as allowed in section 5604.
2. The use of fireworks for fireworks displays pyrotechnics before a proximate audience and pyrotechnics special effect in motion pictures, television, theatrical or group entertainment production as allowed in Title 19, Division 1, Chapter 6 Fireworks reprinted in Section 5608 and Health and Safety Code Division 11.

Amendment 46
California Fire Code §5608.1 — General. Outdoor fireworks displays, use of pyrotechnics before a proximate audience and pyrotechnic special effects in motion picture, television,

theatrical and group entertainment productions shall comply with California Code of Regulations, Title 19, Division 1, Chapter 6 Fireworks and this section. Permits can be revoked, denied, or modified to address extreme weather events, poor air quality, or noise when deemed necessary for the protection of the public health and well-being, as determined by the fire code official.

5608.1.1 Scope. Fireworks and temporary storage, use, and handling of pyrotechnic special effects material used in motion pictures, television, and theatrical and group entertainment productions shall be in accordance with California Code of Regulations, Title 19, Division 1, Chapter 6 Fireworks.

5608.1.2 Additional Safety Requirements. When determined necessary the fire code official has the authority to require additional safety measures be implemented for the storage and/or use of pyrotechnics of any classification.

Amendment 47

California Fire Code §5704.2.7.5.8 — Overfill Prevention. An approved means or method in accordance with Section 5704.2.9.7.5 shall be provided to prevent the overfill of all Class I, II and IIIA liquid storage tanks. Storage tanks in refineries, bulk plants or terminals regulated by Sections 5706.4 or 5706.7 shall have overfill protection in accordance with API 2350.

An approved means or method in accordance with Section 5704.2.9.7.5 shall be provided to prevent the overfilling of Class IIIB liquid storage tanks connected to fuel-burning equipment inside buildings.

Exception: Outside aboveground tanks with a capacity of 1320 gallons (5000 L) or less need only comply with Section 5704.2.9.7.5 (Item 1, Sub-item 1.1).

Amendment 48

California Fire Code §5704.2.7.5.9 — Automatic Filling of Tanks. Systems that automatically fill flammable or combustible liquid tanks shall be equipped with overfill protection, approved by the fire code official that sends an alarm signal to a constantly attended location and immediately stops the filling of the tank. The alarm signal and automatic shutoff shall be tested on an annual basis and records of such testing shall be maintained on-site for a period of five (5) years.

Amendment 49

California Fire Code §5704.2.13.1.4 — Tanks abandoned in place. Tanks abandoned in place, when approved by the fire code official, shall be as follows:

1. Flammable and combustible liquids shall be removed from the tank and connected piping.
2. The suction, inlet, gauge, vapor return and vapor lines shall be disconnected.
3. The tank shall be filled completely with an approved inert solid material.
4. Remaining underground piping shall be capped or plugged.
5. A record of tank size, location and date of abandonment shall be retained.
6. All exterior above-grade fill piping shall be permanently removed when tanks are abandoned or removed.

Amendment 50

California Fire Code §6004.1 — General. The storage and use of highly toxic and toxic compressed gases shall comply with this section. Materials stored and used as a gas, whether or not the material meets the definition of a compressed gas, and meets the definition of a highly toxic, and toxic shall comply with this Section.

Amendment 51

California Fire Code §6004.2.1.4 — Quantities exceeding the minimum threshold quantities but not exceeding the maximum allowable quantities per control area. The indoor storage or use of highly toxic, and toxic gases in amounts exceeding the minimum threshold quantities per control area set forth in Table 6004.2.1.4 but not exceeding maximum allowable quantity per control area set forth in Table 5003.1.1(2) shall be in accordance with Sections 5001, 5003, 6001, 6004.1, and 6004.4.

Amendment 52

Table 6004.2.1.4 is added to read.

TABLE 6004.2.1.4 Minimum Threshold Quantities for Highly Toxic and Toxic Gases for Indoor Storage and Use	
Highly Toxic	20 cubic feet
Toxic	405 cubic feet

Amendment 53

California Fire Code §6004.2.2.10.1 — Alarms. The gas detection system shall initiate a local alarm and transmit a signal to a constantly attended control station when a short-term hazard condition is detected. The alarm shall be both audible and visible and shall provide warning both inside and outside the area where gas is detected. The audible alarm shall be distinct from all other alarms, and directed to a central station service.

Amendment 54

California Fire Code §6004.4 — General indoor requirements. The general requirements applicable to the indoor storage and use of highly toxic and toxic compressed gases shall be in accordance with Sections 6004.4 through 6004.4.8.2.

6004.4.1 Cylinder and tank location. Cylinders shall be located within gas cabinets, exhausted enclosures, or gas rooms. Portable and stationary tanks shall be located within gas rooms or exhausted enclosures.

Exceptions: Where a gas detection system is provided in accordance with 6004.4.8

6004.4.2 Ventilated areas. The room or area in which gas cabinets or exhausted enclosures are located shall be provided with exhaust ventilation. Gas cabinets or exhausted enclosures shall not be used as the sole means of exhaust for any room or area.

6004.4.3 Piping and controls. In addition to the requirements of Section 5003.2.2, piping and controls on stationary tanks, portable tanks, and cylinders shall comply with the following requirements:

1. Stationary tanks, portable tanks, and cylinders in use shall be provided with a means of excess flow control on all tank and cylinder inlet or outlet connections.

   Exceptions:
   1. Inlet connections designed to prevent backflow.
   2. Pressure relief devices.

6004.4.4 Gas rooms. Gas rooms shall comply with Section 5003.8.4 and both of the following requirements:

1. The exhaust ventilation from gas rooms shall be directed to an exhaust system.
2. Gas rooms shall be equipped with an approved automatic sprinkler system. Alternative fire- extinguishing systems shall not be used.

6004.4.5 Treatment systems. The exhaust ventilation from gas cabinets, exhausted enclosures, and gas rooms, required in Section 6004.4.1 shall be directed to a treatment system. The treatment system shall be utilized to handle the accidental release of gas and to process exhaust ventilation. The treatment system shall be designed in accordance with Sections 6004.2.2.7.1 through 6004.2.2.7.5 and Chapter 5 of the California Mechanical Code.

Exceptions:

1. Highly toxic and toxic gases - storage. A treatment system is not required for cylinders, containers, and tanks in storage where all of the following controls are provided:
   1.1 Valve outlets are equipped with gas- tight outlet plugs or caps.
   1.2 Hand wheel-operated valves have handles secured to prevent movement.
   1.3 Approved containment vessels or containment systems are provided in accordance with Section 6004.2.2.3.
2. Highly toxic and toxic gases - use. Treatment systems are not required for highly toxic, and toxic gases supplied by stationary tanks, portable tanks, or cylinders where a gas detection system complying with Section 6004.4.8 and listed or approved automatic-closing fail-safe valves are provided. The gas detection system shall have a sensing interval not exceeding 5 minutes. Automatic-closing fail-safe valves shall be located immediately adjacent to cylinder valves and shall close when gas is detected at the permissible exposure limit (PEL) by a gas sensor monitoring the exhaust system at the point of discharge from the gas cabinet, exhausted enclosure, ventilated enclosure or gas room.

6004.4.5.1 Design. Treatment systems shall be capable of diluting, adsorbing, absorbing, containing, neutralizing, burning or otherwise processing the contents of the largest single vessel of compressed gas. Where a total containment system is used, the system shall be designed to handle the maximum anticipated pressure of release to the system when it reaches equilibrium.

6004.4.5.2 Performance. Treatment systems shall be designed to reduce the maximum allowable discharge concentrations of the gas to one-half immediately dangerous to life and health (IDLH) at the point of discharge to the atmosphere. Where more than one gas is emitted to the treatment system, the treatment system shall be designed to handle the worst-case release based on the release rate, the quantity and the IDLH for all compressed gases stored or used.

6004.4.5.3 Sizing. Treatment systems shall be sized to process the maximum worst-case release of gas based on the maximum flow rate of release from the largest vessel utilized. The entire contents of the largest compressed gas vessel shall be considered.

6004.4.5.4 Stationary tanks. Stationary tanks shall be labeled with the maximum rate of release for the compressed gas contained based on valves or fittings that are inserted directly into the tank. Where multiple valves or fittings are provided, the maximum flow rate of release for valves or fittings with the highest flow rate shall be indicated. Where liquefied compressed gases are in contact with valves or fittings, the liquid flow rate shall be utilized for computation purposes. Flow rates indicated on the label shall be converted to cubic feet per minute (cfm/min) (m3/s) of gas at normal temperature and pressure (NTP).

6004.4.5.5 Portable tanks and cylinders. The maximum flow rate of release for portable tanks and cylinders shall be calculated based on the total release from the cylinder or tank within the time specified in Table 6004.4.6 Where portable tanks or cylinders are equipped with approved excess flow or reduced flow valves, the worst-case release shall be determined by the maximum achievable flow from the valve as determined by the valve manufacturer or compressed gas supplier. Reduced flow and excess flow valves shall be permanently marked by the valve manufacturer to indicate the maximum design flow rate. Such markings shall indicate the flow rate for air under normal temperature and pressure.

6004.4.6. Emergency power. Emergency power shall be provided for the following systems in accordance with Section 604:

1. Exhaust ventilation system.
2. Treatment system.
3. Gas detection system.
4. Smoke detection system.

6004.3.6.1 Fail-safe systems. Emergency power shall not be required for mechanical exhaust ventilation and treatment systems where approved fail-safe systems are installed and designed to stop gas flow.

6004.4.7 Automatic fire detection system. An approved automatic fire detection system shall be installed in rooms or areas where highly toxic, and toxic compressed gases are stored or used. Activation of the detection system shall sound a local alarm. The fire detection system shall comply with Section 907.

6004.4.8 Gas detection system. A gas detection system complying with Section 916 shall be provided to detect the presence of gas at or below the PEL or ceiling limit of the gas for which detection is provided.

Exceptions:
1. A gas detection system is not required for toxic gases when the physiological warning threshold level for the gas is at a level below the accepted PEL for the gas.
2. A gas detection system is not required for highly toxic, and toxic gases where cylinders, portable tanks, and all non-continuously welded connects are within a gas cabinet or exhausted enclosures.

6004.4.8.1 Alarms. The gas detection system shall initiate a local alarm and transmit a signal to an approved location.

6004.4.8.2 Shut-off of gas supply. The gas detection system shall automatically close the shut off valve at the source on gas supply piping and tubing related to the system being monitored for whichever gas is detected.

Exception: Emergency shutoff valves that are ready access and constantly attended/supervised.

Amendment 55
California Fire Code §6405.3.4 — Silane distribution systems automatic shutdown. Silane distribution systems shall automatically shut down at the source upon activation of the gas detection system at levels above the alarm level and/or failure of the ventilation system for the silane distribution system.

Amendment 56
Adoption of California Fire Code Appendix B — Fire-Flow Requirements for Building, as amended

Amendment 57
California Fire Code Appendix B — §B105.2 Buildings other than one- and two two-family dwellings, Group R-3 and R-4 buildings other than one- and two-family dwelling, Group R-3 and R-4 buildings and townhouses shall be as specified in Tables B105.1(2) and B105.2.

Exceptions: [SFM] Group B, S-2 and U occupancies having a floor area not exceeding 1,000 square feet, primarily constructed of noncombustible exterior walls with wood or steel roof framing, having a Class A roof assembly, with uses limited to the following or similar uses.

1. California State Parks buildings of an accessory nature (restrooms).
2. Safety roadside rest areas (SRRA, public restrooms.
3. Truck inspection facilities (TIF), CHP office space and vehicle inspection bays.
4. Sand/salt storage buildings, storage of sand and salt.

The maximum fire flow reduction for all commercial buildings shall not exceed 25 percent of the fire flow specified in Table B105.1(2). The maximum fire flow reduction for all other buildings shall not exceed 50 percent of the fire flow specified Table B105.1(2). The maximum fire flow reduction for all other buildings shall not exceed 50 percent of the fire flow specified in Table B105.1(2).

Amendment 58
Adoption of California Fire Code Appendix C — Fire Hydrant Location and Distribution, as amended

Amendment 59
California Fire Code Appendix C — §C102.1 Minimum number of fire hydrants for buildings. The number of fire hydrants available to a building shall be not less than the minimum specific in Table C102.1, utilizing the base fire flow without fire sprinkler reduction.

Amendment 60
California Fire Code Appendix C — §C103.1 Hydrant spacing. Fire apparatus access roads and public streets providing required access to buildings in accordance with Section 503 of the California Fire Code shall be provided with one or more fire hydrants, as determined by Section C102.1. Where more than one fire hydrant is required, the distance between required fire hydrants shall be in accordance with

Section 103.2 and C103.3, but in no case shall the average spacing be more than 300 feet on center

Amendment 61
Adoption of California Fire Code Appendix D — Fire Apparatus Access Roads, as amended

Amendment 62
California Fire Code Appendix D — §D103.3 Turning radius. The required turning radium of a fire apparatus access roads shall be a minimum of 30 feet inside, and a minimum 50 feet outside.

Amendment 63
California Fire Code Appendix D — §D103.4 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45750mm) shall be provided with width and turnaround provisions in accordance with Table D103.4, as approved by the fire code official.

Amendment 64
California Fire code Appendix D — Table D103.4
REQUIREMENTS FOR DEAD-END
FIRE APPARATUS ACCESS ROADS

LENGTH (feet)	WIDTH (feet)	TURNAROUNDS REQUIRED
0 - 150	26	Not required, unless determined necessary by the fire code official

151 - 500	26	120-foot Hammerhead, 60-foot "Y" or 96-foot-diameter cul-de-sac in accordance with Figure D103.1
500 - 750	26	120-foot Hammerhead, 60-foot "Y" or 96-foot-diameter cul-de-sac in accordance with Figure D103.1
Over 750	Special approval required	

Amendment 65

California Fire Code Appendix D — §D103.5 Fire apparatus access road gates. Gates securing the fire apparatus access roads shall comply with all of the following criteria:

1. Where a single gate is provided, the gate width shall be not lets than 20 feet (6096 mm). Where a fire apparatus road consists of a divided roadway, the gate width shall be not less than 20 feet (6096 mm),
2. Gates shall be automatic horizontal swing, horizontal side, vertical life or vertical pivot type.
3. Construction of gates shall be of materials that allow manual operation by one person.
4. Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.
5. Electric gates shall be equipped with a means of opening the gate by fire department personnel for emergency access. Emergency opening device shall be approved by the fire code official.
6. Methods of locking shall be submitted for approval by the fire code official.
7. Electric gate operators, where provided, shall be listed in accordance with UL 325.
8. Gate intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F2200.

Amendment 66

Adoption of California Fire Code Appendix N – Indoor Trade Shows and Exhibitions, in its entirety

Local Amendments Justification Matrix – California Fire Code					
Amendment No.	**California Fire Code § or Table**	**Title**	**Added to California Fire Code**	**Amended to California Fire Code**	**Justification (As referenced in Legislative Findings)**
1.	202	Certified Unified Program Agency (CUPA)	X		A, B, C
2.	202	Corrosive Liquid		X	B, C & D
3.	202	Health Hazard – Other	X		B, C & D
4.	202	Large-Scale Fire Testing	X		B, C & D
5.	202	Secondary Containment		X	B, C & D
6.	202	Spill Control	X		B, C & D
7.	202	Workstation		X	B, C & D
8.	407.6	Hazardous materials business plan		X	A, B, C
9.	407.7	Facility/Equipment closure plans		X	A, B, C
10.	503.1	Fire apparatus access roads		X	B, C, & D
11.	503.2.1	Dimensions		X	A, B, C, & D
12.	503.2.4	Turning radius		X	A, B, C, & D
13.	503.5	Required gates & barricades		X	B, C, & D
14.	503.6	Security gates		X	B, C, & D
15.	505.1	Address identification		X	B, C, & D
16.	505.3	Site directories	X		B, C, & D
17.	703.3	Fire-resistance penetrations & joints	X		B, C, & D

18.	901.6.2	Integrated Testing		X	B, C & D
19.	901.6.3	Records		X	B, C & D
20.	903.2	Where required - Automatic fire sprinklers		X	B, C & D
21.	909.22.1	Schedule -Smoke control systems		X	B, C & D
22.	1202.1	Definitions - Large-scale fire testing	X		B, C & D
23.	1207.1.	Large-scale fire test		X	B, C & D
24.	1207.5.2	MAQ		X	B, C & D
25.	1207.5.5	Fire suppression system		X	B, C & D
26.	1207.11.3	ESS location		X	B, C & D
27.	1207.11.6	Fire detection		X	B, C & D
28.	3305.5	Fire watch		X	B, C & D
29.	3305.7	Fire walls	X		B, C & D
30.	3307.1	Required access		X	B, C & D

Local Amendments Justification Matrix – California Fire Code (cont'd)

Amendment No.	California Fire Code § or Table	Title	Added to California Fire Code	Amended to California Fire Code	Justification (As referenced in Legislative Findings)
31.	3313	Completion before occupancy	X		B, C & D
32.	4103.1	Portable unvented heaters		X	B, C & D
33.	4103.1.2.1.1	Prohibited locations		X	B, C & D
34.	5001.2.2.2	Health hazards		X	B, C & D
35.	5001.5.1	Hazardous materials business plan		X	B, C & D
36.	5002.1	Health hazards – Other definition		X	B, C & D
37.	5003.1.3	Quantifies not exceeding the MAQ per control area		X	B, C & D
38.	5003.1.5	Health hazard – Other	X		B, C & D
39.	5003.1.6	Additional spill control & secondary containment requirements	X		B, C & D
40.	5003.2.2.1	Design & construction - hazardous materials piping		X	B, C & D
41.	5003.2.2.2	Additional regulations for supply piping for health hazard materials		X	B, C & D
42.	5003.5.2	Ventilation ducting	X		B, C & D

43.	5004.2.1	Spill Control for hazardous materials		X	B, C & D
44.	5402.1	Definition – Corrosive Liquid		X	B, C & D
45.	5601.1.3	Fireworks		X	B, C & D
46.	5608.1	General -Fireworks displays		X	B, C & D
47.	5704.2.7.5.8	Overfill prevention		X	B, C & D
48.	5704.2.7.5.9	Automatic filling of tanks	X		B, C & D
49.	5704.2.13.1.4	Tanks abandoned in place		X	B, C & D
50.	6004.1	General – Toxic gases		X	B, C, & D

Local Amendments Justification Matrix – California Fire Code (cont'd)					
Amendment No.	**California Fire Code § or Table**	**Title**	**Added to California Fire Code**	**Amended to California Fire Code**	**Justification (As referenced in Legislative Findings)**
51.	6004.2.1.4	Quantities exceeding the minimum threshold quantities but not exceeding the maximum allowable quantities per control area	X		B, C, & D
52.	Table 6004.2.1.4	Minimum threshold quantities for highly toxic and toxic gases for indoor storage and use	X		B, C, & D
53.	6004.2.2.10.1	Alarms		X	B, C, & D
54.	6004.4	General indoor requirements – Toxic gases	X		B, C, & D
55.	6405.3.4	Silane distribution systems automatic shutdown	X		B, C, & D
56.	Adoption of Appendix B Fire-Flow Requirements for Buildings,	Fire-flow requirements for buildings	X		B, C, & D

	as amended				
57.	B105.2	Buildings other than one- and two-family dwellings, group R-3, and R-4 buildings and townhouses		X	B, C, & D
58.	Adoption of Appendix C Fire Hydrants Locations and Distribution, as amended	Fire hydrant locations and distribution	X		B, C, & D
59.	C102.1	Minimum number of fire hydrants for buildings		X	B, C, & D
60.	C103.1	Hydrant spacing		X	B, C, & D
Local Amendments Justification Matrix – California Fire Code (cont'd)					
Amendment No.	**California Fire Code § or Table**	**Title**	**Added to California Fire Code**	**Amended to California Fire Code**	**Justification (As referenced in Legislative Findings)**
61.	Adoption of Appendix D Fire Apparatus Access Roads, as amended	Fire apparatus access Roads	X		B, C, & D
62.	D103.3	Turning radius		X	B, C, & D
63.	D103.4	Dead ends		X	B, C, & D
64.	Table D103.4	Requirements for dead-end fire apparatus access roads		X	B, C, & D
65.	D103.5	Fire apparatus access road gates		X	B, C, & D
66.	Adoption of Appendix N Indoor trade shows and Exhibitions, in its entirety	Indoor trade shows and exhibitions	X		B, C, & D