

Summary of Major 2012 NESC Changes

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Section 1

010 and 011—Clarified. Extensive language revisions to the purpose and scope clarify the actual, practical application of the NESC versus the NEC and other standards that have been established since the emergence of the NESC as a national standard. These are clarifications, not substantive changes.

014—Clarified. Waiver of burial depth requirements during emergencies was recognized here in addition to Rule 311C.

015D--Clarified. Application of *EXCEPTIONs* is clarified—they are safe utility options. They are safe utility options.

016--Revised. Effective date changed to first day of month after 180 days from issuance date.

Section 2 — Definitions

Area lighting—New. Installation supplying lumens; exclusive control determines if NESC applies; definition supports revisions to Sec. 1.

Authorized person—New. Definition used in Part 4 and Sec. 1.

Conductor. 9. lateral conductor—Clarified. Horizontal, vertical, or diagonal jumper to make connections on a structure.

Conductor. 12. vertical conductor—New. Risers and vertical portions of lateral conductors.

Delivery point.—New. Point at which one utility delivers signals or energy to another utility, as opposed to the *service point* to a customer.

Effective ground/effectively grounded.—Clarified. Bonding requirements and purpose are clearly specified.

Effectively grounded neutral.—New. Requirements and purpose are clearly specified.

Exclusive control AND exclusive control of utility.—New. Definitions support Sec. 1.

Lines. 1. communication lines.—Revised. Requirements for communication lines located in the supply space versus the communication space

Lines. 2. electric supply lines.—Revised. Fiber-optic lines are communication, but supply conductors to light amplifiers are supply.

Lines. 3. joint-use lines.—New. Joint-use refers to two or more utilities on the same line.

Premises.—New. Land and buildings of a user on the user side of the service point.

Premises wiring (system).—New. Interior and exterior wiring on user side of service point to outlets.

Service point.—New NOTE. An informative discussion of (1) determination the location of the service point and (2) application of the NEC and NESC relative to the service point.

Supervised installation.—New. Maintained and supervised such that only qualified personnel monitor and service the system.

Supported facility.—New. An overhead component supported on but not providing structural support to an overhead structure.

Utility.—New. An organization responsible for the engineering and supervision of the design, construction, operation, and maintenance of a public or private electric supply, communication, area lighting, street lighting, signal, or railroad utility system. Included are sub-definitions of public and private utilities.

Utilization equipment.—Revised. Uses electric energy or light energy on the premises wiring side of the service point.

Vault.—Revised. A structure on an underground system (Part 3) [not an electric supply station (Part 1)].

Section 3 — References

Updates and additions; no removals

Section 9 — Grounding Methods

091—Revised. Items required to be effectively grounded must meet the new definition of *effectively grounded*.

093D—Revised. Guarding is required for grounding conductors of single-grounded systems, unless not accessible to the public.

094B7—Revised. Metal pole diameter and thickness requirements were removed. Supplemental electrodes must be 6 ft from pole.

099B—Revised. Communication grounding conductor size increased from AWG No. 14 to AWG No. 6.

Part 1 — Electric Supply Stations

110A2—Revised. Requirements for safety clearance zone to live parts behind solid portion of station fence and new Figure 110-2 were added.

110B2—Revised. Storing vehicles in stations is recognized.

111A—Revised. Outdoor lighting not required at unattended stations.

Table 111-1—Revised. Illumination requirements were simplified.

114 Exception—New. Fire extinguishing equipment is not required in unmanned, outdoor substations without a control (or similar) building.

124A1—Revised. Guards are now required around energized parts with clearance to outer fence less than that required by 110A2.

124D—New. Vertical clearances to equipment bushings are *taut-string* distances up the side and over to the part—codified an earlier IR.

Part 2 — Overhead General

214A4—Revised. Title change plus inspection records of conditions or defects affecting compliance must be maintained until correction.

214A5—Revised. Title change plus conditions or defects reasonably expected to endanger life or property must be promptly corrected, disconnected, or isolated.

215C1—New NOTE under Exception 1. If a decision is made to ground all items above 8 ft level, old ungrounded ones are not required to be grounded. Typical practice is to ground old items when doing other significant work on the structure.

215C4—Deleted. Span wires carrying railroad or trolley contact conductors are included in 215C6.

215C5—Old C5 renumbered to C4 and revised. Now covers only insulators in anchor guys. Insulator positions are specified to limit opportunity for the public area or other facilities on the structure to be energized through guy contact if a portion of the guy becomes energized.

215C5—New. The new rule is expanded from the old 215C4 to cover insulators in span guys and wires supporting luminaires and traffic signals. Requirements similar to the new 215C4.

217A1a—Revised. Physical protection for structures is required only *in parking lots, in alleys, or next to driveways* where subject to vehicular traffic abrasion that might affect strength.

217A2b—Addition. Structures must be attended or climbing barriers installed whenever temporary steps are attached to the structure.

217A4 & A5—deleted and replaced with new A4. Attachments (including decorations) require permission of structure owner; non-utility attachments require permission of occupants of the space involved. Attachments cannot cause noncompliance with NESC or obstruct climbing. Through-bolts must be trimmed.

218A1—Addition. New NOTE 2 recognizes the impracticality of prevent all tree-conductor contacts on overhead lines.

218B1—Addition. Crossings now include navigable waterways requiring crossing permits. Crossing and adjacent spans should be kept free of overhanging or decayed trees or limbs that might fall into line.

Part 2 — Overhead Clearances

Tables 232-1, 234-1, 234-2, 234-3—Revised. . *Ungrounded* portions of guys added to column titles and some NOTES.

230A3—Revised. Live metallic hardware connected to supply or communication line conductors is considered part of those conductors.

230A4—Revised with addition. If a *calculated* clearance is allowed to be reduced, it shall first be rounded up, then reduced, and the result rounded up. An example was added.

230B and Figure 230-1, Table 230-1, and Table 230-2—Addition. A new *Clearance Zone 4* was added for warm islands in latitudes less than 25 degrees. Temperature of 50 °F and no ice below 9000 ft altitude; 15 °F and 0.25 in radial ice at higher elevations.

Table 232-1—Revised Title of Category 4 added commercial and industrial sites to the list of areas subject to truck traffic.

Table 232-2—Revised. Title of Category 1c added commercial and industrial sites to the list of areas subject to truck traffic and FN 26 of Table 232-1 was added as FN 3.

233B—Revised. Maximum operating voltage is required for circuits above 50 kV to ground. Between different circuits, phasor difference voltage is now used for *horizontal* clearances. *Note that the vertical clearances of 233C and Table 233-1 still use separate a voltage adder for each circuit.*

234B—Clarified. These clearances also apply above intermediate poles in the same line in skip-span construction.

234C and Table 234-1—Clarified. Flagpoles, flags, and banners were added to the list of other installations covered by Part 2 of Table 234-1.

234C3c—Clarified with new Exception. The Footnote from Table 235-6 that had been omitted when the value of 3 in was copied from the table in 2007 was added to recognize that the common house attachment insulators do not always provide the full value of the rule.

234C3d(1) Exception 1—New. The language of old Footnote 14 (now FN 12) from Table 234-1 was added to the rule.

Table 234-1—Revised. Porches and decks were added in with roofs and balconies. Flagpoles, flags, and banners were added in Part 2.

Table 234-1, FN 11—Deleted. No longer appropriate.

Table 234-1, FN 15—Added. To clarify treatment of windblown flags.

Table 234-1, FN 16—Added. To match FN 26 of Table 232-1 if oversized vehicles are expected above loading ramps, etc.

234E1 NOTE—New. The new NOTE clarifies clearance treatment for hot-tubs, etc., that do not employ rescue poles and skimmer poles.

235B1b—Clarified. When using the formula for fixed conductor clearance to determine maximum allowable sag for a clearance, round the resultant down.

235C—Clarified. The clearances apply to both line conductors and to lateral conductors (see definitions), not just line conductors.

235C2b(1)—Clarified. Both Exceptions previously under (1)(a) were moved after (1)(b), since they apply to both subrules.

235C2b(1)(c)i Exception—New. The temperature differentials do not apply to conductors of the same circuit installed the same way that are simultaneously deenergized.

235G4—Deleted and added back as two Exceptions to G3. Neutrals of 230C3 cables and messengers of 230C1 cables may attach to the same insulator as a line neutral, so long as clearances of Table 235-8 are maintained in midspan and insulated energized conductors are held away at attachments.

235H—Revised. Pole owners must concur with agreements for reduced clearance and spacing between communication facilities.

Table 235-5 FN 8, 9, & 10—Revised. Footnotes now mirror changes in 235G for multiple attachments to the same insulator.

Table 235-6—Revised. Communication antennas added directly in the table to meet 235H. Guy types simplified. Service drops added.

238A—Clarified. Communication antennas, and metal or nonmetallic supports or braces associated with communication cables or conductors are among the items to be considered as equipment for this rule.

Part 2 — Overhead Strengths & Loadings

242—Revised. Accommodates merging Table 242-2 into Table 242-1.

Tables 242-1—Revised. Table 242-1 now incorporates requirements of *deleted Table 242-2*.

250B, Table 250-1 and Table 251-1—Revised to add warm island loading. A new *Warm Island Loading case* was added for warm islands in latitudes less than 25 degrees north or south. Temperature of 50 °F, 9 psf wind, and no ice below 9000 ft altitude; 15 °F, 4 psf wind, and 0.25 in radial ice at higher altitudes.

250C1, 250C2, and Table 250-2—Revised. Application of gust response factors and velocity pressure exposure coefficients (height adjustment) were revised to facilitate calculations of wind forces on portions of a structure or supported facilities at a specific height. Formulas must be used to calculate height adjustments for specific heights. The values in Table 250-3 or the formulas may be used, at

the utility's discretion, to determine appropriate gust factors.

253—Revised. Language changed to reflect deletion of Table 253-2.

Table 253-2—Deleted. Alternate method no longer allowed.

260B, 261A1, 261A2a, 261A2b(3), 261D2a(2), 261D3 and Table 261-1A—Text revised or deleted. Language changed to reflect deletion of the alternate method and Tables 253-2 and 261-1B.

261A2b and 261A3a—New NOTE. Sustained loads reduce permitted stress level of wood members and poles. See IEEE Std. 751-1990. Buckling needs to be considered when considering axial loads.

261B—New NOTE. Soil saturation can reduce strength of foundations, settings, and guy anchors.

261H1b—Revised. The colder temperatures of Table 250-1 should be used for aeolian vibration checks. An Exception allows higher temperatures, if vibration is controlled or aeolian vibration damage is unlikely to occur under the controlling conditions.

Table 261-1—Revised footnotes. When new or changed facilities modify the loads, the new loads must be used to determine the required strengths of the affected structural components both if new and as is.

Table 277-1—Revised. New insulator standards were added and several strength ratings were revised.

279A1b—Revised. UV protection is required for fiber-reinforced polymer and other guy insulators affected by ultraviolet light.

Part 3 — Underground

313A4—Revised. Title change plus inspection records of conditions or defects affecting compliance must be maintained until correction.

313A5—Revised. Title change plus conditions or defects reasonably expected to endanger life or property must be promptly corrected, disconnected, or isolated.

Section 32 NOTE 2—Clarified. Both supply and communication cables in duct not part of a conduit system must meet Section 35, not Section 32.

323E5—New. If ventilation openings in vaults are not protected against intrusion by sticks, etc., energized parts must be located away from the opening to meet clearances of Rule 110A2 and Table 110-1.

350F & G—New Recommendation. If color codes are used on underground cables, use the APWA Uniform Color Code.

352A2—New. Backfill and trench should limit opportunity for damage to the duct.

352D1 & 2 and Table 352-1—Addition of duct. Duct must meet same requirements as cable for burial depth. If a duct

is strong enough to resist forces from surface usage, lesser depths may be used without additional protection.

354A2—New Exception. Supply cables up to 300V can have less than 12 inches clearance from steam lines, gas lines, etc., if fault will not damage the other lines and affected parties agree.

355—New. Requirements for duct not part of a conduit system are specified, similar to those for conduit.

380D—New Exception 2. Allows reduced clearances from padmounted equipment to fire hydrants if fire authority and utility agree.

Part 4 — Work Rules

410A3—Revised. Either a detailed arc hazard analysis or Table 410-1, 410-2, or 410-3 must be used to determine the effective arc rating of clothing or clothing systems to be worn working above 50 V.

Table 410-1—New. Calorie per cm² clothing rating requirements are shown by equipment type and voltage. These values can be used in lieu of calculating values. Old Tables 410-1 and 410-2 were renumbered to 410-2 and 410-3.

Table 410-2 (old 410-1)—Moved. Old Table 410-1 was renumbered.

Table 410-3 (old 410-2)—Revised. Maximum clearing times allowed for 4, 8, and 12 calorie systems were updated (generally increased).

420K8—Revised. Nonlocking snaphooks are now prohibited.

421A6—New. First level supervisor is required to conduct a job briefing before beginning each job that includes work procedures, PPE requirements, energy controls, hazards associated with the job, and special precautions.

422A2—Revised. Contact with trucks or other equipment setting poles, etc., in vicinity of energized lines must be avoided—even if the equipment is grounded.

431C—New. When repairing underground communication lines in joint use with damaged supply lines, treat all communication and supply lines as energized or assure that the supply lines are deenergized.

Table 431-1—Revised. The approach distances were revised using IEEE Std 516-2009 calculations. Some values changed an inch or so. Transmission voltages were subdivided to give more flexibility.

441—Clarified. Approach distances apply to reach or extended reach.

441A1—Revised. Approach distances determined by engineering analysis are allowed. New NOTES explain components of calculations and applicable standards.

441A4—Revised. Approach distances NOT determined by engineering analysis must meet Table 441-1 or 441-4 and specified conditions. *It is now recommended that automatic*

reclosing be blocked for work at all voltages (**blocking of automatic reclosing is required below 242 kV**).

441A6—Revised. Values of inadvertent movement from previous 441A7a were moved here, instead of referencing the deleted rule.

441A7—Deleted. Additions of this information to tables and rules elsewhere, including the new NOTES under 441A1, replaced this rule.

Table 441-1—Revised. The approach distances were revised using IEEE Std 516-2009 calculations. Some values changed an inch or more. Transmission voltages were added to give more flexibility.

Table 441-4—Replaced. The approach distances for dc live line work were revised using IEEE Std 516-2009 calculations. The entire table was restructured. Values below 72.6 kV were added. Values above 72.5 kV are based upon a TOV of 1.8 (the last row of the old table).

444D—Revised. Previous paragraph specifying location of employee protective grounds was deleted and performance requirements were added, including a new NOTE and a new Exception.

445—Revised. The requirement to use *extreme caution* to assure the proper sequence of installing and removing protective grounds was moved here from 445B3, where two new NOTES were added.

Appendixes

Table A-1—Revised. The metric M&E column was moved to the right side of the table (had been inadvertently left in 2007 when customary M&E column was moved to the right). The table now shows in order how the values of M&E are created from the original rigid, nonrigid, grounded or insulated, open, and electrical values in feet.

Appendix C—Revised. Existing examples demonstrating the application of the extreme wind loading requirements of 250C were revised to match changes in the code terms and a new Example 5 was added to illustrate calculations for wind on a lattice tower with a large window section and two separate ground wire support peaks.

Appendix E—Revised. Updated with new dates and additional standards.

Be sure to check the NESC Zone on the IEEE web site every few months for errata, Official Interpretations, and Tentative Interim Amendments to the 2012 Edition:
<http://standards.ieee.org/about/nesc/>