

## ***SPECIAL EDITION***

### ***Significant 2014 NEC & WAC 296-46B Changes***

This issue is dedicated to a review of significant changes in the National Electrical Code (NEC) and the WAC 296-46B electrical rules. The 2014 NEC was adopted in March of 2013 with an effective date July 1, 2014. The electrical rules also become effective on that day. Installations made under any electrical permit purchased on or after July 1, 2014 are subject to the requirements of the 2014 NEC and July 2014 WAC 296-46B electrical rules.

The recent rulemaking process was necessary to align the March 2013 WAC 296-46B (based on the 2008 NEC) with the 2014 NEC. In a number of instances, the NEC had aligned with WAC 296-46B. As a result, it was necessary to remove sections from WAC 296-46B to avoid redundancy. Very few amendments to the NEC were adopted.

This document does not cover all changes. It is meant to assist you in becoming aware of significant changes in the 2014 NEC and changes to WAC 296-46B. The explanations vary from the actual code language; for clarification, refer to the 2014 NEC and/or WAC 296-46B. A complete version of the 2014 [WAC 296-46B](#) will soon be available at:

<http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/LawsRules/default.asp>.

Until that time, the adopted electrical rules (modified sections only) in tracked changes format are available at:

<http://www.lni.wa.gov/rules/AO13/16/1316Adoption.pdf>

- **NEC 100 – Definitions.**
  - *2014 NEC new definition - Retrofit kit* – A general term for a complete subassembly of parts and devices for field conversion of utilization equipment.
- **NEC 110.21 (B) - Marking/Field-Applied Hazard Markings.**
  - *2014 NEC new requirement 110.21(B)* - Requirements for caution, warning, or danger signs or labels required elsewhere in the code.
- **NEC 110.24 - Available Fault Current.**
  - *2011 NEC new requirement 110.24* - Non-dwelling unit service equipment required to be field marked with the amount of available fault current when installed or modified.
- **NEC 200.4(B) - Neutral Conductors/Multiple Circuits.**
  - *2014 NEC new requirement 200.4(B)* – *Similar to existing grouping requirements located in 210.4(D) Multiwire Branch Circuits* - In an enclosure, the common grounded conductor (neutral) shall be identified or grouped to correspond with the ungrounded conductors of the same circuit by wire markers, cable ties, or similar means in at least one location within the enclosure.
- **NEC 210.8 (A) - Ground-Fault Circuit-Interrupter Protection for Personnel/Dwelling Units.**
  - *2011 & 2014 NEC new requirements NEC 210.8(6), (7), (A)(9), & (10)* - GFCI protection required for receptacles installed within 6 ft. of the outside edge of any sink, bathtub or shower stall, in all laundry areas, indoor wet locations, locker rooms with associated showering facilities, and on the kitchen dishwasher branch circuit.

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- 2014 new requirement WAC 296-46B-210 (2) - All fixed electrical equipment with exposed grounded metal parts within an enclosed shower area or within five feet of the top inside edge of a bathtub must have ground fault circuit interrupter protection.
- Devices providing GFCI protection must be installed in a readily accessible location.
- **NEC 210.12 - Arc-Fault Circuit-Interrupter Protection.**
  - *2011 and 2014 NEC new requirements 210.12* - Dwelling unit AFCI protection has expanded and now includes all 120 volt, single phase, 15 and 20 amp branch circuits supplying outlets or devices installed in kitchens, family rooms, dining rooms, living room, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, or similar rooms or areas. This includes hard-wired equipment and appliances.
  - Dormitory units now fall under similar requirements.
  - Devices providing AFCI protection must be installed in a readily accessible location.
  - WAC 296-46B-210 (4) - Arc-Fault Circuit-Interrupter Protection deleted, eliminating any differentiation from the 2014 NEC.
- **NEC 210.13 - Ground-Fault Protection of Equipment.**
  - *2014 NEC new requirement 210.13* - Same as the existing GFPE requirements for services and feeders, GFPE is now required on branch-circuit disconnects rated at 1000 amps or more with more than 150 volts to ground (not exceeding 600 volts phase to phase).
- **NEC 210.52 - Dwelling Unit Receptacle Outlets.**
  - *2011 NEC new requirement 210.52(A)(4) - Countertop Receptacles* – Countertop receptacles shall not be considered as the wall space receptacles required by 210.52(A).
  - *2014 NEC revised 210.52(E)(1) & (E) (2) - Outdoor Outlets - One-Family and Two-Family Dwellings* - The requirements for outdoor receptacles have been revised to permit receptacle outlets to be readily accessible from grade but not more than 6 ½ feet above grade level. It is no longer necessary to be standing at grade to access the receptacle, allowing them to be accessible from porches and decks. The same requirements apply to multifamily dwelling units.
  - *2014 NEC revised 210.52(E)(3) - Balconies, Decks, and Porches* - All balconies, decks and porches that are attached to and accessible from inside a dwelling unit shall have a least one outdoor receptacle. The change eliminates the requirement for the receptacle to be installed “within the perimeter of the balcony deck or porch”; it must be accessible and not more than 6 ½ ft. above the balcony, deck or porch.
  - WAC 296-46B-210 (7) - Balconies, Decks, and Porches deleted, eliminating any differentiation from the NEC.
  - *2014 NEC revised 210.52(G) (1) - Basement, Garages, and Accessory Buildings* – The branch circuit feeding the garage receptacles shall not supply outlets outside of the garage. At least one receptacle outlet shall be installed for each car space.
  - *2011 NEC new requirement 2014 NEC revised 210.52(I) Foyers* – Foyers that are not part of a hallway and greater than 60 square feet shall have a receptacle located on each wall space 3 ft. or more in width.
- **NEC 210.64 - Electrical Service Area.**
  - 2014 NEC new requirement 210.64 - In other than one and two family dwellings, at least one 125-volt, 1Ø, 15 or 20 ampere rated receptacle outlet shall be installed within 50 ft. of the electrical service equipment.
  - Modified by the chief electrical inspector - If service equipment is located outdoors, the requirements of NEC 210.64 do not apply (See the [June 2014 edition of the Electrical Currents Newsletter](#)).
- **NEC 250 - Grounding and Bonding.**
  - *2014 NEC new table 250.102(C)* - Rather than Table 250.66, new table 250.102(C) is to be used for sizing grounded conductors, main bonding jumpers, system-bonding jumpers, and supply-side bonding jumpers.

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- WAC296-46B-250(2) Revised - Another option if the concrete encased grounding electrode is not available - If the concrete encased grounding electrode is not available for connection, a ground ring must be installed per NEC 250 or other grounding electrode installed per NEC 250 verified to measure 25 ohms or less to ground. Resistance verification testing must be performed by an independent firm having qualified personnel and proper equipment. A copy of the testing procedures used and a written resistance test record signed by the person performing the test must be available at the time of inspection. The resistance test record must include test details including, but not limited to, the type of test equipment used, the last calibration date of the test equipment, and all measurements taken during the test.
- **NEC 406.12 - Receptacles, Cord Connectors, and Attachment Plugs - Tamper Resistant Receptacles in Dwelling Units.**
  - *2011 & 2014 NEC revised 406.12* - With few exceptions tamper-resistant receptacles shall be installed in all areas specified in 210.52, guest rooms and guest suites of hotels and motels, and childcare facilities.
  - WAC 296-46B-406 deleted, eliminating any differentiation from the NEC.
- **NEC 410.6 Luminaires, Lampholders, and Lamps.**
  - *2014 NEC revised 410.6 – Listing required* - In addition to luminaires and lampholders, retrofit kits shall be listed. Luminaires and signs upgraded in the field will require a listed retrofit kit. A new definition for retrofit kit can be found in NEC Article 100.
  - *2011 NEC new requirement 410.130(G)(1) – Disconnecting means* shall be installed when replacing ballasts.
- **NEC 450 - Transformers and Transformer Vaults.**
  - *2014 NEC new requirement 450.10(A) - Dry Type Transformers - Grounding* - With the exception of transformers with wire-type connections, a terminal bar shall be secured inside the transformer for connection of all equipment grounding conductors and supply side bonding jumpers. The terminal bar shall not be installed on or over any vented portion of the enclosure.
  - *2011 NEC new requirement 450.14 – Disconnecting Means* - Transformers are required to have a disconnecting means. Where located in a remote location, the disconnecting means must be lockable and the location of the disconnect must be field marked on the transformer.
- **NEC 517 - Health Care Facilities** – *The 2012 edition of the NFPA 99, Health Care Facilities Code, underwent major changes resulting in major modifications for the 2014 NEC and WAC 296-46B-517.*
  - *517.2 Definitions* - Two new: Support Space & Wet Procedure Location - Two deleted: Emergency System & Wet Procedure Locations (from the definition of Patient Care Space) - Six revised definitions: Critical Branch, Equipment System Branch, Life Safety Branch, Patient Care Area space, General Care Area-Space, & Patient Care Vicinity.
  - *2011 & 2014 NEC revised 517.18 - General Care Areas- Patient Bed Locations* – The electrical receptacles or the cover plates for receptacles supplied by the critical branch shall have a distinctive color or markings as to be readily identifiable and shall also indicate the panelboard and branch circuit number supply them.
  - The minimum number of receptacles required for general care area patient bed location was increased from four to eight receptacles.
  - *2011 & 2014 NEC revised 517.19 (A) - Critical Care Areas - Patient Bed Locations* - The minimum number of receptacles required for critical care area patient bed location was increased from six to fourteen receptacles.
  - *2014 NEC revised 517.19 (C) - Critical Care Areas – Operating Room Receptacles* - The minimum number of receptacles required for an operating room was increased to thirty-six receptacles.
  - *2014 NEC revised 517.30(B) - Essential Electrical System (Hospital)* – The term “emergency systems” has been removed from Article 517. The essential system is now comprised of three separate branches: the critical branch, the life safety branch, and the equipment branch.

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- **NEC 600 - Electric Signs and Outline Lighting.**
  - *Changes and new requirements for 2011 NEC, 2014 NEC, and WAC296-46B-600.*
  - *NEC 600.3 - Listing – Fixed, mobile, or portable electric signs, section signs, outline lighting, and retrofit kits shall be listed, provided with installation instructions, and installed in conformance with listing.*
  - *NEC 600.4 (C) - Markings - Visibility\_– The required markings and listing labels do not need to be visible after installation but shall be in a location visible during servicing.*
  - *NEC 600.4(D) - Durability – Markings shall be permanent, durable, and when in wet conditions, shall be waterproof.*
  - *NEC 600.4(E) - Installation instructions\_– All signs, outline lighting, skeleton tubing systems, and retrofit kits shall be marked to indicate that field wiring and installation instructions are required.*
  - *NEC 600.9(A)(1) - Disconnects – Location – At Point of Entry to a Sign Enclosure – With the exception of conductors passing through a sign enclosed in a Chapter 3 wiring method, the required sign disconnect shall be located at the point of entry of the conductors into the sign.*
  - WAC296-46B-600 - Electrical Signs – General
    - (1) Listing - All electrical signs and outline lighting must be listed and will be inspected for compliance with instructions and the NEC.
    - (5) Retrofit Kits– Signs and outline lighting can be retrofitted in place if the retrofit components and kits are listed, installation instructions are available, and physical access is provided at the time of inspection.
  
- **NEC 690 - Solar Photovoltaic Systems.**
  - *The continual growth in the PV industry has resulted in many changes to Article 690 in both the 2011 and 2014 NEC. The changes are too many to list here. If you participate in the PV industry, becoming familiar with the changes is imperative.*
  - Modified by the chief electrical inspector – One-year delay, until July 1, 2015, of implementing 2014 NEC sections 690.11, Arc-Fault Circuit Protection (Direct Current), 690.12 Rapid Shutdown of PV Systems on Buildings (See the [May 2014 edition of the Electrical Currents Newsletter](#)).
  
- **NEC 695 - Fire Pumps.**
  - *Many revisions in both the 2011 and 2014 NEC. If you participate in the fire pump industry, becoming familiar with the changes is imperative.*
  
- **NEC 700 - Emergency Systems.**
  - *Changes and new definitions for the 2011 NEC - new requirements and changes for the 2014 NEC, and minor changes to WAC 296-46B-700.*
  - *2014 NEC new requirement 700.8 Surge Protection – A listed SPD shall be installed in or on all emergency systems switchboards or panelboards.*
  - *2014 NEC revised 700.16 Emergency Illumination – Emergency illumination required for emergency service or feeder building disconnecting means.*
  - *2014 NEC new requirement 700.19 Multiwire Branch Circuits – The branch circuit serving the emergency lighting and power circuits shall not be part of a multiwire branch circuit.*
  - *2014 NEC new requirement 700.27 – A licensed professional engineer or other qualified persons must design and select the selective coordination of the overcurrent protection devices for emergency systems.*
  
- **NEC 705 - Interconnected Electric Power Production Sources.**
  - *Point of Connection – Moved from PV Systems NEC 690.64 to 705.12 in 2011, revised for 2014, also applies to NEC 694 Wind Electric Systems – Many of the point of connection requirements have changed.*

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- Modified by the chief electrical inspector – One-year delay, until July 1, 2015, of implementing 2014 NEC section 705.12(6), Wire Harness and Exposed Cable Arc-Fault Protection (See the [May 2014 edition of the Electrical Currents Newsletter](#)).

**WAC 296-46B-010(4) – Inspections – General.**

- *New exception* - Not more than 2.44 m. (8 ft.) of electrical conduit used as service entrance raceway in a foundation of a one or two family dwelling or residence may be installed and the concrete poured without a cover inspection.

● **WAC 296-46B-100 – General definitions.**

- *New definition* - "Journey level electrician" means a person who has been issued a journey level electrician certificate of competency by the department. "The terms "journey level" and "journey person" in RCW 19.28 are synonymous."

● **WAC 296-46B-900(3)(a)(vi) – Plan review for educational, institutional or health care facilities/buildings.**

- *New requirement* - For projects described in WAC 296-46B-900(3)(a)(ii)(iii) & (v), electrical plan review is not required. However, the following information must be available to the electrical inspector before the work is initiated: a clear and adequate description of the project's scope; a load calculation(s); what the load changes are, providing both before and after panel schedules as needed; and provide information showing that the service and feeder(s) supplying the panel(s) where the work is taking place has adequate capacity for any increased load and has code compliant overcurrent protection for that supply.

● **WAC 296-46B-901(7)(v) – Permit – Requirements.**

- *No permit required for* - The disconnection of electrical circuits from their overcurrent protection device for the specific purpose of removing the electrical wiring or equipment for disposal.

● **WAC 296-46B-908(10)(b)(iii), (iv), and (e) - Class B permits expanded**

- *WAC 296-46B-908(10)(b)(iii) & (iv)* - Class B permits expanded to include associated Class 2 low voltage wiring when replacing an electric/gas/oil furnace not exceeding 240 volts and 100 amps when the furnace is connected to an existing branch circuit; or when replacing an individually controlled electric room heater (e.g., baseboard, wall, fan forced air, etc.), air conditioning unit, heat pump unit, or refrigeration unit not exceeding 240 volts, 40 minimum circuit amps when the unit is connected to an existing branch circuit.
- *WAC 296-46B-908(10)(e)* - The conversion from snap switches to not more than ten occupancy sensors was added to the work that can be done using a Class B permit.

● **WAC 296-46B-925(17) - Electrical/telecommunications contractor exemptions**

- *Clarification* - The licensing and certification requirements of Chapter 19.28 RCW do not apply to persons or firms who remove electrical wiring and/or equipment for the purpose of disposal when all conductors, raceways, and equipment to be disposed of have been physically separated from the source of power by a properly certified electrician employed by a licensed electrical contractor, or person(s) meeting the exemptions listed in RCW 19.28.261. Removal of a component or only a portion of an equipment unit is considered electrical maintenance and does not qualify for this exemption.

● **WAC 296-46B-935(1) - Administrator certificate. General.**

- *New requirement* – The department will deny assigning an administrator or master electrician to a contractor if the individual owes money because of an outstanding final judgment(s) to the department.

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