



**Amendments to the 2018 International Fire Code with Phoenix Amendments are indicated in Red - Effective May 4, 2024 as adopted by Ordinance Number G-7242**

**Amendments to the 2018 International Fire Code with Phoenix Amendments are indicated in Blue - Effective July 3, 2021 as adopted by Ordinance Number G-6854**

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## SECTION 105 PERMITS

**105.6.13 Exhibits and trade shows.** An operational permit is required to operate exhibits and trade shows as regulated by Appendix N.

~~Exception: Exhibits less than 100 aggregate square feet (9290 mm<sup>2</sup>).~~

**105.6.17 Floor finishing.** An operational permit is required for floor finishing or surfacing operations exceeding 350 square feet (33 m<sup>2</sup>) using Class I or Class II liquids. Buildings under construction or renovation with a valid construction permit do not require a permit to conduct this activity. ~~The activity shall be performed in accordance with this section.~~

**105.6.36 Outdoor assembly event.** An operational permit is required to conduct an outdoor assembly event where planned attendance exceeds 500 persons, or ~~where 50 or more persons are in a confined area.~~ confining 50 or more persons by temporary installation of fencing or barrier.

**105.6.51.17 Medical facilities.** An operational permit is required to operate a State of Arizona Department of Health Services (DHS) Licensed patient treatment medical facility.

**105.6.51.18 Semiconductor facilities.** An operational permit is required to operate a semiconductor facility that is not part of an HPM facility.

**105.7.25 ~~Reserved. Temporary membrane structures and tents.~~** A construction permit is required to erect an air-supported temporary membrane structure, a temporary stage canopy or a tent having an area in excess of 800 square feet (74 m<sup>2</sup>).

~~Exceptions:~~

- ~~1. Tents used exclusively for recreational camping purposes.~~
- ~~2. Funeral tents and curtains, or extensions attached thereto, when used for funeral services.~~
- ~~3. Tents and awnings open on all sides, which comply with all of the following:
  - ~~3.1. Individual tents shall have a maximum size of 1,200 square feet (111 m<sup>2</sup>).~~
  - ~~3.2. The aggregate area of multiple tents placed side by side Fire Prevention Code of the City of without a fire break clearance of not less than 12 feet (3658 mm) shall not exceed 1,200 square feet (111 m<sup>2</sup>) total.~~
  - ~~3.3. A minimum clearance of 12 feet (3658 mm) to structures and other tents shall be maintained.~~~~

**105.7.26.10 Fire lines & hydrants.** A construction permit is required for the installation or modification of fire lines that serve fire protection systems, fire hydrants, or any combination thereof.

**105.7.26.10.2 Hydrant, temporary.** A construction permit is required for the installation of a temporary hydrant(s) and up to 500 feet (152 m) of and fire line.



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**105.7.26.11 Reserved.**

~~Lithium ion battery systems. To install or modify a lithium ion battery storage system used for facility standby power emergency power or uninterruptible power supplies as regulated by Section 1206.2.~~

**105.7.26.12 Reserved.**

~~Smoke and heat vents. A construction permit is required to install, alter or modify smoke and heat vents.~~

## SECTION 106 FEES

**106.9 Assessment fees.** The fire code official is authorized to assess fees annually for: agro-industrial or solid biomass facilities and pallet ~~yards when material quantities meet those listed in the Fire Prevention Fee Schedule Agro-Industrial, Solid Biomass, and Pallet Fee Assessment Table~~

~~The fire code official is authorized to assess fees annually for: hazardous materials or substances when quantities reach reportable quantities in accordance with Fire Prevention Fee Schedule Hazardous Materials Assessment Classification Table 8107.1; or hazardous material facilities with areas larger than 250,000 square feet (23,225 m<sup>2</sup>) that represent a special hazard as determined by the fire code official.~~

**106.10 Area assessment fees.** Facilities that represent special hazards as determined by the fire code official shall be assessed an area assessment fee. Facilities more than 250,000 square feet (23,225 m<sup>2</sup>) shall be assessed an additional fee calculated on the total area of the developed site. The assessment fee shall be calculated in intervals of 250,000 square feet (23,225 m<sup>2</sup>) in accordance with the fee schedule. For those facilities being assessed hazardous material fees, area fees will be based on the fee group ~~on~~ in accordance with Fire Prevention Fee Schedule Area Assessment Fee Table. 8106.3.

## SECTION 109 BOARD OF APPEALS

**109.1 [A] 109.1 Fire Safety Advisory Board.** In order to hear and decide appeals of orders, decisions or determinations made by the fire code official relative to the application and interpretation of this code, there shall be and is hereby created the Fire Safety Advisory Board. Hereinafter called "the Board," it shall consist of up to 13 members, a majority of whom are residents of the City of Phoenix. Board members shall be United States citizens. One board member's only qualification shall be Phoenix residency, while other board members shall be drawn from the following industries, trades and professions: fire-protection systems contractor; architect; realtor; developer; petroleum industry; liquefied petroleum gas industry; property insurance; fire protection engineering; owner or manager of a business that would not qualify for membership in another industry; health care industry; special events coordinator; and construction contractor. The Board shall be appointed by the governing body and shall hold office at its pleasure. The fire code official shall be an ex officio member of said board but shall not have a vote on any matter before the Board. The Board shall adopt and operate in accordance with City Procedures, Board by-laws, and adopted Fire



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~~Code rules of procedure~~ for conducting its business and shall render all decisions and findings in writing to the appellant with a duplicate copy to the fire code official.

**109.74 Appeal to the Fire Marshal.** An appeal shall be submitted to the Fire Marshal in writing. ~~Appeals shall be made within 30 days of receipt of a notice of noncompliance indicating required corrections.~~

109.85 Appeal to the Fire Safety Advisory Board. Any person may appeal a decision of the Fire Marshal to the Fire Safety Advisory Board following the decision of the Fire Marshal. The appellant shall appear to present the appeal to the Board. ~~The appeal shall be made within 30 days of receiving a decision from the Fire Marshal.~~

**109.96 Appeal to the Superior Court.** Any persons aggrieved by a decision of the Board may at any time ~~within 30 days after the Board's decision~~ file an appeal with the Superior Court of the county by following ~~the various methods of~~ appeal or review procedures ~~as~~ set forth by the applicable statutes of the State of Arizona.

~~109.7.1 Property Liens.~~ A property lien may be placed on properties when appeal stipulations are granted for extended periods of time.

**110.3 Notice of violation or civil citation.** Where the fire code official finds a building, premises, vehicle, storage facility or outdoor area that is in violation of this code, the fire code official is authorized to prepare and issue a written notice of violation or civil citation describing the conditions deemed ~~unsafe and, where compliance is not immediate, specifying a time for reinspection.~~ in violation. ~~Nothing herein shall require the issuance of a notice of violation prior to commencement of emergency abatement, the issuance of a citation or civil or criminal violation proceedings.~~

## SECTION 110 VIOLATIONS

**110.3.1 Service of notice of violation.** A notice of violation issued pursuant to this code shall be served on the owner, the owner's authorized agent, operator, occupant or other person responsible for the condition or violation, either by personal service, mail, e-mail or by delivering the same to, and leaving it with, some person of responsibility on the premises. For unattended or abandoned locations, a copy of such notice of violation ~~shall~~ may be posted on the premises in a conspicuous place at or near the entrance to such premises ~~and the notice of violation shall be mailed by certified mail with return receipt requested or a certificate of mailing, to the last known address of the owner, the owner's authorized agent, or occupant~~ further served in accordance with this section.

**110.3.2 Service of civil citation.** A civil citation issued pursuant to this code shall be served on the owner, the owner's authorized agent, operator, occupant or other person responsible for the condition or violation, either by personal service, mail, or by delivering the same to, and leaving it with, some person of responsibility on the premises. For unattended or abandoned



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locations, a copy of civil citation shall be posted on the premises in a conspicuous place at or near the entrance to such premises and the civil citation shall be mailed by certified mail or registered mail, with return receipt requested. Service of civil citations may also be accomplished as provided under rule 2.3 of the Local Rules of Practice and Procedure for the City of Phoenix Municipal Court.

**110.4 Compliance with orders, citations and notices.** A building, premises or thing shall not be used when in violation of this code as noted on a tag order or notice in accordance with Section 104.5. A notice of violation or civil citation issued or served as provided by this code shall be complied with by the owner, the owner's authorized agent, operator, occupant or other person responsible for the condition or violation to which the notice of violation or civil citation pertains. In case of extreme danger to persons or property, immediate compliance is required. Each day that a violation continues may be deemed a separate violation.

**110.5 Cumulative proceedings and remedies.** If violations are not promptly remedied, the fire code official is authorized to request the legal counsel of the jurisdiction to institute the appropriate legal proceedings at law or in equity to restrain, correct or abate such violation or to require removal or termination of the unlawful occupancy of the structure in violation of the provisions of this code or of the order or direction made pursuant hereto. The proceedings and remedies are cumulative and the City may proceed to seek one or more such remedies.

**110.6 Civil Violations.** Any person, firm or corporation who causes, permits, facilitates, aids or abets any violation of this code, or who fails to perform any act or duty required by this code, is subject to a civil sanction of not less than \$500 nor more than \$2,500. Each day that a violation continues may be deemed a separate violation.

~~**110.3.4 Civil actions or criminal citations.** Any person, firm or corporation who causes, permits, facilitates, aids or abets any violation of this code, or who fails to perform any act or duty required by this code, is subject to a civil sanction of not less than \$500 nor more than \$2,500 or a Class 1 criminal misdemeanor.~~

**110.7 Criminal Violations.** Any person, firm or corporation who causes, permits, facilitates, aids or abets any violation of this code, or who fails to perform any act or duty required by this code shall be guilty of a Class 1 misdemeanor. Each day that a violation continues may be deemed a separate violation.

~~**110.3.4 Civil actions or criminal citations.** Any person, firm or corporation who causes, permits, facilitates, aids or abets any violation of this code, or who fails to perform any act or duty required by this code, is subject to a civil sanction of not less than \$500 nor more than \$2,500 or a Class 1 criminal misdemeanor.~~



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~~110.3.4.1 Commencement of civil action. Any civil action to enforce the provisions of this code shall be commenced, and summons shall be issued, in accordance with the procedures set forth in Arizona Revised Statutes or city ordinances, or as provided in the Local Rules of Practice and Procedure—City Court—City of Phoenix.~~

~~110.3.4.2 Admission or denial of allegations; hearing; findings of Court; civil sanctions.~~

~~1. A person served with a civil citation or complaint shall appear at the time and place stated in the citation or summons, or may appear prior to the time, and admit or deny the allegations of the complaint. Allegations not denied at the time of appearance are deemed admitted.~~

~~2. If the allegations are admitted, the Court shall enter judgment for the City and impose a civil sanction.~~

~~3. If the person denies the allegations, the Court Fire Prevention Code of the City of Phoenix Amendment, Clarification, & Consistency Change shall set the matter for hearing. Civil hearings are informal and held without a jury, and the City of Phoenix is required to prove the violation charged by a preponderance of the evidence. Technical rules of evidence do not apply, except for statutory provisions relating to privileged communications. If the person elects to be represented by counsel, the person shall so notify the Court at least 10 days prior to the hearing date. Hearings may be recorded. If the Court finds in favor of the person, the Court shall enter an order dismissing the citation or complaint. If the Court finds in favor of the City, the Court shall enter judgment for the City and impose a civil sanction.~~

~~4. If the person served with a civil citation or complaint fails to appear on or before the time directed to appear or at the time set for hearing by the Court, the allegations shall be deemed admitted and the Court shall enter judgment for the City and impose a civil sanction.~~

~~110.3.4.3 Criminal penalties. Where in any section of this code the doing of any act is required, prohibited or declared to be unlawful, any person, firm or corporation who shall be convicted of a violation of any such section shall be guilty of a Class I misdemeanor. 110.3.4.4 Injunctive Relief. The imposition of any civil action or criminal penalty provided in this Code shall not preclude the fire code official from instituting any appropriate action or proceeding to require compliance with the provisions of this Code and with administrative orders and determinations made hereunder. In the event that any building, structure, occupancy, or equipment is erected, constructed, reconstructed, Fire Prevention altered, repaired, converted, demolished, moved or maintained, or any building, structure, premises or system service is used or occupied in violation of this Code, the fire code official may institute any appropriate action or proceedings to prevent unlawful erection, construction, reconstruction, alteration, repair, removal, demolition or utilization a building, occupancy, premises or system regulated by this code.~~

~~{A} 110.4 Violation penalties. Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the fire code official, or of a permit or certificate used under provisions of this code, shall be guilty of a Class 1~~



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~~criminal misdemeanor punishable by a civil sanction of not less than \$500 per day nor more than \$2,500 per day. Each day that a violation continues after due~~

110.8 Abatement of violation. In addition to the imposition of the penalties herein described, the fire code official is authorized to institute appropriate action to prevent unlawful construction or to restrain, correct or abate a violation; or to prevent illegal occupancy of a structure or premises; or to stop an illegal act, conduct of business or occupancy of a structure on or about any premises.

~~Abatement of violation. In addition to the imposition of the penalties herein described, the fire code official is authorized to institute appropriate action to prevent unlawful construction or to restrain, correct or abate a violation; or to prevent illegal occupancy of a structure or premises; or to stop an illegal act, conduct of business or occupancy of a structure on or about any premises.~~

110.8.1 Abatement orders. The Municipal Court of the City of Phoenix shall have jurisdiction to issue orders to the property owner of record, as recorded in the Maricopa County Recorder's Office, to abate unsafe conditions or any other violation of this Code, or to issue orders permitting the City of Phoenix to abate unsafe conditions as defined in this Code. Abatement orders may be issued by the Municipal Court pursuant to a request from the fire code official or may be initiated by the Court in addition to any civil sanction or criminal penalty assessed for violations of this Code.

~~Abatement orders. The Municipal Court of the City of Phoenix shall have jurisdiction to issue orders to the property owner of record, as recorded in the Maricopa County Recorder's Office, to abate unsafe conditions or any other violation of this Code, or to issue orders permitting the City of Phoenix to abate unsafe conditions as defined in this Code. Abatement orders may be issued by the Municipal Court pursuant to a request from the fire code official or may be initiated by the Court in addition to any civil sanction or criminal penalty assessed for violations of this Code.~~

## SECTION 202 GENERAL DEFINITIONS

202 3D PRINTER. A machine used in the additive manufacturing process for fabricating objects through the deposition of a material using a print head, nozzle or other printer technology.

202 CRITICAL AREAS. Areas that are designated for the highest level of emergency responder radio coverage including but not limited to areas such as exit stairs, exit passageways, elevator lobbies, fire protection equipment room and control valve locations, and fire command centers.



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### **SECTION 317 ROOFTOP GARDENS AND LANDSCAPED ROOFS**

**317.2 Rooftop garden or Landscaped roof size.** ~~Rooftop garden or~~ Landscaped roof areas shall not exceed 15,625 square feet (1,450m<sup>2</sup>) in size for any single area with a maximum dimension of 125 feet (39m) in length or width. A minimum 6-foot-wide (1.8m) clearance consisting of a listed Class A ~~rated~~ roof ~~system complying assembly tested~~ with ASTM E108 or UL 790 shall be provided between adjacent ~~rooftop gardens or~~ landscaped roof area.

### **SECTION 320 ~~RESERVED EXCAVATIONS AND CONFINED SPACES~~**

~~**320.2.1 Excavations and trenches.** Excavations and trenches shall be in accordance with Title 29, Code of Federal Regulations, Part 1926.650-1926.652, Subpart P.~~

~~**320.2.2 Confined spaces.** Confined spaces shall be in accordance with Title 29, Code of Federal Regulations, Part 1910.~~

### **322 ADDITIVE MANUFACTURING (3D PRINTING)**

**General.** Additive manufacturing equipment and operations shall comply with Section 322.

**322.1.1 Scope.** Additive manufacturing shall comply with one of the following:

1. Nonindustrial additive manufacturing shall comply with Section 322.2.
2. Industrial additive manufacturing shall comply with Section 322.3

**322.1.2 Installation, operation and maintenance.** 3D printers and associated additive manufacturing equipment shall be installed, operated and maintained in accordance with this code, the listing and the manufacturer's instructions.

**322.1.3 Production materials.** Only the production materials listed for use with the equipment and included in the manufacturer's instructions shall be used.

**322.2 Nonindustrial additive manufacturing.** Nonindustrial additive manufacturing equipment and operations shall comply with Sections 322.2.1 and 322.2.2. Additive manufacturing equipment and operations that do not comply with Section 322.2 shall comply with Section 322.3.

**322.2.1 Listing.** 3D printers used in nonindustrial additive manufacturing shall be listed and labeled in accordance with UL2011, UL 60950-1 or UL 62368-1. The listing shall also verify:

1. The 3D printers are self-contained and utilize maximum 30-liter prepackaged production materials.
2. The operation of the 3D printers shall not create a hazardous (classified) electrical area or zone outside the unit.
3. If any hazardous (classified) electrical area or zone exists inside the unit's outer enclosure, the area shall be protected by intrinsically safe electrical construction or other acceptable protection methods.
4. The 3D printers shall not utilize inert gas or an external combustible dust collection system.

**322.2.2 Occupancies.** Nonindustrial additive manufacturing shall be permitted in all occupancy groups.



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322.3 Industrial additive manufacturing. Industrial additive manufacturing equipment and operations shall comply with Sections 322.3.1 through 322.3.12.

322.3.1 Permits required. Permits shall be obtained from the fire code official in accordance with Section 105.5 prior to engaging in industrial additive manufacturing operations.

322.3.2 Listing. 3D printers used in industrial additive manufacturing shall be listed and labeled in accordance with UL 2011 or approved for the application based on a field evaluation conducted by an approved agency.

322.3.3 Combustible dusts and metals. Industrial additive manufacturing operations that store, use or produce combustible dust, combustible particulate solids or combustible metals shall comply with Chapter 22 and this section.

322.3.4 Powder evaluation. Printing powders used in industrial additive manufacturing operations shall be tested for combustibility in accordance with NFPA 484 or NFPA 652 as applicable. A copy of test reports shall be provided to the fire code official upon request.

322.3.5 Combustible (nonmetallic) dusts. Industrial additive manufacturing operations that store, use or produce combustible (nonmetallic) dusts shall comply with NFPA 654.

322.3.6 Combustible metals. Industrial additive manufacturing operations that store or use combustible metals shall comply with NFPA 484.

322.3.7 Ancillary equipment. Ancillary equipment provided for recycling, sieving, vacuuming or handling combustible powders shall be designed and approved for such use.

322.3.8 Hazardous materials. Industrial additive manufacturing operations that store or use hazardous materials exceeding the maximum allowable quantity limits shall comply with Chapter 50.

322.3.9 Inert gas. Additive manufacturing processes that utilize inert gases shall comply with Chapter 53. Ventilation or gas detection shall be provided in accordance with Section 5307.

322.3.10 Technical assistance. Where required by the fire code official, a report evaluating the acceptability of technologies, processes, products, facilities, materials and uses associated with the operation shall be provided in accordance with Section 104.9 and approved

322.3.11 Performance-based design alternative. Where approved by the fire code official, buildings and facilities where industrial additive manufacturing is performed shall be permitted to comply with the performance-based design options in Section 5001.3 as an alternative to compliance with the other requirements set forth in this section.





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322.3.12 Occupancies. Industrial additive manufacturing shall be conducted only in the occupancy groups associated with manufacturing operation and permitted by the Chapter 50 maximum allowable quantity tables. Where approved, the requirements in Section 322.3.6 shall be permitted to provide the technical basis for determining compliance with Table 5003.1.1(1), Note q.

### SECTION 323 TRADE SHOWS AND EXHIBITS

323 Trade Shows and Exhibits. Trade Shows and Exhibits shall conform to Appendix N.

### SECTION 403 EMERGENCY PREPAREDNESS REQUIREMENTS

**403.10.3.1 Fire safety and evacuation plan.** The fire safety and evacuation plan required by Section 404 shall include ~~special employee actions, including fire protection procedures necessary for residents, and shall be amended or revised upon admission of a resident with unusual needs,~~ a description of staff actions. Plans shall include procedures necessary for full evacuation of care recipients and shall be amended or revised upon admission of care recipients with unusual needs.

**403.10.3.1.1 Fire safety plans.** A copy of the plan shall be maintained at the facility at all times. Plans shall include the following in addition to the requirements of Section 404:

1. Location and number of ~~resident~~ sleeping rooms.
2. Location of special locking ~~or egress control~~ arrangements

**403.10.3.2 Employee training.** Employees shall be periodically instructed and kept informed of their duties and responsibilities under the plan. Records of instruction shall be maintained. Such instruction shall be reviewed ~~by employees~~ at intervals not exceeding two months. A copy of the plan shall be readily available at all times within the facility. Training of new staff shall be provided promptly upon employment. Staff shall be instructed in the proper use of portable fire extinguishers.

408 Emergency Response Preplanning. When required by the fire code official a facility, property, and/or business shall provide the fire code official with a site plan and building layout (internal and external) identifying emergency access points, fire control and protection equipment locations, and other life safety features inside the property and structures.

### SECTION 505 PREMISES IDENTIFICATION

**505.1.2 Commercial occupancies.** Premises identification shall be provided for Group A, B, E, F, H, I, M, S and U occupancies. The building identification is required to be internally or externally illuminated to meet visibility requirements in low or no light conditions.

**505.1.2.1 Buildings less than 200 feet.** Buildings less than 200 feet (60,960 mm) long and less than 100 feet (30,480 mm) from the edge of the road shall be identified with a building address that is not less than 12 inches (305 mm) high with a minimum 2-inch



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(51 mm) brush stroke on a contrasting background. The address shall be visible from all access directions. ~~The building identification is required to be internally or externally illuminated.~~

508.1.6.2 Fire Department Communications System. Two way hard wired communication system is required in high rise buildings

#### **SECTION 510 EMERGENCY RESPONDER RADIO COVERAGE**

**510.4.1 Emergency responder communication ~~enhancement coverage~~ system signal strength.** The building shall be considered to have acceptable in-building, two-way emergency responder communications ~~enhancement~~ system coverage ~~when~~ where signal strength measurements in 95 percent of all areas and 99 percent of areas designated as critical areas by the fire code official on each floor of the building meet the signal strength requirements in Sections 510.4.1.1 through 510.4.1.3.

**510.4.1.2 Minimum signal strength out of the building.** The minimum outbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the fire code official. The outbound signal level shall be sufficient to provide not less than a DAQ of 3.0 or an equivalent SINR applicable to the technology for either analog or digital signals. A Bit Error Rate (BER) of 2.6% is equivalent to a DAQ 3.0 and is acceptable to meet this equivalency.

#### **SECTION 703 PENETRATIONS**

**703.2 Repair of penetrations.** Where damaged, materials used to protect membrane- and through-penetrations shall be replaced or restored with materials or systems that meet or exceed the code requirements applicable at the time when the assembly was constructed, remodeled or altered.



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## SECTION 901 GENERAL

**901.4.6.3 Environment.** Automatic sprinkler system riser rooms and fire pump rooms shall be maintained at a temperature of not less than 40°F (4°C) ~~and not more than 100°F (37°C)~~. All fire protection equipment in the room/space shall be listed for the temperatures anticipated in the space/room. If equipment listing temperatures and/or manufacture specifications fall below the anticipated maximum room/space temperatures, then cooling shall be provided to meet equipment listing. Heating and cooling units shall be permanently installed.

**901.6 Inspection, testing and maintenance.** Fire detection and alarm systems, emergency alarm systems, gas detection systems, fire-extinguishing systems, smoke control systems, mechanical smoke exhaust systems and smoke and heat vents shall be maintained in an operative condition at all times and shall be replaced or repaired where defective. Appendix I is adopted as part of the Phoenix Fire Code. This appendix is not intended to provide comprehensive inspection, testing and maintenance requirements, which are found in NFPA 10, 25 and 72. Rather, it is intended to identify problems that are readily observable during fire inspections. Nonrequired fire protection systems and equipment shall be inspected, tested and maintained or removed.

**901.7 Systems out of service.** Where a required fire protection system is out of service, ~~the Phoenix Fire Department Alarm Room, 602-495-5555 shall be notified immediately~~ and, where required by the fire code official, the building shall be either evacuated and/or an approved fire watch shall be provided for ~~all occupants left unprotected by the shutdown~~ until the fire protection system has been returned to service. ~~Failure to comply may result in the revocation of qualified contractor status to be an accepted Inspecting Authority within the City of Phoenix.~~

Where utilized, fire watches shall be provided with not less than one approved means for notification of the fire department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires.

## SECTION 907 FIRE ALARM AND DETECTION SYSTEMS

**907.2.12.2 Fire department communication system.** Two way hard wired fire department communication system is required in high-rise buildings. In other buildings ~~where~~ a wired communication system is approved in lieu of an emergency responder radio coverage system in accordance with Section 510, the wired fire department communication system shall be designed and installed in accordance with NFPA 72 and shall operate between a fire command center complying with Section 508, elevators, elevator lobbies, emergency and standby power rooms, fire pump rooms, areas of refuge and inside interior exit stairways. The fire department communication device shall be provided at each floor level within the interior exit stairway.



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**907.5.2.2.5 Emergency Standby Power.** Emergency voice/ alarm communications systems shall be provided with **emergency** power in accordance with Section 1203. ~~The system shall be capable of powering the required load for a duration of not less than 24 hours, as required in NFPA 72.~~

#### **SECTION 914 FIRE PROTECTION BASED ON SPECIAL DETAILED REQUIREMENTS OF USE AND OCCUPANCY**

**914.3.1.2 Water supply to required fire pumps.** In buildings that are more than 420 feet (128 m) in building height, and buildings of Type IVA and IVB construction that are more than 120 feet (36.6 m) in building height, required fire pumps shall be supplied by connections to not fewer than two water mains located in different streets. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate.

**914.3.5 Emergency voice/alarm communication system.** An emergency voice/alarm communication system shall be provided in accordance with Section 907.6.2.2. Two way hard wired fire department communication system is required in high-rise buildings.

#### **SECTION 1203 EMERGENCY AND STANDBY POWER SYSTEMS**

**1203.2 Where required.** Emergency and standby power systems shall be provided where required by Sections 1203.2.1 through 1203.2.~~1820~~

**1203.2.20 Exhaust ventilation.** Standby power shall be provided for mechanical exhaust ventilation systems. The system shall be capable of powering the required load for a duration of not less than 2 hours.

**1203.4.1 Group I-2 and ambulatory care facilities.** In Group I-2 occupancies and ambulatory care facilities, emergency and standby power systems shall be maintained in accordance with NFPA 99.

**1203.5.1 Group I-2 and ambulatory care facilities.** In Group I-2 occupancies and ambulatory care facilities, emergency and standby power systems shall be inspected and tested under load in accordance with NFPA 99.

#### **SECTION 1204 SOLAR PHOTOVOLTAIC POWER SYSTEMS**

**1204.2.1 Solar photovoltaic systems for Group R-3 buildings.** Solar photovoltaic systems for Group R-3 buildings shall comply with Sections 1204.2.1.1 through 1204.2.1.3.



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~~**1204.2.1.1 Roof access points.** Roof access points shall be located in areas that do not require the placement of ground ladders over openings such as windows or doors and located at strong points of building construction in locations where the access point does not conflict with overhead obstructions such as tree limbs, wires, or signs.~~

**1204.2.1.1 Pathways to ridge.** Not fewer than two 36 inch- wide (914 mm) pathways on separate roof planes, from lowest roof edge to ridge, shall be provided on all buildings. Not fewer than one pathway shall be provided on the street or driveway side of the roof. For each roof plane with a photovoltaic array, not fewer than one 36-inch-wide (914 mm) pathway from lowest roof edge to ridge shall be provided on the same roof plane as the photovoltaic array, on an adjacent roof plane or straddling the same and adjacent roof planes.

~~**1204.2.1.2 Residential systems for one and two family dwellings.** Access to residential systems for one and two family dwellings shall be provided in accordance with Sections 1204.2.1.3 through 1204.2.1.6.~~

**1204.2.1.2 Setbacks at ridge.** For photovoltaic arrays occupying 33 percent or less of the plan view total roof area, a setback of not less than 18 inches (457 mm) wide is required on both sides of a horizontal ridge. For photovoltaic arrays occupying more than 33 percent of the plan view total roof area, a setback of not less than 36 inches (457 mm) wide is required on both sides of a horizontal ridge.

~~**1204.2.1.3 Residential buildings with hip roof layouts.** Panels/modules installed on residential buildings with hip roof layouts shall be located in a manner that provides a 3-foot wide (914 mm) clear access pathway from the eave to the ridge on each roof slope where panels/modules are located. The access pathway shall be located at a structurally strong location on the building capable of supporting the live load of fire fighters accessing the roof.~~

**1204.2.1.3 Alternative setbacks at ridge.** Where an automatic sprinkler system is installed within the dwelling in accordance with Section 903.3.1.3, setbacks at the ridge shall conform to one of the following:

1. For photovoltaic arrays occupying 66 percent or less of the plan view total roof area, a setback of not less than 18 inches (457 mm) wide is required on both sides of a horizontal ridge.
2. For photovoltaic arrays occupying more than 66 percent of the plan view total roof area, a setback of not less than 36 inches (914 mm) wide is required on both sides of a horizontal ridge.

~~**1204.2.1.4 Residential buildings with a single ridge.** Panels/modules installed on residential buildings with a single ridge shall be located in a manner that provides two, 3-foot wide (914 mm) access pathways from the eave to the ridge on each roof slope where panels/modules are located.~~

~~**1204.2.1.5 Residential buildings with roof hips and valleys.** Panels/modules installed on residential buildings with roof hips and valleys shall be located no closer than 18 inches (457 mm) to a hip or a valley where panels/modules are to be placed on both sides of a hip or valley. Where panels are to be located on only one side of a hip or valley that is of equal length, the panels shall be permitted to be placed directly adjacent to the hip or valley.~~



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~~1204.2.1.6 Residential building smoke ventilation. Panels/modules installed on residential buildings shall be located no higher than 3 feet below the ridge in order to allow for fire department smoke ventilation operations.~~

1204.2.3 Building-integrated photovoltaic (BIPV) systems. Where building-integrated photovoltaic (BIPV) systems are installed in a manner that creates areas with electrical hazards to be hidden from view, markings shall be provided to identify the hazardous areas to avoid. The markings shall be reflective and be visible from grade.

Exception: BIPV systems listed in accordance with Section 690.12(B)(2) of NFPA 70 (2020 edition), where the removal or cutting away of portions of the BIPV system during fire-fighting operations have been determined to not expose a fire fighter to electrical shock hazards.

## SECTION 1206 ELECTRICAL ENERGY STORAGE SYSTEMS

**1206.2.2 Construction documents.** The following information shall be provided with the permit application:

1. Location and layout diagram of the room in which the stationary storage battery system is to be installed.
2. Details on hourly fire-resistance-rated assemblies provided.
3. Quantities and types of storage batteries and battery systems.
4. Manufacturer's specifications, ratings and listings of storage batteries and battery systems.
5. Details on energy management systems.
6. Location and content of signage.
7. Details on fire-extinguishing, smoke detection and ventilation systems.
8. Rack storage arrangement, including seismic support criteria.

9. A commissioning plan

10. A decommissioning plan

~~**1206.1 Scope.** The provisions in this section are applicable to energy storage systems designed to provide electrical power to a building or facility. These systems are used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities. Energy storage systems in Group R-3 and R-4 occupancies shall be in accordance with Sections 1206.2.1 and 1206.4. Approved signage is required for all installations.~~

~~**General.** The provisions in this section are applicable to stationary and mobile Energy Storage System (ESS).~~

~~**Exception:** ESS in Group R-3 and R-4 occupancies exceeding those amounts listed in table 1206.2 shall comply with Section 1206.4 and 1206.2.1.1~~

~~**1206.2.1 Permits.** Permits shall be obtained for the construction and operation of stationary storage battery systems with a capacity of more than 3 kWh, in accordance with Section 105.7.2.~~

~~**Scope.** ESS having capacities exceeding the values shown in Table 1206.2 shall comply with this section.~~

~~**Exception:** ESS in Group R-3 and R-4 occupancies exceeding those amounts listed in table 1206.2 shall comply with Section 1206.4 through 1206.4.9~~

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~~1206.2.1.1 Stationary storage battery systems. Stationary storage battery systems having capacities exceeding the values shown in Table 1206.2 shall comply with Section 1206.2.1 through 1206.2.13.6, as applicable. Approved signage is required for all installations.~~

Permits. Permits shall be obtained for ESS as follows;

1. Construction permits shall be obtained for stationary ESS installations greater than table 1206.2 and for mobile ESS charging and storage locations covered by Section 1206.5.1.

2. Permits shall be obtained in accordance with Section 105.7.2

~~1206.2.1 Permits. Permits shall be obtained for the construction of stationary storage battery systems with a capacity of more than 3 kWh, in accordance with Section 105.7.2.~~

**Table 1206.2**

Battery Technology	Energy Capacity (a)
Flow batteries (b)	20 kWh
Lead acid, all types	70 kWh
Lithium, all types	20 kWh
Nickel cadmium (Ni-Cd)	70 kWh
Sodium, all types	20 kWh (c)
<u>Stationary ESS in R3/4 occupancies</u>	<u>3 kWh</u>
<u>Other electrochemical ESS</u>	<u>3kWh</u>

For SI:1 kilowatt hour = 3.6 megajoules.

a. For batteries rated in amp-hours, kWh shall equal rated voltage times amp-hour rating divided by 1000.

b. Shall include vanadium, zinc-bromine, polysulfide-bromide, and other flowing electrolyte-type technologies.

c. 70 kWh for sodium-ion technologies.

1206.2.2.1 Replacements. Replacements of ESS shall be considered new ESS installations and shall comply with the provisions of Section 1206 as applicable to new ESS. The ESS being replaced shall be decommissioned in accordance with Section 1206.2.2.5

1206.2.2.2 Reused and repurposed equipment. Equipment and materials shall only be reused or reinstalled unless such elements are in good working order and approved by the fire code official. Storage batteries previously used in other applications, such as electric vehicle propulsion, shall not be reused in applications regulated by Chapter 12 unless approved by the fire code official and unless the equipment is refurbished by a battery refurbishing company approved in accordance with UL 1974.

1206.2.2.3 Retrofits. Retrofitting of an existing ESS shall comply with the following:

1. A construction permit shall be obtained in accordance with Section 105.7.2



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2. New batteries, battery modules, capacitors and similar ESS components shall be listed.
3. Battery management and other monitoring systems shall be connected and installed in accordance with the manufacturer's instructions.
4. The overall installation shall continue to comply with UL 9540 listing requirements, where applicable.
5. Systems that have been retrofitted shall be commissioned in accordance with Section 1206.2.2.5.
6. Retrofits shall be documented in the service records log.

1206.2.2.3.1 Retrofitting lead acid and nickel cadmium. Shall not apply to retrofitting of lead-acid and nickel-cadmium batteries with other lead-acid and nickel-cadmium batteries at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC.

1206.2.2.4 Energy storage system listings. ESS shall be listed in accordance with UL 9540.

Exception: 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, are not required to be listed.

1206.2.2.5 Commissioning, decommissioning, operation and maintenance. Commissioning, decommissioning, operation and maintenance shall be conducted in accordance with this section.

1206.2.2.5.1 Commissioning. Commissioning of newly installed ESS and existing ESS that have been retrofitted, replaced or previously decommissioned and are returning to service shall be conducted prior to the ESS being placed in service in accordance with a commissioning plan that has been approved prior to initiating commissioning.

The commissioning plan shall include the following:

1. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities.
2. A listing of the specific ESS and associated components, controls and safety-related devices to be tested, a description of the tests to be performed and the functions to be tested.
3. Conditions under which all testing will be performed, which are representative of the conditions during normal operation of the system.
4. Documentation of the owner's project requirements and the basis of design necessary to understand the installation and operation of the ESS.
5. Verification that required equipment and systems are installed in accordance with the approved plans and specifications.
6. Integrated testing for all fire and safety systems.
7. Testing for any required thermal management, ventilation or exhaust systems associated with the ESS installation.
8. Preparation and delivery of operation and maintenance documentation.
9. Training of facility operating and maintenance staff.
10. Identification and documentation of the requirements for maintaining system performance to meet the original design intent during the operation phase.





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11. Identification and documentation of personnel who are qualified to service, maintain and decommission the ESS, and respond to incidents involving the ESS, including documentation that such service has been contracted for.
12. A decommissioning plan for removing the ESS from service, and from the facility in which it is located. The plan shall include details on providing a safe, orderly shutdown of energy storage and safety systems with notification to the code officials prior to the actual decommissioning of the system. The decommissioning plan shall include contingencies for removing an intact operational ESS from service, and for removing an ESS from service that has been damaged by a fire or other event.

**Exception:** Commissioning shall not be required for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC. A decommissioning plan shall be provided and maintained where required by the fire code official.

**1206.2.2.5.2 Initial acceptance testing.** During the commissioning process an ESS shall be evaluated for proper operation in accordance with the manufacturer's instructions and the commissioning plan prior to final approval.

**1206.2.2.5.3 Commissioning report.** A report describing the results of the system commissioning, including the results of the initial acceptance testing required in Section 1206.2.2.5.2, shall be provided to the fire code official prior to final inspection and approval and maintained at an approved on-site location.

**1206.2.2.5.4 Operation and maintenance.** An operation and maintenance manual shall be provided to both the ESS owner or their authorized agent and the ESS operator before the ESS is put into operation and shall include the following:

1. Manufacturer's operation manuals and maintenance manuals for the entire ESS, or for each component of the system requiring maintenance, that clearly identify the required routine maintenance actions.
2. Name, address and phone number of a service agency that has been contracted to service the ESS and its associated safety systems.
3. Maintenance and calibration information, including wiring diagrams, control drawings, schematics, system programming instructions and control sequence descriptions, for all energy storage control systems.
4. Desired or field-determined control set points that are permanently recorded on control drawings at control devices or, for digital control systems, in system programming instructions.
5. A schedule for inspecting and recalibrating all ESS controls.
6. A service record log form that lists the schedule for all required servicing and maintenance actions and space for logging such actions that are completed over time and retained on-site.
7. The ESS shall be operated and maintained in accordance with the manual and a copy of the manual shall be retained at an approved on-site location.

**1206.2.2.5.5 Decommissioning.** The code official shall be notified prior to the decommissioning of an ESS. Decommissioning shall be performed in accordance with the decommissioning plan that includes the following:



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1. A narrative description of the activities to be accomplished for removing the ESS from service, and from the facility in which it is located.
2. A listing of any contingencies for removing an intact operational ESS from service, and for removing an ESS from service that has been damaged by a fire or other event.

1206.2.2.6 Equipment listing. Chargers, inverters and energy storage management systems shall be covered as part of the UL 9540 listing or shall be listed separately.

1206.2.2.7 Utility interactive systems. Inverters shall be listed and labeled in accordance with UL 1741. Only inverters listed and labeled for utility interactive system use and identified as interactive shall be allowed to operate in parallel with the electric utility power system to supply power to common loads.

1206.2.2.8 Ongoing inspection and testing. Systems that monitor and protect the ESS installation shall be inspected and tested in accordance with the manufacturer's instructions and the operation and maintenance manual. Inspection and testing records shall be maintained in the operation and maintenance manual.

1206.2.2.9 Repairs. Repairs of ESS shall only be done by qualified personnel. Repairs with other than identical parts shall be considered retrofitting and comply with Section 1207.3.7 (Final Numbering TBD). Repairs shall be documented in the service records log.

1206.2.3.7 Fire mitigation personnel. Where, in the opinion of the fire code official, it is essential for public safety that trained personnel be on-site to respond to possible ignition or re-ignition of a damaged ESS, the system owner, agent or lessee shall immediately dispatch one or more fire mitigation personnel to the premise, as required and approved, at their expense. These personnel shall remain on duty continuously after the fire department leaves the premise until the damaged energy storage equipment is removed from the premises, or earlier if the fire code official indicates the public safety hazard has been abated.

1206.2.3.7.1 Duties. On-duty fire mitigation personnel shall have the following responsibilities:

1. Keep a diligent watch for fires, obstructions to means of egress and other hazards.
2. Immediately contact the fire department if their assistance is needed to mitigate any hazards or extinguish fires.
3. Take prompt measures for remediation of hazards in accordance with the decommissioning plan per Section 1206.2.2.11.
4. Take prompt measures to assist in the evacuation of the public from the structures.

1206.2.10.3.1 System status. Where required by the fire code official, visible annunciation shall be provided on cabinet exteriors or in other approved locations to indicate that potentially hazardous conditions associated with the ESS exist.

1206.2.10.3.12 Annunciator panel. The approved annunciator panel shall visibly indicate any hazardous temperature or other conditions. The location of the annunciator panel shall be approved by the fire code official.

1206.2.11.2 Fire detection. An approved automatic smoke detection system or radiant energy-sensing fire detection system complying with Section 907.2 shall be installed in rooms, indoor areas and walk-in units containing electrochemical ESS. An

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approved radiant energy-sensing fire detection system shall be installed to protect open parking garage and rooftop installations. Alarm signals from detection systems shall be transmitted to a central station, proprietary or remote station service in accordance with NFPA 72, or where approved to a constantly attended location.

**1206.2.11.23 Smoke detection system.** An approved automatic smoke detection system shall be installed in rooms containing stationary storage battery systems in accordance with Section 907.2.

**1206.5 Mobile ESS equipment and operations.** Mobile ESS equipment and operations shall comply with Sections 1206.5.1 through 1206.5.7.7

**Table 1206.5.2 MOBILE ENERGY STORAGE SYSTEMS (ESS)**

COMPLIANCE REQUIRED		DEPLOYMENT
Feature	Section	
All ESS installations	1206	Yes <sup>b</sup>
Fire suppression systems	1206.2.11.1	Yes <sup>c</sup>
Maximum allowable quantities	1206.2.9	Yes
Means of egress separation	1206.2.8.7.2	Yes
Size and separation	1206.2.8.3	Yes <sup>d</sup>
Smoke and automatic fire detection	1206.2.11.2	Yes <sup>e</sup>
Technology-specific protection	Table 1206.2.10	Yes
Vegetation control	1206.2.8.7	Yes

- a. See Section 1206.5.2.
- b. Mobile operations on wheeled vehicles and trailers shall not be required to comply with Section 1207.4.4 seismic and structural load requirements.
- c. Fire suppression system connections to the water supply shall be permitted to use approved temporary connections.
- d. In walk-in units, spacing is not required between ESS units and the walls of the enclosure.
- e. Alarm signals are not required to be transmitted to an approved location for mobile ESS deployed 30 days or less

**1206.5.1 Charging and storage.** For the purpose of Section 1206.5, charging and storage covers the operation where mobile ESS are charged and stored so they are ready for deployment to another site, and where they are charged and stored after a deployment.

**1206.5.2 Deployment.** For the purpose of Section 1206.5, deployment covers operations where mobile ESS are located at a site other than the charging and storage site and are being used to provide power.

**1206.5.3 Permits.** Construction permits shall be provided for charging and storage of mobile ESS shall be provided for deployment of mobile ESS as required by Section 1206.2.1 and 105.7.2



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**1206.5.4 Construction documents.** Construction documents complying with Section 1206.5.4.1 shall be provided with the construction permit application for mobile ESS charging and storage locations.

**1206.5.4.1 Deployment documents.** The following information shall be provided with the operation permit applications for mobile ESS deployments:

1. Relevant information for the mobile ESS equipment and protection measures in the construction documents required by Section 1206.5.4
2. Location and layout diagram of the area in which the mobile ESS is to be deployed, including a scale diagram of all nearby exposures.
3. Location and content of signage, including no smoking signs.
4. Description of fencing to be provided around the ESS, including locking methods.
5. Details on fire suppression, smoke and automatic fire detection, system monitoring, thermal management, exhaust ventilation and explosion control, if provided.
6. For deployment, the intended duration of operation, including anticipated connection and disconnection times and dates.
7. Location and description of local staging stops during transit to the deployment site. See Section 1206.5.7.5
8. Description of the temporary wiring, including connection methods, conductor type and size, and circuit overcurrent protection to be provided.
9. Description of how fire suppression system connections to water supplies or extinguishing agents are to be provided.
10. Contact information for personnel who are responsible for maintaining and servicing the equipment, and responding to emergencies as required by Section 1206.2.3.5

**1206.5.5 Approved locations.** Locations where mobile ESS are charged, stored and deployed shall be restricted to the locations established on the construction permit.

**1205.5.6 Charging and storage.** Installations where mobile ESS are charged and stored shall be treated as permanent ESS indoor or outdoor installations, and shall comply with the following sections, as applicable:

1. Indoor charging and storage shall comply with Section 1206.2.8. Outdoor charging and storage shall comply with Section 1206.2.8.7. Charging and storage on rooftops and in open parking garages shall comply with Section 1206.2.13.

**Exceptions:**

1. Electrical connections shall be permitted to be made using temporary wiring complying with the manufacturer's instructions, the UL 9540 listing and NFPA 70.
2. Fire suppression system connections to the water supply shall be permitted to use approved temporary connections.

**1206.5.7 Deployed mobile ESS requirements.** Deployed mobile ESS equipment and operations shall comply with this section and Table 1206.5



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**1206.5.7.1 Duration.** The duration of mobile ESS deployment shall not exceed 30 days.

**Exceptions:**

1. Mobile ESS deployments that provide power for durations longer than 30 days shall comply with Section 1205.5.6
2. Mobile ESS deployments shall not exceed 180 days unless additional approval from the fire code official is obtained.

**1206.5.7.2 Restricted locations.** Deployed mobile ESS operations shall not be located indoors, in covered parking garages, on rooftops, below grade or under building overhangs.

**1206.5.7.3 Clearance to exposures.** Deployed mobile ESS shall be separated by a minimum of 10 feet (3048 mm) from the following exposures:

1. Public ways.
2. Buildings.
3. Stored combustible materials.
4. Hazardous materials.
5. High-piled storage.
6. Other exposure hazards.
7. Deployed mobile ESS shall be separated by a minimum of 50 feet (15,240 mm) from public seating areas and from tents, canopies and membrane structures with an occupant load of 30 or more.

**1206.5.7.4 Electrical connections.** Electrical connections shall be made in accordance with the manufacturer's instructions and the UL 9540 listing. Temporary wiring for electrical power connections shall comply with NFPA 70. Fixed electrical wiring shall not be provided.

**1206.5.7.5 Local staging.** Mobile ESS in transit from the charging and storage location to the deployment location and back shall not be parked within 100 feet (30,480 mm) of an occupied building for more than 1 hour during transit, unless specifically approved by the fire code official when the permit is issued.

**1206.5.7.6 Fencing.** An approved fence with a locked gate or other approved barrier shall be provided to keep the general public at least 5 feet (1,524 mm) from the outer enclosure of a deployed mobile ESS.

**1205.5.7.7 Smoking.** Smoking shall be prohibited within 10 feet (3,048 mm) of mobile ESS. Signs shall be posted in accordance with Section 310.

## **1207 PORTABLE GENERATORS**

**1207.1 Portable generators.** The use, operation and maintenance of portable generators shall comply with this section.



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1207.2 Listing. Portable generators manufactured after January 1, 2021, shall be listed and labeled in accordance with UL 2201.

1207.3 Operation and maintenance. Portable generators shall be operated and maintained in accordance with the manufacturer's instructions.

1207.4 Grounding. Portable generators shall be grounded in accordance with NFPA 70.

1207.5 Operating locations. Portable generators shall be operated only outdoors a minimum of 5 feet (1524 mm) from any building openings such as windows and doors or air intakes. Portable generators shall not be operated within buildings or enclosed areas. Additional separation shall be provided for tents, membrane structures and outdoor assembly events as specified in Chapter 31.

1207.6 Cords and wiring. Extension cords and temporary wiring used to connect portable generators shall be in accordance with Section 604 and shall be provided with GFCI protection.

1207.7 Connections to premise wiring. Connections to a premise wiring system shall comply with all of the following:

1. Power shall not be provided in a manner that "backfeeds" receptacles or the premise wiring system.
2. Connection to a premise served by commercial power shall be made through a listed transfer switch installed, used and maintained in accordance with NFPA 70.
3. Connection to buildings not served by commercial power shall comply with NFPA 70.

1207.8 Refueling. Portable generators shall not be refueled while operating.

1207.9 Storage and repair. Storage and repair of fuel-fired portable generators shall comply with Section 313.

1207.10 Fire extinguisher. A listed portable fire extinguisher complying with Section 906 with a minimum rating of 2-A:20- B:C shall be provided not more than 50 feet (15 240 mm) from the portable generator.

## SECTION 2007 HELISTOPS AND HELIPORTS

**2007.6 Foam protection.** Foam fire-protection capabilities shall be provided for rooftop heliports. Such systems shall be designed, installed and maintained in accordance with the applicable provisions of Sections 903 through 905 and NFPA 11 & 418 409.



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## SECTION 2808

### STORAGE AND PROCESSING OF MULCH, WOOD CHIPS, HOGGED MATERIAL, FINES, COMPOST, SOLID BIOMASS FEEDSTOCK AND RAW PRODUCT ASSOCIATED WITH YARD WASTE, AGRO-INDUSTRIAL AND RECYCLING FACILITIES

~~2808.7.3 Conveyor Systems. Automatic sprinkler protection shall be provided in conveyor tunnels and combustible enclosures that pass under a pile. Combustible conveyor systems and enclosed conveyor systems shall be equipped with an approved automatic sprinkler system~~

~~2808.7.4.3 Fire Hydrants.~~ The fire code official may increase the distance required to a fire hydrant as set forth in Section 507 where the conditions of this section are complied with. The omitting of an on-site hydrant or increased overall distance to the nearest hydrants will be evaluated with the application for permit.

~~2808.9 Material-handling equipment.~~ Approved material handling equipment shall be available ~~for moving wood chips, hogged material, wood fines and raw product during fire fighting operations.~~ by contract to aid in the event of emergency for moving wood chips and hogged material. Equipment available shall include:

1. Equipment to move stored material during a fire
2. Water trucks
3. Water pumps if using pond for any piece of water source

~~2808.6.1 Internal temperature.~~ If any location in a pile is found to have an internal temperature of 160°F (71° C) immediate action must be taken to reduce the temperature. If any location in a pile is found to have an internal temperature of 180° F (82°C) or greater, the following procedures must immediately be taken:

1. The area with the high temperature shall be dug out of the main pile. This overheated material shall be pushed out in the designated push out area. The material shall be no greater than 3ft. in depth in the push out area.
2. Water shall be stationed closely to the affected area, prior to digging out the hotspot, to immediately douse any flare ups that may occur when air is added to overheated area.
3. Continual temperature probing and removal of material greater than 180° F (82° C) shall be conducted until all overheated material is separated into the push out area.

~~2808.7.1 Delivery and tipping area.~~ Not more than two designated tipping areas may be provided at a single facility and Delivery and tipping areas shall be shown on the approved facility site plan. Tipping areas shall comply with the following:

1. Size. Tipping areas shall not exceed a maximum area of 50 feet by (15 240 mm) by 50 feet (15 240 mm).
2. Height. Material within a tipping area shall not exceed 5 feet (1524 mm) in height at any time.
3. Separation. Tipping areas shall be separated from all piles and other tipping areas by a fire access lane that is not less than 20 feet (6096 mm) wide.
4. Water system. A water system shall be available to wet down/ cool the raw product in case of fire within the tipping area.
5. Duration. Raw product shall be kept in tipping area long enough to ensure no load was delivered that is already over heated. Raw product shall be less than 160° F before mixing with main pile.



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**TIPPING AREA.** An area within ~~an solid waste management facility or recycling~~ agro-industrial, solid biomass facility for vehicles to unload new material. ~~solid wastes or recyclables.~~

~~**2808.7.3 Conveyor Systems.** Automatic sprinkler protection shall be provided in conveyor tunnels and combustible enclosures that pass under a pile. Combustible conveyor systems and enclosed conveyor systems shall be equipped with an approved automatic sprinkler system~~

### **SECTION 3108 MAZES**

~~**3103.3.2 3108**~~ **Mazes.** Mazes including, but not limited, to corn stalk or hedge mazes, shall be in accordance with this section and Section 3106.

~~**3103.3.2.1 3108.1**~~ **Safe refuge areas.** Safe refuge areas shall be established outside of the maze or building and structure, and shall not be closer than 50 feet (15240 mm).

~~**3103.3.2.2 3108.2**~~ **Paths.** Paths throughout the maze shall be a minimum of 36 inches (914 mm) clear and unobstructed width.

~~**3103.3.2.3 3108.3**~~ **Separation.** Not less than 20 feet (6096 mm) shall be provided between mazes and buildings and structures. The 20-foot (6096 mm) clearance shall be free from vegetation and obstructions.

~~**3103.3.2.4 3108.4**~~ **Means of egress.** Each exit shall be not less than 6 feet (1828 mm) wide.

~~**3103.3.2.5 3108.5**~~ **Travel distance.** The maximum travel distance to reach an exit access shall not exceed 75 feet (22,860 mm). The travel distance shall be determined by using the maze path.

~~**3103.3.2.6 3108.6**~~ **Number.** The travel distance required to reach an exit access shall determine the number of exits required. Locking devices shall remain unlocked on exits when the maze is occupied.

~~**3103.3.2.7 3108.7**~~ **Exit signs.** Signs shall be provided next to or above each exit. The lettering shall be not less than 12 inches (305 mm) high with 2-inch (51 mm) brushstrokes. The signs shall read EXIT with lettering in a color contrasting to the sign's background.

~~**3103.3.2.8 3108.8**~~ **Security plan.** The plan shall document who shall provide security (e.g., off-duty police officers, sheriff's posse, employees). All security personnel shall be provided with a 2-way radio and flashlight.

~~**3103.3.2.9 3108.9**~~ **Evacuation plans.** The plan shall document the responsibilities of all on-site employees. The plan shall also document how attendees will be evacuated and where they will be evacuated.

~~**3103.3.2.10 3108.10**~~ **Maze rules.** Rules shall be posted at the maze entrance.





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~~3103.3.2.11~~ 3108.11 **Employee responsibilities.** Each employee shall be familiar with the evacuation plan and with fire extinguisher locations. Documentation of training shall be provided to the fire code official.

~~3103.3.2.12~~ 3108.12 **Employee guides.** An employee shall be responsible for guiding a group of not more than 14 attendees through the maze. Each employee shall be provided with one flashlight and a two-way radio. The employees shall be responsible for detecting and reporting fire or smoke to a competent person posted at the maze main entrance and begin evacuation procedures.

~~3103.3.2.13~~ 3108.13 **Main entrance employee.** Each maze shall be manned by an employee at the entrance. The employee shall be capable of communicating with the employees and shall be provided with a cellular telephone. When the main entrance employee receives a report of smoke, fire or injury, the employee shall immediately call 911.

~~3103.3.2.14~~ 3108.14 **Watering.** Corn stalk and hedge mazes shall be provided with sufficient water and at a frequency that prevents the vegetation from becoming dry or brittle. Failure to comply with this provision creates an imminent hazard and the fire code official shall issue a stop order.

~~3103.3.2.15~~ 3108.15 **Buildings and structures.** Where buildings and structures are intended to be occupied by attendees, the building and structure shall comply with Section 905 regarding Class III standpipes.

## SECTION 50 HAZARDOUS MATERIALS

**5003.2.2.1 - 2.** Piping and tubing shall be identified in accordance with ASME A13.1. Markings used for piping systems shall consist of the content's name and include a direction-of-flow arrow. Markings shall be provided at each valve; at wall, floor or ceiling penetrations; at each change of direction; and at a minimum of every 20 feet (6096 mm) or fraction thereof throughout the piping run.

**5005.1.12 Emergency isolation.** Where gases or liquids having a hazard ranking of Health Class 3 or 4, Flammability Class 4, Water Reactive Reactivity Class 3 or 4 or Instability Class 3 or 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 and 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.

## Chapter 80 Referenced Standards

**API**  
Std 2000 - ~~6th~~ 7th Edition (~~2009~~ 2014): Venting Atmosphere and Low-pressure Storage Tanks: Nonrefrigerated and Refrigerated

RP 2028 – 3rd Edition (2002) Flame Arresters in Piping Systems

RP 2350 – 5th Edition (2021) Overfill Prevention for Storage Tanks in Petroleum Facilities

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**ASHRAE** The American Society of Heating, Refrigerating and Air-Conditioning Engineers  
15 – ~~2016~~ 2022 Safety Standard for Refrigeration Systems

#### **ASME**

A13.1 – ~~2015~~ 2020

B31.3 – ~~2016~~ 2020 Process Piping

BPVC - ~~2015~~ 2019: ASME Boiler and Pressure Vessel Code (Sections I, II, IV, V & VI, VIII)

#### **ANSI/BHMA**

A156.38 – 2009 Low Energy Power Operated Sliding and Folding Doors

A156.27 – 2019 Power and Manual Operated Revolving Pedestrian Doors

A156.19 – 2007 Power Assist and Low-Energy Power Operated Doors

A156.10 – 2007 Power Operated Pedestrian Doors

#### **NFPA**

**NFPA 2 Hydrogen Technologies Code** ~~2016~~ 2020

**NFPA 12 Standard on Carbon Dioxide Extinguishing Systems** ~~2015~~ 2018

**NFPA 13 Standard for the Installation of Sprinkler Systems** ~~2016~~ 2019

**NFPA 13D Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes** ~~2016~~ 2019

**NFPA 13R Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies** ~~2016~~ 2019

**NFPA 14 Standard for the Installation of Standpipe and Hose Systems** ~~2014~~ 2019

**NFPA 16 Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems** ~~2015~~ 2019

**NFPA 24 Standard for the Installation of Private Fire Service Mains and Their Appurtenances** ~~2016~~ 2019

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NFPA 30B Code for the Manufacture and Storage of Aerosol Products ~~2015~~ [2019](#)

NFPA 33 Standard for Spray Application Using Flammable or Combustible Materials ~~2016~~ [2018](#)

NFPA 34 Standard for Dipping, Coating and Printing Processes Using Flammable or Combustible Liquids ~~2015~~ [2018](#)

NFPA 45 Standard on Fire Protection for Laboratories Using Chemicals ~~2015~~ [2019](#)

NFPA 52 Vehicular Natural Gas Fuel Systems Code ~~2016~~ [2019](#)

NFPA 55 Standard for storage, use and handling of compressed gases and cryogenic Fluids in portable and stationary containers, cylinders and tanks ~~2016~~ [2020](#)

NFPA 61 Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities ~~2017~~ [2020](#)

NFPA 69 Standard on Explosion Prevention Systems ~~2014~~ [2019](#)

NFPA 72 National Fire Alarm and Signaling Code ~~2016~~ [2019](#)

NFPA 86 Standard for Ovens and Furnaces ~~2015~~ [2019](#)

NFPA 92 Standard for Smoke Control Systems ~~2015~~ [2018](#)

NFPA 110 Standard for Emergency and Standby Power Systems ~~2016~~ [2019](#)

NFPA 111 Standard for Stored Electrical Energy Emergency and Standby Power Systems ~~2016~~ [2019](#)

NFPA 160 Standard for the Use of Flame Effects Before an Audience ~~2016~~ [2021](#)

NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations ~~2013~~ [2019](#)

NFPA 484 Standard for Combustible Metals ~~2015~~ [2019](#)

NFPA 652 The Fundamentals of Combustible Dust ~~2016~~ [2019](#)

NFPA 654 Standard for Prevention of Fire and Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids ~~2017~~ [2020](#)

NFPA 664 Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities ~~2017~~ [2020](#)

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NFPA 853 Installation of Stationary Fuel Cell Power Systems ~~2015~~ [2020](#)

NFPA 855 – ~~20~~ [23](#) Standard for the installation of energy storage systems

NFPA 914 Code for Fire Protection of Historic Structures ~~2015~~ [2019](#)

NFPA 1126 Standard for the Use of Pyrotechnics Before a Proximate Audience ~~2016~~ [2021](#)

NFPA 1221 – 19 Standard for the Installation, Maintenance, and Use of Emergency Services Communication Systems 2019

NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems ~~2015~~ [2018](#)

**OSHA  
29 CFR 1910 & 1926**

**Appendix "D"**

Remove Appendix D's contents (Fire Department Details) from the adopted Fire Code and create a standalone "Phoenix Fire Department Access and Identification Detail Manual." Appendix D will now refer to this document for access details.