# 2022 Underground #2 Fuel Oil Storage for EPSS Reminder List

## Applicable Codes and Standards

CBC 2022, CEC 2022, CMC 2022, CFC 2022, California Health & Safety Code,
NFPA 30 2021, NFPA 37 2018, NFPA 55 2020, NFPA 99 2021, NFPA 110 2019

## I. Scope

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| **1.** | Emergency and standby power systems required by the California Building Code or the California Fire Code shall be installed in accordance with the California Building Code and NFPA 110. | **CBC, Sec. 2702.1.3** |
| **2.** | Prevention, control and mitigation of dangerous conditions related to storage, use, dispensing, mixing and handling of flammable and combustible liquids shall be in accordance with California Fire Code Chapter 50 and Chapter 57. | **CFC Sec. 5701.1 & 5701.2** |
| **3.** | Flammable and combustible liquids shall not be placed, stored or handled in any occupancy within the scope of California Code of Regulations, Title 19, Division 1 regulations, except as provided in the California Fire Code. | **CCR, Title 19, Div. 1, §3.15** |

## II. Generator Fuel Supply

| CHK | N/A | | | |
|---|---|---|---|---|
| ☐ | ☐ | **1.** | Minimum fuel supply of 24 hrs. full-demand operation for acute care hospital. (Min 72 hrs. for NPC-5) | **CEC, 700-12(D)(2) Exc.1** |
| ☐ | ☐ | **2.** | Minimum fuel supply of 6 hrs. full-demand operation for SNF, Psych, ICF. | **CEC, 700-12(D)(2) Exc.2** |
| ☐ | ☐ | **3.** | Minimum fuel supply of 4 hrs. full-demand operation for ambulatory surgery clinics. | **CEC, 700-12(D)(2) Exc.3** |
| ☐ | ☐ | **4.** | For faciities subject Medicare & Medicade Services (CMS) regulations, see CFR 42 482.15(e)(3) for emergency fueld requirements. | **CEC, 700-12(D)** |
| ☐ | ☐ | **5.** | See OSHPD CAN 2-108 for temporary generator fuel supplies. | **CBC, Sec. 108** |
| ☐ | ☐ | **6.** | Liquid fuel shall feed to engines by pumps only. | **NFPA 37, Sec. 6.9** |
| ☐ | ☐ | **7.** | Fuel supply for exclusive use of EPSS or separate draw down. | **NFPA 110, Sec. 5.5.1 & Sec. 5.5.1.1** |
| ☐ | ☐ | **8.** | Main fuel tank(s) shall be sized to accommodate 133% of the specific EPS class. | **NFPA 110, Sec. 5.5.3** |
| ☐ | ☐ | **9.** | Low-fuel sensing switch required for the main fuel supply tank(s) when less than the minimum fuel required for the specific EPS class remains in the tank(s). | **NFPA 110, Sec. 5.5.2** |
| ☐ | ☐ | **10.** | Calculate full-demand generator fuel consumption. | **NFPA 110, Sec. 7.9.1** |
| ☐ | ☐ | **11.** | Tanks shall be sized so that the fuel is consumed within the storage life, or provisions shall be made to remediate fuel that is stale or contaminated or to replace stale or contaminated fuel with clean fuel. | **NFPA 110, Sec. 7.9.1.3** |
| ☐ | ☐ | **12.** | Prior to being placed into service, tanks shall be tested in accordance with Section 21.5 of NFPA 30. | **CFC, Sec. 5704.2.12.1** |
| ☐ | ☐ | **13.** | Low fuel annunciation at generator panel. | **NFPA 110, Sec. 5.6.5.1** |
| ☐ | ☐ | **14.** | Low fuel annunciation at a remote location on-site or off-site. | **NFPA 110, Sec. 5.6.6.2(1)** |
| ☐ | ☐ | **15.** | Low fuel annunciation at a constantly monitored location. | **NFPA 99, Sec. 6.7.1.2.7.1, 6.7.1.2.7.2(A)-(I)** |
| ☐ | ☐ | **16.** | Low fuel annunciation at regular work station of operating personnel. | **NFPA 99, Sec. 6.7.1.2.7.1, 6.7.1.2.7.2(A)-(I)** |

## III. Underground Tank Installation

| CHK | N/A | | | |
|---|---|---|---|---|
| ☐ | ☐ | **1.** | CUPA (Certified Uniform Program Agency) review and approval required. See OSHPD PIN 2. | **H & S Code, § 25280 et seq** |
| ☐ | ☐ | **2.** | Located with respect to existing foundations and supports such that the loads carried by the latter cannot be transmitted to the tank. | **CFC, Sec. 5704.2.11.1(1)** |
| ☐ | ☐ | **3.** | Tank location distance to wall of basement, pit, cellar or lot line not less than 3 ft.. | **CFC, Sec. 5704.2.11.1(2)** |
| ☐ | ☐ | **4.** | Minimum distance of 1 ft. shell to shell between underground tanks. | **CFC, Sec. 5704.2.11.1(3)** |
| ☐ | ☐ | **5.** | Tank, tank vent and tank filler locations in accordance with NFPA 55, Table 9.3.2. | **NFPA 55, Sec. 9.3.2** |
| ☐ | ☐ | **6.** | Signs prohibiting open flames and smoking. | **CFC, Sec. 5704.2.3.1** |
| ☐ | ☐ | **7.** | Set on a firm foundation and surrounded by at least 6 in. of noncorrosive inert material such as clean sand. | **CFC, Sec. 5704.2.11.2** |
| ☐ | ☐ | **8.** | Covered by 12 in. of backfill and 12 in. of clean earth or 12 in. of compacted backfill and 4" slab of reinforced concrete. | **NFPA 30, Sec. 23.5.2.1** |
| ☐ | ☐ | **9.** | Where subject to traffic, at least 36 in. of backfill or 18 in. of compacted backfill and at least 6 in. of reinforced concrete or 18 in. of compacted backfill and 8 in. of asphaltic concrete. | **NFPA 30, Sec. 23.5.2.2** |
| ☐ | ☐ | **10.** | When asphaltic or reinforced concrete is used for protection, it shall extend at least 12 in. beyond the tank in all directions. | **NFPA 30, Sec. 23.5.2.3** |
| ☐ | ☐ | **11.** | When the depth of cover is greater than the tank diameter or if the pressure at the bottom of the tank can exceed 10 psi, the manufacturer of the tank shall be consulted to determine if reinforcement of the tank is required. | **NFPA 30, Sec. 23.5.3.2** |
| ☐ | ☐ | **12.** | Where the vertical length of the fill and vent pipes is such that when filled with liquid, the static head on the tank bottom can exceed 10 psi, the tank and its piping shall be hydrostatically tested using recognized engineering standards. | **NFPA 30, Sec. 21.5.1.2** |
| ☐ | ☐ | **13.** | Fabrication & construction of tanks complies with NFPA 30. See NFPA 30, Sections 21, 22 & 23. | **CFC, Sec. 5704.2.7** |
| ☐ | ☐ | **14.** | Where a tank is located in an area where it is subject to buoyancy because of a rise in the water table, flooding or accumulation of water from fire suppression operations, uplift protection shall be provided in accordance with Sections 22.14 and 23.14 of NFPA 30. | **CFC, Sec. 5704.2.7.8** |
| ☐ | ☐ | **15.** | Fill pipes shall be equipped with a spill container and an overfill prevention system in accordance with NFPA 30. | **CFC, 5704.2.11.3** |
| ☐ | ☐ | **16.** | Provide an approved method of leak detection from any component of the system that is designed and installed in accordance with NFPA 30. | **CFC, Sec. 5704.2.11.4.2** |
| ☐ | ☐ | **17.** | Fill pipe and discharge lines shall enter only through the top of tank. | **CFC, Sec. 5704.2.7.5.5.2** |
| ☐ | ☐ | **18.** | Fill lines shall be sloped toward the tank. | **CFC, Sec. 5704.2.7.5.5.2** |
| ☐ | ☐ | **19.** | Fuel tanks supplied by pumps shall have (1) overflow line piped to source tank, (2) high level alarm and (3) high-level automatic shutoff. | **NFPA 37, Sec. 6.5.4** |
| ☐ | ☐ | **20.** | Filling, emptying and vapor recovery connections shall be located outside buildings, away from sources of ignition not less than 5 ft. from building openings or lot lines of property that can be built upon & not more than 5 ft. above finished ground level.. | **CFC, Sec. 5704.2.7.5.2 & Sec. 5704.2.7.5.6** |
| ☐ | ☐ | **21.** | Prior to being placed in service, tanks shall be tested in accordance with NFPA 30, Sec. 21.5. An approved listing mark on tank is evidence of compliance. | **CFC, Sec. 5704.2.12.1** |
| ☐ | ☐ | **22.** | Before covering, tanks and connected piping shall be tested for tightness in the presence of the fire code official. | **CFC Sec. 5704.2.12.2** |
| ☐ | ☐ | **23.** | Tanks and piping shall be protected by a cathodic protection system or constructed of approved or listed corrosion-resistant materials or systems. | **NFPA 30, Sec. 23.3.5** |

## IV. Generator Fuel Supply/Return Piping

| CHK | N/A | | | |
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| ☐ | ☐ | **1.** | Provisions shall be made for pressure testing of piping. | **CFC, Sec. 5703.6.3** |
| ☐ | ☐ | **2.** | Protected from corrosion and galvanic action. | **CFC, Sec. 5703.6.5** |
| ☐ | ☐ | **3.** | Piping protected from damage by guard posts or other approved means in accordance with CFC Sec. 312. | **CFC, Sec. 5703.6.4** |
| ☐ | ☐ | **4.** | Supports protected by 2-hr fire rating, draining away or other approved means. | **CFC, Sec. 5703.6.8** |
| ☐ | ☐ | **5.** | Approved metallic or nonmetallic flex connectors permitted to protect the piping. | **NFPA 37, Sec. 6.8.2.1** |
| ☐ | ☐ | **6.** | Valves shall be provided to control normal flow and shut off flow for breaks. | **NFPA 37, Sec. 6.8.3** |
| ☐ | ☐ | **7.** | Fuel piping shall be of compatible metal to minimize electrolysis and be properly sized. | **NFPA 110, Sec. 7.9.3** |
| ☐ | ☐ | **8.** | Galvanized fuel lines shall not be used. | **NFPA 110, Sec. 7.9.3.1** |
| ☐ | ☐ | **9.** | Approved flexible fuel lines shall be used between the prime mover and the fuel piping. | **NFPA 110, Sec. 7.9.3.2** |
| ☐ | ☐ | **10.** | Fuel line solenoids shall be battery powered. | **NFPA 110, Sec. 7.9.9 & Sec. 5.6.3.2** |
| ☐ | ☐ | **11.** | EPS piping shall be designed to minimize damage from earthquakes. | **NFPA 110, Sec. 7.11.5** |
| ☐ | ☐ | **12.** | Gravity return fuel lines between the day tank and main supply tank shall flow freely to the main tank. | **NFPA 110, Sec. 7.9.4.2** |
| ☐ | ☐ | **13.** | Liquid fuel shall feed to engines by pumps. | **NFPA 37, Sec. 6.9** |
| ☐ | ☐ | **14.** | Spill control, drainage control & secondary containment not required for piping connected to systems. See ANSI/ASME B31.3 | **CFC, Sec. 5703.6.2** |
| ☐ | ☐ | **15.** | Listed flexible joints required on underground liquid, vapor and vent piping at tank connections, connections at vent risers and where differential movement can occur. | **CFC, Sec. 5703.6.9** |
| ☐ | ☐ | **16.** | Listed flexible joints are not required for fiberglass-reinforced piping ≤ 4 in. in dia. and piping has a straight run of not less than 4 ft. on one side of a connection changing direction. The installation of nonmetallic piping shall be in accordance with the manufacturer's instructions. | **CFC, Sec. 5703.6.9.1** |

## V. Underground Tank Venting

| CHK | N/A | | | |
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| ☐ | ☐ | **1.** | Vent for normal venting shall vent to exterior not less than 12 ft. above grade level.. | **CFC, Sec. 5704.2.7.3.3** |
| ☐ | ☐ | **2.** | Vent pipes shall terminate at least 5 ft from building openings, lot lines from property that can be built upon and at least 15 ft from powered ventilation air intake devices. | **CFC, Sec. 5704.2.7.3.3 & NFPA 30, Sec. 27.8.2.2** |
| ☐ | ☐ | **3.** | Vent pipe outlets shall be located and directed vertically or horizontally so that vapors will not accumulate or travel to an unsafe location, enter building openings, or be trapped under eaves or other obstructions. | **CFC Sec. 5704.2.7.3.3 & NFPA 30, Sec. 27.8.2.2** |
| ☐ | ☐ | **4.** | Vent pipes and vapor return piping shall be installed without sags or traps in which liquid can collect. Vent piping shall drain back to tank. | **CFC Sec. 5704.2.7.3.4 & NFPA 30, Sec. 27.8.2.9** |
| ☐ | ☐ | **5.** | Vent outlets and devices shall be protected to minimize the possibility of blockage from weather, dirt, or insect nests. | **NFPA 30, Sec. 27.8.2.4** |
| ☐ | ☐ | **6.** | Vent piping shall not be manifolded unless otherwise required. When vent piping is manifolded, piping shall be sized to prevent excessive pressure when tanks are filled simultaneously. | **CFC, Sec. 5704.2.7.3.5 & NFPA 30, Sec. 27.8.2.12** |
| ☐ | ☐ | **7.** | Vent pipes shall be permitted to be fitted with return bends, coarse screens, or other devices to minimize ingress of foreign material. | **NFPA 30, Sec. 27.8.2.8** |
| ☐ | ☐ | **8.** | Vent piping protected from physical damage by guard posts or other approved means in accordance with CFC. Sec. 312. | **CFC, Sec. 5703.6.4 & NFPA 30, Sec. 27.8.2.11** |
| ☐ | ☐ | **9** | Normal vent piping shall not be used for any other purpose. | **CFC Sec. 5704.2.7.3.1** |
| ☐ | ☐ | **10.** | The tank end of the vent pipe shall enter the tank through the top. | **NFPA 30, Sec. 27.8.2.11** |

**NOTE**

**Compliance with all items on this list does not necessarily assure compliance with all provisions of the applicable codes and standards. This reminder list should be used only by persons with a comprehensive knowledge of the applicable codes and standards.**

OSHPD Policy Intent Notices and Code Application Notices.
https://hcai.ca.gov/construction-finance/codes-and-regulations/#PINs
https://hcai.ca.gov/construction-finance/codes-and-regulations/#CANs
OSHPD Project Review Status
https://hcai.ca.gov/construction-finance/resources/project-status-reports/
OSHPD Public Use Forms
https://hcai.ca.gov/construction-finance/resources/forms-applications-reminder-