RESOLUTION NO._____

A RESOLUTION OF THE COUNCIL OF THE CITY OF FRESNO, CALIFORNIA MAKING AND ADOPTING EXPRESS FINDINGS THAT MODIFICATIONS OR CHANGES TO THE CALIFORNIA FIRE CODE ARE REASONABLY NECESSARY BECAUSE OF LOCAL CLIMATIC, GEOLOGICAL AND TOPOGRAPHICAL CONDITIONS

WHEREAS, the State of California has adopted the 2015 edition of the International Fire Code, with amendments, which was entitled the 2016 California Fire Code. The 2016 California Fire Code has been incorporated into Title 24, Part 9 of the California Code of Regulations and will take effect on January 1, 2017; and

WHEREAS, California Health & Safety Code Section 17958.5 authorizes the City, by ordinance, to make changes or modifications to the requirements contained in the provisions of the California Fire Code and other regulations adopted pursuant to California Health & Safety Code Section 17921(a) that result in more stringent local requirements; and

WHEREAS, California Health & Safety Code Sections 17958, 17958.5 and 17958.7 require more stringent local requirements be supported by express findings made by a city that such modifications or changes are "reasonably necessary because of local climatic, geological or topographical conditions"; and

WHEREAS, the Council of the City of Fresno intends this Resolution to fulfill the requirements of the California Health & Safety Code regarding modifications or changes

Date Adopted:
Date Approved:
Effective Date:
City Attorney Approval: BC

to the California Fire Code including express findings of reasonable necessity because of local climatic, geological or topographical conditions.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Fresno that it expressly finds each of the various proposed modifications or changes to the California Fire Code, which are enumerated below, are reasonably necessary because of local climatic, geological and topographical conditions in the area encompassed by the City of Fresno, as follows:

A. LOCAL CONDITIONS:

Pursuant to Health and Safety Code, Sections 17958.7 and 18941.5, local climatic, topographical or geological conditions make the amendments to the California Fire Code reasonably necessary.

1. CLIMATIC – EXTREME TEMPERATURES

1.1 During the summer months the City of Fresno experiences periods of what can only be described as extreme heat.

The last three years' worth of the "Local Climatological Data Annual Summary with Comparative Data" reports for 2013, 2014, and 2015, promulgated by the United States Department of Commerce, National Oceanic and Atmospheric Administration, National Climatic Data Center demonstrate this condition. In the 2013 summary, the mean daily maximum temperature for Fresno in June, July, August and September is: 95.6°F, 102.3°F, 98.3°F and 91.5°F respectively. In 2014, the same information is noted as: 96.4°F, 101.2°F, 98.6°F and 94.6°F and in 2015 was: 96.8°F, 96.8°F, 97.1°F and 92.4°F.

1.2 Because of the extreme heat Fresno experiences during the summer months, Fresno firefighters responding to fires and other incidents requiring the

evacuation of a building are regularly exposed to temperatures in excess of 105°F degrees, when accounting for their protective gear, exposing them to the probability of heat cramps, heat exhaustion and possibly heat stroke.

2. GEOLOGICAL – LIMITED WATER SUPPLY AND WATER PRESSURE

2.1 The Fresno Metropolitan area is arid area that receives small amounts of rainfall each year. In 2013, Fresno received only 3.01 inches of water equivalent precipitation. In 2014, the City received only 7.46 inches and in 2015, only 8.98 inches. Furthermore, the Fresno City Metropolitan Area relies primarily on groundwater for its municipal water supply. According to the California Department of Water Resources, the Kings basin (our underground aquifer) is in a state of critical overdraft.

2.2 Due to the hot, dry summers in the Fresno area, domestic water demand substantially reduces the ability of the public water system to dependably meet the larger fire flow demand in many areas of the City.

3. CLIMATIC/TOPOGRAPHICAL – POOR AIR QUALITY CAUSED BY TOPOGRAPHY OF SAN JOAQUIN VALLEY AIR BASIN, LARGE NUMBER OF SUNNY DAYS AND INVERSIONS THAT FORM DURING WINTER MONTHS

3.1 As a result of the San Joaquin Valley's climate and topography, the San Joaquin Valley Air Basin (SJVAP) is predisposed to poor air quality. High mountain ranges surrounding the Valley frequently create air layer inversions that prevent mixing of air masses. The large number of sunny days per year, and high temperatures in the summer, favors the formation of ozone. The area is so sunny the City of Fresno was ranked the second highest major California city for sunshine, with an estimated 79% annual average of possible sunshine for more than a forty-year period. In the winter, inversions form that often trap particulate matter.

3.2 The Federal EPA and California Air Resources Board have classified the San Joaquin Valley Air Basin as severe non-attainment for Ozone and serious non-attainment (federal) non-attainment (state) for PM_{10}. Ozone is formed by a complex series of chemical reactions between reactive organic gases (ROG), oxides of nitrogen and sunlight. PM_{10} is suspended particulate matter that is less than 10 microns in size. Given its small size, PM_{10} can remain airborne for long periods and can be inhaled, pass through the respiratory system, and lodge in the lungs. In general, nonattainment means that the Federal standard has been exceeded more than twice per year.

3.3 Smoke is composed primarily of carbon dioxide, water vapor, carbon monoxide, particulate matter, hydrocarbons and other organic chemicals, nitrogen oxides, trace minerals and several thousand other compounds. Particulate matter is the principal pollutant of concern from some for the relatively short-term exposures (hours to weeks) typically experienced by the public. Particulate matter in wood smoke has a size range near the wavelength of visible light (.4-.7 micrometers). Since these particles can be inhaled into the deepest recesses of the lungs they are thought to represent a greater health concern than larger particles. Another pollutant of concern during some events is carbon monoxide. The San Joaquin Valley Air Pollution Control District states "Emissions from burning include fine particulate, hydrocarbons, oxides of nitrogen, oxides of sulfur, carbon monoxide, and toxic air contaminants that contribute to our air quality problems."

4. TOPOGRAPHICAL – FRESNO'S DEVELOPMENT PATTERN

4.1 Due to the relatively low density growth pattern in the Fresno area, the City of Fresno's nineteen fire stations are spaced approximately four miles apart resulting in an average of a two mile running distance for the designated first-in engine company.

4.2 This average two mile travel distance increases the response time to fires which result in an increase in the size and intensity of fires.

B. REASONABLE NECESSITY

The Council expressly finds the modifications and changes to the California Fire Code are reasonably necessary due to the local conditions set forth above since they reduce the risks to life, property, public health and safety that result from the City of Fresno's climatic, geological and topographical conditions. The modifications and changes are further reasonably necessary and justified for the reasons set forth below.

In adopting the California Fire Code as the City of Fresno Fire Code, the City of Fresno proposes to make certain modifications or changes whose effect is to impose more stringent requirements locally than are mandated by the California Fire Code. These are specifically listed below, but may be generally characterized as relating to (1) fire sprinkler systems; (2) luminous exit markings; (3) additional regulation of lumber yards, woodworking, recycling, and waste handling facilities; (4) and additional regulation of motor fuel dispensing and repair garages, locations of above-ground tanks, the amount of Class I and Class II liquids at farms and construction sites in above-ground tanks and basement storage of flammable liquids. These requirements are reasonably necessary to address risks created by local climatic, geological or topographical conditions set forth above for the following reasons:

1. MORE RESTRICTIVE REQUIREMENTS FOR INSTALLATION OF FIRE SPRINKLERS: FRESNO MUNICIPAL CODE AMENDMENTS TO VARIOUS SECTIONS BEGINNING WITH 10-50903.1 THROUGH 10-50912.2.3

1.1 The Fresno Municipal Code Amendments contain more restrictive requirements for installation of fire sprinklers than those in found in the California Fire

Code. The requirements are located at Fresno Municipal Code Section 10-50903.1 (requiring retrofitting of fire sprinklers under prescribed conditions based on fire damage, building additions, a change of use to a higher life safety hazard or condominium conversions), through 10-50912.2.3 (requiring more restrictive installation details to assist responding firefighters). The amendments are reasonably necessary to address risks created by local climatic, geological or topographical conditions.

1.2 Approximately thirty percent of all residential fires start in the kitchen. Furthermore, studies and testing performed by the United States Fire Administration has resulted in the United States Fire Administration concluding that a single low flow residential sprinkler in the kitchen was able to control both the cooking oil fire and an appliance fire on the countertop.

1.3 Studies performed by the city of Scottsdale, Arizona established in over 90 percent of the cases where automatic fire sprinklers were activated, the fires were controlled with one fire sprinkler. Those one sprinkler activations deposited an average of 276 gallons of water in the structure, compared to an estimated average of 4,876 gallons that would have been sprayed by fire department hoses had sprinklers not been available. In summary, fires in buildings with sprinkler systems use thousands of gallons of water less to extinguish the fire than fires that occur in non-sprinklered property.

1.4 Fires in non-sprinklered buildings generate orders of magnitude more smoke than fires controlled with automatic fire sprinklers. As set forth above, smoke contains particulate matter and other pollutants which contribute to the San Joaquin Valley's sever non-attainment status relating to PM_{10} and ozone.

1.5 As such, this ordinance mandating more restrictive fire sprinkler installation standards is expressly found to be reasonably necessary to address risks created by local climatic, geological or topographical conditions, including limiting fire personnel's exposure to extreme temperatures, reducing the amount of water necessary to extinguish fires, reducing the amount of smoke generated by such fires and addressing extended run time due to topography-related low density growth pattern in the Fresno.

2. INSTALLATION OF LUMINOUS EXIT PATH MARKINGS SHALL BE PROVIDED IN ALL ENCLOSED STAIRWAYS IN ALL NEW BUILDINGS WITH THREE OR MORE STORIES: FRESNO MUNICIPAL CODE, SECTION 10-51024.1

2.1 Reports and studies related to building evacuation have concluded that the use of luminous egress markings indicators are effective in guiding occupants out of a building, with or without the use of electrical power. This is because luminous exit path markings are not dependent upon electricity for illumination and they are placed at floor level as this is where the most visibility is in the event of smoke. Traditional electrical exit lighting is located higher (above doorways) which is obscured when smoke fills a room or hallway.

2.2 By making it easier for individuals to evacuate buildings unassisted, fewer firefighters will have to respond to fires to assist with evacuation and/or firefighter resources can be directed toward fire suppression efforts to reduce fire intensity and duration. Accordingly, fewer firefighters will be exposed to health risks associated with exposure to sustained high temperatures and shorter fire duration can reduce smoke generations affecting air quality and fire suppression water use from such fires. As such, mandating installation of luminous egress path markings in certain occupancies three stories or more is expressly found to be reasonably necessary to protect the health and

safety of firefighters and other emergency personnel in light of Fresno's extremely high temperatures, air quality, limited water supply and pressure, and extended run time due to topography-related low density growth pattern in the Fresno.

3. REQUIREMENTS REGARDING LUMBER YARDS, WOODWORKING, RECYCLING, AND WASTE HANDLING FACILITIES: VARIOUS FRESNO MUNICIPAL CODE, SECTIONS BEGINNING WITH 10-2801.1 THROUGH 10-2808.12

3.1 In 2003, the City of Fresno Fire Department was involved in costly and time consuming fire suppression activities at two separate wood waste and green waste recycling facilities. Neither of these two facilities was in compliance with the requirements of Chapter 19 of the California Fire Code. After review of the suppression activities of both incidents, the City of Fresno Fire Department has concluded that even if the facilities had been in compliance with Chapter 19, the City would not have had the necessary equipment to rapidly suppress the fires. As a result, the fires lingered for numerous days, causing health and safety issues for the residents of the City and impacting air quality.

3.2 The City of Fresno currently has a number of wood waste and green waste recycling facilities within its boundaries and anticipates more like facilities as the City endeavors to reduce the amount of solid waste processed in landfills.

3.3 The Fresno Fire Department has concluded that it does not have adequate equipment to quickly engage and control a fire.

3.4 Winter conditions in Fresno and the entire Central Valley include rain and other moisture issues (Tule Fog). The green waste/recycling business is very well known for the problem of spontaneous combustion associated with it when the right amount of

moisture creates a chemical reaction that develops heat which in turn, if unchecked, starts fires in the green waste piles. As set forth above, much of the year, Fresno has very hot, dry conditions. This makes all combustible materials more so, which increases the general fire hazard. As set forth above, this causes an obvious heat exposure to the firefighters that are responding to and addressing the emergency.

3.5 The larger the piles of wood product, the more heat retained and the more likely the piles will spontaneously combust. The larger the piles, the more difficult the fire is to fight, and as a result, the fire will burn longer, causing smoke to linger in the valley, creating a continuous health hazard to the residents and negatively affecting air quality.

3.6 The amendments to the California Fire Code reducing the dimensions of the size of the piles of such wood materials, and imposing additional safety measures, is necessary to ensure the City of Fresno's Fire Department's ability to quickly engage such fires and control them. By requiring pile size restrictions, separation, and access, the fire crews may more readily abate the emergency and/or hazard. On-site water mains and hydrant system will provide a more readily available source of water for firefighting, and will reduce the time it takes the fire crews to set up and extinguish a fire. The less time it takes to start the extinguishment process, the less time the fire has to spread and intensify. Access to a limited-size pile of green waste/recyclable material via all-weather roads will reduce the response time required by the Fire Department to set up and address a fire problem. Perimeter fencing provides a higher level of security for the business site and thereby reduces the threat of a possible arson-caused fire. Wood by-product stored in piles has a tendency to spontaneously combust and spread within a large pile.

3.7 The amendments relating to the storage of wood product are necessary to reduce, or attempt to reduce, air pollution in the San Joaquin Valley caused by wood fires, which is detrimentally enhanced by the above described local climatic, geologic and topographical conditions in the San Joaquin Valley.

4. REGULATION OF MOTOR FUEL DISPENSING AND REPAIR GARAGES, LOCATIONS OF ABOVE-GROUND TANKS, THE AMOUNT OF CLASS I AND CLASS II LIQUIDS AT FARMS AND CONSTRUCTION SITES IN ABOVE-GROUND TANKS AND BASEMENT STORAGE OF FLAMMABLE LIQUIDS: VARIOUS FRESNO MUNICIPAL CODE SECTIONS BEGINNING WITH 10-52306.2.3, THROUGH 10-52808.12

4.1 The following describes when particle classes of liquids and gases reach boiling if temperatures remain at over 100°F:

> Class I flammable liquids: Some of these liquids, such as gasoline and acetone, have boiling points (rapid release of ignitable vapors) at temperatures of 100-130 degrees F. Elevated ambient temperatures for these liquids increases the generation of flammable vapors and increases the chance of ignition.
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> Class II combustible liquids: These liquids have flash points (the temperature at which a liquid emits ignitable vapors) at or above 100°F. Local climatic conditions in the summer cause many common combustible liquids such as charcoal lighter fluid or paint thinner to be in a state of ready ignition from a spark or open flame.
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> For flammable and combustible liquids and gasses, the range of ignitability as a percentage of vapor volume in air increases with rise in temperature. For example: gasoline vapor at room temperature will ignite (lower flammability limit or LFL) at 1.07 percent of air volume; at 100°F gasoline will ignite at .94 percent of air volume.

4.2 As set forth above, much of the year Fresno has very hot, dry conditions. This local condition makes all combustible materials (grass, weeds, buildings, roof, etc.) highly combustible, which increases the general fire hazard. High temperatures also make all flammable liquids and gases much more volatile, increasing the fire hazard.

4.3 Therefore, increased regulation of the storage of certain classes of fuels and gases is reasonably necessary to reduce the fire risk associated with the ignition of fuel and gases caused by local conditions.

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STATE OF CALIFORNIA)
COUNTY OF FRESNO) ss.
CITY OF FRESNO)

I, YVONNE SPENCE, City Clerk of the City of Fresno, certify that the foregoing resolution was adopted by the Council for the City of Fresno, at a regular meeting held on the _____ day of _____, 2016.

AYES :
NOES :
ABSENT :
ABSTAIN :

YVONNE SPENCE, CMC
City Clerk

By:_____
Deputy

APPROVED AS TO FORM:
DOUGLAS T. SLOAN
City Attorney

By:_____
Brandon M. Collet Date
Deputy

Attachments:

- Exhibit "1" – Historical temperature data compiled United States Department of Commerce, National Oceanic and Atmospheric Administration, National Climatic Data Center and the National Weather Service