

## FROM ELECTRICAL INDUSTRY CANADA, THE TOP CHANGES

Now in its 24th Edition, some of the top changes are:

### 1. Power Over Ethernet

2015 Code — No specific requirements

2018 Code — New Subsection 16-300

POE (Power over Ethernet) has existed for many years however, recent revisions to IEEE standards for communications cables has opened the door to higher power applications for POE, such as room lighting. Through these cables, power levels approaching 100 W are possible, along with simultaneous communications between devices and systems. POE is typically implemented as a "structured" cable system, wherein cables are bundled together for extended lengths. Cable heating is a function of the power it carries and as such, installation and layout become critical factors in ensuring safe operation. New requirements for POE have been added to the Code in the form of new Rules 16-300 through 16-350, and Table 60.

### 2. Installation of Identified Conductor at Control Locations

2015 Code — Two wire simple switch loop acceptable

2018 Code — Identified conductor required at every control location

Control devices are increasingly used as an essential part of energy management systems. Many of these devices require power to operate, and where used in a simple switch loop, create a small current through the bonding conductor. As the number of devices increase, the cumulative current through the bonding system will become unacceptable. New Subrule 4-028(2) now mandates that an identified conductor be installed at each manual or automatic control location. This requirement applies to all occupancy types. The term "neutral" has been replaced with the more accurate term "identified conductor".

### 3. Bonding And Grounding

2015 Code — 15 pages long and two tables

2018 Code — 8 pages long and one table

Section 10 requirements have been reorganized into a more logical flow of and significantly reduced in size. Objectives for solidly grounded, impedance grounded, and

ungrounded systems are clearly specified at the beginning of the Section. Tables 16A and 16B have been combined into a single Table, with Rule 10-614 providing specific conditions for selecting the size of bonding conductor or bonding jumper.

### 4. Arc Fault Circuit Interrupters

2015 Code — AFCI protection required, with some exemptions

2018 Code — exemptions tightened, application to existing circuits clarified

Clarification is now provided for AFCI protection of existing branch circuits that are extended due to renovations or additions. Exemptions from AFCI protection have been reduced or removed for number of areas including branch circuits supplying smoke alarms, carbon monoxide alarms, and bathrooms.

### 5. Disconnecting Means for LED Luminaires

2015 Code — disconnecting means required for fluorescent ballasts

2018 Code — disconnecting means required for fluorescent ballasts and LED drivers

To support safe maintenance, the Code has for several editions required disconnecting means for fluorescent luminaires utilizing double ended lamps and operating at more than 150 V. With

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increased use of LED lighting, the requirements have been extended to LED luminaires exceeding 150 V to ground with double ended lamps.

### 6. Tamper Resistant (TR) Receptacles

2015 Code — TR receptacles required in dwelling units and child care facilities

2018 Code — TR receptacles required in additional occupancy types

The requirement for tamper resistant receptacles in dwelling units and child care facilities is expanded to include other areas where children may be present including hotel guest rooms, preschools, and elementary education facilities.

### 7. Equipment Connected to Devices Having Class 2 Outputs

2015 Code — approval requirement based on application

2018 Code — approval based on voltage and application. Voltage limited by location.

Products having a Class 2 output are covered by a number of standards including C22.2 No. 60950-1 (LPS), C22.2 No. 66.3 (Class 2 transformer) C22.2 no. 223 (ELV), C22.2 No. 250.13 (LED), and C22.2 No. 62368-1 (AV and IT). The output voltage from these supplies can vary substantially in magnitude and waveform, up to 60 Vdc. Revisions to Section 16 now set the requirements for approval of

such equipment based on application, location, voltage, and waveform, and maximum permitted voltages for dry, damp, and wet locations.

### 8. Increased GFCI Protection For Wet Areas

2015 Code — No requirement for GFCI protection for heaters or controls in bathrooms

2018 Code — GFCI protection required

Similar to GFCI requirements for receptacles in the vicinity of showers, sinks or tubs, new Section 62 Rules mandate GFCI protection for electric heating devices and heating controls in the vicinity of sinks, showers or tubs.

### 9. Continuous Loads

2015 Code — complex continuous load requirements

2018 Code — continuous load requirements simplified.

Rule 8-104 has been one of the more misunderstood Rules in the Code, with varying interpretations of how it should be applied. Subrules 8-104(1) through (4) remain intact however, Subrules 8-104(5) through (7) have been distilled down two Subrules; one for switches and breakers marked for continuous operation at 100%, and one marked for continuous operation at 80%. In both cases, the Subrules now simply Require two things:

(1) that the continuous load not exceed the continuous operation marking on the fused switch or circuit breaker, and  
(2) that the continuous load not exceed a specified percentage of the allowable ampacity determined from Section 4.

Gone are references to specific columns in Tables, underground installations, and derating (correction) factors.

### 10. The 5% Rule

2015 Code — calculated load permitted to exceed conductor ampacity by 5%

2018 Code — 5% rule eliminated

Subrule 8-106(1) has existed in the Code for some time, the later introduction of Rule 8-104 put 8-106(1) in conflict. In addition, conductor ampacities are determined by Section 4, not 8, as confirmed by several related changes to Section 8. Finally, the Subrule has been inconsistently applied. As such, Subrule 8-106(1) was deleted.

### 11. Kitchen Wall (not counter) Receptacles

2015 Code — separate branch circuit required

2018 Code — separate branch circuit not required

Given that many kitchens are now used as general living areas, and receptacles are now required to be provided along the kitchen wall in the same fashion as a living room, there is no longer a need for a dedicated circuit. The requirement has been deleted.