

NFPA 111

Standard on Stored Electrical Energy Emergency and Standby Power Systems

2005 Edition



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An International Codes and Standards Organization

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Standard on

Stored Electrical Energy Emergency and Standby Power Systems

2005 Edition

This edition of NFPA 111, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*, was prepared by the Technical Committee on Emergency Power Supplies and acted on by NFPA at its November Association Technical Meeting held November 13–17, 2004, in Miami Beach, FL. It was issued by the Standards Council on January 14, 2005, with an effective date of February 7, 2005, and supersedes all previous editions.

This edition of NFPA 111 was approved as an American National Standard on February 7, 2005.

Origin and Development of NFPA 111

The Technical Committee on Emergency Power Supplies was organized in 1976 by NFPA in recognition of the demand for guidelines on the assembly, installation, and performance of electrical power systems to supply critical and essential needs during outages of the normal power source. The committee developed a base standard, NFPA 110, *Standard for Emergency and Standby Power Systems*. During the process of developing NFPA 110, it was determined that several power sources were available for emergency and standby power systems, each of which presented unique characteristics. The committee determined that sufficient differences existed between these sources to justify a multidocument presentation, with each document providing clearly defined specifics. Each document would follow the basic format of NFPA 110 to provide a consistent basis for comparison and usage and would remain under the jurisdiction of the Technical Committee on Emergency Power Supplies.

However, because of the unique knowledge necessary to provide an authoritative document, it was determined that a subcommittee should be established to prepare each document.

The technical committee, late in 1982, authorized a subcommittee to begin preparation of a draft document on systems using stored energy sources. Actual drafting began in 1984. In 1986, the technical committee authorized the entry of a document tentatively titled NFPA 110A, *Stored Energy Emergency and Standby Power Systems*, for adoption at the 1989 NFPA Annual Meeting.

Designated as NFPA 111, this document addressed the performance of stored energy systems with appropriate equipment detail. It did not require the installation of stored energy systems. Rather, it was a document that, if followed, would result in a system suitable for various situations as required by other codes and standards.

The requirements of the standard were considered necessary to obtain the minimum level of reliability and performance, particularly where life safety electrical power needs were involved, and to achieve an on-site stored energy auxiliary electrical power source suitable to the needs of the applicable requirements.

The second edition of NFPA 111, the first under its new designation, contained only minor changes from the 1989 edition.

For the 1996 edition, the major change was the addition of Section 1.5, which covered the acceptability of systems, methods, and devices other than those listed in the document.

The 2001 edition contained two changes: moving informational text to the appendix, and expanded operational testing requirements in Section 6.3.

The 2005 edition has undergone a complete rewrite in accordance with the *Manual of Style for NFPA Technical Committee Documents* (MOS). Along with the MOS rewrite, the committee has reviewed and acted upon public proposals and comments. Some of the document changes include revision of definitions, which are now located in Chapter 3. Other data in the document has been transferred to the table format for greater usability.

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This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on performance criteria for the selection and assembly of the components for emergency and standby power systems in buildings and facilities, including categories of power supplies, transfer equipment, controls, supervisory equipment, and all related electrical and mechanical auxiliary or accessory equipment needed to supply emergency or standby power to the utilization equipment. The Committee also shall be responsible for criteria on the maintenance and testing of the system. This Committee does not cover requirements for the application of emergency power systems, self-contained emergency lighting units, and electrical wiring, except that wiring that is an integral part of the system up to the load side of the transfer switch(es).

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A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for mandatory extracts are given in Chapter 2 and those for nonmandatory extracts are given in Annex B. Editorial changes to extracted material consist of revising references to an appropriate division in this document or the inclusion of the document number with the division number when the reference is to the original document. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex B.

Chapter 1 Administration**1.1 Scope.**

1.1.1* This standard shall cover performance requirements for stored electrical energy systems providing an alternate source of electrical power in buildings and facilities in the event that the normal electrical power source fails.

1.1.2 Systems covered in this standard shall include power sources, transfer equipment, controls, supervisory equipment, and accessory equipment, including integral accessory equipment, needed to supply electrical power to the selected circuits.

1.1.3 This standard shall cover installation, maintenance, operation, and testing requirements as they pertain to the performance of the stored emergency power supply system (SEPSS).

1.1.4 Exclusions.

1.1.4.1 This standard shall not cover the following:

- (1) Application of the SEPSS
- (2) Distribution wiring
- (3) Systems having total outputs less than 500 VA or less than 24 V, or systems less than Class 0.033
- (4) Emergency lighting unit equipment
- (5) Nuclear sources, fuel cells, solar systems, and wind stored-energy systems

1.1.4.2 The following shall not be within the scope of this standard:

- (1) Specific buildings or facilities, or both, requiring an SEPSS

- (2) Specific loads to be served by the SEPSS
- (3) Type, class, or level to be assigned to any specific load (See Section 4.1.)

1.2 Purpose.

1.2.1 This standard shall provide performance requirements for SEPSS and also shall be used in conjunction with other standards.

1.2.2 It shall be the role of other NFPA standards to specify which occupancies require an SEPSS and the applicable level, type, and class.

1.2.3 This standard shall not specify where an SEPSS is required. (See 1.1.4.2.)

1.2.4 This standard shall provide guidance for inspectors, designers, installers, manufacturers, and users of an SEPSS and shall serve as a basis for communication between the parties involved.

1.2.5 This standard shall not be considered a design manual.

1.2.6 Compliance with this standard shall not absolve the parties involved of their respective responsibilities for the design, installation, maintenance, performance, or compliance with other applicable standards and codes.

1.2.7 The installation of a stored-energy system(s) conforming to this standard shall ensure that alternate power is available to minimize life safety hazards resulting from power loss to certain continuous chemical or industrial processes, computer controlled systems, emergency lighting, and the like.

1.3 Application.

1.3.1 This document shall apply to new installations of SEPSS.

1.3.2 Existing systems shall not be required to be modified to conform except where the authority having jurisdiction determines that nonconformity presents a distinct hazard to life.

1.4 Equivalency. Nothing in this standard shall be intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety to those prescribed by this document, provided the requirements of 1.4.1 and 1.4.2 are met.

1.4.1 Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency.

1.4.2 The system, method, or device shall be approved for the intended purpose by the authority having jurisdiction.

1.5 Function.

1.5.1 SEPSS shall provide a source of electrical power of required capacity, reliability, and quality to loads for a given length of time within a specified time after loss, failure, or disruption of the normal power supply.

1.5.2 An SEPSS shall include a means to recharge the stored-energy system.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.