

STATE OF FLORIDA



COMMISSIONERS:  
BRAULIO L. BAEZ, CHAIRMAN  
J. TERRY DEASON  
RUDOLPH "RUDY" BRADLEY  
CHARLES M. DAVIDSON  
LISA POLAK EDGAR

ORIGINAL

OFFICE OF THE GENERAL COUNSEL  
RICHARD D. MELSON  
GENERAL COUNSEL  
(850) 413-6199

05 OCT 27 AM 10: 27

COMMISSION  
CLERK

Public Service Commission

October 27, 2005

Mr. Scott Boyd, Executive Director  
Joint Administrative Procedures Committee  
Room 120, Holland Building  
Tallahassee, FL 32399-1300

RE: Docket No. 050591-TP – Proposed Amendment of Rule 25-4.036, F.A.C., Design and Construction of Plant, and Rule 25-24.515, F.A.C., Pay Telephone Service.

Dear Mr. Boyd:

Enclosed is an original copy of the following materials concerning the above-referenced proposed rules:

- CMP \_\_\_\_\_
- COM \_\_\_\_\_ 1. A copy of the rules.
- CTR \_\_\_\_\_ 2. A copy of the F.A.W. notices.
- ECR \_\_\_\_\_ 3. A statement of facts and circumstances justifying the proposed rules.
- GCL \_\_\_\_\_ 4. A federal standards statement.
- OPC \_\_\_\_\_ 5. A statement of estimated regulatory costs.
- RCA \_\_\_\_\_ 6. A copy of the 2005 edition of the National Electrical Code.
- SCR \_\_\_\_\_
- SGA \_\_\_\_\_
- SEC   1
- OTH \_\_\_\_\_

Please return the copy of the National Electrical Code when you have finished your review of the proposed rules. If there are any questions with respect to these rules, please do not hesitate to call me.

Sincerely,

*Samantha M. Cibula*  
Samantha M. Cibula  
Associate General Counsel

Enclosures  
NFPA JAPC.smc.doc  
cc: ~~Division of the Commission Clerk and Administrative Services~~

DOCUMENT NUMBER 001  
10427 OCT27 05  
PSC-COMMISSION CLERK

1 **25-4.036 Design and Construction of Plant.**

2 (1) The plant and facilities of the utility shall be designed, constructed, installed,  
3 maintained and operated in accordance with provisions of the ~~2002 Edition~~ of the National  
4 Electrical Safety Code (IEEE C2-2002) and the National Electrical Code (NFPA 70-2005~~70-~~  
5 ~~2002~~), pertaining to the construction of telecommunications facilities.

6 (2) Compliance with these codes and accepted good practice is necessary to insure  
7 as far as reasonably possible continuity of service, uniformity in the quality of service  
8 furnished and the safety of persons and property.

9 Specific Authority 350.127(2) FS.

10 Law Implemented 364.01(4), 364.03 FS.

11 History—Revised 12-1-68, Amended 4-19-77, Formerly 25-4.36, Amended 2-5-86, 3-26-91, 5-  
12 3-94, 12-23-02.

13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

CODING: Words underlined are additions; words in ~~struck through~~ type are deletions from existing law.

1 **25-24.515 Pay Telephone Service.**

2 (1) For the purposes of this section, the term "direct free" shall mean without  
3 requiring the use of a coin, paper money, credit card, or any other form of payment, even if the  
4 payment will be returned.

5 (2) Pay telephone stations shall be lighted during the hours of darkness when light  
6 from other sources is not adequate to read instructions and use the instrument.

7 (3) Each pay telephone station shall return any deposited amount if the call is not  
8 completed, except messages to a Feature Group A access number.

9 (4) Each pay telephone station shall permit direct free access to the universal  
10 telephone number "911" where operable.

11 (5) Each pay telephone station shall permit direct free access to dialtone.

12 (6) Each pay telephone station shall permit direct free access to toll free numbers  
13 (e.g., 800, 877, and 888).

14 (7) Each pay telephone station shall complete calls to local and long distance  
15 directory assistance.

16 (8) Each pay telephone station shall complete calls to the responsible party for  
17 repairs or refunds by direct free access.

18 (9) Each pay telephone station shall be equipped with a legible sign, card, or plate  
19 of reasonable permanence which shall identify the following:

20 (a) The telephone number and location address of the pay telephone station, name  
21 and certificate number of the certificate holder, the party responsible for repairs and refunds,  
22 address of responsible party, free phone number of responsible party, clear dialing instructions  
23 (including notice of the lack of availability of local or toll services), and the local coin rate.

24 (b) For those pay telephone stations that will terminate conversation after a  
25 minimum elapsed time, notice shall be included on the sign card as well as an audible

CODING: Words underlined are additions; words in ~~struck through~~ type are deletions  
from existing law.

1 announcement 30 seconds prior to termination of the phone call.

2 (10) Each pay telephone station that provides access to any interexchange company  
3 shall provide coin free access, except for Feature Group A access, to all locally available  
4 interexchange companies. The pay telephone station shall provide such access through the  
5 forms of access purchased by locally available long distance carriers such as 10XXX+0,  
6 10XXXX+0, 101XXXX+0, 950, toll free (e.g., 800, 877, and 888) access.

7 (11) No sales solicitation shall be allowed during the interval between the last digit  
8 dialed by the end user and connection with the interexchange carrier.

9 (12) All 0- calls shall be routed to a telecommunications company that is authorized  
10 by the Commission to handle 0- calls. All other calls, including operator service calls, may be  
11 routed to the pay telephone provider's carrier of choice, unless the end user dials the  
12 appropriate access code for their carrier of choice, i.e., 950, 10XXX, 10XXXX, 101XXXX,  
13 and toll free access (e.g., 800, 877, and 888).

14 (13)(a) Each pay telephone station shall allow incoming calls to be received at all  
15 times, with the exception of those located at hospitals, schools, and locations specifically  
16 exempted by the Commission. There shall be no charge for receiving incoming calls.

17 (b) A pay telephone provider may petition the Commission for an exemption from  
18 the incoming call requirement for a period that shall not exceed two years from the effective  
19 date of the Order granting the exemption. Requests for exemption from the requirement that  
20 each pay telephone station allow incoming calls shall be accompanied by a completed Form  
21 PSC/CMP-2 (02/99), entitled "Request to Block Incoming Calls," which is incorporated into  
22 this rule by reference and may be obtained from the Commission's Division of Competitive  
23 Markets and Enforcement. The form requires an attestation from the owner of the pay  
24 telephone, the owner of the pay telephone location, and the chief of the responsible law  
25 enforcement agency that the request is sought in order to deter criminal activity facilitated by

CODING: Words underlined are additions; words in ~~struck through~~ type are deletions  
from existing law.

1 incoming calls being received at the specified pay telephone. A separate form shall be filed for  
2 each telephone number for which an exemption is sought. The provider of the pay telephone  
3 may request subsequent two-year exemptions by filing another Form PSC/CMP-2 (02/99).  
4 Where incoming calls are not received, central-office based intercept shall be provided at no  
5 charge to the end user and a written notice shall be prominently displayed on the instrument  
6 directly above or below the telephone number which states: "Incoming calls blocked at request  
7 of law enforcement."

8 (14) Each pay telephone station must be connected to an individual access line.

9 (15)(a) Each pay telephone service company shall permit outgoing calls to be placed  
10 from its pay telephone stations at all times.

11 (b) Each pay telephone service company shall make all reasonable efforts to  
12 minimize the extent and duration of interruptions of service. Service repair programs should  
13 have as their objective the restoration of service on the same day that the interruption is  
14 reported to the company. (Sundays and holidays excepted.)

15 (16)(a) Where there is a single pay telephone station, a directory shall be maintained at  
16 each station. Where there are two or more pay telephone stations located in a group, a  
17 directory for the entire local calling area shall be maintained at every other station. However,  
18 where telephone pay stations are fully enclosed, a directory shall be maintained at each pay  
19 telephone station. For purposes of this rule, the term "directory" shall mean both a current  
20 white page directory for the local calling area and a reasonably current yellow page directory  
21 that is appropriate for the calling area of the pay telephone station.

22 (b) Pay telephone stations that provide local directory assistance at no charge are  
23 exempt from the provisions in paragraph (16)(a). A notice must appear on the placard if local  
24 directory assistance at no charge is being provided.

25 (17) Normal maintenance and coin collection activity shall include a review of the

CODING: Words underlined are additions; words in ~~struck through~~ type are deletions  
from existing law.

1 | cleanliness of each pay telephone station.

2 |         (18)(a) Except as provided in paragraphs (18)(b) below, each pay telephone station  
3 | shall conform to sections 4.1.3(17), 4.2.4, 4.2.5, 4.2.6, 4.5.1., 4.31.2, 4.31.3, and 4.31.5 of the  
4 | ADA Accessibility Guidelines for Buildings and Facilities, Appendix A to 28 CFR Part 36,  
5 | (July 1, 2003 Edition), which sections are incorporated by reference into this rule. This rule  
6 | does not apply to public text telephone and closed circuit telephones.

7 |         (b) Pay telephones shall not be installed where the required “clear floor or ground  
8 | space” provided for in ADA Accessibility Guidelines for Buildings and Facilities sections  
9 | 4.2.4.1, 4.2.4.2, and 4.31.2 would be reduced by a vehicle parked in a designated parking  
10 | space.

11 |         (19) Each pay telephone station shall permit end users to input unlimited digits for  
12 | the duration of the call.

13 |         (20) Toll Fraud Liability.

14 |         (a) A company providing interexchange telecommunications services or local  
15 | exchange telecommunications services shall not collect from a pay telephone provider for  
16 | charges billed to a line for calls that originated from that line through the use of access codes  
17 | such as 10XXX, 10XXXX, 101XXXX, 950, and toll free (e.g., 800, 877, 888) access codes, or  
18 | when the call originating from that line otherwise reached an operator position, if the  
19 | originating line is subscribed to outgoing call screening and the call was placed after the  
20 | effective date of the outgoing call screening order.

21 |         (b) A company providing interexchange telecommunications services or local  
22 | exchange telecommunications services shall not collect from a pay telephone provider for  
23 | charges for collect or third number billed calls, if the line to which the call was billed was  
24 | subscribed to incoming call screening and the call was placed after the effective date of the  
25 | incoming call screening order.

CODING: Words underlined are additions; words in ~~struck through~~ type are deletions  
from existing law.

1 (c) Any calls billed through the provider of local exchange telecommunications  
2 services or directly by an interexchange company, or through a billing agent, which have been  
3 identified as not collectible as described in paragraphs (20)(a) and (b) above, must be removed  
4 from any pay telephone provider's bill after the pay telephone provider gives notice of the  
5 fraudulent charges to the billing party. Pay telephone providers shall give such notice to the  
6 provider of local exchange telecommunications services and the interexchange company in  
7 writing no later than the due date of the bill.

8 (d) The provider of local exchange telecommunications services is responsible for  
9 charges described in paragraph (20)(c) that are associated with the failure of the provider of  
10 local exchange telecommunications services' screening services.

11 (e) The interexchange company is responsible for charges described in paragraph  
12 (20)(c) that are associated with the failure to properly validate calls via the appropriate  
13 provider of local exchange telecommunications services' data base.

14 (f) Definitions: For purposes of subsection (20) the term "Effective Date" shall  
15 mean the date after the call screening order was placed and associated charges apply.

16 (g) Any charges accrued to a line when the subscriber has subscribed to the  
17 provider of local exchange telecommunications services to screen calls described in  
18 paragraphs (20)(a) and (b) above shall not be the basis for discontinuance of local and  
19 intrastate service.

20 (21) Providers serving confinement facilities shall provide for completion of all  
21 inmate calls allowed by the confinement facility.

22 (22) Pay telephone stations located in confinement facilities shall be exempt from  
23 the requirements of subsections (2), (4), (6), (7), (8), (10), (12), (13), (15), (16), and (19) of  
24 this rule. Such pay telephone stations shall also be exempt from the requirements of subsection  
25 (9), except that outgoing local and long distance calls may not be terminated until after a

CODING: Words underlined are additions; words in ~~struck through~~ type are deletions  
from existing law.

1 minimum elapsed time of ten minutes. Audible and written disconnect notifications shall  
2 apply, and one access line shall not be connected to more than three pay telephone stations.

3 (23) Pay telephone facilities shall be designed, constructed, installed, maintained  
4 and operated in accordance with provisions of the National Electrical Safety Code (IEEE C2-  
5 2002) and the National Electrical Code (NFPA 70-2005~~NEPA 70-2002~~).

6 Specific Authority 350.127(2) FS.

7 Law Implemented 364.03, 364.035, 364.063, 364.337, 364.3375, 364.345 FS.

8 History—New 1-5-87, Amended 4-14-92, 12-21-92, 2-3-93, 10-10-94, 12-27-94, 9-5-95, 2-1-  
9 99, 12-23-02, 4-5-05.

10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

CODING: Words underlined are additions; words in ~~struck through~~ type are deletions from existing law.





WRITTEN COMMENTS OR SUGGESTIONS ON THE PROPOSED RULE MAY BE SUBMITTED TO THE FPSC, DIVISION OF THE COMMISSION CLERK AND ADMINISTRATIVE SERVICES, WITHIN 21 DAYS OF THE DATE OF THIS NOTICE FOR INCLUSION IN THE RECORD OF THE PROCEEDING.

IF REQUESTED WITHIN 21 DAYS OF THE DATE OF THIS NOTICE, A HEARING WILL BE SCHEDULED AND ANNOUNCED IN THE FAW.

THE PERSON TO BE CONTACTED REGARDING THE THESE PROPOSED RULE IS:

Samantha Cibula, Florida Public Service Commission, 2540 Shumard Oak Blvd., Tallahassee, Florida 32399-0862, (850) 413-6245.

THE FULL TEXT OF THE PROPOSED RULE IS:

25-4.036 Design and Construction of Plant.

(1) The plant and facilities of the utility shall be designed, constructed, installed, maintained and operated in accordance with provisions of ~~the 2002 Edition~~ of the National Electrical Safety Code (IEEE C2-2002) and the National Electrical Code (NFPA ~~70-2005~~~~70-2002~~), pertaining to the construction of telecommunications facilities.

(2) No change.

Specific Authority 350.127(2) FS.

Law Implemented 364.01(4), 364.03 FS.

History—Revised 12-1-68, Amended 4-19-77, Formerly 25-4.36, Amended 2-5-86, 3-26-91, 5-3-94, 12-23-02.

NAME OF PERSON ORIGINATING PROPOSED RULE: Ray Kennedy

NAME OF SUPERVISOR OR PERSONS WHO APPROVED THE PROPOSED RULE:

Florida Public Service Commission

DATE PROPOSED RULE APPROVED: October 18, 2005

DATE NOTICE OF PROPOSED RULE DEVELOPMENT PUBLISHED IN FAW: Volume 31,  
Number 20, May 20, 2005

If any person decides to appeal any decision of the Commission with respect to any matter considered at the rulemaking hearing, if held, a record of the hearing is necessary. The appellant must ensure that a verbatim record, including testimony and evidence forming the basis of the appeal is made. The Commission usually makes a verbatim record of rulemaking hearings.

Any person requiring some accommodation at this hearing because of a physical impairment should call the Division of the Commission Clerk and Administrative Services at (850) 413-6770 at least 48 hours prior to the hearing. Any person who is hearing or speech impaired should contact the Florida Public Service Commission by using the Florida Relay Service, which can be reached at: 1-800-955-8771 (TDD).

NOTICE OF PROPOSED RULEMAKING

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 050591-TP

RULE TITLE:

RULE NO.:

Pay Telephone Service

25-24.515

**PURPOSE AND EFFECT:** To amend the rule to reference the most recent edition of the National Electrical Code.

**SUMMARY:** Rule 25-24.515 requires that the plant and facilities of regulated companies be designed, constructed, installed, maintained, and operated in accordance with the provisions of the National Electrical Code. The proposed amendments would update the rule to reflect the 2005 edition of the Code.

**SUMMARY OF STATEMENT OF ESTIMATED REGULATORY COST:** The proposed rule amendment should not significantly impact the agency, the industry, cities, counties, or small businesses.

Any person who wishes to provide information regarding the statement of estimated regulatory costs, or to provide a proposal for a lower cost regulatory alternative must do so in writing within 21 days of this notice.

**SPECIFIC AUTHORITY:** 350.127(2), FS

**LAW IMPLEMENTED:** 364.03, 364.035, 364.063, 364.337, 364.3375, 364.345, FS

**WRITTEN COMMENTS OR SUGGESTIONS ON THE PROPOSED RULE MAY BE**

**SUBMITTED TO THE FPSC, DIVISION OF THE COMMISSION CLERK AND**

**ADMINISTRATIVE SERVICES, WITHIN 21 DAYS OF THE DATE OF THIS NOTICE FOR**

**INCLUSION IN THE RECORD OF THE PROCEEDING.**

IF REQUESTED WITHIN 21 DAYS OF THE DATE OF THIS NOTICE, A HEARING WILL BE SCHEDULED AND ANNOUNCED IN THE FAW.

THE PERSON TO BE CONTACTED REGARDING THESE PROPOSED RULE IS:

Samantha Cibula, Florida Public Service Commission, 2540 Shumard Oak Blvd., Tallahassee, Florida 32399-0862, (850) 413-6245.

THE FULL TEXT OF THE PROPOSED RULE IS:

25-24.515 Pay Telephone Service.

(1) – (22) No Change.

(23) Pay telephone facilities shall be designed, constructed, installed, maintained and operated in accordance with provisions of the National Electrical Safety Code (IEEE C2-2002) and the National Electrical Code (~~NFPA 70-2005~~~~NEPA 70-2002~~).

Specific Authority 350.127(2) FS.

Law Implemented 364.03, 364.035, 364.063, 364.337, 364.3375, 364.345 FS.

History—New 1-5-87, Amended 4-14-92, 12-21-92, 2-3-93, 10-10-94, 12-27-94, 9-5-95, 2-1-99, 12-23-02, 4-5-05.

NAME OF PERSON ORIGINATING PROPOSED RULE: Ray Kennedy

NAME OF SUPERVISOR OR PERSONS WHO APPROVED THE PROPOSED RULE:

Florida Public Service Commission

DATE PROPOSED RULE APPROVED: October 18, 2005

DATE NOTICE OF PROPOSED RULE DEVELOPMENT PUBLISHED IN FAW: Volume 31, Number 20, May 20, 2005

If any person decides to appeal any decision of the Commission with respect to any matter considered at the rulemaking hearing, if held, a record of the hearing is necessary. The appellant

must ensure that a verbatim record, including testimony and evidence forming the basis of the appeal is made. The Commission usually makes a verbatim record of rulemaking hearings.

Any person requiring some accommodation at this hearing because of a physical impairment should call the Division of the Commission Clerk and Administrative Services at (850) 413-6770 at least 48 hours prior to the hearing. Any person who is hearing or speech impaired should contact the Florida Public Service Commission by using the Florida Relay Service, which can be reached at: 1-800-955-8771 (TDD).

STATEMENT OF FACTS AND CIRCUMSTANCES  
JUSTIFYING RULE

The National Electrical Code provides standards that must be followed by entities that design, install, operate and maintain electrical instrumentation, including the associated wiring that serves to provide power and/or signaling distribution. Moreover, the National Electrical Code provides uniform standards to minimize harm to persons or damage to properties. Rules 25-4.036 and 25-24.515 currently reflect the 2002 version of the National Electrical Code. The rules are being amended to reflect the most current version of the National Electrical Code, which is the 2005 edition.

STATEMENT ON FEDERAL STANDARDS

There is no federal standard on the same subject.

State of Florida



## Public Service Commission

CAPITAL CIRCLE OFFICE CENTER • 2540 SHUMARD OAK BOULEVARD  
TALLAHASSEE, FLORIDA 32399-0850

### -M-E-M-O-R-A-N-D-U-M-

---

**DATE:** August 24, 2005  
**TO:** Office of General Counsel (Cibula)  
**FROM:** Division of Economic Regulation (Hewitt) *CBH CSW TH*  
**RE:** Statement of Estimated Regulatory Costs for Proposed Amendments to Rules 25-4.036, F.A.C., Design and Construction of Plant, and 25-24.515, F.A.C., Pay Telephone Service

---

#### SUMMARY OF THE RULE

Rules 25-4.036 and 25-24.515, F.A.C, require that the plant and facilities of regulated companies be designed, constructed, installed, maintained, and operated in accordance with provisions of the National Electrical Safety Code and the National Electrical Code. The proposed amendments would update the rules to the latest version of the Code.

#### ESTIMATED NUMBER OF ENTITIES REQUIRED TO COMPLY AND GENERAL DESCRIPTION OF INDIVIDUALS AFFECTED

All regulated Florida telecommunications companies would potentially be affected by the proposed rule changes. There are 415 competitive local exchange companies, 10 incumbent local exchange companies, 30 shared tenant service companies, 423 pay telephone companies, 681 interexchange companies, and 37 alternative access vendors as of June 30, 2005, regulated by the Commission. If any are not in compliance, they would have to update their plant and facilities to meet the latest code requirements.

#### RULE IMPLEMENTATION AND ENFORCEMENT COST AND IMPACT ON REVENUES FOR THE AGENCY AND OTHER STATE AND LOCAL GOVERNMENT ENTITIES

The Commission would benefit by having the latest safety code in effect for regulated companies and their customers. There should be no impact on revenues for the Commission.

There should be no negative impact on other state and local government entities.

#### ESTIMATED TRANSACTIONAL COSTS TO INDIVIDUALS AND ENTITIES

Regulated companies would have to comply with any changes from the previous version of the code. However, Commission staff has determined that the changes to the NEC are mainly cosmetic, renumbering paragraphs and moving items around. The only appreciable change was that previous designations for some of the wires used for communications can no longer be used in the future. These changes should be insignificant to the industry as far as costs are concerned.



IMPACT ON SMALL BUSINESSES, SMALL CITIES, OR SMALL COUNTIES

There should be no significant impact on regulated small businesses, small cities, or small counties. The latest NEC is required by most, if not all, counties, cities, and state/federal communications works.

CH:kb

cc: Mary Andrews Bane

Chuck Hill

Ray Kennedy

Hurd Reeves

# NEC<sup>®</sup> 2005

NFPA 70: National Electrical Code<sup>®</sup>  
International Electrical Code<sup>®</sup> Series



**C3**



An International Codes  
and Standards Organization

Errata

**NFPA 70**

***National Electrical Code***<sup>®</sup>

**2005 Edition**

**Reference: 2005 NEC**<sup>®</sup>

The National Electrical Code Correlating Committee notes the following errors in the 2005 edition of NFPA 70, *National Electrical Code*.

*How to Use this Errata Sheet*

This is a list of errata to the first printing of the 2005 NEC<sup>®</sup>. A first printing is indicated by the numeral 1 as the last digit in the line of number appearing at the bottom of the inside front cover.

1. Page 70-36            **110.26(A)(1)**: Revise reference to "Table 110.26(A)(1)(1)" to read "Table 110.26(A)(1)".
2. Page 70-47            **210.8(A)**: Relocate text appearing at bottom of left-hand column that reads "Receptacles installed under the exceptions to 210.8(A)(5) shall not be considered as meeting the requirements of 210.52(G)" to the right-hand column following *Exception No. 3* to 210.8(A)(5).
3. Page 70-59            **220.14(K)**: Revise reference "220.14" to "220.14(I)" ..
4. Page 70-73            **230.24(A)**: Revise fourth exception to "*Exception No. 4*".
5. Page 70-78            **230.72(B)**: First sentence, revise word "ore" to "more".
6. Page 70-91            **240.93 First paragraph & 240.93(A), (B), (C)**: Delete entire text.
7. Page 70-126           **300.6(A)**: First sentence, revise "listed" to "approved".
8. Page 70-139           **Table 310.13**: Underground service entrance cable – single conductor, revise thickness of insulation "mils" column from 5 to 45
9. Page 70-150           **Table 310.64**: 25,001 to 28,000 volts, 1 AWG and 1/0AWG – 2000 kcmil, 100% insulation level, revise 2.80 mils to 280 mils.
10. Page 70-174           **Table 326.80**: Revise amperes value for 1750 kcmil from 344 to 315
11. Page 70-176           **330.10(B)**: Revise 770.52 to 770.133.
12. Page 70-182           **336.104(C)**: Revise Class I to Class 1.
13. Page 70-363           **502.150(A)(1)**: Revise 502.100(A) to 502.10(A).

## NFPA 70

# *National Electrical Code*<sup>®</sup>

### 2005 Edition

This edition of NFPA 70, *National Electrical Code*, was prepared by the National Electrical Code Committee and acted on by NFPA at its May Association Technical Meeting held May 23–26, 2004, in Salt Lake City, UT. It was issued by the Standards Council on July 16, 2004, with an effective date of August 5, 2004, and supersedes all previous editions.

A tentative interim amendment (TIA) to Section 604.6(A)(1) was issued on July 15, 2004. For further information on tentative interim amendments see Section 5 of the NFPA Regulations Governing Committee Projects available at:

<http://www.nfpa.org/Codes/NFPADirectory.asp#Regs&Procedures>

This edition of NFPA 70 was approved as an American National Standard on August 5, 2004.

### History and Development of the *National Electrical Code*<sup>®</sup>

The National Fire Protection Association has acted as sponsor of the *National Electrical Code* since 1911. The original *Code* document was developed in 1897 as a result of the united efforts of various insurance, electrical, architectural, and allied interests.

In accordance with the provisions of the NFPA Regulations Governing Committee Projects, a National Electrical Code Committee Report on Proposals containing proposed amendments to the 2002 *National Electrical Code* was published by NFPA in July 2003. This report recorded the actions of the various Code-Making Panels and the Correlating Committee of the National Electrical Code Committee on each proposal that had been made to revise the 2002 *Code*. The report was circulated to all members of the National Electrical Code Committee and was made available to other interested NFPA members and to the public for review and comment. Following the close of the public comment period, the Code-Making Panels met, acted on each comment, and reported their action to the Correlating Committee. NFPA published the National Electrical Code Committee Report on Comments in April 2004, which recorded the actions of the Code-Making Panels and the Correlating Committee on each public comment to the National Electrical Code Committee Report on Proposals. The National Electrical Code Committee Report on Proposals and the National Electrical Code Committee Report on Comments were presented to the 2004 May Association Technical Meeting for adoption.

NFPA has an Electrical Section that provides particular opportunity for NFPA members interested in electrical safety to become better informed and to contribute to the development of the *National Electrical Code* and other NFPA electrical standards. Each of the Code-Making Panels and the Chairman of the Correlating Committee reported their recommendations to meetings of the Electrical Section at the 2004 NFPA World Safety Conference and Exposition. The Electrical Section thus had opportunity to discuss and review the report of the National Electrical Code Committee prior to the adoption of this edition of the *Code* by the Association at its 2004 May Technical Session.

This 2005 edition supersedes all other previous editions, supplements, and printings dated 1897, 1899, 1901, 1903, 1904, 1905, 1907, 1909, 1911, 1913, 1915, 1918, 1920, 1923, 1925, 1926, 1928, 1930, 1931, 1933, 1935, 1937, 1940, 1942, 1943, 1947, 1949, 1951, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1962, 1965, 1968, 1971, 1975, 1978, 1981, 1984, 1987, 1990, 1993, 1996, 1999, and 2002. The 2005 edition marks the 50th edition of the *National Electrical Code*.

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.

This *Code* is purely advisory as far as NFPA is concerned. It is made available for a wide variety of both public and private uses in the interest of life and property protection. These include both use in law and for regulatory purposes, and use in private self-regulation and standardization activities as insurance underwriting, building and facilities construction and management, and product testing and certification.

Contents

ARTICLE		70-	ARTICLE		70-
90	Introduction .....	23	240	Overcurrent Protection .....	81
<b>Chapter 1 General</b>					
100	Definitions .....	26		I. General .....	81
	I. General .....	26		II. Location .....	84
	II. Over 600 Volts, Nominal .....	32		III. Enclosures .....	87
110	Requirements for Electrical Installations .....	33		IV. Disconnecting and Guarding .....	88
	I. General .....	33		V. Plug Fuses, Fuseholders, and Adapters .....	88
	II. 600 Volts, Nominal, or Less .....	36		VI. Cartridge Fuses and Fuseholders .....	89
	III. Over 600 Volts, Nominal .....	38		VII. Circuit Breakers .....	89
	IV. Tunnel Installations over 600 Volts, Nominal .....	40		VIII. Supervised Industrial Installations .....	90
	V. Manholes and Other Electric Enclosures Intended for Personnel Entry, All Voltages .....	41		IX. Overcurrent Protection Over 600 Volts, Nominal .....	91
<b>Chapter 2 Wiring and Protection</b>					
200	Use and Identification of Grounded Conductors .....	43	250	Grounding and Bonding .....	92
210	Branch Circuits .....	45		I. General .....	92
	I. General Provisions .....	45		II. System Grounding .....	95
	II. Branch-Circuit Ratings .....	49		III. Grounding Electrode System and Grounding Electrode Conductor .....	101
	III. Required Outlets .....	51		IV. Enclosure, Raceway, and Service Cable Grounding .....	105
215	Feeders .....	55		V. Bonding .....	105
220	Branch-Circuit, Feeder, and Service Calculations .....	56		VI. Equipment Grounding and Equipment Grounding Conductors .....	108
	I. General .....	56		VII. Methods of Equipment Grounding .....	113
	II. Branch Circuit Load Calculations .....	57		VIII. Direct-Current Systems .....	115
	III. Feeder and Service Load Calculations .....	59		IX. Instruments, Meters, and Relays .....	116
	IV. Optional Feeder and Service Load Calculations .....	61		X. Grounding of Systems and Circuits of 1 kV and Over (High Voltage) .....	117
	V. Farm Load Calculation .....	65	280	Surge Arresters .....	119
225	Outside Branch Circuits and Feeders .....	66		I. General .....	119
	I. General .....	66		II. Installation .....	119
	II. More Than One Building or Other Structure .....	69		III. Connecting Surge Arresters .....	119
	III. Over 600 Volts .....	71	285	Transient Voltage Surge Suppressors: TVSSs .....	120
230	Services .....	72		I. General .....	120
	I. General .....	72		II. Installation .....	120
	II. Overhead Service-Drop Conductors .....	73		III. Connecting Transient Voltage Surge Suppressors .....	121
	III. Underground Service-Lateral Conductors .....	74	<b>Chapter 3 Wiring Methods and Materials</b>		
	IV. Service-Entrance Conductors .....	74	300	Wiring Methods .....	122
	V. Service Equipment — General .....	77		I. General Requirements .....	122
	VI. Service Equipment — Disconnecting Means .....	77		II. Requirements for Over 600 Volts, Nominal .....	131
	VII. Service Equipment — Overcurrent Protection .....	79	310	Conductors for General Wiring .....	133
	VIII. Services Exceeding 600 Volts, Nominal ...	80	312	Cabinets, Cutout Boxes, and Meter Socket Enclosures .....	158
				I. Installation .....	158
				II. Construction Specifications .....	160
			314	Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Handhole Enclosures .....	161
				I. Scope and General .....	161
				II. Installation .....	162

NATIONAL ELECTRICAL CODE COMMITTEE

*These lists represent 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 this document.*

**Technical Correlating Committee**

**James W. Carpenter, Chair**

International Association of Electrical Inspectors, TX [E]  
Rep. International Association of Electrical Inspectors

**Mark W. Earley, Secretary**

NFPA, MA  
(nonvoting)

**Jean A. O'Connor, Recording Secretary**

NFPA, MA  
(nonvoting)

**James E. Brunssen, Telcordia, NJ [UT]\***

Rep. Alliance for Telecommunications Industry Solutions  
**Michael I. Callanan, National Joint Apprentice & Training Committee, MD [L]**

Rep. International Brotherhood of Electrical Workers  
**William R. Drake, Marinco, CA [M]**

**John R. Kovacik, Underwriters Laboratories Incorporated, IL [RT]**

**James T. Pauley, Square D Company, KY [M]**

Rep. National Electrical Manufacturers Association  
**Michael D. Toman, MEGA Power Electrical Services, Incorporated, MD [IM]**

Rep. National Electrical Contractors Association

**John W. Troglia, Edison Electric Institute, WI [UT]**

Rep. Electric Light & Power Group/EEI

**Craig M. Wellman, DuPont Engineering, DE [U]**

Rep. American Chemistry Council

**Alternates**

**Jeffrey Boksiner, Telcordia Technologies, Incorporated, NJ [UT]**

Rep. Alliance for Telecommunications Industry Solutions  
(Alt. to J. E. Brunssen)

**Philip H. Cox, Bigelow, AR [E]**

Rep. International Association of Electrical Inspectors  
(Alt. to J. W. Carpenter)

**James M. Daly, General Cable, NJ [M]**

Rep. National Electrical Manufacturers Association  
(Alt. to J. T. Pauley)

**Stanley J. Folz, Folz Electric, Incorporated, IL [IM]**

Rep. National Electrical Contractors Association  
(Alt. to M. D. Toman)

**Palmer L. Hickman, National Joint Apprentice & Training Committee, MD [L]**

Rep. International Brotherhood of Electrical Workers  
(Alt. to M. I. Callanan)

**Neil F. LaBrake, Jr., Niagara Mohawk, a National Grid Company, NY [UT]**

Rep. Electric Light & Power Group/EEI  
(Alt. to J. W. Troglia)

**William M. Lewis, Eli Lilly & Company, IN [U]**

Rep. American Chemistry Council  
(Alt. to C. M. Wellman)

**Mark C. Ode, Underwriters Laboratories Incorporated, NC [RT]**

(Alt. to J. R. Kovacik)

**Nonvoting**

**Richard G. Biermann, Biermann Electric Company, Incorporated, IA [IM]**

**D. Harold Ware, Libra Electric Company, OK [IM]**

**CODE-MAKING PANEL NO. 1**

**Articles 90, 100, 110, Annex A, Annex G**

**John D. Minick, Chair**

National Electrical Manufacturers Association, TX [M]  
Rep. National Electrical Manufacturers Association

**Michael A. Anthony, University of Michigan, MI [U]**  
Rep. The Association of Higher Education Facilities Officers

**Louis A. Barrios, Jr., Shell Global Solutions, TX [U]**  
Rep. American Chemistry Council

**David A. Dini, Underwriters Laboratories Incorporated, IL [RT]**

**William T. Fiske, Intertek Testing Services NA, Incorporated, NY [RT]**

**H. Landis Floyd II, The DuPont Company, DE [U]**  
Rep. Institute of Electrical & Electronics Engineers, Incorporated

**Palmer L. Hickman, National Joint Apprentice & Training Committee, MD [L]**

Rep. International Brotherhood of Electrical Workers

**David L. Hittinger, IEC of Greater Cincinnati, OH [IM]**

Rep. Independent Electrical Contractors, Incorporated

## NFPA 70

## National Electrical Code®

2005 Edition

**IMPORTANT NOTE:** This NFPA document is made available for use subject to important notices and legal disclaimers. These notices and disclaimers appear in all publications containing this document and may be found under the heading "Important Notices and Disclaimers Concerning NFPA Documents." They can also be obtained on request from NFPA or viewed at [www.nfpa.org/disclaimers](http://www.nfpa.org/disclaimers).

## ARTICLE 90 Introduction

### 90.1 Purpose.

(A) **Practical Safeguarding.** The purpose of this *Code* is the practical safeguarding of persons and property from hazards arising from the use of electricity.

(B) **Adequacy.** This *Code* contains provisions that are considered necessary for safety. Compliance therewith and proper maintenance results in an installation that is essentially free from hazard but not necessarily efficient, convenient, or adequate for good service or future expansion of electrical use.

FPN: Hazards often occur because of overloading of wiring systems by methods or usage not in conformity with this *Code*. This occurs because initial wiring did not provide for increases in the use of electricity. An initial adequate installation and reasonable provisions for system changes provide for future increases in the use of electricity.

(C) **Intention.** This *Code* is not intended as a design specification or an instruction manual for untrained persons.

(D) **Relation to Other International Standards.** The requirements in this *Code* address the fundamental principles of protection for safety contained in Section 131 of International Electrotechnical Commission Standard 60364-1, *Electrical Installations of Buildings*.

FPN: IEC 60364-1, Section 131, contains fundamental principles of protection for safety that encompass protection against electric shock, protection against thermal effects, protection against overcurrent, protection against fault currents, and protection against overvoltage. All of these potential hazards are addressed by the requirements in this *Code*.

### 90.2 Scope.

(A) **Covered.** This *Code* covers the installation of electrical conductors, equipment, and raceways; signaling and communications conductors; equipment, and raceways; and optical fiber cables and raceways for the following:

- (1) Public and private premises, including buildings, structures, mobile homes, recreational vehicles, and floating buildings
- (2) Yards, lots, parking lots, carnivals, and industrial substations

FPN to (2): For additional information concerning such installations in an industrial or multibuilding complex, see ANSI C2-2002, *National Electrical Safety Code*.

- (3) Installations of conductors and equipment that connect to the supply of electricity
- (4) Installations used by the electric utility, such as office buildings, warehouses, garages, machine shops, and recreational buildings, that are not an integral part of a generating plant, substation, or control center.

(B) **Not Covered.** This *Code* does not cover the following:

- (1) Installations in ships, watercraft other than floating buildings, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles

FPN: Although the scope of this *Code* indicates that the *Code* does not cover installations in ships, portions of this *Code* are incorporated by reference into Title 46, *Code of Federal Regulations*, Parts 110–113.

- (2) Installations underground in mines and self-propelled mobile surface mining machinery and its attendant electrical trailing cable
- (3) Installations of railways for generation, transformation, transmission, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communications purposes
- (4) Installations of communications equipment under the exclusive control of communications utilities located outdoors or in building spaces used exclusively for such installations
- (5) Installations under the exclusive control of an electric utility where such installations
  - a. Consist of service drops or service laterals, and associated metering, or
  - b. Are located in legally established easements, rights-of-way, or by other agreements either designated by or recognized by public service commissions, utility commissions, or other regulatory agencies having jurisdiction for such installations, or
  - c. Are on property owned or leased by the electric utility for the purpose of communications, metering, generation, control, transformation, transmission, or distribution of electric energy.