2007 Emergency Power Supply Systems - Generators Reminder List

Applicable Codes and Standards
CBC 2007, CEC 2007, CMC 2007, CFC 2007
NFPA 37 2002, NFPA 99 2005, NFPA 110 2005

CHK	N/A	I. Generator Connections	
☐	☐	**1.** Detached structures shall be of noncombustible or fire-resistive construction.	**NFPA 37 4.1.2.1**
☐	☐	**2.** Detached structures shall have ventilation to prevent the accumulation of flammable vapors.	**NFPA 37 4.1.2.2**
☐	☐	**3.** Engine rooms in structures shall have building elements of at least 1-hour fire resistance rating.	**NFPA 37 4.1.2.3**
☐	☐	**4.** Engine rooms shall have ventilation to prevent the accumulation of flammable vapors.	**NFPA 37 4.1.2.5**
☐	☐	**5.** Openings ONLY permitted in exterior walls if in an I Occupancy.	**CBC Sec. 432.2.2.1**
☐	☐	**6.** Exterior openings shall be protected below or within 10' of building openings.	**CBC Sec. 432.2.2**
☐	☐	**7.** Minimum 1-hour occupancy separation required when in a building.	**CBC Sec. 432.2.1**
☐	☐	**8.** Occupancies shall be separated by fire barriers in accordance with CBC Table 508.3.3.	**CBC Sec. 508.3.3.4.1**
☐	☐	**9.** Engines and enclosures installed on roofs shall be located at least 5 ft from openings and from structures having combustible walls.	**NFPA 37 4.1.4**
☐	☐	**10.** Surface beneath engines on a roof shall be noncombustible to a minimum distance of 12 in.	**NFPA 37 4.1.3.2**
☐	☐	**11.** Engines installed outdoors shall be located at least 5 ft from building openings.	**NFPA 37 4.1.4**
☐	☐	**12.** Engines installed outdoors shall be located at least 5 ft structures having combustible walls.	**NFPA 37 4.1.4**
☐	☐	**13.** Adequate air shall be provided for cooling and to replenish engine combustion air.	**NFPA 99 Sec. 4.4.1.1.12.2**
☐	☐	**14.** Provisions shall be made to maintain generator room to maximum ambient air temperature required by the EPS manufacturer.	**NFPA 99 Sec. 4.4.1.1.12.1**
☐	☐	**15.** Generators shall not be located in a room or area used for any other purpose.	**CBC Section 432.2.3**
☐	☐	**16.** Energy converters shall not be located in the generator room.	**NFPA 99 Sec. 4.4.1.1.8.1**

		II. Generator Protection	
☐	☐	**1.** Equipment located to minimize damage resulting from vandalism, tampering, or sabotage.	**NFPA 110 7.2.4**
☐	☐	**2.** Normal power service equipment not permitted in generator room where service equipment is <150 volts or ≤1000 amperes.	**NFPA 110 7.2.4**
☐	☐	**3.** No combustible materials permitted in room.	**Title 19 Sec. 3.19(f)**
☐	☐	**4.** Spill control & secondary containment aboveground storage tanks >1000 gal.	**CFC Sec. 3304.4**
☐	☐	**5.** Monitoring of secondary containment.	**CFC Sec. 2704.2.2.5**
☐	☐	**6.** Protected by fire sprinklers if H-3 Occupancy .	**CFC Sec. 3405.3.5.3 & Sec. 3405.3.7.3**
☐	☐	**7.** Not permitted in basement if H-3 Occupancy.	**CFC Sec. 3405.3.5.3 & Sec. 3405.3.7.2**
☐	☐	**8.** Generators readily accessible for repair, maintenance, cleaning, or replacement.	**NFPA 110 7.2.5**
☐	☐	**9.** Water jacket heater provided or room heated.	**NFPA 99 Sec. 4.4.1.1.11**
☐	☐	**10.** Heated enclosure or battery heater provided for outdoor enclosures.	**NFPA 110 Sec. 5.3.1**
☐	☐	**11.** Automatic battery charger provided.	**NFPA 110 Sec. 5.6.4.6**
☐	☐	**12.** Level 1 control panel provided at generator.	**NFPA 110 Sec. 5.6.5.1**
☐	☐	**13.** Remote annunciation at location readily observed by personnel.	**NFPA 99 Sec. 4.4.1.1.17**
☐	☐	**14.** Remote audible & visible alarm at continuously monitored location.	**NFPA 99 Sec. 4.4.1.1.17**
☐	☐	**15.** Remote engine shutdown for engines > 10 hp.	**NFPA 37 Sec. 9.2.2**
☐	☐	**16.** Remote fuel & combustion air shutoff for deisel engines in hazardous areas.	**NFPA 37 Sec. 9.2.2**

CHK	N/A	III. Generator Fuel Supply	
☐	☐	**1.** Minimum fuel supply of 24 hrs. for acute care hospital.	**CEC Sec. 700-12(B)(2) Exc. 1**
☐	☐	**2.** Minimum fuel supply of 6 hrs. for SNF, Psych, ICF.	**CEC Sec. 700-12(B)(2) Exc. 2**
☐	☐	**3.** Minimum fuel supply of 4 hrs. for ambulatory surgery clinics.	**CEC Sec. 700-12(B)(2) Exc. 3**
☐	☐	**4.** Minimum fuel supply of 72 hrs. when required to meet NPC-5.	**CEC Sec. 700-12(B)(2) Exc. 1**
☐	☐	**5.** Fuel supply for exclusive use of EPSS or separate draw down.	**NFPA 110 Sec. 5.5.1**
☐	☐	**6.** Fuel tanks shall be sized to accommodate the specific EPS class	**NFPA 110 Sec. 5.5.3**
☐	☐	**7.** Low-fuel sensing switch required for the main fuel supply tank(s).	**NFPA 110 Sec. 5.5.2**
☐	☐	**8.** Liquid fuel shall feed to engines by pumps only.	**NFPA 37 Sec. 6.9**
☐	☐	**9.** Approved flexible fuel lines shall be used between the prime mover and the fuel piping.	**NFPA 110 Sec. 7.9.3.2**
☐	☐	**10.** Approved metallic or nonmetallic flexible connectors permitted to protect the	**NFPA 37 Sec. 6.8.2.1**

piping. NFPA 37 Sec . 6.8.2.1

☐	☐	**11.** Exhaust piping shall be connected to the prime mover by means of a flexible connector.	**NFPA 110 Sec. 7.10.3**
☐	☐	**12.** Flexible electrical conduit connections provided.	**NFPA 110 Sec. 7.12.4**
☐	☐	**13.** Flexible hoses for cooling system provided.	**NFPA 110 Sec. 7.8.5**

IV. Generator Fuel Supply/Return Piping

☐	☐	**1.** Fuel piping shall be of compatible metal to minimize electrolysis and be properly sized.	**NFPA 110 Sec 7.9.3**
☐	☐	**2.** Galvanized fuel lines shall not be used.	**NFPA 110 Sec. 7.9.3.1**
☐	☐	**3.** Protected from galvanic action.	**CFC Sec. 3304.6.5**
☐	☐	**4.** Protected from corrosion.	**CFC Sec. 3304.6.5**
☐	☐	**5.** Supports protected by 2-hr fire rating or other approved means.	**CFC Sec. 3304.6.8**
☐	☐	**6.** EPS piping shall be designed to minimize damage from earthquakes.	**NFPA 110 Sec. 7.11.6**
☐	☐	**7.** Liquid fuel shall feed to engines by pumps only.	**NFPA 37 Sec. 6.9**
☐	☐	**8.** Approved flexible fuel lines shall be used between the prime mover and the fuel piping.	**NFPA 110 Sec. 7.9.3.2**
☐	☐	**9.** Approved metallic or nonmetallic flexible connectors permitted to protect the piping.	**NFPA 37 Sec . 6.8.2.1**
☐	☐	**10.** Provisions shall be made for pressure testing of piping.	**CFC Sec. 3304.6.3**

V. Generator Exhaust

☐	☐	**1.** Approved thimble(s) required where exhaust passes through combustible walls or partitions.	**NFPA 110 Sec. 7.10.3.4**
☐	☐	**2.** Exhaust system shall be designed so it does not create excessive backpressure.	**NFPA 110 Sec. 7.10.4**
☐	☐	**3.** Exhaust piping shall be connected to the prime mover by means of a flexible connector.	**NFPA 110 Sec. 7.10.3**
☐	☐	**4.** Low points in exhaust systems shall have suitable drains.	**NFPA 37 Sec. 8.1.5**
☐	☐	**5.** Exhaust systems shall terminate outside a structure.	**NFPA 37 Sec. 8.2.3.1**
☐	☐	**6.** Exhaust termination a minimum 25' from ventilation air inlets or windows.	**NFPA 37 Sec. 5-10.2 & CMC Sec. 407.2.1**
☐	☐	**7.** Exhaust shall be independently supported.	**NFPA 110 Sec 7.10.3**
☐	☐	**8.** Exhaust systems shall be a metal, masonry, or factory-built chimney.	**NFPA 37 Sec. 8.2.5**
☐	☐	**9.** Exhaust pipes <1400degrees F shall have clearances from combustible materials as per NFPA 37 Sec. 7-3.1.	**NFPA 37 Sec. 8.3**
☐	☐	**10.** Exhaust pipes >1400degrees F shall comply with NFPA 211	**NFPA 37 Sec. 8.3**

VI. Generator Day Tanks

CHK	N/A		
☐	☐	**1.** Required when fuel pump lift (suction head) is not adequate.	**NFPA 110 Sec. 7.9.2**
☐	☐	**2.** Not permitted near exit.	**CFC Sec. 3404.3.3.3**
☐	☐	**3.** Vents to exterior not less than 12 ft above adjacent ground level.	**CFC Sec. 3404.2.7.3.3**
☐	☐	**4.** Fabrication & construction of tanks complies with NFPA 30.	**CFC Sec. 3404.2.7**
☐	☐	**5.** Supports and connections structurally designed per CBC and NFPA 30.	**CFC Sec. 3404.2.7.7**
☐	☐	**6.** Spill control and secondary containment when container exceeds 55 gal or aggregate capacity exceeds 1000 gal.	**CFC Sec. 3405.3.7.6.3**
☐	☐	**7.** Spill control and secondary containment when above lowest story or basement.	**NFPA 37 Sec. 6.3.2.4**
☐	☐	**8.** Drainage control or diking required for unprotected aboveground tanks located outside.	**CFC Sec. 3404.2.10**
☐	☐	**9.** Drainage control or diking not required for listed secondary containment tank	**CFC Sec. 3304.2.10, #2**
☐	☐	**10.** Spill control and secondary containment when storage tanks are located on roof.	**NFPA 37 Sec. 6.3.4.2**
☐	☐	**11.** Monitoring of secondary containment required.	**CFC Sec. 2704.2.2.5**
☐	☐	**12.** Maximum capacity 660 gal.	**NFPA 37 Sec. 5-3.2.2**
☐	☐	**13.** Maximum aggregate 660 gal capacity of all day tanks connected to one generator.	**NFPA 37 Sec. 5-3.2.2**
☐	☐	**14.** The aggregate capacity of all day tanks not to exceed 1320 gal.	**NFPA 37 Sec. 6.3.2.3**
☐	☐	**15.** Liquid storage room <1000 sq ft must have at least 25% of perimeter on an exterior wall.	**CBC Sec. 415.3**
☐	☐	**16.** Sprinkler protection required when quantity exceeds 120 gal.	**CFC Sec. 3404.3.7.5.1**
☐	☐	**17.** Liquid storage room required when quantity exceeds 480 gal.	**CFC Sec. 3404.3.4.3**
☐	☐	**18.** Liquid storage room must be separated from adjacent occupancies as required for H-3 occupancies.	**CBC Sec. 508.3.3.4**
☐	☐	**19.** Signage in accordance with NFPA 704 and CFC Sec. 3403.5.	**CFC Sec. 3403.5**

VII. Emergency Power

1. Battery powered emergency lighting required.	**NFPA 110 Sec. 7.3.1**
2. Battery charger for task illumination connected to life safety branch (hospitals).	**CEC Sec 517-32(E)**
3. Receptacles at Gen Set connected to life safety branch (hospitals).	**CEC Sec. 517-32(E)**
4. Task illumination connected to life safety branch (SNF's).	**CEC Sec. 517-42(F)**
5. Receptacles at Gen Set connected to life safety branch (SNF's).	**CEC Sec. 517-42(F)**
6. Equipment essential to operation of generator (ventilation, fuel oil pumps, etc.) powered by EPS.	**NFPA 110 Sec. 7.12.5**

VIII. Exiting

1. Common path of travel for H-3 Occupancy > 25 ft.	**CBC Sec. 1014.3**
2. Swing in direction of egress if H-3 Occupancy.	**CBC Sec. 1008.1.2**
3. Panic hardware required if H-3 Occupancy.	**CBC Sec. 1008.1.9**
4. Two exits required if H Occupancy with occupant load > 3.	**CBC Sec. 1015.1**

IX. Testing

1. 2-hour test with full load.	**NFPA 110 Sec. 7.13.6**
2. Cold start & 2-hour test with building load.	**NFPA 110 Sec. 7.13.4.1**
3. Cycle crank test.	**NFPA 110 Sec. 7.13.10**
4. All safeties required by NFPA 110 Sec. 5.6.5 and 5.6.6 shall be tested.	**NFPA 110 Sec. 7.13.11**

NOTE:

The purpose of this list is to reduce oversights and to achieve minimum levels of uniformity and completeness. The use of this reminder list does not constitute a complete plan review. 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.
http://www.oshpd.ca.gov/FDD/Regulations/pinscans.html

OSHPD Project Review Status
http://www.oshpd.ca.gov/FDD/Project_Tracking/index.asp

OSHPD Public Use Forms
http://www.oshpd.ca.gov/FDD/Forms/index.html