Standard EC.02.03.01

The hospital manages fire risks.

Elements of Performance for EC.02.03.01

1. The hospital minimizes the potential for harm from fire, smoke, and other products of combustion.

2. If patients are permitted to smoke, the hospital takes measures to minimize fire risk. (See also EC.02.01.03, EP 4)

4. The hospital maintains free and unobstructed access to all exits.

   **Note:** This requirement applies to all buildings classified as business occupancy. The “Life Safety” (LS) chapter addresses the requirements for all other occupancy types.

9. The hospital has a written fire response plan. (See also LS.02.01.70, EP 4)

10. The written fire response plan describes the specific roles of staff and licensed independent practitioners at and away from a fire’s point of origin, including when and how to sound fire alarms, how to contain smoke and fire, how to use a fire extinguisher, and how to evacuate to areas of refuge. (See also EC.02.03.03, EP 5; EC.03.01.01, EP 2; and HR.01.04.01, EP 2)

   **Note:** For additional guidance, see NFPA 101, 2000 edition (Sections 18/19.7.1 and 18/19.7.2)
Standard EC.02.04.01
The hospital manages medical equipment risks.

Elements of Performance for EC.02.04.01

1. The hospital solicits input from individuals who operate and service equipment when it selects and acquires medical equipment.

2. The hospital maintains either a written inventory of all medical equipment or a written inventory of selected equipment categorized by physical risk associated with use (including all life-support equipment) and equipment incident history. The hospital evaluates new types of equipment before initial use to determine whether they should be included in the inventory. (See also EC.02.04.03, EPs 1 and 3)

3. The hospital identifies the activities, in writing, for maintaining, inspecting, and testing for all medical equipment on the inventory. (See also EC.02.04.03, EPs 2 and 3)

   Note: Hospitals may use different strategies for different items as appropriate. For example, strategies such as predictive maintenance, reliability-centered maintenance, interval-based inspections, corrective maintenance, or metered maintenance may be selected to ensure reliable performance.

4. The hospital identifies, in writing, frequencies for inspecting, testing, and maintaining medical equipment on the inventory based on criteria such as manufacturers’ recommendations, risk levels, or current hospital experience. (See also EC.02.04.03, EPs 2 and 3)

5. The hospital monitors and reports all incidents in which medical equipment is suspected in or attributed to the death, serious injury, or serious illness of any individual, as required by the Safe Medical Devices Act of 1990.

6. The hospital has written procedures to follow when medical equipment fails, including using emergency clinical interventions and backup equipment.
Standard EC.02.05.01

The hospital manages risks associated with its utility systems.

Elements of Performance for EC.02.05.01

1. The hospital designs and installs utility systems that meet patient care and operational needs. (See also EC.02.06.05, EP 1)

2. The hospital maintains a written inventory of all operating components of utility systems or maintains a written inventory of selected operating components of utility systems based on risks for infection, occupant needs, and systems critical to patient care (including all life-support systems). The hospital evaluates new types of utility components before initial use to determine whether they should be included in the inventory. (See also EC.02.05.05, EPs 1, 3-5)

3. The hospital identifies, in writing, inspection and maintenance activities for all operating components of utility systems on the inventory. (See also EC.02.05.05, EPs 3-5; EC.02.05.09, EP 1)

   Note 1: Hospitals may use different approaches to maintenance. For example, activities such as predictive maintenance, reliability-centered maintenance, interval-based maintenance, corrective maintenance, or metered maintenance may be selected to ensure dependable performance.

   Note 2: For guidance on maintenance and testing activities for Essential Electric Systems (Type I), see NFPA 99, 1999 edition (Section 3-4.4).

4. The hospital identifies, in writing, the intervals for inspecting, testing, and maintaining all operating components of the utility systems on the inventory, based on criteria such as manufacturers’ recommendations, risk levels, or hospital experience. (See also EC.02.05.05, EPs 3-5)

5. The hospital minimizes pathogenic biological agents in cooling towers, domestic hot- and cold-water systems, and other aerosolizing water systems.

6. In areas designed to control airborne contaminants (such as biological agents, gases, fumes, dust), the ventilation system provides appropriate pressure relationships, air-exchange rates, and filtration efficiencies.

   Note: Areas designed for control of airborne contaminants include spaces such as operating rooms, special procedure rooms, delivery rooms for patients diagnosed with or suspected of having airborne communicable diseases (for example, pulmonary or laryngeal tuberculosis), patients in “protective environment” rooms (for example, those receiving bone marrow transplants), laboratories, pharmacies, and sterile supply rooms. For further information, see Guidelines for Design and Construction of Health Care Facilities, 2010 edition, administered by the Facility Guidelines Institute and published by the American Society for Healthcare Engineering (ASHE).

7. The hospital maps the distribution of its utility systems.
8. The hospital labels utility system controls to facilitate partial or complete emergency shutdowns.

9. The hospital has written procedures for responding to utility system disruptions.

10. The hospital’s procedures address shutting off the malfunctioning system and notifying staff in affected areas.

11. The hospital’s procedures address performing emergency clinical interventions during utility system disruptions.

12. The hospital’s procedures address how to obtain emergency repair services.

13. The hospital responds to utility system disruptions as described in its procedures.

Standard EC.02.05.03

The hospital has a reliable emergency electrical power source.

Elements of Performance for EC.02.05.03

The hospital provides emergency power for the following:

1. Alarm systems, as required by the Life Safety Code.
   
   **Note:** For guidance in establishing a reliable emergency power system (that is, an essential electrical distribution system), see NFPA 99, 1999 edition (Section 1 2-3.3).

2. Exit route and exit sign illumination, as required by the Life Safety Code.
   
   **Note:** For guidance in establishing a reliable emergency power system (that is, an essential electrical distribution system), see NFPA 99, 1999 edition (Section 1 2-3.3)

3. Emergency communication systems, as required by the Life Safety Code.
   
   **Note:** For guidance in establishing a reliable emergency power system (that is, an essential electrical distribution system), see NFPA 99, 1999 edition (Section 1 2-3.3)

4. Elevators (at least one for nonambulatory patients).
   
   **Note:** For guidance in establishing a reliable emergency power system (that is, an essential electrical distribution system), see NFPA 99, 1999 edition (Section 1 2-3.3)

5. Equipment that could cause patient harm when it fails, including life-support systems; blood, bone, and tissue storage systems; medical air compressors; and medical and surgical vacuum systems.
   
   **Note:** For guidance in establishing a reliable emergency power system (that is, an essential electrical distribution system), see NFPA 99, 1999 edition (Section 1 2-3.3)

6. Areas in which loss of power could result in patient harm, including operating rooms, recovery rooms, obstetrical delivery rooms, nurseries, and urgent care areas.
   
   **Note:** For guidance in establishing a reliable emergency power system (that is, an essential electrical distribution system), see NFPA 99, 1999 edition (Section 1 2-3.3)

Standard EC.02.05.07
The hospital inspects, tests, and maintains emergency power systems.

Note: This standard does not require hospitals to have the types of emergency power equipment discussed below. However, if these types of equipment exist within the building, then the following maintenance, testing, and inspection requirements apply.

Rationale for EC.02.05.07
Emergency electrical power supply systems may fail during a power disruption, leaving the hospital unable to deliver safe care, treatment, and services to patients. Testing these systems for sufficient lengths of time at regular frequencies increases the likelihood of detecting reliability problems and reduces the risk of losing this critical resource when it is most needed.

Elements of Performance for EC.02.05.07

1. At 30-day intervals, the hospital performs a functional test of battery-powered lights required for egress for a minimum duration of 30 seconds. The completion date of the tests is documented.

2. Every 12 months, the hospital either performs a functional test of battery-powered lights required for egress for a duration of 1½ hours; or the hospital replaces all batteries every 12 months and, during replacement, performs a random test of 10% of all batteries for 1½ hours. The completion date of the tests is documented.

3. Every quarter, the hospital performs a functional test of stored emergency power supply systems (SEPSS) for 5 minutes or as specified for its class (whichever is less). The hospital performs an annual test at full load for 60% of the full duration of its class. The completion dates of the tests are documented.

Note 1: Non-SEPSS battery backup emergency power systems that the hospital has determined to be critical for operations during a power failure (for example, laboratory equipment or electronic medical records) should be properly tested and maintained in accordance with manufacturer’s recommendations.

Note 2: SEPSS are intended to automatically supply illumination or power to critical areas and equipment essential for safety to human life. Included are systems that supply emergency power for such functions as illumination for safe exiting, ventilation where it is essential to maintain life, fire detection and alarm systems, public safety communications systems, and processes where the current interruption would produce serious life safety or health hazards to patients, the public, or staff.

Note 3: Class defines the minimum time for which the SEPSS is designed to operate at its rated load without being recharged. For additional guidance, see

4. Twelve times a year, at intervals of not less than 20 days and not more than 40 days, the hospital tests each emergency generator for at least 30 continuous minutes. The completion dates of the tests are documented.

5. The emergency generator tests are conducted with a dynamic load that is at least 30% of the nameplate rating of the generator or meets the manufacturer’s recommended prime movers’ exhaust gas temperature. If the hospital does not meet either the 30% of nameplate rating or the recommended exhaust gas temperature during any test in EC.02.05.07, EP 4, then it must test each emergency generator once every 12 months using supplemental (dynamic or static) loads of 25% of nameplate rating for 30 minutes, followed by 50% of nameplate rating for 30 minutes, followed by 75% of nameplate rating for 60 minutes, for a total of 2 continuous hours.

6. Twelve times a year, at intervals of not less than 20 days and not more than 40 days, the hospital tests all automatic transfer switches. The completion date of the tests is documented.

7. At least once every 36 months, hospitals with a generator providing emergency power for the services listed in EC.02.05.03, EPs 5 and 6, test each emergency generator for a minimum of 4 continuous hours. The completion date of the tests is documented.

   Note: For additional guidance, see NFPA 110, 2005 edition, Standard for Emergency & Standby Power Systems.

8. The 36-month emergency generator test uses a dynamic or static load that is at least 30% of the nameplate rating of the generator or meets the manufacturer’s recommended prime movers’ exhaust gas temperature.

9. If a required emergency power system test fails, the hospital implements measures to protect patients, visitors, and staff until necessary repairs or corrections are completed.

10. If a required emergency power system test fails, the hospital performs a retest after making the necessary repairs or corrections.
Standard EC.02.05.05

The hospital inspects, tests, and maintains utility systems.

Note: At times, maintenance is performed by an external service. In these cases, hospitals are not required to possess maintenance documentation but must have access to such documentation during survey and as needed.

Elements of Performance for EC.02.05.05

1. The hospital tests utility system components on the inventory before initial use. The completion date of the tests is documented. (See also EC.02.05.01, EP 2)

The hospital inspects, tests, and maintains the following:

2. Life-support utility system components on the inventory. These activities are documented. (See also EC.02.05.01, EPs 2-4)

3. Infection control utility system components on the inventory. These activities are documented. (See also EC.02.05.01, EPs 2-4)

4. Non-life-support utility system components on the inventory. These activities are documented. (See also EC.02.05.01, EPs 2-4)