

Adopted changes to the Wisconsin Electrical Code, Comm 16, projected to go into effect on May 1, 2003

The Department of Commerce proposes an order to repeal ss. Comm 16.12 (1), Comm 16.295, Comm 16.35, Comm 16.41, Comm 16.437, Comm 16.44, and Comm 16.45 (4); to renumber ss. Comm 16.23, Comm 16.24 (1) (a), and Comm 16.24 (2) (b); to renumber and amend ss. Comm 16.12 (2), Comm 16.24 (1) (b), Comm 16.24 (2) (c), Comm 16.34, Comm 16.355, and Comm 16.36; to amend ss. Comm 16.02 (2) (e), Comm 16.065, Comm 16.17 (2) (a), Comm 16.25 (1) (a) (intro.), Comm 16.25 (6), Comm 16.25 (7) (title), (intro.) and (b), Comm 16.26 (title), (intro.) and (2), Comm 16.30 (1), Comm 16.33, Comm 16.395, and Comm 16.42 (1); to repeal and re-create ss. Comm 16.03 (3), Comm 16.11 (1), Comm 16.20, and Comm 16.42 (2); and to create ss. Comm 16.03 (4), Comm 16.155, Comm 16.17 (3), Comm 16.215, Comm 16.23, Comm 16.275, Comm 16.294, Comm 16.37, Comm 16.38, Comm 16.39 (1), Comm 16.392, Comm 16.438, Comm 16.49, and Comm 16.52; relating to electrical construction.

Analysis of Proposed Rules

Statutory Authority: Sections 101.02(1), 101.63(1), 101.73(1) and 101.82, Stats.

Statutes Interpreted: Sections 101.63(1), 101.73(1), 101.82 and 101.865, Stats.

Chapter Comm 16, Electrical Code, establishes safety and health requirements for the installation of electrical wiring, communication systems and electrical equipment in places of employment, public buildings, dwellings and other premises such as carnivals, parking lots, and mines. The chapter incorporates by reference the National Fire Protection Association (NFPA) standard NFPA 70 – National Electrical Code (NEC). In addition, the chapter includes amendments that clarify or supplement the electrical standards contained in the NEC. Chapter Comm 16 also establishes rules for the electrical inspection of farms, public buildings and places of employment.

The proposed rules consist of an update of chapter Comm 16, including the incorporation by reference of the 2002 edition of the NEC. The proposed rules do not contain any revisions to the current rules for the electrical inspection of farms, public buildings and places of employment.

The following is a summary of the major changes in the proposed rules. [The numbers in brackets indicate where the rule change can be found in the rule draft.]

1. Deleting several Wisconsin amendments to the NEC as a result of changes in the 2002 edition of the NEC. For example, because of changes in NEC 300.7 (A) of the 2002 NEC relating to sealing of raceways exposed to different temperatures, section Comm 16.295 is being deleted.

2. Revising the rules relating to the application of the code by clarifying the requirements relating to existing installations and by adding requirements for repairs. [Comm 16.03 (3) and (4)]

3. Deleting the NEC definition of "structure". [Comm 16.17 (3)]
4. Adding a requirement in dwelling units for installation of GFCI protection at sinks where receptacles are installed to serve countertop surfaces and are located within 6 feet of the sink. [Comm 16.20 (1)]
5. Adding requirements in other than dwelling units for installation of GFCI protection at outdoor receptacles and at sinks where receptacles are installed to serve countertop surfaces and are located within 6 feet of the sink. [Comm 16.20 (2)]
6. Allowing the option of supervision by a Wisconsin professional engineer, architect or designer of electrical systems when calculating branch-circuit, feeder and service sizes. [Comm 16.23]
7. Revising the supplemental electrode rule by requiring 2 supplemental made electrodes for all installations, not just for one- and 2-family dwellings. [Comm 16.26 (2)]
8. Adding a requirement for a supplemental equipment grounding conductor for a metallic raceway installed in direct contact with earth, in concrete slabs or floors poured on earth, or in exterior concrete walls below grade. [Comm 16.275]
9. Deleting the NEC requirement for a warning ribbon to identify the location of underground service conductors that are not encased in concrete. [Comm 16.294]
10. Revising the requirements for motor disconnects by retaining the 1999 NEC wording and adding a modification. [Comm 16.38]
11. Adding a clarification for who is a qualified person to monitor and service a transformer installation over 600 volts. [Comm 16.39 (1)]
12. Deleting the NEC exception allowing mechanical ventilation to be used to exempt the area up to 18 inches above the floor from being classified a hazardous area in commercial garages. [Comm 16.392]
13. Adding a requirement for a service disconnecting means with overcurrent protection at the service point for electrically driven or controlled irrigation machines. [Comm 16.438]
14. Adding a new rule to clarify that a person can request the Department to perform an electrical plan review. [Comm 16.52]

The proposed rules have been developed with the assistance of the Electrical Code Advisory Council. The members of that citizen advisory council are as follows:

<u>Name</u>	<u>Representing</u>
Terry Fameree	International Association of Electrical Inspectors
David Hansen	Dept of Agriculture, Trade and Consumer Protection
Ronald L. Jahnke	NECA, Wisconsin Chapter

Ronald Janikowski
Charles L. Johansen
James D. Loock
Richard Lynes
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Robert Molde
Ken Peterson
Paul Welnak

International Association of Electrical Inspectors
Wisconsin Builders Association
Wisconsin Public Service Commission
Associated Builders and Contractors of Wisconsin
NECA, Milwaukee Chapter
Wisconsin Utilities Association
Wisconsin Electric Cooperative Association
Wisconsin State AFL-CIO

SECTION 1. Comm 16.02 (2) (e) is amended to read:

Comm 16.02 (2) (e) Installations for the purpose of street or area lighting owned and under exclusive control of electrical utilities or municipal electric departments where located outdoors on property owned or leased by the utility; on or along public highways, streets, roads or similar public thoroughfares; or outdoors on private property by established rights ~~of easement~~ such as easements, where such installations are in compliance with ch. PSC 114.

SECTION 2. Comm 16.03 (3) is repealed and re-created to read:

Comm 16.03 (3) EXISTING INSTALLATIONS. Existing electrical installations shall conform to the electrical code that applied when the installations were installed. An existing electrical installation may be required to be brought into compliance with the current code's requirements by the department and within the time period determined by the department when a hazard to life, health or property exists or is created by the installation.

SECTION 3. Comm 16.03 (4) is created to read:

Comm 16.03 (4) REPAIRS. Repairs to electrical installations shall conform to the electrical code that applied when the installations were installed. A repair may be required to be brought into compliance with the current code's requirements by the department and within the time period determined by the department when a hazard to life, health or property exists or is created by the repair.

SECTION 4. Comm 16.065 is amended to read:

Comm 16.065 Fees. Fees for petitions for variance, electrical plan review and electrical inspections issued under this chapter shall be submitted as specified in ch. Comm 2.

SECTION 5. Comm 16.11 (1) is repealed and re-created to read:

Comm 16.11 (1) MATERIALS. Materials, equipment and products which do not comply with the requirements of this chapter shall not be used unless approved in writing by the department. Approval of materials, equipment and products shall be based on sufficient data, tests and other evidence that prove the material, equipment or product meets the intent of the requirements of this chapter. Data, tests and other evidence shall be provided by a qualified independent third party.

Note: Examples of a qualified independent third party include a nationally recognized testing laboratory and a professional engineer.

SECTION 6. Comm 16.12 (1) is repealed.

SECTION 7. Comm 16.12 (2) is renumbered Comm 16.12 and amended to read:

Comm 16.12 Adoption of standards by reference. The National Electrical Code, ~~NEC-1999~~ NEC-2002, subject to the changes, additions or omissions specified in subch. III, is hereby incorporated by reference into this chapter.

SECTION 8. Comm 16.155 is created to read:

**ARTICLE 80 --
ADMINISTRATION AND ENFORCEMENT**

Comm 16.155 Administration and enforcement [NEC 80]. NEC Article 80 does not apply in Wisconsin.

SECTION 9. Comm 16.17 (2) (a) is amended to read:

Comm 16.17 (2) (a) "Building" means a structure which stands alone or which is separated from adjoining structures by fire walls having not less than a 3-hour ~~fire-resistive~~ fire-resistance rating with all openings in the wall protected with 3-hour ~~fire-rated~~ rated fire door assemblies.

Note: Electrical generating equipment is not considered a structure.

Note: See chs. Comm 61 to 65 for ~~fire-resistive~~ fire-resistance standards.

SECTION 10. Comm 16.17 (3) is created to read:

Comm 16.17 (3) OMISSIONS. The definition of "structure" in NEC Article 100 does not apply in Wisconsin.

SECTION 11. Comm 16.20 is repealed and re-created to read:

Comm 16.20 Ground-fault circuit-interrupter protection for personnel [NEC 210.8].

(1) DWELLING UNITS [NEC 210.8 (A)]. This is a department rule in addition to the requirements of NEC 210.8 (A) (1) to (8):

Sinks, where receptacles are installed to serve countertop surfaces and are located within 6 feet of the outside edge of the sink, except that a single receptacle or a duplex receptacle for 2 appliances located within dedicated space for each appliance that, in normal use, is not easily moved from one place to another and that is cord-and-plug connected in accordance with NEC 400.7 (A) (6), (A) (7), or (A) (8) shall not be required to have ground-fault circuit-interrupter protection.

(2) OTHER THAN DWELLING UNITS [NEC 210.8 (B)]. Substitute the following wording for NEC 210.8 (B):

In units other than dwelling units, all 125-volt, single phase, 15- and 20-ampere receptacles installed in the following locations shall have ground-fault circuit-interrupter protection for personnel:

(a) Bathrooms.

(b) Kitchens, where the receptacles are installed to serve the countertop surfaces.

(c) Outdoors, except as provided in subds. 1. to 3.

1. Receptacles that are not readily accessible and are supplied from a dedicated branch circuit for electric snow-melting or deicing equipment shall be permitted to be installed in accordance with the applicable provisions of Article 426.

2. A single receptacle or a duplex receptacle for 2 appliances located within dedicated space for each appliance that, in normal use, is not easily moved from one place to another and that is cord-and-plug connected in accordance with NEC 400.7 (A) (6), (A) (7) or (A) (8) shall not be required to have ground-fault circuit-interrupter protection.

3. A receptacle installed in a parking area for the purpose of connecting motor vehicle block/tank heaters shall not be required to have ground-fault circuit-interrupter protection.

(d) Commercial garages, repair areas and storage areas where electrical diagnostic equipment, electrical hand tools, or portable lighting equipment are to be used.

(e) Sinks, where receptacles are installed to serve countertop surfaces and are located within 6 feet of the outside edge of the sink, except that a single receptacle or a duplex receptacle for 2 appliances located within dedicated space for each appliance that, in normal use, is not easily moved from one place to another and that is cord-and-plug connected in accordance with NEC 400.7 (A) (6), (A) (7), or (A) (8) shall not be required to have ground-fault circuit-interrupter protection.

SECTION 12. Comm 16.215 is created to read:

Comm 16.215 Common area branch circuits [NEC 210.25]. This is a department rule in addition to the requirements of NEC 210.25:

For service upgrades for existing 2-family dwellings only, separation of common area branch circuits will not be required.

SECTION 13. Comm 16.23 is renumbered Comm 16.205.

SECTION 14. Comm 16.23 is created to read:

**ARTICLE 220 --
BRANCH-CIRCUIT, FEEDER, AND SERVICE CALCULATIONS**

Comm 16.23 Branch-circuit, feeder, and service calculations [NEC 220]. (1)
COMPUTATION OF BRANCH-CIRCUIT LOADS [NEC 220.3]. Substitute the following wording for NEC 220.3 (intro.):

Branch-circuit loads shall be computed as shown in NEC 220.3 (A) through (C), or under the supervision of a Wisconsin professional engineer, architect or designer of electrical systems, circuit load calculations may use a lower unit load than identified in Table 220.3 (A) when energy codes restrict lighting loads to an amount lower than the table values.

(2) GENERAL [NEC 220.10]. This is a department exception in addition to the requirements in NEC 220.10:

Exception: Under the supervision of a Wisconsin professional engineer, architect or designer of electrical systems, the feeder or service size may be computed using diversity factors or historical data of a similar type of building, other than one- and 2-family dwelling units.

SECTION 15. Comm 16.24 (1) (a) is renumbered Comm 16.24 (1).

SECTION 16. Comm 16.24 (1) (b) is renumbered 16.24 (5) and amended to read:

Comm 16.24 (5) (title) CLEARANCES OVER ROADWAYS, WALKWAYS, RAIL, WATER, AND OPEN LAND [NEC 225.60]. Substitute the following wording for the note to NEC ~~225-18~~ 225.60 (C):

Note: For clearances of conductors of over 600 volts, see ch. PSC 114.

SECTION 17. Comm 16.24 (2) (b) is renumbered Comm 16.24 (2).

SECTION 18. Comm 16.24 (2) (c) is renumbered 16.24 (6) and amended to read:

Comm 16.24 (6) (title) CLEARANCES OVER BUILDINGS AND OTHER STRUCTURES [NEC 225.61]. Substitute the following wording for the note to NEC ~~225-19~~ 225.61 (B):

Note: See ch. PSC 114 regarding clearances of conductors of over 600 volts and for prohibition of constructing dwellings under or near overhead lines.

SECTION 19. Comm 16.25 (1) (a) (intro.) is amended to read:

Comm 16.25 (1) (a) (intro.) These are department informational notes to be used under NEC 230.2 ~~(a)~~ (intro.):

SECTION 20. Comm 16.25 (6) is amended to read:

Comm 16.25 (6) MAXIMUM NUMBER OF DISCONNECTS [NEC 230.71]. These ~~exceptions~~ are department rules in addition to the ~~exception~~ requirements in NEC 230.71 ~~(a)~~ (A):

(a) ~~Exception No. 1.~~ Individual dwelling units shall have a single main disconnecting means for each metered service, except services rated 300 amperes or more shall be permitted to have 2 service disconnecting means.

(b) ~~Exception No. 2.~~ Additional disconnecting means installed on individual dwelling units as permitted for different uses, such as for different rate schedules, permitted by ~~NEC 230-2~~ Exception No. 6 NEC 230.2 (D), shall be allowed to remain should subsequent changes in use occur.

(c) ~~Exception No. 3.~~ Not more than 6 circuit breakers shall be permitted to be installed in existing dual or split bus service panelboards installed prior to February 1, 1968.

SECTION 21. Comm 16.25 (7) (title), (intro.) and (b) are amended to read:

Comm 16.25 (7) (title) RATING OF ~~DISCONNECT~~ SERVICE DISCONNECTING MEANS [NEC230.79]. This is a department rule in addition to the requirements of NEC 230.79 ~~(e)~~:

(b) *Two- or multi-family dwellings.* Except as provided in par. (c), for 2-family or multi-family dwellings, the service equipment shall have a rating of not less than 150 amperes, 3-wire or 4-wire. Where the combined rating of all service disconnecting means is 150 amperes or larger, the service or feeder equipment rating for each dwelling unit shall have a rating of not less than ~~50~~ 60 amperes.

SECTION 22. Comm 16.26 (title), (intro.) and (2) are amended to read:

Comm 16.26 (title) Grounding electrode system installation [NEC ~~250-50~~ 250.53]. These are department rules in addition to the requirements of NEC ~~250-50(a)~~ 250.53 (D) (2):

(2) TWO SUPPLEMENTAL ELECTRODES. ~~For one and two family dwellings, where~~ Where the supplemental electrode required by NEC ~~250-50 (a) 250.53 (D) (2)~~ consists of made electrodes specified in NEC ~~250-52 250.52 (A) (5)~~, not less than 2 supplemental made electrodes shall be installed.

SECTION 23. Comm 16.275 is created to read:

Comm 16.275 Types of equipment grounding conductors [NEC 250.118]. This is a department rule in addition to the requirements of NEC 250.118:

A metallic raceway installed in direct contact with earth, in concrete slabs or floors poured on earth, or in exterior concrete walls below grade shall be augmented with a supplemental equipment grounding conductor identified in NEC 250.118 (1). This supplemental conductor shall be sized in accordance with NEC 250.122. An aluminum equipment grounding conductor used for this purpose shall be insulated.

SECTION 24. Comm 16.294 is created to read:

Comm 16.294 Underground installations [NEC 300.5]. NEC 300.5 (D) (3) does not apply in Wisconsin.

SECTION 25. Comm 16.295 is repealed.

SECTION 26. Comm 16.30 (1) is amended to read:

Comm 16.30 (1) ADJUSTMENT FACTORS [NEC 310.15 (B) (2)]. This is a department exception in addition to the exceptions specified in NEC 310.15 (B) (2) (a):

Exception No. ~~5~~ 6: The derating factors shown ~~above~~ in Table 310.15 (B) (2) (a) do not apply to branch circuits supplying an individual dwelling unit.

SECTION 27. Comm 16.33 is amended to read:

**ARTICLE ~~348~~ 358 --
ELECTRICAL METALLIC TUBING: TYPE EMT**

Comm 16.33 (title) Use ~~[NEC 348-4]~~ Uses permitted [NEC 358.10]. This is a department rule in addition to the requirements of NEC ~~348-4~~ 358.10:

Electrical metallic tubing shall not be used in direct contact with earth, in concrete slabs or floors poured on earth, or in exterior concrete walls below grade.

SECTION 28. Comm 16.34 is renumbered 16.32 and amended to read:

ARTICLE ~~370~~ 314 --
**OUTLET, DEVICE, PULL AND JUNCTION BOXES;
CONDUIT BODIES; ~~AND~~ FITTINGS; ~~AND~~ MANHOLES**

Comm 16.32 Conductors entering boxes, conduit bodies, or fittings [NEC ~~370-17~~ 314.17] This is a department exception in addition to the requirements of NEC ~~370-17 (b) and (c)~~ 314.17 (B) and (C):

Exception. ~~Cable~~ Non-metallic sheathed cable shall not be required to be secured to the box or cabinet where it is enclosed within a raceway for mechanical protection providing the cable is secured within 12 inches of where it leaves the raceway. The raceway shall be at least 12 inches in length and sealed to prevent entrance of foreign materials.

SECTION 29. Comm 16.35 is repealed.

SECTION 30. Comm 16.355 is renumbered 16.325 and amended to read:

Comm 16.325 Outlet boxes [NEC ~~370-27~~ 314.27]. This is a department rule in addition to the requirements of NEC ~~370-27 (a)~~ 314.27 (A):

In a dwelling unit, a ceiling outlet box installed for use as a lighting fixture outlet in a habitable room or kitchen and located where a ceiling fan could be installed shall be a type listed for ceiling fan support.

SECTION 31. Comm 16.36 is renumbered 16.31 and amended to read:

ARTICLE ~~373~~ 312 --
CABINETS, ~~AND~~ CUTOUT BOXES, ~~AND~~ METER SOCKET ENCLOSURES

Comm 16.31 (title) ~~Conductors entering cabinets or cutout boxes [NEC ~~373-5]~~~~ Cabinets, cutout boxes, and meter socket enclosures [NEC 312.5]. This is a department exception in addition to the requirements of NEC ~~373-5 (e)~~ 312.5 (C):

Exception. ~~Cable~~ Non-metallic sheathed cable shall not be required to be secured to the box or cabinet where it is enclosed within a raceway for mechanical protection providing the cable is secured within 12 inches of where it leaves the raceway. The raceway shall be at least 12 inches in length and sealed to prevent entrance of foreign materials.

SECTION 32. Comm 16.37 is created to read:

ARTICLE 400 --
FLEXIBLE CORDS AND CABLES

Comm 16.37 Uses not permitted [NEC 400.8]. This is a department exception in addition to the exception in NEC 400.8 (4):

Exception No. 2: Flexible cords and cables permitted by NEC 400.7 (A) that are connected to sources other than busways shall be permitted to be attached to adequately supported equipment or building surfaces provided the type of cord or cable, the attachment to the building and equipment, and the support comply with the provisions of NEC 368.8 (B).

SECTION 33. Comm 16.38 is created to read:

**ARTICLE 430 --
MOTORS, MOTOR CIRCUITS, AND CONTROLLERS**

Comm 16.38 Location [NEC 430.102]. Substitute the following wording for NEC 430.102 (B) and Exception:

A separate disconnecting means shall be located in sight from the motor location and the driven machinery location.

Exception: A disconnecting means, in addition to the controller disconnecting means as required in accordance with NEC 430.102 (A), shall not be required for the motor where the disconnecting means for the controller is individually capable of being locked in the open position. The provision for locking or adding a lock to the disconnecting means shall be permanently installed on or at the switch or circuit breaker used as the disconnecting means.

SECTION 34. Comm 16.39 (1) is created to read:

Comm 16.39 (1) OVERCURRENT PROTECTION [NEC 450.3]. This is a department rule in addition to NEC Table 450.3 (A) Note 3:

The qualified person can be either an employee at that location or an employee contracted for this purpose who is readily available.

SECTION 35. Comm 16.392 is created to read:

**ARTICLE 511 --
COMMERCIAL GARAGES, REPAIR AND STORAGE**

Comm 16.392 Classifications of locations [NEC 511.3]. Section NEC 511.3 (B) (1) Exception does not apply in Wisconsin.

SECTION 36. Comm 16.395 is amended to read:

**ARTICLE 514 --
~~GASOLINE MOTOR FUEL DISPENSING AND SERVICE STATIONS FACILITIES~~**

Comm 16.395 Circuit disconnects [NEC ~~514-5~~ 514.11]. Substitute the following wording for NEC ~~514-5 (b)~~ 514.11 (B):

At attended self-service stations, emergency controls as specified in NEC ~~514-5 (a)~~ 514.11 (A) shall be installed at a location acceptable to the authority having jurisdiction. Where such controls are located over 100 feet from any dispenser, a two-way means of communication shall be provided between all dispenser locations and the attendant's area.

Note: The disconnect requirements found in NEC 514.11 and NEC 514.13 are required by ch. Comm 10 for combustible liquid dispensers such as diesel fuel.

SECTION 37. Comm 16.41 is repealed.

SECTION 38. Comm 16.42 (1) is amended to read:

Comm 16.42 (1) (title) ~~SERVICE EQUIPMENT, SEPARATELY DERIVED SYSTEMS, FEEDERS, DISCONNECTING MEANS, AND GROUNDING [NEC 547-8]~~ ELECTRICAL SUPPLY TO BUILDINGS OR STRUCTURES FROM A DISTRIBUTION POINT [NEC 547.9]. ~~(a)~~ This is a department informational note to be used under NEC ~~547-8 (a) and (c)~~ 547.9 (A):

Note: A pole-top disconnect is recognized as the service disconnecting means required by this section.

SECTION 39. Comm 16.42 (2) is repealed and re-created to read:

Comm 16.42 (2) EQUIPOTENTIAL PLANES AND BONDING OF EQUIPOTENTIAL PLANES [NEC 547.10]. Section NEC 547.10 (A) and (B) do not apply in Wisconsin.

SECTION 40. Comm 16.437 is repealed.

SECTION 41. Comm 16.438 is created to read:

**ARTICLE 675 --
ELECTRICALLY DRIVEN OR CONTROLLED IRRIGATION MACHINES**

Comm 16.438 Disconnecting means [NEC 675.8]. This is a department rule in addition to the requirements of NEC 675.8:

A service disconnecting means with overcurrent protection shall be provided at the service point in accordance with NEC 230 VI.

SECTION 42. Comm 16.44 is repealed.

SECTION 43. Comm 16.45 (4) is repealed.

SECTION 44. Comm 16.49 is created to read:

**ARTICLE 702 --
OPTIONAL STANDBY SYSTEMS**

Comm 16.49 Optional standby systems [NEC 702]. This is a department rule in addition to the requirements of NEC 702:

Where an outdoor housed generator set is equipped with a readily accessible disconnecting means located within sight of the building or structure supplied, an additional disconnecting means shall not be required where ungrounded conductors pass through the building or structure.

SECTION 45. Comm 16.52 is created to read:

Comm 16.52 Electrical plan review. Upon request, the department may perform electrical plan review for dwellings, public buildings, places of employment, and electrical services.

END

EFFECTIVE DATE

Pursuant to s. 227.22 (2) (intro.), Stats., these rules shall take effect on the first day of the month following publication in the Wisconsin Administrative Register.
