



## Parking Structures: Updates to Fire Safety Standards

Authority	Edition/Year	Requirement Description	Specific Conditions
<b>NFPA 88A</b>	2023	Installation of sprinkler systems required in all parking structures.	<b>New Requirement:</b> All parking structures, including open ones previously exempt, must install sprinkler systems according to NFPA 13.
<b>NFPA 13</b>	2022	Updated hazard classification for parking structures.	<b>Updated to Ordinary Hazard Group 2 (OH 2):</b> 0.2 GPM/SF over 1500 ft <sup>2</sup> , from Ordinary Hazard Group 1 (OH 1), 0.15 GPM/SF over 1500 ft <sup>2</sup> , raising the design density requirement by 33% to better mitigate fire risks.
<b>FM Global</b>	January 2021	Elevated hazard category for parking structures.	<b>Updated to Hazard Category 3 (HC-3):</b> 0.3 GPM/SF over 2500 ft <sup>2</sup> for wet pipe systems; for dry pipe systems, 0.3 GPM/SF over 3500 ft <sup>2</sup> . This change from Hazard Category 2 (HC-2), which was 0.2 GPM/SF over 2500 ft <sup>2</sup> for wet and 0.2 GPM/SF over 3500 ft <sup>2</sup> for dry, reflects a 50% increase in design density to address the heightened risk of fire, particularly from modern vehicle materials and designs.
<b>Zurich Resilience Solutions</b>	2022	Guidelines for electric vehicle charging and parking for EVs and other modern cars that contain increased fire loads due to plastics.	<p><b>Sprinkler Protection:</b> Extra Hazard Group 1 (EH1), 0.3 GPM/SF over 2500 ft<sup>2</sup>, designed for modern vehicles (including EVs) to confine fires to their origin and limit structural damage.</p> <p><b>Fire Detection:</b> Install automatic fire detection systems in EV charging and parking areas, with alarms communicated to a constantly attended location.</p> <p><b>Ventilation:</b> Ensure adequate ventilation to keep flammable vapors below 25% of their lower flammable limit, activated by combustible gas detectors.</p> <p><b>Location and Compartmentation:</b> Position charging and parking near entrances/exits, ideally on ground level for fire service access; provide 1-hour fire-rated separations from other occupancies.</p> <p><b>Pre-fire Planning:</b> Establish pre-fire plans, including marking EV charging station locations on fire plans, verifying adequate water supply for firefighting, and facilitating public fire service access and response.</p>

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City Code (San Francisco)	2022	Specific requirements for EV charging stations in parking structures.	<p><b>New Buildings:</b></p> <p><b>Design Standards:</b> Fire sprinkler systems must be designed per NFPA 13-2022 Extra Hazard Group II (EH2).</p> <p><b>Sprinkler Density:</b> Minimum of 0.40 GPM/ft<sup>2</sup> over the area of the EV charging stations.</p> <p><b>Design Area Extension:</b> Sprinkler coverage must extend at least 3 feet beyond the perimeter of the EV parking spaces. For areas less than 2,500 SF, the design is not required to extend 15 feet beyond as typically required by NFPA 13.</p> <p><b>Existing Buildings:</b></p> <p><b>Upgrade to EH2:</b> For any new EV parking spaces, existing sprinkler systems must be upgraded to EH2 standards, with the same design and hydraulic coverage requirements.</p> <p><b>Coverage Area:</b> Similar to new buildings, for areas less than 2,500 SF, the design must extend at least 3 feet beyond the perimeter of the EV parking spaces without the need to extend 15 feet.</p> <p><b>Hydraulic Calculations</b></p> <p>Design criteria must include all sprinklers within a minimum 2,500 square feet area of operation, or the maximum area containing parking spaces associated with EV charging stations, extending 3 feet beyond the perimeter of the parking spaces, whichever is less, but not less than 1,500 SF required for Ordinary Hazard design density.</p> <p><b>Fire Separation for Non-Sprinkler Areas</b></p> <p>In cases where a fire sprinkler system is not required by code or is not provided, parking spaces associated with EV charging stations must be separated from other areas within the garage/building by a minimum one-hour fire-rated wall on three sides. The open side should comply with code-required egress/access provisions.</p>

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<p><b>Nationwide Insurance</b></p>	<p>2022</p>	<p>Enhanced fire sprinkler system requirements for EV parking and charging areas.</p>	<p><b>Endorsement by Nationwide Insurance:</b> Nationwide Insurance aligns with San Francisco’s Fire Protection Engineering Department, recommending Extra Hazard Group II (EH 2), 0.4 GPM/SF over 2500 ft<sup>2</sup>, sprinkler protection for EV parking and charging areas.</p> <p><b>Placement of EV Charging Stations:</b> Nationwide emphasizes the strategic placement of EV charging stations to ensure they do not obstruct building exits or essential areas like fire pumps.</p> <p><b>Spacing Guidelines:</b> EV charging stations should maintain a minimum spacing of 30 feet from buildings. They should also be at least 50 feet away from other high-hazard areas.</p> <p><b>Inside Building Guidelines:</b> No more than five vehicles should charge next to each other inside buildings to facilitate effective emergency responses and minimize fire spread.</p>