

TYPE 1 ESSENTIAL ELECTRICAL SYSTEMS

GOVERNED BY NFPA 99 AND NFPA 70



RCW 70.41.080



Standards for fire protection and the enforcement thereof, with respect to all hospitals to be licensed hereunder shall be the responsibility of the chief of the Washington state patrol, through the director of fire protection, who shall adopt, after approval by the department, the recognized standards applicable to hospitals for the protection of life against the cause and spread of fire and fire hazards adopted by the Federal Centers for Medicare and Medicaid services for hospitals that care for Medicare or Medicaid beneficiaries.

NFPA 99 CHAPTER 3

- **Type 1 systems are divided into the Emergency System and the Equipment System**
- **The emergency system shall be limited to circuits essential to life safety and critical patient care.**
 - **These are designated life safety branch and the critical branch.**
- **The equipment system shall supply major electrical equipment necessary for patient care and basic Type I operation.**
- **CMS applies these requirements to both new and existing facilities.**

TYPE 1 ELECTRICAL SYSTEMS

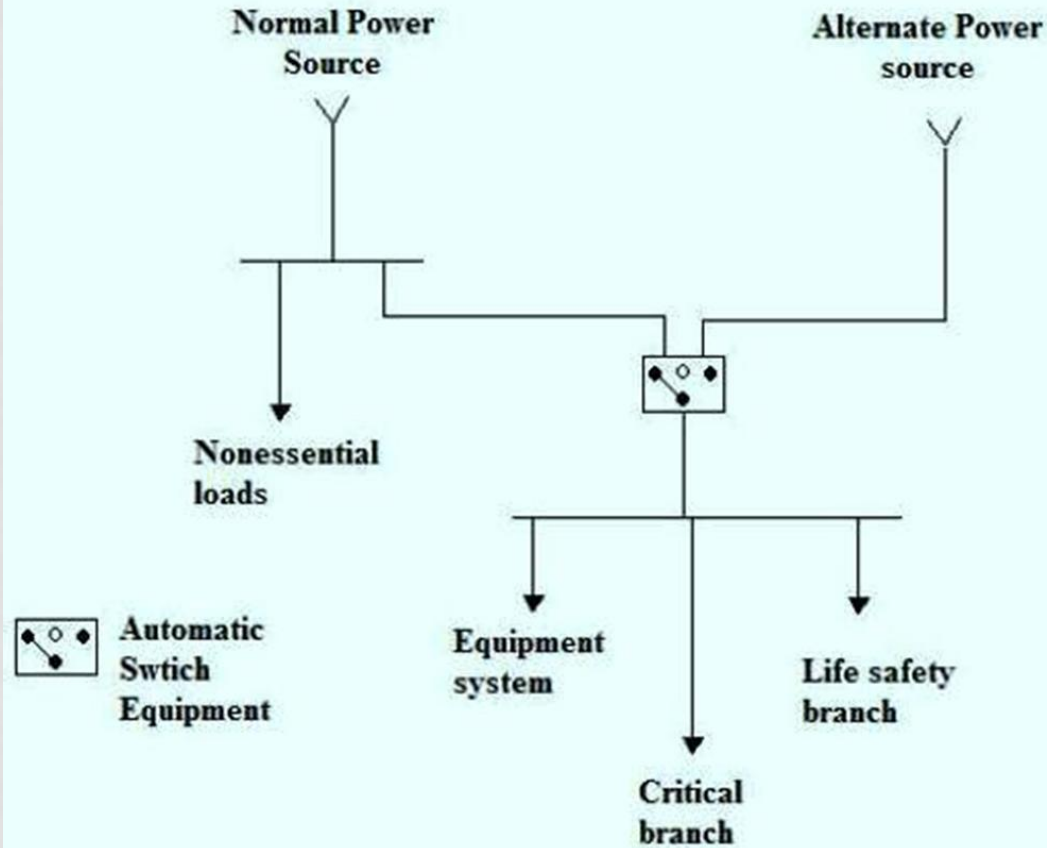
- There needs to be three separate branches with their own dedicated and labeled electrical panels throughout the facility.
- The life safety branch / panels are only allowed to have those systems listed in NFPA 99 3-4.2.2.2 (b) 1-7 (egress illumination, exit signs, med gas / fire alarm systems and alarms, hospital emergency comm. systems, task illumination and receptacles at generator set location and elevator systems)
- The critical branch is dedicated for task illumination and equipment.

TRANSFER SWITCHES

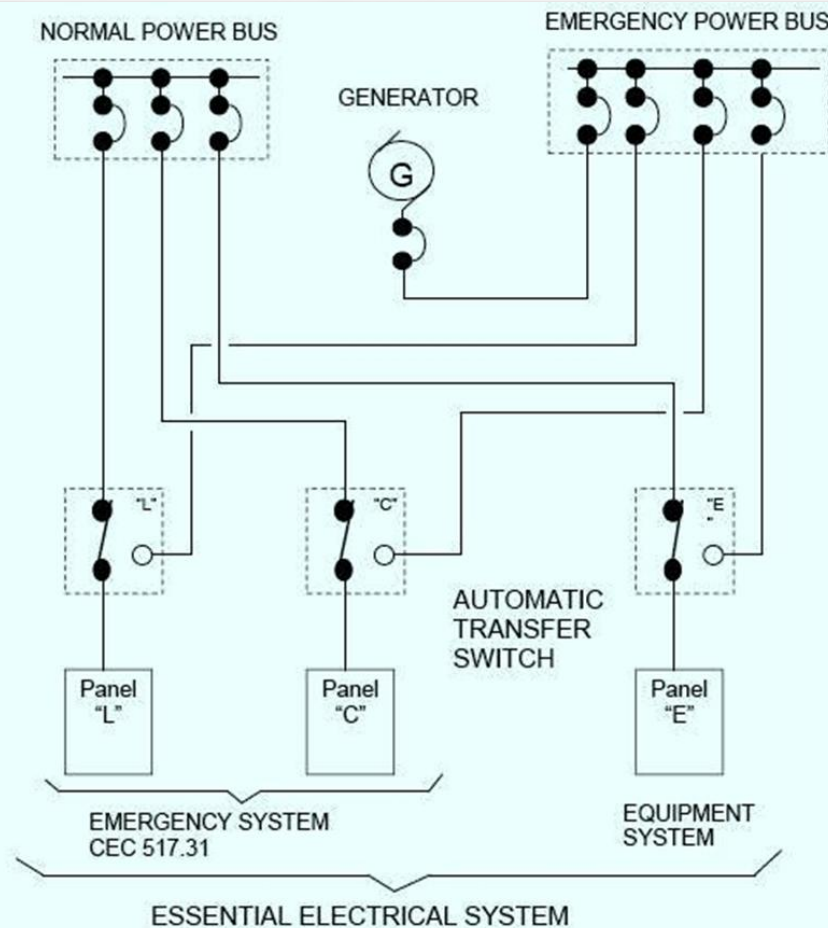
- If the facility's electrical demand is over 150 kv (120kw), the generator must have 3 separate, labeled transfer switches (1 each for the life safety, critical, and equipment branches).
- If the demand is less than 120 kw, the generator can use one transfer switch for multiple branches.
- If the facility does not have documentation of what their demand is, an electrical engineer can conduct a 30 day test to verify the wattage.

ELECTRICAL DEMAND LESS THAN 150 KVA

(150 KVA or less)



ELECTRICAL DEMAND GREATER THAN 150 KVA



MINIMUM ELECTRICAL SYSTEM TYPICAL LARGE HOSPITAL – GREATER
THAN 150 KVA MAXIMUM DEMAND ON ESSENTIAL ELECTRICAL SYSTEM

AMBULATORY SURGICAL CENTERS

- **Type 1 Systems are required if any procedures using general anesthesia occur**
- **This has become an increasing issue in ASC's, as most are actually classified by DOH as an Ambulatory Surgical Site (AS) which means they do not go through a DOH construction review, just local review under the fire code.**

REASONS FOR SEPARATION OF BRANCHES

- **Hospital Loses Power after Transfer Switch Failed – August 2007, Texas:** An automatic transfer switch failed during an outage resulting in a patient wing being without power for an hour.
- **Hospital Backup System Slow to Respond – December 2008, Alabama:** Backup power did not respond due to a faulty circuit breaker impacting emergency room, patient tower and main surgical wing.

FUEL SUPPLIES FOR GENERATORS

- **3-1 Energy Sources.**
- **3-1.1 The following energy sources shall be permitted for use for the emergency power supply (EPS):**
 - **(a)*Liquid petroleum products at atmospheric pressure**
 - **(b) Liquefied petroleum gas (liquid or vapor withdrawal)**
 - **(c) Natural or synthetic gas**
- **Exception: For Level 1 installations in locations where the probability of interruption of off-site fuel supplies is high (e.g., due to earthquake, flood damage, or a demonstrated utility unreliability), on-site storage of an alternate energy source sufficient to allow full output of the emergency power supply system (EPSS) to be delivered for the class specified shall be required, with provision for automatic transfer from the primary energy source to the alternate energy source.**
- **3-1.2* The performance of a Level 1 EPSS in seismic risk areas shall be based on the EPS equipment operating a minimum of 96 hours without refueling if the need for an EPS persists for this period of time.**

GENERATOR REMOTE STOP SWITCH

- **NFPA 110 (1999 edition).**
- **3-5.5.6 All Level 1 and Level 2 installations shall have a remote manual stop station of a type similar to a break-glass station located outside the room housing the prime mover, where so installed, or located elsewhere on the premises where the prime mover is located outside the building.**
- **Appendix A-3-5.5.6 For Level 1 and Level 2 systems located outdoors, the manual shutdown should be located external to the weatherproof enclosure and should be appropriately identified.**