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Executive Summary: The State of California adopts and publishes a set of new construction codes every three years referred to as the California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code. The purpose of this agenda item is to adopt by reference and amend the 2016 California Building Standards Code, which become effective January 1, 2017, with certain administrative and technical amendments based on Fremont’s local conditions. The proposed administrative and technical changes carry forward current provisions in the Fremont Building and Fire Codes. These provisions mainly relate to soils susceptible to liquefaction, corrosive soils and some structural changes required to address some code deficiencies and local conditions due to the proximity of Fremont to the Hayward and Calaveras earthquake faults. Some of the previous amendments are now in the current California Building Standards Code so they are no longer need to be included in the local amendment in the attached ordinance. The new Fire and Building Code amendments are similar to the code amendments of the surrounding jurisdictions that have similar climatic, geological, and topographical conditions.

In addition, the proposed local amendments to the 2016 California Energy Code and the 2016 California Green Building Standards Code (CAL Green) would continue Fremont’s leadership position in promoting energy efficiency, and reducing greenhouse gas emissions. Based on the recommendations of the Environmental Sustainability Commission, staff has developed proposed ordinance language regarding: 1) increased levels of electrical vehicle (EV) readiness in new single and multifamily residential and non-residential construction, and 2) reduction in non-residential maximum allowable wattages for outdoor lighting in new construction and retrofits. In addition, staff will validate that the proposed energy mitigation measures are cost-effective in compliance with the California Building Standards Commission (CBSC) and the California Energy Commission (CEC), with supporting cost-
effectiveness studies attached. Pursuant to a Council referral to investigate possible changes to the Codes to make residential development more solar-ready, staff had intended to bring forward a recommendation regarding mandatory solar requirements in residential development as part of the larger Code update. However, a supporting study being prepared by the CEC is still being finalized, so staff now anticipates bringing forward a recommended amendment related to residential solar in early 2017.

Staff recommends that the City Council introduce the ordinance tonight to adopt proposed changes to the California Building Standards Code, including local amendments, and schedule a second public hearing for November 1, 2016. Additionally, staff recommends adopting, by reference, the 2015 International Property Maintenance Code and 2015 International Swimming Pool and Spa Code to permit more effective enforcement of hazardous structures within the City and to provide minimum requirements for the design, construction, alteration, repair, and maintenance of swimming pools and spas, respectively.

BACKGROUND: The California Building Standards Commission (CBSC) is an independent commission within the State Consumer Services Agency responsible for reviewing, adopting, and publishing building standards for the State of California. Every three years, the CBSC adopts a compilation of building regulations referred to as the California Building Standards Code (California Code of Regulations, Title 24). Through the code adoption process, the CBSC selects and approves a set of model codes. Inclusive in these regulations are the California Building, Mechanical, Plumbing, Electrical, Existing Buildings, Fire, Energy, Residential Building, Historical Building, and Green Building Codes. Participating State agencies, such as State Fire Marshal (SFM), Division of the State Architect (DSA), Housing and Community Development (HCD), and Office of Statewide Health Planning and Development (OSHPD), have an opportunity to amend the code for the occupancy groups under their respective authorities. Local governments or jurisdictions can also modify the code to add more restrictive provisions based on their specific local geologic, climatic, and topographic conditions to protect their communities. Any local amendments to the above mandated codes must be more restrictive than the State Building Standards Code and must be substantiated with findings, per California Health & Safety Code Section 17958. The administrative provisions of the code can be modified without specific justification based on local conditions.

The 2016 Codes become effective on January 1, 2017; however, the specific code addition applicable to a building project is established by the building permit application date. Therefore, projects submitted for a permit on or after January 1, 2017, must be designed to the 2016 edition of the California Building Standards Code. The specific codes mandated for effectiveness in January 2017 by the State of California are as follows:

- 2016 California Building Code Volumes 1 & 2
- 2016 California Mechanical Code
- 2016 California Plumbing Code
- 2016 California Electrical Code
- 2016 California Existing Buildings Code
- 2016 California Fire Code
- 2016 California Energy Code
- 2016 California Residential Building Code
- 2016 California Green Building Standards Code
- 2016 California Historical Building Code
Included with the adoption of the California Building Standards Code is the 2015 International Property Maintenance Code (IPMC). This model code provides the City authority to abate structures that are imminent hazards to the public in a quick and efficient manner. The model code includes definitions of terms for enforcement, for the integrity of structural elements of buildings, and specific hazards. These definitions are not included in the other standard codes. Staff also recommends adopting the 2015 International Swimming Pool and Spa Code (ISPSC). This model code provides minimum requirements for the design, construction, alteration, repair and maintenance of swimming pools and spas, which is no longer included in the California Building Standards Code.

The California Energy Code and CALGreen set mandatory requirements that relate to energy, water, and materials usage within the built environment. Changes to the Energy Code and CALGreen increase mandatory efficiency standards, thereby reducing the environmental impact that buildings have on local resources and decreasing community-wide greenhouse gas emissions.

Due to the implications of the Energy Code and CALGreen on reducing greenhouse gas emissions and achieving the goals set forth in the City’s Climate Action Plan, on September 15, 2016, the Environmental Sustainability Commission voted unanimously to recommend that City Council consider the following amendments to the California Energy Code and CAL Green:

1. Amend CALGreen to increase mandatory requirements for electric vehicle (EV) readiness in new construction, thereby encouraging the adoption of zero-emissions vehicles by Fremont residents;
2. Amend the California Energy Code to reduce maximum allowable wattages for outdoor lighting applications in new construction and retrofits, thereby encouraging the use of LED lighting options; and
3. Amend the California Energy Code to require the installation of rooftop solar energy systems in new construction.

Amendments to CAL Green require that a justification be filed with the CBSC, and amendments to the California Energy Code require that a cost-effectiveness study also be filed with the CEC.

Staff supports the recommendation of the Environmental Sustainability Commission that amendments to CALGreen for EV readiness and the California Energy Code for outdoor lighting be included as part of the 2016 California Building Standards Code adoption process. For EV readiness, the justification submitted will be the “Plug-In Electric Vehicle Infrastructure Cost-Effectiveness Report” prepared by Energy Solutions (July 2016), included as an attachment to this report. For outdoor lighting, the justification submitted will be the “Energy Cost-Effectiveness Study for Nonresidential Outdoor Lighting Power Allowances” prepared by Energy Solutions (July 2016), included as an attachment to this report.

For mandatory rooftop solar energy systems, the CEC is in the process of drafting a new cost-effectiveness study that will support an ordinance for single and multi-family residential new construction throughout all California climate zones. The study will also include model code language. This cost-effectiveness study is scheduled to be released in its final version.
by the CEC in December 2016. This study is expected to be used as the basis for mandatory residential solar requirements for many communities in the Bay Area and throughout California that are considering such measures. In order to utilize the most up-to-date cost-effectiveness data, and also to promote consistency by utilizing model code language where appropriate, staff plans to bring forward to Council a recommendation for mandatory rooftop solar energy systems in residential construction in early 2017.

CALGreen also contains construction waste management provisions to reduce the amount of waste from construction that would be sent to landfills. Fremont Municipal Code (FMC) Chapter 8.40 is the City’s Solid Waste Recyclables and Organics Management Ordinance and its purpose is to encourage material resource efficiency through reuse and recycling of construction waste products. In order to be consistent with changes required by CALGreen, staff is recommending minor revisions to FMC Chapter 8.40 to modify the thresholds for covered projects.

The 2016 California Fire Code (CFC) added a ban of all fireworks and incorporates portions of California Code of Regulations, Title 19, specific sections of the Health and Safety Code and other reference standards into the body of the CFC. These changes all regulate fireworks and explosives. Therefore, FMC section 9.20 is preempted by the CFC and the attached Ordinance repeals Fremont’s fireworks ordinance.

DISCUSSION/ANALYSIS: The City has historically amended the California Building Standards Code triennially. The proposed amendments represent a continuation of some of the local amendments currently in effect. A brief discussion of some of the local amendments to the 2016 California Building Standards Code and the changes under this ordinance, include:

1. Administrative Amendments;
2. Soils Reports, Investigation, and Soils Observation;
3. Special Inspection and Structural Observation;
4. Roof Coverings and Roof Sheathing;
5. Fire Resistant Construction, Fire Separation and Exiting;
6. Wood Structures and Prescriptive Conventional Construction;
7. California Plumbing Code Amendments;
8. California Mechanical Code Amendments;
9. California Electrical Code Amendments;
10. Automatic Fire Extinguishing Systems;
11. California Fire Code Amendments;
12. Structural Amendments and Suspended Ceiling;
13. 2015 International Property Maintenance Code;
15. California Residential Building Code;
16. California Green Building Standards Code; and

I. Administrative Amendments: The administrative amendments for the Building, Electrical, Mechanical, Plumbing, Residential Building, Existing Building, and Fire codes include:
• When work requires a building permit;
• Submittal information required to obtain the permit;
• Valid dates of the permit and its expiration;
• Application process to obtain a building permit;
• Appeal process for a denial of a permit;
• Penalties for violations of the ordinance; and
• Duties and authority of the Building Official and Fire Marshal.

Further, the local amendments require plats of survey when deemed necessary, require soil and structural observation, require the issuance of certificates of occupancy at the time of occupancy or use changes and define conditions for temporary certificates of occupancy. The appeals process has also been modified to mirror the other appeals process found in the Neighborhood Preservation Ordinance, FMC Chapter 8.60. These amendments are carried forward from the previous code adoption.

A relative hazard table is also being re-adopted that ranks relative hazards between different occupancies and establishes when installation of fire sprinklers will be required when occupancy classifications change.

2. **Soils Reports, Investigation, and Soils Observation:** The amendments carry forward the requirements for soil investigations and foundation observations. Additional amendments are added to clarify when soil reports and liquefaction evaluation are required.

3. **Structural Inspection and Structural Observation:** The building design of one- or two-family dwellings are getting more complex, especially those designs in the hillside areas and taller buildings with more complex floor plans and irregular configurations. The 2016 Codes allow these buildings to be constructed without the benefit of special inspections and structural observations from the registered design professional. Proposed amendments require structural observations from the registered design professional and special inspection from special inspection agencies, in addition to the inspections from the building inspector, to help ensure the quality of major structural elements and connections that affect the vertical and lateral resisting systems of these buildings.

4. **Roof Coverings and Roof Decking:** The amendments carry forward the requirements for certifying the roof covering in the Wildland-Urban Interface fire areas. A new amendment is added to disallow skip sheathing under concrete or clay tile roof due to its poor performance in recent earthquakes.

5. **Fire Resistant Construction, Fire Separation, and Exiting:** The 2016 Codes continue to rely heavily on the installation of fire sprinkler systems. Under the 2016 Codes, a fire extinguishing system can be used to increase the overall building height and floor area, and reduce the fire resistivity of its structural elements, exterior walls, and exit corridors. The California State Fire Marshal’s Office (SFM) again rejected some of these provisions for occupancy groups under their authority and limited the use of fire sprinkler systems to either increase floor area or height, but not both. The SFM also does not allow a sprinkler system to be used to reduce the required fire resistant
construction of roof-tops, exit corridors, and occupancy separations between units of multi-unit residential units.

The following are general descriptions of local amendments regarding fire resistant construction and exiting:

- **Exterior walls:** The local amendments extend the amendments requiring fire resistance covering on the inside face of exterior walls to buildings located in the Wildland Urban Interface Fire Area. The spread of fire from one building to the next is not occupancy dependent and can be crucial in the event of a post-earthquake fire.

- **Fire separation between sleeping units and dwelling units:** The local amendments maintain fire resistance of walls separating sleeping units in hotels and motels and extend this requirement to duplexes. This firewall specification is already required for all other multi-unit residential buildings. Furthermore, the proposed amendments do not allow a reduction of the rated floor or wall assemblies from 1 hour to ½ hour for any duplexes or multi-residential hotels and motels.

- **Fire resistance of exit corridors in assembly (A) occupancy:** The local amendments maintain fire resistance construction of 1 hour for exit corridors. The rated fire corridor is a critical element of the fire exit system and all occupants of a building should have the same degree of protection in the event of a post-earthquake fire.

6. **Wood Structures and Prescriptive Conventional Construction:** The amendment carries forward the requirements disallowing certain types of wall coverings for seismic load-resisting elements which have performed poorly in recent earthquakes and remains unchanged.

7. **California Plumbing Code Amendments:** A requirement for an earthquake-actuated gas shutoff valve, designed to shut off the gas to a building to prevent a fire or explosion due to accumulation of gas in a building in the event of an earthquake, has been added to the ordinance. New buildings, alterations and additions over $10,000, must install these devices. The amendment continues to carry forward the requirements for flexible utility connections in areas prone to liquefaction.

8. **California Mechanical Code Amendments:** The amendment carries forward the protection of hoods and ducts in an enclosure by fire rated materials to restrict grease duct fires to the hood and duct and prevent it from spreading to the rest of the building. There were a number of grease duct fires in Fremont in single-story buildings. These fires were contained by shafts. If the shaft had not been fire-rated, the fire would easily spread to the roof. Therefore, the amendment to the California Mechanical Code will ensure that any new hood or duct is enclosed by fire rated materials.

9. **California Electrical Code Amendments:** The amendment carries forward requirements using non-ferrous materials for grounding, raceways, and components of electrical systems intended for direct contact with the earth under highly corrosive conditions to avoid damage due to corrosion. Also, an amendment utilizing flexible electrical connections will prevent failure due to settlement and earthquake.
10. **Automatic Fire Extinguishing Systems Amendments:** Most requirements for Automatic Fire Extinguishing Systems (AFES) are being carried forward with minor changes made for clarity. These include a 50% limit on Fire Flow requirements for buildings with automatic sprinkler systems installed, a specific definition of when Alterations prompt sprinkler installation in multifamily residential buildings, and separate underground sprinkler and hydrant systems for large buildings. The proposed amendments are mostly administrative and similar to amendments or practices currently in place.

11. **California Fire Code Amendments:** The proposed amendments are mostly administrative and similar to amendments or practices currently in place. Several sections of the California Fire Code (CFC) related to fire flow, definitions, fire alarm specifications and hazardous materials are again amended to allow the Fire Department greater flexibility and application of life safety and property conservation controls. These can be summarized as follows:

- Fire Flow calculations and Underground Piping installation practices have been incorporated.
- Fire Alarm System installation and monitoring requirements are unchanged;
- Spill control and secondary containment mechanisms are required for a wider range of hazardous materials and at lower thresholds;
- Explosives and Fireworks (Chapter 56) sections have been amended to carry forward language consistent with the continued ban on the sale and possession of “Safe and Sane Fireworks”; and,
- Additional construction and monitoring requirements have been added for hazardous materials with CFC health hazard classifications of 3 and 4, mainly the toxic and highly toxic materials. Some flammable and oxidizing materials will also be covered by these changes.

The remaining technical changes are consistent with the existing amendments currently in effect.

As a result of the ban on all fireworks in the 2016 CFC, FMC Chapter 9.20 is obsolete and is repealed in the ordinance.

12. **Structural and Suspended Ceiling:** The California Building Code has little information regarding seismic design requirements for suspended ceilings. It is through the experience of prior earthquakes, such as the Northridge Earthquake, that this local amendment is proposed to minimize the amount of bodily and building damage where these ceilings are installed. Since a great deal of emphasis has been placed on sprinkler systems, all measures that further ensure the sprinkler system will function after an earthquake are of great importance to Fremont due to proximity to the Hayward Fault. All other proposed structural amendments are based on Uniform Code Committee and regional branches of Structural Engineers Association of California recommendations.

13. **International Property Maintenance Code:** The current 2015 International Property Maintenance Code replaces the California Housing Code and the Uniform Code for the Abatement of Dangerous Buildings. The appeals sections will be replaced with a reference to the appeals procedure in the Neighborhood Preservation Ordinance, FMC
Sections 8.60.120 to 8.60.150. Under this appeal process, a hearing officer, rather than the City Council, decides appeals by citizens of actions by the Chief Building Official and his staff, including declaring buildings unsafe (red tag) and determining whether a building is a nuisance that requires abatement. This process, whereby appeals are heard by a hearing officer, is currently in place and has been successfully used for several years for enforcement of other FMC ordinances.

14. California Building Standards Code Appendices: Appendices are not adopted as part of the California Building Standards Code. They are provided in the Code to offer optional or supplemental criteria to the provisions in the main chapters of the code. The proposed ordinance adopts the following appendix chapters of the 2016 California Building Standards Code and references:

California Building Code:
- **Appendix Chapter C:** This appendix chapter contains provisions for the construction of agricultural buildings. The same provisions are currently in effect in the City of Fremont.
- **Appendix Chapter F:** This chapter includes provisions that require rodent proofing of dwellings. The same provisions are currently in effect in the City of Fremont.
- **Appendix Chapter I:** This appendix chapter contains requirements for patio covers. The same provisions are currently in effect in the City of Fremont.

California Residential Building Code:
- **Appendix Chapter H:** This appendix chapter contains requirements for patio covers. The same provisions are currently in effect in the City of Fremont.
- **Appendix Chapter J:** This appendix chapter contains provisions for the construction of Existing Buildings and Structures. The same provisions are currently in effect in the City of Fremont.
- **Appendix Chapter K:** This appendix chapter contains provisions for sound transmission between attached dwelling units.
- **Appendix Chapter V:** This is a new appendix chapter that contains provisions for swimming pools and spas.

California Mechanical Code:
- **Appendix Chapter B:** This appendix chapter contains procedures to be followed to place gas equipment in operation. The same provisions are currently in effect in the City of Fremont.
- **Appendix Chapter C:** This appendix chapter contains provisions for installation and testing of oil (liquid) fuel-fired equipment. The same provisions are currently in effect in the City of Fremont.
- **Appendix Chapter D:** This appendix chapter contains provisions for fuel supply at manufactured/mobile home parks and recreational vehicles. The same provisions are currently in effect in the City of Fremont.

California Plumbing Code:
- **Appendix Chapter A:** This appendix chapter contains provisions for the sizing of water supply systems. The same provisions are currently in effect in the City of Fremont.
- **Appendix Chapter B:** This appendix chapter contains provisions for the sizing of combination waste and vent systems. The same provisions are currently in effect in the City of Fremont.

- **Appendix Chapter D:** This appendix chapter contains provisions for the sizing of storm water systems. The same provisions are currently in effect in the City of Fremont.

- **Appendix Chapter L:** This appendix chapter contains provisions for sustainable plumbing practices.

California Existing Building Code:
- **Appendix Chapter A3:** This appendix chapter contains prescriptive provisions for seismic strengthening of cripple walls.

International Property Maintenance Code:
- **Appendix Chapter A:** This appendix chapter contains boarding standards to board windows and doors to prevent entry to unsafe structures.

15. **California Residential Code:** The proposed amendments are administrative and identical to the amendments for adoption to California Building Code for residential buildings. The administrative chapter of the California Residential Code is not adopted but refers to the administrative provisions of the California Building Code. The technical provisions include requirements for fire-sprinklers and fire separation between garage and dwelling. The amendments also prohibit the use of brittle materials for bracing of dwellings due to the poor performance in a seismic event. These provisions are currently in effect in the City of Fremont and are carried forward to the 2016 Code.

16. **California Green Building Standards Code:** The proposed amendment, recommended to Council by the Environmental Sustainability Commission, is to enhance the use of electric vehicles (EV) in the community, thereby reducing community-wide greenhouse emissions attributed to the transportation sector. “EV Ready” parking spaces equipped with the electrical raceway, wiring, and electrical circuit must be included in all residential and non-residential new construction projects and in additions where additional parking spaces are provided. For single-family residential, the requirement for EV Ready parking spaces will be one per each new dwelling unit. For multifamily projects of 3 units or more and for non-residential projects, the requirement for EV Ready parking spaces will be 8 percent of the total number of new parking spaces. This is equivalent to the Tier 1 CALGreen option for non-residential developments.

17. **California Energy Code:** The proposed amendment, recommended to Council by the Environmental Sustainability Commission, reduces the maximum allowable wattages for lighting in various non-residential outdoor applications for new construction projects and retrofits of over 50 percent of total lighting. This requirement will promote the use of new, high-efficiency LED lighting, offering long-term energy savings and the related reduction in greenhouse gas emissions while still maintaining high levels of lighting quality.

**Resolution of Local Condition Findings:** Health and Safety Code Sections 17958, 17958.5, and 17958.7 require the City Council to make findings regarding local climatic,
geological, and topographical conditions before adopting local amendments to the State-adopted California Building Standards Code. The proposed amendments to the building standards codes are based primarily on earthquake and soils conditions in Fremont. Proposed findings include a map showing areas prone to liquefaction, fault line proximity and areas of corrosive soils. The proposed findings are enclosed with this staff report; however, the City Council will not be asked to adopt the findings by resolution until the second reading of the ordinances on November 1, 2016.

**Public Outreach:** On September 13, 2016, an informational meeting with building industry stakeholders was held to present the proposed amendments to the standard codes. This meeting was followed by the Environmental Sustainability Commission meeting on the proposed amendments to the California Energy Code and the California Green Building Standards Code on September 15, 2016.

**Public Hearing Notice:** A 1/8-page display ad public hearing notice was published in the *Tri-City Voice* on September 27 and again on October 4, 2016, notifying the public of tonight's actions to update the California Building Standards Code.

**Summary of Ordinances for Publication:** Government Code Section 36933(c) authorizes the City Council to designate a City official to prepare a summary of ordinances to satisfy the publication requirement. In the past, Council has designated the City Attorney to prepare the summary. The summary must be published and a certified copy of the full text of the ordinances posted in the Clerk’s office at least five days prior to adoption. The summary must be published again within 15 days following adoption of the ordinances and include the names of the Council members voting for and against the ordinances. In the interest of economy, it is recommended that the City Attorney be designated to prepare a summary of the ordinances.

**FISCAL IMPACT:** The costs associated with the application and administration of the building standards in the City of Fremont are funded by user fees paid by developers with the exception of Code Enforcement, which is supported by the general fund. The proposed code adoption would not change the current cost for these services and would not require any additional general fund contribution.

**ENVIRONMENTAL REVIEW:** The proposed action is exempt from the requirements of the California Environmental Quality Act (CEQA) in that it is not a Project which has the potential for causing a significant effect on the environment under Title 14 of the California Code of Regulations, Section 15061(b)(3). No further environmental review is necessary.

**ATTACHMENTS:**

- PEV Infrastructure Cost Effectiveness Report_Energy Solutions_July 2016
- Maps - Local Seismic Fault Lines and Soil Conditions
- Draft Ordinance- Construction & Demolition Debris Diversion & Recycling
- Draft Ordinance- Fire Code
- Draft Ordinance- Building Code Amendments
- Draft Resolution- Findings & Modifications to the California Building Standards Code
RECOMMENDATION:
1. Hold public hearing.
2. Find that the project is exempt from the California Environmental Quality Act (CEQA), pursuant to Guideline 15061(b)(3).
4. Direct staff to prepare and the City Clerk to publish a summary of the proposed ordinances.
5. Schedule a public hearing for November 1, 2016.
6. Direct the City Clerk to publish a notice of public hearing to consider adoption of the ordinances in accordance with Government Code Section 6066 and 50022.3.