

NFPA® 550

Guide to the Fire Safety Concepts Tree

2012 Edition



NFPA, 1 Batterymarch Park, Quincy, MA 02169-7471
An International Codes and Standards Organization



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NFPA® 550

**Guide to the
Fire Safety Concepts Tree**

2012 Edition

This edition of NFPA 550, *Guide to the Fire Safety Concepts Tree*, was prepared by the Technical Committee on Fire Risk Assessment Methods. It was issued by the Standards Council on December 13, 2011, with an effective date of January 2, 2012, and supersedes all previous editions.

This edition of NFPA 550 was approved as an American National Standard on January 2, 2012.

Origin and Development of NFPA 550

The NFPA Committee on Systems Concepts was organized to be responsible for developing systems concepts and criteria for fire protection in structures. A primary accomplishment of this committee was the development of the Fire Safety Concepts Tree. This *Guide to the Fire Safety Concepts Tree* was developed by the Committee on Systems Concepts in 1985. Appreciation is extended to Dr. John M. Watts, Jr., of the Fire Safety Institute for his major contribution to the contents of this document.

The Committee on Systems Concepts was discharged in October 1990, at which time the Standards Council assumed responsibility for this document.

The 1995 edition represented a reconfirmation of the 1986 edition with editorial clarifications.

The 2002 edition represented the majority of the 1995 edition with changes reflecting NFPA's requirements for document uniformity as prescribed by the *Manual of Style for NFPA Technical Committee Documents*. The changes consisted of formatting, renumbering, and editorial clarifications. Minor changes were made to content and several deletions made with respect to unreferenced text.

The 2007 edition represented a reconfirmation of the 2002 edition.

The 2012 edition represents a reconfirmation of the 2007 edition with updates to referenced publications where necessary.

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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 covering the following: (1) frameworks that identify the relationships of fire safety concepts used for fire prevention and fire control, including codes, standards and recommended practices, and (2) frameworks that describe the properties of risk assessment methods for use in regulations.



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2012 Edition

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

Changes other than editorial are indicated by a vertical rule beside the paragraph, table, or figure in which the change occurred. These rules are included as an aid to the user in identifying changes from the previous edition. Where one or more complete paragraphs have been deleted, the deletion is indicated by a bullet (•) between the paragraphs that remain.

Information on referenced publications can be found in Chapter 2.

Chapter 1 Administration

1.1 Scope. This guide describes the structure, application, and limitations of the Fire Safety Concepts Tree.

1.2 Purpose. This guide is intended to provide tools to assist the Fire Safety Practitioner (e.g., Designer, Engineer, Code Official) in communicating fire safety and protection concepts. Its use can assist with the analysis of codes or standards and facilitate the development of performance-based designs.

1.3 Application. The Fire Safety Concepts Tree provides an overall structure with which to analyze the potential impact of fire safety strategies. It can identify gaps and areas of redundancy in fire protection strategies as an aid in making fire safety decisions. The use of the Fire Safety Concepts Tree should be accompanied by the application of sound fire protection engineering principles.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this guide and should be considered part of the recommendations of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2010 edition.

NFPA 70®, *National Electrical Code*®, 2011 edition.

NFPA 75, *Standard for the Protection of Information Technology Equipment*, 2009 edition.

National Fire Protection Association “Fire Safety Concepts Tree”, 2002 edition.

2.3 Other Publications.

2.3.1 ANSI/UL Publications. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

ANSI/UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1 Hazardous (Classified) Locations*, 2006, including revisions through June 3, 2010.

2.3.2 SFPE Publications. Society of Fire Protection Engineers, 7315 Wisconsin Avenue, Suite 1225 W, Bethesda, MD 20814.

SFPE Engineering Guide to Performance-Based Fire Protection, 2nd edition, 2007.

2.3.3 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Advisory Sections. (Reserved)

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter apply to the terms used in this guide. Where terms are not defined in this chapter or within another chapter, they should be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, is the source for the ordinarily accepted meaning. Descriptions of elements or concepts in the Fire Safety Concepts Tree have been provided to help convey the intent of the Systems Concepts Committee. These descriptions are intended as a guide to the thinking that framed the tree and should not restrict alternative interpretation of the concepts if such alternative descriptions are based on appropriate fire protection engineering principles. For example, it might be appropriate to a specific application of the tree to define “Prevent Fire Ignition” in terms of a flame height or a rate of heat release. At the same time, this is the only published source of definitions of these concepts and is, therefore, a step toward better communication through common understanding. Italicized terms in the descriptions of Fire Safety Concepts Tree elements are defined in Section 3.4, Glossary Terms.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Guide. A document that is advisory or informative in nature and that contains only nonmandatory provisions. A guide may contain mandatory statements such as when a guide can be used, but the document as a whole is not suitable for adoption into law.

3.2.4* Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

