

May 10, 2007

CMS Standards Applicable to ASCs -- Essential Electrical Systems
2000 edition of NFPA 101 & 1999 edition of NFPA 99

When CMS adopted the 2000 edition of NFPA 101, and the mandatory cross-referenced 1999 edition of NFPA 99, there were a few very specific exceptions taken to NFPA's documents. First of all, CMS rejected NFPA's waiver of requirements based on the number of patients occupying a given ASC. Next, CMS established a lengthy phase in period (that now has passed) for emergency lighting standards in areas of exit egress. Then finally, in clarifying their intent relative to a dramatic increase in the complexity of NFPA's emergency power requirements (referred to as Essential Electrical System standards, or "EES") took the position that facilities under construction on or before March 11, 2003 could continue to use the relatively simple "Type 3 EES," while newer facilities would discriminate between systems based on the "level" of anesthesia permitted in the specific facility. This position was reiterated and formalized in a May 4, 2007 memo addressed to State Health and Fire authorities (CMS Ref: S&C-07-21) specifying the minimum EES acceptable in any ASC would be Type 3, with the higher standard of Type 1 required in ASCs administering general anesthesia.

The significant differences between Type 1 and 3 systems are many, but there are commonalities as well. Both types of EES require at least two "alternate sources" of power – meaning the "normal" power usually provided by an off site utility company (but could be a remote facility's on-site generator where no utility company is available) plus one or more "emergency sources" like a rechargeable battery system, an on-site generator not involved with normal power, or a separate utility company not involved with providing non-emergency power. In truth, a vast majority of EES have multiple sources of emergency power, since numerous rechargeable batteries are typically involved with exit signage, lighting, medical gas alarms, etc. even where the recognized emergency source is a generator. From a regulatory point of view (NFPA 99, Chapter 3), the discussion of batteries Vs. generator is not "Type specific" for an EES; meaning both Type 1 and Type 3 EES may derive their emergency power from any of the above described emergency sources.

Both types of EES also are required to automatically replace a "failed" normal source within no more than 10 seconds of an interruption. They both as well require on-site written documentation of all tests, maintenance and repairs, as well as full maintenance/operation manuals from the manufacturer or each EES component.

The differences between types of EES involve literally hundreds of specific and technical requirements, but can be explained and investigated in general terms as well. From an ASC owner's, and surveyor's perspective there are three fundamental distinctions between Type 3 and Type 1 systems.

First, and most obvious of all, is the required duration of supply from the emergency source. Type 3 systems must provide at least 90 minutes (1 ½ hours) of emergency power. Type 1 systems must provide at least four hours emergency of emergency power.

Second is the consideration of how many circuits and/or devices must be supplied with emergency power. Type 3 systems must provide the amount of emergency power considered essential for life safety and orderly cessation of procedures – leaving the actual definition of “adequate” largely up to the facility owners (beyond baseline mandates for exit pathway lighting and alarm system functions). Type 1 systems are far more extensive, requiring emergency power as necessary to maintain almost ordinary operations – from heating and air filtration of operating rooms, to elevator operation (in multi-story buildings), to lighting and appliance circuits in patient care areas, and more.

The third distinction relates to the complexity/separation of the circuitry for the EES – typically referred to as “distribution requirements.” Type 3 systems may be as simple as normal power provided through standard electrical receptacles, with emergency power provided by individual rechargeable battery packs connected to each critical device or equipment item. The next, but still relatively simple step is a “hard-wired” Type 3 system with one set of circuits (perhaps a single circuit breaker box) connected only to the normal source, and another set of circuits (a second circuit breaker box) also by the normal source that will be automatically be connected to the emergency source of power if the normal source fails – meaning a hard-wired Type 3 EES can be installed using only two circuit breaker panels (two branches, as NFPA describes it).

Type 1 systems require at least four separate breaker panels – one for circuits served only be normal power; a second for “life safety” circuits related primarily to alarm systems, and emergency exit signage/pathway lighting; a third for “critical” circuits related primarily to patient care areas receptacles and lighting, and for support functions essential to ongoing patient care activities; and a fourth for motor driven equipment important to patient health and safety, from select air conditioning systems, to the clinical vacuum pump, and more. While four branches are minimum, many installations involve as many as eight (or more) due to multiple voltage requirements for each category of electrical load.

As stated above, the NFPA theoretically allows the “alternate source” of power to be supplied by batteries, a generator, or separate utility – but considering the extensive loads involved, it is clear a battery-based Type 1 EES is unlikely, if even possible.

While “older facilities” (those built before 3/11/03) seem to get off easy -- being allowed to administer all types of anesthesia with only a Type 3 EES -- they are somewhat diminished by that “waiver.” The big question for them is their value if the waiver goes away. Upgrading to a Type 1 EES (from any Type 3 EES) will require an extensive

rewiring of the entire facility – likely shutting it down for months and/or impacting its resale value.

NFPA and CMS both indicate systems that fall out of conformance with “Type 3” requirements must be upgraded if they use general anesthesia. Taken literally, this means a failed inspection of the EES could eliminate the waiver, and trigger an upgrade. It is also important to realize that remodeled areas of any ASC must meet the higher standard (if the facility uses general anesthesia), as must additions – meaning existing ASCs that administer general anesthesia could very well end up with two separate EESs in time.

The lesson for all ASCs, especially those built before April 11, 2003, should be to carefully and diligently keep their electrical systems in full conformance with NFPA standards. Aside from minimizing risk related to patient care during a power failure, it will help protect the overall investment by delaying and/or avoiding costly upgrades to the EES.

Your greatest protection from non-conformance with the mandated NFPA standards will come from a thorough self-assessment of your facility’s standing. The original standards can be purchased from the NFPA in Quincy, MA (1-800-344-3555, or <http://www.NFPA.ORG>) and are available in an extensively annotated version called “Handbooks.” Abbreviated checklists of the NFPA requirements are used by some third party accreditation bodies, and could be useful as a self assessment tool (contact your professional society for recommendations.)

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