

2009 Fall Revision Cycle

Report on Proposals

A compilation of NFPA® Technical Committee Reports on Proposals for public review and comment

Public Comment Deadline: March 6, 2009

NOTE: The proposed NFPA documents addressed in this Report on Proposals (ROP) and in a follow-up Report on Comments (ROC) will only be presented for action at the NFPA June 2010 Association Technical Meeting to be held June 7–11, 2010, at Mandalay Bay Convention Center in Las Vegas, NV, when proper Amending Motions have been submitted to the NFPA by the deadline of October 23, 2009. Documents that receive no motions will not be presented at the meeting and instead will be forwarded directly to the Standards Council for action on issuance. For more information on the rules and for up-to-date information on schedules and deadlines for processing NFPA documents, check the NFPA website (www.nfpa.org) or contact NFPA Standards Administration.



National Fire Protection Association®

1 BATTERYMARCH PARK, QUINCY, MA 02169-7471

Information on NFPA Codes and Standards Development

I. Applicable Regulations. The primary rules governing the processing of NFPA documents (codes, standards, recommended practices, and guides) are the *NFPA Regulations Governing Committee Projects (RGCPs)*. Other applicable rules include *NFPA Bylaws*, *NFPA Technical Meeting Convention Rules*, *NFPA Guide for the Conduct of Participants in the NFPA Standards Development Process*, and the *NFPA Regulations Governing Petitions to the Board of Directors from Decisions of the Standards Council*. These rules and regulations are contained in the *NFPA Directory*. For copies of the *Directory*, contact Codes and Standards Administration at NFPA Headquarters; these documents are also available on the NFPA website at “www.nfpa.org.”

The following is general information on the NFPA process. All participants, however, should refer to the actual rules and regulations for a full understanding of this process and for the criteria that govern participation.

II. Technical Committee Report (TCR). The Technical Committee Report is defined as “the Report of the Technical Committee and Technical Correlating Committee (if any) on a document. A Technical Committee Report consists of the Report on Proposals (ROP), as modified by the Report on Comments (ROC), published by the Association” (see 1.4 of *RGCPs*).

III. Step 1: Report on Proposals (ROP). The ROP is defined as “a report to the Association on the actions taken by Technical Committees and/or Technical Correlating Committees, accompanied by a ballot statement and one or more proposals on text for a new document or to amend an existing document” (see 1.4 of *RGCPs*). Any objection to an action in the ROP must be raised through the filing of an appropriate Comment for consideration in the ROC or the objection will be considered resolved.

IV. Step 2: Report on Comments (ROC). The ROC is defined as “a report to the Association on the actions taken by Technical Committees and/or Technical Correlating Committees accompanied by a ballot statement and one or more comments resulting from public review of the Report on Proposals (ROP)” (see 1.4 of *RGCPs*). The ROP and the ROC together constitute the Technical Committee Report. Any outstanding objection following the ROC must be raised through an appropriate Amending Motion at the Association Technical Meeting or the objection will be considered resolved.

V. Step 3a: Action at Association Technical Meeting. Following the publication of the ROC, there is a period during which those wishing to make proper Amending Motions on the Technical Committee Reports must signal their intention by submitting a Notice of Intent to Make a Motion. Documents that receive notice of proper Amending Motions (Certified Amending Motions) will be presented for action at the annual June Association Technical Meeting. At the meeting, the NFPA membership can consider and act on these Certified Amending Motions as well as Follow-up Amending Motions, that is, motions that become necessary as a result of a previous successful Amending Motion. (See 4.6.2 through 4.6.9 of *RGCPs* for a summary of the available Amending Motions and who may make them.) Any outstanding objection following action at an Association Technical Meeting (and any further Technical Committee consideration following successful Amending Motions, see *RGCPs* at 4.7) must be raised through an appeal to the Standards Council or it will be considered to be resolved.

VI. Step 3b: Documents Forwarded Directly to the Council. Where no Notice of Intent to Make a Motion is received and certified in accordance with the Technical Meeting Convention Rules, the document is forwarded directly to the Standards Council for action on issuance. Objections are deemed to be resolved for these documents.

VII. Step 4a: Council Appeals. Anyone can appeal to the Standards Council concerning procedural or substantive matters related to the development, content, or issuance of any document of the Association or on matters within the purview of the authority of the Council, as established by the *Bylaws* and as determined by the Board of Directors. Such appeals must be in written form and filed with the Secretary of the Standards Council (see 1.6 of *RGCPs*). Time constraints for filing an appeal must be in accordance with 1.6.2 of the *RGCPs*. Objections are deemed to be resolved if not pursued at this level.

VIII. Step 4b: Document Issuance. The Standards Council is the issuer of all documents (see Article 8 of *Bylaws*). The Council acts on the issuance of a document presented for action at an Association Technical Meeting within sixty days from the date of the recommendation from the Association Technical Meeting, unless this period is extended by the Council (see 4.8 of *RGCPs*). For documents forwarded directly to the Standards Council, the Council acts on the issuance of the document at its next scheduled meeting, or at such other meeting as the Council may determine (see 4.5.7 and 4.8 of *RGCPs*).

IX. Petitions to the Board of Directors. The Standards Council has been delegated the responsibility for the administration of the codes and standards development process and the issuance of documents. However, where extraordinary circumstances requiring the intervention of the Board of Directors exist, the Board of Directors may take any action necessary to fulfill its obligations to preserve the integrity of the codes and standards development process and to protect the interests of the Association. The rules for petitioning the Board of Directors can be found in the *Regulations Governing Petitions to the Board of Directors from Decisions of the Standards Council* and in 1.7 of the *RGCPs*.

X. For More Information. The program for the Association Technical Meeting (as well as the NFPA website as information becomes available) should be consulted for the date on which each report scheduled for consideration at the meeting will be presented. For copies of the ROP and ROC as well as more information on NFPA rules and for up-to-date information on schedules and deadlines for processing NFPA documents, check the NFPA website (www.nfpa.org) or contact NFPA Codes & Standards Administration at (617-984-7246).

2009 Fall Revision Cycle ROP Contents

by NFPA Numerical Designation

Note: Documents appear in numerical order.

NFPA No.	Type Action	Title	Page No.
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11	P	Standard for Low-, Medium-, and High-Expansion Foam.....	11-1
13E	P	Recommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems.....	13E-1
14	P	Standard for the Installation of Standpipe and Hose Systems.....	14-1
18	P	Standard on Wetting Agents	18-1
37	P	Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines	37-1
45	P	Standard on Fire Protection for Laboratories Using Chemicals.....	45-1
53	P	Recommended Practice on Materials, Equipment, and Systems Used in Oxygen-Enriched Atmospheres	53-1
70B	P	Recommended Practice for Electrical Equipment Maintenance	70B-1
91	P	Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids	91-1
120	P	Standard for Fire Prevention and Control in Coal Mines	120-1
122	P	Standard for Fire Prevention and Control in Metal/Nonmetal Mining and Metal Mineral Processing Facilities.....	122-1
204	P	Standard for Smoke and Heat Venting	204-1
211	P	Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances	211-1
214	P	Standard on Water-Cooling Towers	214-1
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276	N	Standard Method of Fire Test for Determining the Heat Release Rate of Roofing Assemblies with Combustible Above-Deck Roofing Components	276-1
326	P	Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair	326-1
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405	P	Standard for the Recurring Proficiency of Airport Fire Fighters	405-1
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551	P	Guide for the Evaluation of Fire Risk Assessments	551-1
600	R	Standard on Industrial Fire Brigades	600-1
601	R	Standard for Security Services in Fire Loss Prevention	601-1
701	P	Standard Methods of Fire Tests for Flame Propagation of Textiles and Films	701-1
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805	P	Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants.....	805-1
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1250	P	Recommended Practice in Emergency Service Organization Risk Management.....	1250-1
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1581	P	Standard on Fire Department Infection Control Program	1581-1
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**2009 Fall Revision Cycle ROP
Committees Reporting**

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805	Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants	P		805-1
806	Performance-Based Standard for Fire Protection for Advanced Nuclear Reactor Electric Generating Plants	N		806-1
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Fire Service Occupational Safety and Health				
1581	Standard on Fire Department Infection Control Program	P		1581-1
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13E	Recommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems	P		13E-1
1407	Standard for Fire Service Rapid Intervention Crews	N		1407-1
1410	Standard on Training for Initial Emergency Scene Operations	P		1410-1
1452	Guide for Training Fire Service Personnel to Conduct Dwelling Fire Safety Surveys	P		1452-1
Fire Tests				
255	Standard Method of Test of Surface Burning Characteristics of Building Materials	W		255-1
276	Standard Method of Fire Test for Determining the Heat Release Rate of Roofing Assemblies with Combustible Above-Deck Roofing Components	N		276-1
701	Standard Methods of Fire Tests for Flame Propagation of Textiles and Films	P		701-1
Foam				
11	Standard for Low-, Medium-, and High-Expansion Foam	P		11-1
Forest and Rural Fire Protection				
1150	Standard on Foam Chemicals for Fires in Class A Fuels	P		1150-1
Handling and Conveying of Dusts, Vapors, and Gases				
91	Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids	P		91-1
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Mining Facilities				
120	Standard for Fire Prevention and Control in Coal Mines	P		120-1
122	Standard for Fire Prevention and Control in Metal/Nonmetal Mining and Metal Mineral Processing Facilities	P		122-1
Oxygen-Enriched Atmospheres				
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Pre-Incident Planning			
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520	Standard on Subterranean Spaces	P	520-1
Tank Leakage and Repair Safeguards			
326	Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair	P	326-1
329	Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases	P	329-1
Water Additives for Fire Control and Vapor Mitigation			
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Water-Cooling Towers			
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Key to Proposal Headings

The first line of every proposal includes the following information:

Document No.	Proposal No.	Log No.	Paragraph Reference	Committee Action
101	6	38	3.4	Accept

Example: 101-6 Log #38
(3.4)

Final Action: Accept

TYPES OF ACTION

P Partial Revision **C** Complete Revision **N** New Document **R** Reconfirmation **W** Withdrawal

The following classifications apply to Committee members and represent their principal interest in the activity of the Committee.

1. **M** Manufacturer: A representative of a maker or marketer of a product, assembly, or system, or portion thereof, that is affected by the standard.
2. **U** User: A representative of an entity that is subject to the provisions of the standard or that voluntarily uses the standard.
3. **IM** Installer/Maintainer: A representative of an entity that is in the business of installing or maintaining a product, assembly, or system affected by the standard.
4. **L** Labor: A labor representative or employee concerned with safety in the workplace.
5. **RT** Applied Research/Testing Laboratory: A representative of an independent testing laboratory or independent applied research organization that promulgates and/or enforces standards.
6. **E** Enforcing Authority: A representative of an agency or an organization that promulgates and/or enforces standards.
7. **I** Insurance: A representative of an insurance company, broker, agent, bureau, or inspection agency.
8. **C** Consumer: A person who is or represents the ultimate purchaser of a product, system, or service affected by the standard, but who is not included in (2).
9. **SE** Special Expert: A person not representing (1) through (8) and who has special expertise in the scope of the standard or portion thereof.

NOTE 1: "Standard" connotes code, standard, recommended practice, or guide.

NOTE 2: A representative includes an employee.

NOTE 3: While these classifications will be used by the Standards Council to achieve a balance for Technical Committees, the Standards Council may determine that new classifications of member or unique interests need representation in order to foster the best possible Committee deliberations on any project. In this connection, the Standards Council may make such appointments as it deems appropriate in the public interest, such as the classification of "Utilities" in the National Electrical Code Committee.

NOTE 4: Representatives of subsidiaries of any group are generally considered to have the same classification as the parent organization.

**FORM FOR COMMENTS ON NFPA REPORT ON PROPOSALS
2009 FALL REVISION CYCLE
FINAL DATE FOR RECEIPT OF COMMENTS: 5:00 pm EST, March 6, 2009**

For further information on the standards-making process, please contact the Codes and Standards Administration at 617-984-7249 or visit www.nfpa.org/codes.

For technical assistance, please call NFPA at 1-800-344-3555.

FOR OFFICE USE ONLY

Log #: _____

Date Rec'd: _____

Please indicate in which format you wish to receive your ROP/ROC electronic paper download
(Note: If choosing the download option, you must view the ROP/ROC from our website; no copy will be sent to you.)

Date 8/1/200X Name John B. Smith Tel. No. 253-555-1234

Company _____ Email _____

Street Address 9 Seattle St. City Tacoma State WA Zip 98402

***If you wish to receive a hard copy, a street address MUST be provided. Deliveries cannot be made to PO boxes.

Please indicate organization represented (if any) Fire Marshals Assn. of North America

1. (a) NFPA Document Title National Fire Alarm Code NFPA No. & Year NFPA 72, 200X ed.

(b) Section/Paragraph 4.4.1.1

2. Comment on Proposal No. (from ROP): 72-7

3. Comment Recommends (check one): new text revised text deleted text

4. Comment (include proposed new or revised wording, or identification of wording to be deleted): [Note: Proposed text should be in legislative format; i.e., use underscore to denote wording to be inserted (inserted wording) and strike-through to denote wording to be deleted (~~deleted wording~~).]

Delete exception.

5. **Statement of Problem and Substantiation for Comment:** (Note: State the problem that would be resolved by your recommendation; give the specific reason for your Comment, including copies of tests, research papers, fire experience, etc. If more than 200 words, it may be abstracted for publication.)

A properly installed and maintained system should be free of ground faults. The occurrence of one or more ground faults should be required to cause a 'trouble' signal because it indicates a condition that could contribute to future malfunction of the system. Ground fault protection has been widely available on these systems for years and its cost is negligible. Requiring it on all systems will promote better installations, maintenance and reliability.

6. Copyright Assignment

(a) I am the author of the text or other material (such as illustrations, graphs) proposed in this Comment.

(b) Some or all of the text or other material proposed in this Comment was not authored by me. Its source is as follows (please identify which material and provide complete information on its source):

I agree that any material that I author, either individually or with others, in connection with work performed by an NFPA Technical Committee shall be considered to be works made for hire for the NFPA. To the extent that I retain any rights in copyright as to such material, or as to any other material authored by me that I submit for the use of an NFPA Technical Committee in the drafting of an NFPA code, standard, or other NFPA document, I hereby grant and assign all and full rights in copyright to the NFPA. I further agree and acknowledge that I acquire no rights in any publication of the NFPA and that copyright and all rights in materials produced by NFPA Technical Committees are owned by the NFPA and that the NFPA may register copyright in its own name.

Signature (Required) _____

PLEASE USE SEPARATE FORM FOR EACH COMMENT • email: proposals_comments@nfpa.org • NFPA Fax: (617) 770-3500
Mail to: Secretary, Standards Council, National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471

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For technical assistance, please call NFPA at 1-800-344-3555.

FOR OFFICE USE ONLY

Log #: _____

Date Rec'd: _____

Please indicate in which format you wish to receive your ROP/ROC electronic paper download
(Note: If choosing the download option, you must view the ROP/ROC from our website; no copy will be sent to you.)

Date _____ Name _____ Tel. No. _____

Company _____ Email _____

Street Address _____ City _____ State _____ Zip _____

***If you wish to receive a hard copy, a street address **MUST** be provided. Deliveries cannot be made to PO boxes.

Please indicate organization represented (if any) _____

1. (a) NFPA Document Title _____ NFPA No. & Year _____

(b) Section/Paragraph _____

2. Comment on Proposal No. (from ROP): _____

3. Comment Recommends (check one): new text revised text deleted text

4. Comment (include proposed new or revised wording, or identification of wording to be deleted): [Note: Proposed text should be in legislative format; i.e., use underscore to denote wording to be inserted (inserted wording) and strike-through to denote wording to be deleted (~~deleted wording~~).]

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I agree that any material that I author, either individually or with others, in connection with work performed by an NFPA Technical Committee shall be considered to be works made for hire for the NFPA. To the extent that I retain any rights in copyright as to such material, or as to any other material authored by me that I submit for the use of an NFPA Technical Committee in the drafting of an NFPA code, standard, or other NFPA document, I hereby grant and assign all and full rights in copyright to the NFPA. I further agree and acknowledge that I acquire no rights in any publication of the NFPA and that copyright and all rights in materials produced by NFPA Technical Committees are owned by the NFPA and that the NFPA may register copyright in its own name.

Signature (Required) _____

**PLEASE USE SEPARATE FORM FOR EACH COMMENT • email: proposals_comments@nfpa.org • NFPA Fax: (617) 770-3500
Mail to: Secretary, Standards Council, National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471**

10/31/2008

Sequence of Events Leading to Issuance of an NFPA Committee Document

Step 1 Call for Proposals

▼ Proposed new document or new edition of an existing document is entered into one of two yearly revision cycles, and a Call for Proposals is published.

Step 2 Report on Proposals (ROP)

▼ Committee meets to act on Proposals, to develop its own Proposals, and to prepare its Report.

▼ Committee votes by written ballot on Proposals. If two-thirds approve, Report goes forward. Lacking two-thirds approval, Report returns to Committee.

▼ Report on Proposals (ROP) is published for public review and comment.

Step 3 Report on Comments (ROC)

▼ Committee meets to act on Public Comments to develop its own Comments, and to prepare its report.

▼ Committee votes by written ballot on Comments. If two-thirds approve, Report goes forward. Lacking two-thirds approval, Report returns to Committee.

▼ Report on Comments (ROC) is published for public review.

Step 4 Technical Committee Report Session

▼ “*Notices of intent to make a motion*” are filed, are reviewed, and valid motions are certified for presentation at the Technical Committee Report Session. (“Consent Documents” that have no certified motions bypass the Technical Committee Report Session and proceed to the Standards Council for issuance.)

▼ NFPA membership meets each June at the Annual Meeting Technical Committee Report Session and acts on Technical Committee Reports (ROP and ROC) for documents with “certified amending motions.”

▼ Committee(s) vote on any amendments to Report approved at NFPA Annual Membership Meeting.

Step 5 Standards Council Issuance

▼ Notification of intent to file an appeal to the Standards Council on Association action must be filed within 20 days of the NFPA Annual Membership Meeting.

▼ Standards Council decides, based on all evidence, whether or not to issue document or to take other action, including hearing any appeals.

The Technical Committee Report Session of the NFPA Annual Meeting

The process of public input and review does not end with the publication of the ROP and ROC. Following the completion of the Proposal and Comment periods, there is yet a further opportunity for debate and discussion through the Technical Committee Report Sessions that take place at the NFPA Annual Meeting.

The Technical Committee Report Session provides an opportunity for the final Technical Committee Report (i.e., the ROP and ROC) on each proposed new or revised code or standard to be presented to the NFPA membership for the debate and consideration of motions to amend the Report. The specific rules for the types of motions that can be made and who can make them are set forth in NFPA's rules, which should always be consulted by those wishing to bring an issue before the membership at a Technical Committee Report Session. The following presents some of the main features of how a Report is handled.

What Amending Motions Are Allowed. The Technical Committee Reports contain many Proposals and Comments that the Technical Committee has rejected or revised in whole or in part. Actions of the Technical Committee published in the ROP may also eventually be rejected or revised by the Technical Committee during the development of its ROC. The motions allowed by NFPA rules provide the opportunity to propose amendments to the text of a proposed code or standard based on these published Proposals, Comments, and Committee actions. Thus, the list of allowable motions include motions to accept Proposals and Comments in whole or in part as submitted or as modified by a Technical Committee action. Motions are also available to reject an accepted Comment in whole or part. In addition, Motions can be made to return an entire Technical Committee Report or a portion of the Report to the Technical Committee for further study.

The NFPA Annual Meeting, also known as the NFPA World Safety Conference & Exposition®, takes place in June of each year. A second Fall membership meeting was discontinued in 2004, so the NFPA Technical Committee Report Session now runs once each year at the Annual Meeting in June.

Who Can Make Amending Motions. NFPA rules also define those authorized to make amending motions. In many cases, the maker of the motion is limited by NFPA rules to the original submitter of the Proposal or Comment or his or her duly authorized representative. In other cases, such as a Motion to Reject an accepted Comment, or to Return a Technical Committee Report or a portion of a Technical Committee Report for Further Study, anyone can make these motions. For a complete explanation, NFPA rules should be consulted.

The Filing of a Notice of Intent to Make a Motion. Before making an allowable motion at a Technical Report Session, the intended maker of the motion must file, in advance of the session, and within the published deadline, a Notice of Intent to Make a Motion. A Motions Committee appointed by the Standards Council then reviews all notices and certifies all amending motions that are proper. The Motions Committee can also, in consultation with the makers of the motions, clarify the intent of the motions and, in certain circumstances, combine motions that are dependent on each other together so that they can be made in one single motion. A Motions Committee report is then made available in advance of the meeting listing all certified motions. Only these Certified Amending Motions, together with certain allowable Follow-Up Motions (that is, motions that have become necessary as a result of previous successful amending motions) will be allowed at the Technical Committee Report Session.

Consent Documents. Often there are codes and standards up for consideration by the membership that will be noncontroversial and no proper Notices of Intent to Make a Motion will be filed. These "Consent Documents" will bypass the Technical Committee Report Session and head straight to the Standards Council for issuance. The remaining Documents are then forwarded to the Technical Committee Report Session for consideration of the NFPA membership.

Action on Motions at the Technical Committee Report Session. In order to actually make a Certified Amending Motion at the Technical Committee Report Session, the maker of the motion must sign in at least an hour before the session begins. In this way a final list of motions can be set in advance of the session. At the session, each proposed document up for consideration is presented by a motion to adopt the Technical Committee Report on the document. Following each such motion, the presiding officer in charge of the session opens the floor to motions on the document from the final list of Certified Amending Motions followed by any permissible Follow-Up Motions. Debate and voting on each motion proceeds in accordance with NFPA rules. NFPA membership is not required in order to make or speak to a motion, but voting is limited to NFPA members who have joined at least 180 days prior to the session and have registered for the meeting. At the close of debate on each motion, voting takes place, and the motion requires a majority vote to carry. In order to amend a Technical Committee Report, successful amending motions must be confirmed by the responsible Technical Committee, which conducts a written ballot on all successful amending motions following the meeting and prior to the Document being forwarded to the Standards Council for issuance.

Standards Council Issuance

One of the primary responsibilities of the NFPA Standards Council, as the overseer of the NFPA codes and standards development process, is to act as the official issuer of all NFPA codes and standards. When it convenes to issue NFPA documents, it also hears any appeals related to the document. Appeals are an important part of assuring that all NFPA rules have been followed and that due process and fairness have been upheld throughout the codes and standards development process. The Council considers appeals both in writing and through the conduct of hearings at which all interested parties can participate. It decides appeals based on the entire record of the process as well as all submissions on the appeal. After deciding all appeals related to a document before it, the Council, if appropriate, proceeds to issue the document as an official NFPA code or standard. Subject only to limited review by the NFPA Board of Directors, the decision of the Standards Council is final, and the new NFPA code or standard becomes effective twenty days after Standards Council issuance.

Report of the Committee on**Electric Generating Plants****William D. Snell**, *Chair*

TXU Power, TX [U]

Don Drewry, *Secretary*

HSB Professional Loss Control, NJ [I]

Donald C. Birchler, FP&C Consultants Inc., MO [SE]**Bernhard G. Bischoff**, Chemetron Fire Systems, IL [M]

Rep. Fire Suppression Systems Association

Harold D. Brandes, Jr., Waxhaw, NC [SE]**Stanley J. Chingo**, NISYS Corporation, GA [SE]**William P. Collins**, UTC Power/Fuel Cells, CT [M]**Harry M. Corson, IV**, Siemens Fire Safety, NJ [M]

Rep. National Electrical Manufacturers Association

Phillip A. Davis, Allianz Global Risks, IL [I]**Kenneth W. Dungan**, Risk Technologies, LLC, TN [SE]**Laurie B. Florence**, Underwriters Laboratories Inc., IL [RT]**Ismail M. Gosla**, Fluor Corporation, CA [SE]**Richard M. Hansen**, Richard M. Hansen & Associates, Inc., IL [SE]**Rickey L. Johnson**, XL Insurance, NY [I]**David E. Kipley**, AREVA NP, Inc., IL [SE]**John W. Koester**, Marsh Risk Consulting, MD [I]**Roland Lafontaine**, The Viking Corporation, FL [M]

Rep. National Fire Sprinkler Association

W. Gene McAlester, F. E. Moran, Inc., IL [IM]**Amjad M. Mian**, Manitoba Hydro, Canada [U]**Thomas P. O'Connor**, American Electric Power Service Corporation, OH [U]

Rep. Edison Electric Institute

Scot Pruett, Black & Veatch Corporation, KS [SE]**Ronald Rispoli**, Entergy Corporation, AR [U]**Norman C. Rockwell**, Tennessee Valley Authority, TN [U]**Daniel J. Sheridan**, Sheridan Engineering, Inc., MI [SE]**Andrew Skok**, Fuel Cell Energy, CT [M]**Todd Strothers**, CSA International, NC [RT]**Robert Vincent**, Shambaugh & Son, L.P., IN [IM]

Rep. National Fire Sprinkler Association

Robert P. Wichert, US Fuel Cell Council, CA [U]**Alternates****Steven M. Behrens**, XL Global Asset Protection Services, CT [I]

(Alt. to Rickey L. Johnson)

Daryl C. Bessa, F. E. Moran, Inc., IL [IM]

(Alt. to W. Gene McAlester)

John K. Bouchard, Marsh USA, MA [I]

(Alt. to John W. Koester)

Hugh D. Castles, Entergy Services, Inc., MS [U]

(Alt. to Ronald Rispoli)

Kelvin Hecht, UTC Fuel Cells, CT [M]

(Alt. to William P. Collins)

Gary T. Heller, Salt River Project, AZ [U]

(Alt. to Thomas P. O'Connor)

Thomas C. Clayton, Overland Park, KS [SE]

(Member Emeritus)

Leonard R. Hathaway, The Villages, FL [I]

(Member Emeritus)

Staff Liaison: **Jason Gamache**

Committee Scope: This Committee shall have primary responsibility for documents on fire protection for electric generating plants and high voltage direct current (HVDC) converter stations, except for electric generating plants using nuclear fuel.

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

The Technical Committee on **Electric Generating Plants** is presenting three Reports for adoption, as follows:

Report I: The Technical Committee proposes for adoption, amendments to NFPA 850, **Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations**, 2005 edition. NFPA 850 is published in Volume 15 of the 2008 National Fire Codes and in separate pamphlet form.

The report on NFPA 850 has been submitted to letter ballot of the **Technical Committee on Electric Generating Plants**, which consists of 29 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

Report II: The Technical Committee proposes for adoption, amendments to NFPA 851, **Recommended Practice for Fire Protection for Hydroelectric Generating Plants**, 2005 edition. NFPA 851 is published in Volume 15 of the 2008 National Fire Codes and in separate pamphlet form.

The report on NFPA 851 has been submitted to letter ballot of the **Technical Committee on Generating Plants**, which consists of 29 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

Report III: The Technical Committee proposes for adoption, amendments to NFPA 853, **Standard for the Installation of Stationary Fuel Cell Power Systems**, 2007 edition. NFPA 853 is published in Volume 10 of the 2008 National Fire Codes and in separate pamphlet form.

The report on NFPA 853 has been submitted to letter ballot of the **Technical Committee on Electric Generating Plants**, which consists of 28 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

853-1 Log #CP1 **Final Action: Accept**
(Entire Document)

Submitter: Technical Committee on Electric Generating Plants,
Recommendation: Review entire document to: 1) Update any extracted material by preparing separate proposals to do so, and 2) review and update references to other organizations documents, by preparing proposal(s) as required.
Substantiation: To conform to the NFPA Regulations Governing Committee Projects.
Committee Meeting Action: Accept
Number Eligible to Vote: 28
Ballot Results: Affirmative: 25
Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-2 Log #26 **Final Action: Reject**
(5.1.1(12) (New))

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Add new text as follows:
(12) If the fuel cell system includes integrated fuel storage, then the setback requirements of NFPA 55 shall also apply.
Substantiation: It needs to be explicitly stated that if the feed stock for the fuel cell is part of an integrated system that the siting of the fuel cell does not over-ride the siting requirements of the fuel.
Committee Meeting Action: Reject
Committee Statement: This is already addressed in 6.4.1 already.
Number Eligible to Vote: 28
Ballot Results: Affirmative: 25
Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-3 Log #8 **Final Action: Reject**
(5.1.1(13))

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Add new text as follows:
It shall be located at least 15 feet away from combustible materials.
Substantiation: Basis for this change is NFPA 37. Definition is required for distance "away" from exposures, as "away" is too ambiguous.
Committee Meeting Action: Reject
Committee Statement: This subject is sufficiently covered in item 5.1.1(9).
Number Eligible to Vote: 28
Ballot Results: Affirmative: 25
Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-4 Log #24 **Final Action: Accept**
(5.1.1(5))

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:
5.1.1 (5) It shall be located outside potentially hazardous atmospheres as defined by Article 500 or Article 505 of NFPA 70, *National Electrical Code*, unless listed and approved for the specific installation.
Substantiation: Addition of the referenced articles in NFPA 70 provides clarity to the sections of the *National Electrical Code* which are applicable to area classification.
Committee Meeting Action: Accept
Number Eligible to Vote: 28
Ballot Results: Affirmative: 25
Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-5 Log #25 **Final Action: Accept**
(5.1.1(5))

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:
5.1.1 (5) It shall be located outside potentially hazardous atmospheres as defined by Article 500 or Article 505 of NFPA 70, *National Electrical Code*, unless listed and approved for the specific installation.
Substantiation: Addition of the referenced articles in NFPA 70 provides clarity to the sections of the *National Electrical Code* which are applicable to area classification.
Committee Meeting Action: Accept
Number Eligible to Vote: 28
Ballot Results: Affirmative: 25
Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-6 Log #23 **Final Action: Reject**
(5.1.1(6))

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:
It shall be sited so the power system and equipment do not affect required building exits, as defined in NFPA 101 or the locally adopted building code, during normal operations or fire emergencies.
Substantiation: Lack of reference to NFPA 101 or to the local building code permits ambiguity. By referencing a code document it is intended to help stipulate how far from the building entrance equipment may be located and what the orientation of that equipment might be.
Committee Meeting Action: Reject
Committee Statement: Text as written is sufficient to define the hazard.
Number Eligible to Vote: 28
Ballot Results: Affirmative: 25
Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-7 Log #22 **Final Action: Reject**
(5.1.1(8))

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:
It shall be located in a manner that allows service, maintenance and emergency access in accordance with manufacturer's published instructions and Article 110 of NFPA 70.
Substantiation: Article 110 of NFPA 70 contains minimum values for working spaces for live electrical equipment.
Committee Meeting Action: Reject
Committee Statement: Text as written is sufficient. Redundant to the requirement to meet NFPA 70.
Number Eligible to Vote: 28
Ballot Results: Affirmative: 25
Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-8 Log #19 **Final Action: Accept in Principle in Part**
(5.1.1(9))

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:
It shall be located away from combustible materials, hazardous chemicals, high-piled stock, and other exposures to fire hazards:
Fuel cell power systems, and their weatherproof housings if provided, that are installed outdoors shall be located at least 1.5 m (5 ft) from openings in walls and at least 1.5 m (5 ft) from structures having combustible walls. A minimum separation shall not be required where the following conditions exist:
(1) The adjacent wall of the structure has a fire resistance rating of at least 1 hour.
(2) The weatherproof enclosure is constructed of noncombustible materials and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure.
Substantiation: Basis for this change is NFPA 37 Section 4.1.4. Definition is required for distance "away" from exposures, as "away" is too ambiguous.
Break up requirements for combustible materials from other materials due to difference in setback distance.
Committee Meeting Action: Accept in Principle in Part
Revised text as follows:
Keep language in 5.1.1(9):
5.1.1(9) It shall be located away from combustible materials, hazardous chemicals, high-piled stock, and other exposures to fire hazards.
Add new 5.1.1(10) and 5.1.1(11) and renumber accordingly.
5.1.1(10) Fuel cell power systems, and their weatherproof housings if provided, that are installed outdoors shall be located at least 1.5 m (5 ft) from openings in walls and at least 1.5 m (5 ft) from structures having combustible walls.
5.1.1(11) A minimum separation shall not be required where the following conditions exist:
(1) The adjacent wall of the structure has a fire resistance rating of at least 1 hour.
Reject the following:
(2) The weatherproof enclosure is constructed of noncombustible materials and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure.
Committee Statement: 5.1.1(9) is for exposure to the fuel cell and 5.1.1(10) and 5.1.1(11) are for exposure from the fuel cell. Item (2) is unenforceable language.
Number Eligible to Vote: 28
Ballot Results: Affirmative: 24 Negative: 1
Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.
Explanation of Negative:
COLLINS, W.: Proposed change, 853-8 (Log#19), adds two new requirements to 5.1 General Siting.

- 5.1.1(10) Fuel cell power systems, and their weatherproof housing, if provided, that are installed outdoors shall be located at least 1.5 m (5 ft) from openings in walls, and at least 1.5 m (5 ft) from structures having combustible walls.
- 5.1.1(11) A minimum separation shall not be required where the adjacent wall of the structure has a fire resistance rating of at least 1 hour.

The substantiation for these requirements is based on NFPA 37 Section 4.1.4. Improper application of NFPA 37

NFPA 37, *Installation of Stationary Combustible Engines and Gas Turbines*, addresses potential fire hazards from these prime movers related to entrained gaseous and liquid fuels and lubricating oil systems. Other potential hazards are exhausts, touch temperatures and noise.

NFPA 853 addresses the installation of fuel cells that are designed, tested and listed to CSA America FC1. They have:

- No or minimal liquid fuels
- Minimal gaseous fuels
- Combustible gas and thermal detectors to interrupt input fuels
- Documented surface temperatures.

Openings in walls

There is a potential hazard from exhaust entering a building. This issue is addressed in:

5.2.3 The exhaust outlet(s) from process area or areas that contain fuel-bearing components of a fuel cell power system shall be located at least 4.6 m (15 ft) from heating, ventilating, and air-conditioning air intakes, windows, doors and other openings into buildings.

(The issue is not that the fuel cell should be 5 ft from openings in a wall, its exhaust should be 15 ft from opening in a wall).

Distance from combustible walls

The documented surface temperatures of fuel cell power systems defines the suitable distance from combustible walls. This issue is rightfully addressed in:

5.1.1(8) It shall be located in a manner that allows service, maintenance, and emergency access.

Editorial

a. since these two new requirements only address outdoor installation, they should have been proposed for 5.1 Outdoor Installation.

b. Please note that there is rightfully no similar requirement to be 5 ft from combustible walls when installed indoors.

853-9 Log #21 **Final Action: Reject**
(5.2.1)

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

For outdoor installations, a fuel cell power system and related components shall be designed and constructed for outdoor installation. Prepackaged, self-contained fuel cell power systems intended for outdoor installation shall be listed or approved for outdoor use.

Substantiation: This adds the requirement of a listing or approval for prepackaged, self-contained systems. This insures compliance with ANSI/CSA FC1 for operation, safety and integrity of construction.

Committee Meeting Action: Reject

Committee Statement: The proposed language is redundant.

Number Eligible to Vote: 28

Ballot Results: Affirmative: 25

Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-10 Log #28 **Final Action: Accept**
(5.2.2)

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

Air intakes to a fuel cell power system shall be located so the plant system is not adversely affected by other exhausts, gases, or contaminants.

Substantiation: For consistency with definitions.

Committee Meeting Action: Accept

Number Eligible to Vote: 28

Ballot Results: Affirmative: 25

Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-11 Log #20 **Final Action: Reject**
(5.2.3)

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Add new text as follows:

The exhaust outlet(s) from process areas or areas that contain fuel-bearing components of a fuel cell power system shall be located at least 4.6 m (15 ft) from heating, ventilating, and air-conditioning (HVAC) air intakes, windows, doors, and other openings into buildings.

Exception: Exhaust outlet(s) from a listed or approved fuel cell power system where the total abnormal gas emission or concentration from the fuel cell power system is

- 1) non-toxic,
- 2) cannot attain 25 percent of LFL under normal operation, and
- 3) the building is provided with limit controls, or other means to ensure building oxygen concentrations are not depleted below 18 percent.

Substantiation: The exhaust of a fuel cell listed to the FC1 standard is limited to 25% of LFL. These requirements in the exception are consistent with the requirements for indoor operation and address the hazards associated with fuel cell system exhausts.

Committee Meeting Action: Reject

Committee Statement: This would require field measurements and verification which cannot be controlled by this Standard.

Number Eligible to Vote: 28

Ballot Results: Affirmative: 25

Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-12 Log #17 **Final Action: Reject**
(5.2.3.1)

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Add new text as follows:

The exhaust outlet(s) shall not be directed onto walkways or other paths of travel for pedestrians. Fuel cell power systems 1.3m (5 ft) from walkways or other pedestrian paths shall be considered to meet this requirement.

Exception: Exhaust outlet(s) from a listed or approved fuel cell power system where the total abnormal gas emission or concentration from the fuel cell power system is

- 1) non-toxic, and
- 2) cannot attain 25 percent of LFL under normal operation and,
- 3) exhaust temperature cannot exceed 140F (60C).

Substantiation: Original wording did not provide a prescriptive distance, and then would be completely open to interpretation.

Adding a maximum exhaust temperature and composition limits ensures that pedestrians cannot be hurt by the exhaust

Committee Meeting Action: Reject

Committee Statement: The fuel cell hazard needs to be addressed under all conditions not just normal operation.

Number Eligible to Vote: 28

Ballot Results: Affirmative: 25

Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-13 Log #16 **Final Action: Accept in Part**
(5.2.3.2)

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

The area classification around outlets from processes or compartments that contain fuel-bearing components shall be in accordance with Article 500 or Article 505 of NFPA 70, National Electrical Code.

Exception: exhaust outlet(s) from listed fuel cell power systems need not meet this requirement.

Substantiation: Adding reference to Article 505 permits alternative method for area classification permitted in NFPA 70.

The concentration in the exhaust cannot exceed 50% LFL under normal or abnormal conditions in accordance with FC1 Section 1.33f, the listing standard.

Committee Meeting Action: Accept in Part

Accept the following:

The area classification around outlets from processes or compartments that contain fuel-bearing components shall be in accordance with Article 500 or Article 505 of NFPA 70, National Electrical Code.

Reject the following:

Exception: exhaust outlet(s) from listed fuel cell power systems need not meet this requirement.

Committee Statement: NFPA 70 is the proper document to classify those areas addresses in 5.2.3.2. Additional exceptions are not necessary.

Number Eligible to Vote: 28

Ballot Results: Affirmative: 25

Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-14 Log #15 **Final Action: Accept**
(5.3.6)

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

Each room shall be provided with egress in accordance with NFPA 101, *Life Safety Code* or the locally adopted building code.

Substantiation: Addition of the locally adopted building code will eliminate confusion in locales where NFPA 101 is not adopted, or where provision of NFPA 101 are superseded by local code.

Committee Meeting Action: Accept

Number Eligible to Vote: 28

Ballot Results: Affirmative: 25

Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-15 Log #18
(5.4.2)**Final Action: Accept in Principle****Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

Unless greater distance is specified by the manufacturer's published instructions, the roofing material under and within 30.5 cm (12 in) horizontally of from a fuel cell power system or component shall be noncombustible or shall have a Class A rating as defined by the applicable building code.

Substantiation: Class A roof material is defined in the local building code.**Committee Meeting Action: Accept in Principle**

Revise the proposal as follows:

Unless greater distance is specified by the manufacturer's published instructions, the roofing material under and within 30.5 cm (12 in) horizontally of from a fuel cell power system or component shall be noncombustible or shall have a Class A rating when tested in accordance with NFPA 256, as defined by the applicable building code.

Committee Statement: Additional guidance is redundant to 5.1.1 and therefore is not required.**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-16 Log #11
(5.5.1.1)**Final Action: Accept****Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Add new text as follows:

The installation requirements of fuel cell power systems shall be in accordance with Article 692 of NFPA 70 National Electrical Code (NEC).

Substantiation: Addition of a specific pointer to the appropriate section of the NEC dealing with fuel cell installations.**Committee Meeting Action: Accept****Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-17 Log #10
(5.5.1.2)**Final Action: Accept in Principle****Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Add new text as follows:

The location of the manual fuel shut-off valve shall be marked at the location of the primary disconnecting means of the building or circuits supplied.

Substantiation: This requirement, also found in Article 692 of the NEC is for the safety or first responders answering a call at a location with a fuel cell power system. Disconnecting the electrical power alone, in some cases, will cause a fuel cell power system to start up, and therefore can present a further hazard to the responders. By calling attention to the requirement to also shut off the fuel source both causes the electrical system hazards to be neutralized and helps the first responder to recognize that another piece of property has to be protected.**Committee Meeting Action: Accept in Principle**

Locate the requirement as a new Section 5.5.3 instead of 5.5.1.2 and revise as follows:

The location of the manual fuel shut-off valve required by Chapter 6 shall be marked at the location of the primary disconnecting means of the building or circuits supplied.

Committee Statement: The committee felt that a reference to Chapter 6 was necessary and also felt that the requirement is better located as a new 5.5.3.**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-18 Log #29
(6.4.3.1)**Final Action: Accept****Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

An accessible manual shutoff valve shall be located in the hydrogen piping to the fuel cell power system within 1.8 m (6 ft) of the storage container.

Substantiation: Addition of the requirement for a manual valve, as compared to a valve activated through software or mechanical means which cannot be locked/tagged out of service, or proven to be closed during an emergency.**Committee Meeting Action: Accept****Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-19 Log #9
(6.4.3.2)**Final Action: Accept in Principle****Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

The hydrogen supply piping to the fuel cell power system shall be provided with a second manual accessible shutoff valve that is located within 1.8m (6 ft) of the power system, unless the power system is enclosed by a room with a 1-hour fire resistance rating as described in Section 5.2. If the hydrogen storage is within 1.8m (6 ft) of the fuel cell power system, the valve described in 6.4.3.1 shall be considered to meet this requirement.

Substantiation: Addition of the requirement for a manual valve, as compared to a valve activated through software or mechanical means which cannot be locked/tagged out of service, or proven to be closed during an emergency.

There is no need for double shutoff valves if the fuel and power system are within 1.8 meters of each other (arm's reach).

Committee Meeting Action: Accept in Principle

The hydrogen supply piping to the fuel cell power system shall be provided with a second manual accessible shutoff valve that is located within 1.8m (6 ft) of the power system, unless the power system is enclosed by a room with a 1-hour fire resistance rating as described in Section 5.2. If the hydrogen storage is within 1.8m (6 ft) of the fuel cell power system, the valve described in 6.4.3.1 shall be considered to meet this requirement.

Committee Statement: Agree with submitter but there was a typo in the submitter's proposal.**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-20 Log #7
(6.4.3.4)**Final Action: Reject****Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

For indoor installation of a power system, where the fuel supply is stored outdoors, an automatic shutoff valve interlocked with gas detection shall be located outside the building that houses the power system in accordance with 8.1.5. The automatic shutoff valve used to meet the requirements of this section shall be listed or approved for safety shutoff.

Substantiation: The intention of stipulating that the shutoff valve be listed is so that an inappropriate valve is not used.**Committee Meeting Action: Reject****Committee Statement:** There currently are no listed components for hydrogen shutoffs.**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-21 Log #31
(6.4.3.6)**Final Action: Reject****Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

Areas classified as hazardous locations due to hydrogen piping shall be provided with ventilation to the outdoors adequate to preclude the buildup of flammable gas within the room.

Substantiation: Wording clarifies why the area is classified. Ventilation is discussed in other NFPA documents with regard to flammable gas storage, however this reference was could be construed to mean just opening a window would be sufficient protection from the buildup of flammable gases.**Committee Meeting Action: Reject****Committee Statement:** Committee felt that the current language is more specific than the proposed language.**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-22 Log #6
(6.4.3.7)**Final Action: Accept in Principle****Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

Hydrogen containers and associated piping shall be electrically grounded and bonded in accordance with CGA G5.4.

Substantiation: Change in wording specifically points to bonding and grounding specification for hydrogen plumbing for CGA G-5.4, *Standard for Hydrogen Piping Systems at Consumer Locations*, 2001.**Committee Meeting Action: Accept in Principle**

Revise as follows:

Hydrogen containers and associated piping shall be electrically grounded and bonded in accordance with NFPA 70/CGA G5.4.

Committee Statement: Committee felt that NFPA 70 is a better document to reference than CGA G5.4**Number Eligible to Vote: 28**

Ballot Results: Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-23 Log #5 **Final Action: Reject**
(7.3.2)**Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

The exhaust system shall be designed such that all emissions are exhausted to a safe location outdoors and at least 15 feet (4.6m) from air intakes, windows, doors, or other building openings.

Exception: Exhaust outlet(s) from areas containing listed fuel cell power systems do not need to meet this requirement as the concentration in the exhaust cannot exceed 25% LFL, in accordance with the listing standard.

Substantiation: The Class I Division 2 limit as depicted in NFPA 497 is 15 feet (4.6m). There is no need to have a classified area around a device incapable of producing a flammable gas concentration.

Committee Meeting Action: Reject**Committee Statement:** The proposal is redundant to Section 5.2.3.**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-24 Log #30 **Final Action: Reject**
(7.3.2)**Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

If mechanical exhaust is required per 7.2.1, a control interlock shall be provided to shut down the unit upon loss of exhaust.

Substantiation: Provides specific pointer to requirement for mechanical ventilation

Committee Meeting Action: Reject**Committee Statement:** The existing language in 7.1.3 is adequate to express the requirement.**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-25 Log #4 **Final Action: Reject**
(7.3.6)**Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Add new text as follows:

The exhaust outlet fan shall not be a source of ignition. If the motor can be exposed to potentially hazardous atmospheres, it shall be Class I Division 2, suitable in accordance with NFPA 70.

Substantiation: Without this explicit statement, it is possible for an inappropriate fan to be used. In the event that a hydrogen leak occurred, it is possible that the exhaust fan might ignite the atmosphere if it did not ignite otherwise.

Committee Meeting Action: Reject**Committee Statement:** Area classification is done in accordance with NFPA 70 so this area is redundant to NFPA 70. NFPA 70 is adequate.**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-26 Log #3 **Final Action: Accept in Principle in Part**
(7.4.1)**Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

Pressure tank and piping intended to be purged, pressure regulators, relief valves, and other potential sources of combustible gas shall be vented to outside of the building at least 4.6m (15 ft) from air intakes, windows, doors or other building openings. The vent terminus must be at an approved distance from the building.

Substantiation: IFGC 703.4 2006 edition

IFC 2209.5.4.3.4 2006 edition

Committee Meeting Action: Accept in Principle in Part

Revise the proposal as follows:

Pressure tanks and piping intended to be purged, pressure regulators, relief valves, and other potential sources of combustible gas shall be vented to the outside of the building terminating at least 4.6m (15 ft) from air intakes, windows, doors or other building openings.

Reject the following:

The vent terminus must be at an approved distance from the building.

Committee Statement: The committee felt that the last sentence provides too much latitude for AHJs.**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-27 Log #27 **Final Action: Reject**
(8.1.5.4)**Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

Combustible gas detector(s) meeting the requirements of 8.1.5.7 shall be installed in the fuel cell power system enclosure, the exhaust system, or the room that encloses the fuel cell power system installation.

Substantiation: Sends the reader to the specific reference requiring combustible gas detectors.

Committee Meeting Action: Reject**Committee Statement:** The proposal references 8.1.5.7 and is redundant**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-28 Log #32 **Final Action: Accept**
(A.3.3.16)**Submitter:** Bob Eugene, Underwriters Laboratories Inc.**Recommendation:** Revise text as follows:

A.3.3.16 Limited Combustible. For more information, see NFPA 259, Standard Test Method for Potential Heat of Building Materials. Materials that have neither a flame spread index greater than 25 nor evidence of continued progressive combustion should be tested in accordance with NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials ASTM E84 or ANSI/UL 723.

Substantiation: NFPA 5000 TCC directive (5000-3 Log #1b) directed that NFPA 255 be removed and that both ASTM E84 and UL 723 be referenced wherever NFPA 255 was previously referenced. NFPA 255 is to be withdrawn in 2009 upon the recommendation of the Fire Test Committee. The Fire Test Committee has recommended that ASTM E84 and UL 723 replace NFPA 255. ASTM E84 and ANSI/UL 723 should be editorially added to Chapter 2 in accordance with the NFPA Manual of Style.

Committee Meeting Action: Accept**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-29 Log #2 **Final Action: Accept in Principle**
(A.5.1.1(10))**Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Add new text as follows:

Installations at tower locations should consider mechanical damage and exposure to falling ice and other objects by either locating the fuel cell power system outside of antennae reach or by using protective materials and construction such as ice bridging.

Substantiation: The original document did not anticipate locations subject to falling objects or ice. This is a particular hazard at radio towers and cellular telephone sites.

Committee Meeting Action: Accept in Principle

Revise proposal as follows:

Installations at tower locations should consider mechanical damage and exposure to falling ice and other objects, by either locating the fuel cell power system outside of antennae reach or by using protective materials and construction such as ice bridging.

Committee Statement: The committee felt that the original proposal was too specific. The revised language is not specific only to antennae tower locations.

Number Eligible to Vote: 28**Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.853-30 Log #1 **Final Action: Reject**
(A.5.1.1(13))**Submitter:** Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Add new text as follows:

Combustible materials would include loose trash and papers; tall unmowed grass and weeds; and dry brush.

Substantiation: There needs to be greater definition of combustible materials with reference to the siting of fuel cells in relation to commonly found objects in the field.

Committee Meeting Action: Reject**Committee Statement:** 5.1.1(13) was rejected. See Committee Action on Proposal 853-3 (Log #8).**Number Eligible to Vote: 28****Ballot Results:** Affirmative: 25**Ballot Not Returned:** 3 Corson, IV, H., Hansen, R., Strothers, T.

853-31 Log #14 **Final Action: Reject**
(A.5.5.1)

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Add new text as follows:

The following sections of the NFPA 70 *National Electrical Code* are relevant for electrical interconnection of fuel cell equipment:

Chapter 2 Wiring Protection

Chapter 3 Wiring Methods and Materials

Article 692 Fuel Cell Systems Installation

The minimum bonding and grounding requirements for fuel cell power systems are specified in Article 692 of NFPA 70, *National Electrical Code*. Special bonding and grounding requirements for antenna and tower applications are specified in ANSI TIA 222.

Substantiation: Addition of this information is for personnel safety and helps specify where to look for grounding and bonding requirements.

Owner site specific requirements for grounding and bonding such as ANSI/TIA-222-G-2005 may be more stringent than the NEC requirement.

Committee Meeting Action: Reject

Committee Statement: The committee felt that this proposal was too unique to include in the Standard.

Number Eligible to Vote: 28

Ballot Results: Affirmative: 25

Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

Comment on Affirmative:

COLLINS, W.: **Rationale for change.**

Proposed change, 853-31 (Log #14), proposed adding new requirements to Section 5.5 Interconnections with other building services. I agree with the Committee that these new requirements do not belong in this section. However, Log #14 does note a potential deficiency in guidance on lightning protection.

This document gives no guidance on lightning protection. The referencing of NFPA 70 and NFPA 780 in the annex would be appropriate to address most applications. However, it must be acknowledged that there are specialty situations where commercial best practices exceed this guidance.

In lieu of amending Section 5.5, it is suggested that annex material be added for guidance to 5.1.1(2) in General Siting. This material would not be a requirement but rather a pointer to sources used as commercially accepted best practice.

Recommendation:

It is recommended that Section A.5.1.1(2) be added:

A.5.1.1(2) General lightning protection requirements are noted in NFPA 70, *National Electrical Code*. Specific details are stipulated in NFPA 780, *Standard for the Installation of Lightning Protection Systems*. However, there are applications where more stringent commercially accepted practices should be considered (e.g. ANSI/TIA-222-G, *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures*).

It is also recommended that Sections 5.1.1(2), C.1.1 and C.1.2.1 be amended as shown:

5.1.1 A fuel cell power system(s) and associated equipment, components, and controls shall be sited and installed in accordance with the manufacturer's instructions and meet the following requirements:

(2)* It shall be anchored, located, and protected so that the system and equipment will not be adversely affected by rain, snow, ice, freezing temperatures, wind, seismic events, and lightning.

C.1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 70, *National Electrical Code*, 2008 Edition

NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials*, 2006 Edition.

NFPA 259, *Standard Test Method for Potential Heat of Building Materials*, 2003 Edition.

NFPA 497, *Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas*, 2004 Edition.

NFPA 780, *Standard for the Installation of Lightning Protection Systems*, 2008 Edition.

C.1.2.1 ANSI Publications. American National Standards Institute, Inc., 25 West 3rd Street, 4th Floor, New York, NY 10036.

ANSI CSA FC 1, *American National Standard for Fuel Cell Power Systems*, 2004.

ANSI/TIA-222-G, *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures*, 2005.

853-32 Log #12 **Final Action: Accept in Principle**
(A.6.4.3.1)

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

The shutoff valve should be in a location that is identified and easily accessed by authorized personnel such that the valve can be operated in the event of a pending emergency. The shutoff valve may be within a fenced area or chained and locked in the normal position to prevent unauthorized persons from tampering with the shutoff valve. A cylinder valve on unmanifolded cylinder storage installations meets the intent of 6.4.3.1.

Substantiation: This explanation in the annex material allows for physical security of a fuel cell installation.

Committee Meeting Action: Accept in Principle

Revise as follows:

The shutoff valve should be in a location that is identified and easily accessed by authorized personnel such that the valve can be operated in the event of a pending emergency. The shutoff valve may be within a fenced area or chained and locked in the normal position to prevent unauthorized persons from tampering with the shutoff valve. A cylinder valve on unmanifolded cylinder storage installations meets the intent of 6.4.3.1.

Committee Statement: The Committee felt that the second sentence was too specific for the Standard.

Number Eligible to Vote: 28

Ballot Results: Affirmative: 25

Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.

853-33 Log #13 **Final Action: Accept in Principle**
(A.6.4.3.2)

Submitter: Paul J. Buehler, Jr., Plug Power, Inc. / Rep. NFPA 2 Task Group 4
Recommendation: Revise text as follows:

The shutoff valve should be outside of the storage containment area in a location that is identified and easily accessed by authorized personnel such that the valve can be operated in the event of a pending emergency. The shutoff valve may be within a fenced area or chained and locked in the normal position to prevent unauthorized persons from tampering with the shutoff valve. An inlet shut off valve on the fuel cell system meets the intent of 6.4.3.2.

Substantiation: Addition of the requirement for a manual valve, as compared to a valve activated through software or mechanical means which cannot be locked/tagged out of service, or proven to be closed during an emergency.

There is no need for double shutoff valves if the fuel and power system are within 1.8 meters of each other (arm's reach).

Committee Meeting Action: Accept in Principle

Revise proposal as follows:

The shutoff valve should be outside of the storage containment area in a location that is identified and easily accessed by authorized personnel such that the valve can be operated in the event of a pending emergency. The shutoff valve may be within a fenced area or chained and locked in the normal position to prevent unauthorized persons from tampering with the shutoff valve. An inlet shut off valve on the fuel cell system meets the intent of 6.4.3.2.

Committee Statement: The committee felt that the second sentence was too specific for the Standard.

Number Eligible to Vote: 28

Ballot Results: Affirmative: 25

Ballot Not Returned: 3 Corson, IV, H., Hansen, R., Strothers, T.