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Understanding EES Branch Separation Requirements

Per 1999 Edition of NFPA 99 & 2002 edition of NFPA 70

The chief distinction between Type 1 and Type 3 Essential Electrical Systems is found in circuiting and distribution requirements. Type 3 systems can be as simple as individual conforming rechargeable battery units attached to each load important to orderly cessation of procedures. A step up in complexity is a hard wired Type 3 EES where a remote alternate source of power (generator or rechargeable battery based) provides back-up through a branch panel hardwired to circuits requiring such emergency backup. All Type 1 EES involve hardwired circuits backed up by an alternate source (generator or rechargeable battery based), but also require separation of loads into three distinct branches to prioritize connection to the alternate source, and avoid incompatible loading conditions.

Any given hardwired Type 3 EES will therefore involve at least two types of branch panels (circuit breaker boxes). One kind that provides only normal power to the loads served, and another that receives power through a transfer switch that will provide alternate power if the normal source is interrupted. While two branch panels are the minimum defined requirement, there could be more depending on the voltage and phasing of power provided – which is to say there could be more than one normal panel, and more than one emergency panel.

Type 1 EES are far more complex, requiring distinction between types of emergency loads connected to each of at least three different emergency panels. NFPA 99 provides a useful summary of the design requirements for a Type 1 EES, but refers to NFPA 70 for greater complexities and details of system design. Both NFPA documents specify separation of emergency loads into two different systems; an Emergency System that backs up loads important to life safety and direct patient care, and an Equipment System that backs up important building service loads like temperature control, air filtration, clinical air compressors or vacuum pumps, etc. The Emergency System is further required to provide a Life Safety Branch and a separate Critical Branch. The NFPA's lists of required loads on each branch and system are fairly comprehensive, and can be found in both NFPA 70 or NFPA 99.

The requirement to physically separate the mandatory branches of a Type 1 EES is found in NFPA 70 section 517.30(C)(1) stating “*Separation from Other Circuits. The life safety branch and critical branch of the emergency system shall be kept entirely independent of all other wiring and equipment and shall not enter the same raceways, boxes, or cabinets with each other or other wiring.*” Simply stated, from the transfer switch on, there can be no shared conduit, box, circuiting, or anything else in common

between the three minimum branches arranged for connection to the alternate source of power. Adding the mandatory Normal branch (for circuits never connected to the alternate source) results in an absolute minimum of four branch panels for any given Type 1 EES. As explained above for Type 3 systems, there can be multiple panels serving each required branch of a Type 1 EES, depending on different power needs of the attached loads.

CMS requires the AAAHC, as a condition of its deeming authority, to re-verify NFPA 99 and 101 conformance at the time of each and every survey – regardless of prior acceptance by any official or agency. Experience over many years, and hundreds of surveys of facilities with prior approval, has demonstrated frequent errors in survey accuracy at all levels of NFPA standards review. CMS does not recognize or honor prior approvals made in error.

Any and all ASCs wishing to achieve and maintain Medicare Certification must continuously comply with NFPA's EES requirements. To do so they must pay particular attention to NFPA 99 and NFPA 70 "electrical distribution" requirements, and be prepared to demonstrate full conformance.

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