

NEC Selective Coordination—Up to Which Source?

Introduction

Ever since the requirements for selective coordination were added to Articles 700 and 701 in the 2005 NEC, and Article 708 in the 2008 NEC, there has been a question regarding what the word “all” means in the requirements. A statement by Code Making Panel 13 in the 2011 NEC Report on Proposals seems to have answered the question.

NEC Selective Coordination Requirements

Article 700 covering Emergency Power Systems, Article 701 covering Legally Required Power Systems and Article 708 covering Critical Operations Power Systems all include a similarly worded requirement. For example, the text in Article 700 reads as follows:

700.27 Coordination.

Emergency system(s) overcurrent devices shall be selectively coordinated with all supply side overcurrent protective devices.

The only difference in the wording of Sections 701.18 and 708.54 involves the name of the system.

Section 700.27 also impacts health care facilities, in that Section 517.26 states:

517.26 Application of Other Articles.

The essential electrical system shall meet the requirements of Article 700, except as amended by Article 517.

What does “all” mean?

Some have suggested that “all” means not only all of the overcurrent protective devices (OCPDs) on the load side of the automatic transfer switch (ATS) but also all of the OCPDs on the line side of the ATS, including those up to both the normal source and the alternate source. But this interpretation is in conflict with the scope of the articles. For example, the scope of Article 700 states (emphasis added):

700.1 Scope.

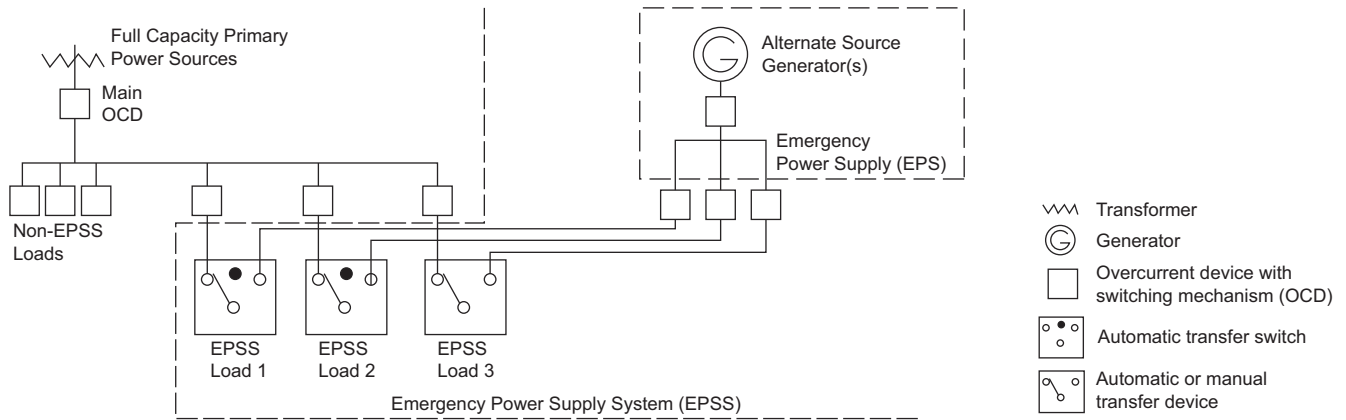
The provisions of this article apply to the electrical safety of the installation, operation, and maintenance of emergency systems consisting of circuits and equipment intended to supply, distribute, and control electricity for illumination, power, or both, to required facilities when the normal electrical supply or system is interrupted.

Emergency systems are those systems legally required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having jurisdiction. These systems are intended to automatically supply illumination, power, or both, to designated areas and equipment in the event of failure of the normal supply or in the event of accident to elements of a system intended to supply, distribute, and control power and illumination essential for safety to human life.

FPN No. 5: For further information regarding performance of emergency and standby power systems, see NFPA 110-2005, Standard for Emergency and Standby Power Systems.

NFPA 110 includes a diagram in the Appendix B.1 that graphically illustrates what part of an electrical system is the Emergency Power Supply System.

Figure 1: Emergency Power Supply System



What position has Code Making Panel 13 (CMP13) taken?

Lengthy proposals were made (13-197, 13-234 and 13-296) to change the text of 700.27, 701.18 and 708.54 in the 2011 NEC. CMP13 rejected all three proposals, stating in part that, “The proposal for “(A) Normal System” covers devices in the normal source that are outside the scope of Article 700.”

Summary

Code Making Panel 13 has answered the question that has been debated over the past two Code cycles, namely that the selective coordination requirements in Sections 700.27, 701.18 and 708.54 apply to those OCPDs on the load side of the ATS and the OCPDs on the alternate source side of the ATS. This position agrees with the scope of the articles and the definition of an Emergency Power Supply System illustrated in NFPA 110.

Of course it would be prudent for selective coordination to also be evaluated up to the normal source, attempting to achieve coordination to the extent practicable. NFPA 110 Annex A states, “A.6.5.1 It is important that the various overcurrent devices be coordinated, as far as practicable, to isolate faulted circuits and to protect against cascading operation on short circuit faults. In many systems, however, full coordination is not practicable without using equipment that could be prohibitively costly or undesirable for other reasons.”

For More Information

Refer to: 2010 Annual Revision Cycle National Electrical Code® Committee Report on Proposals

All above references to the NEC are to the 2008 Edition.
All references to NFPA110 are to the 2005 Edition

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