

OESC Code Rule 32-110(e)

Description of the change: Add Rule 32-110(e)

Background

Recent revisions accepted to the 2012 (22nd) edition of CANADIAN ELECTRICAL CODE (CEC), PART I, included a change (SN3569) that requires each branch circuit supplying 125 V receptacles, rated 20 A or less, to be protected by a combination type arc fault circuit interrupter (with some exceptions). The new requirements will prevent connection of smoke alarms or carbon monoxide alarms on a circuit that supplies a mix of lighting and receptacles, which is currently permitted by Rule 32-110(a). Part of the intent of this change was to mirror the requirements of the US National Electrical Code 2014, which requires circuits, including those that feed smoke and/ or carbon monoxide alarms, to be protected by an arc fault circuit interrupter (AFCI). In Canada, this was a major stumbling block at the time of the original Section 26 AFCI submission and it prevented the inclusion of lighting circuits as The National Building Code of Canada (prior to 2010) did not require 120 V hard wired smoke alarms have battery backup. Lighting circuits were ultimately exempted to avoid conflict with Rule 32-110. There was also concern tripping of an AFCI during a fire situation may disable the alarms.

Arcing faults or Ground faults do not differentiate between lighting, receptacle or smoke alarm circuits. It would be ironic to have the smoke alarm circuit cause an electrical fire due to an arcing fault. Sentence 3.2.4.21.(6)(c) and Sentence 9.10.19.4.(1)(c) in the 2012 Ontario Building Code now requires smoke alarms to be hard wired and have an alternate power source that can power the smoke alarms for 7 days, followed by 4 minutes of alarm.

Supporting References

Smoke alarms and combination type smoke alarms* that include carbon monoxide alarms, certified to CAN/ULC-S531, are required to be connected to a secondary power supply, such as a battery, and have the capacity to supply the maximum intended power to the smoke alarm for no less than 7 days in the standby condition and thereafter be able to operate the smoke alarm for an alarm signal for at least 4 minutes continuously. Even in the event of a tripped AFCI or GFCI, the alarms will continue to operate and will alert the occupant of a tripped circuit.

** UL 2034 Single and Multiple Station Carbon monoxide Alarms standard does not currently have the same performance requirements as smoke alarms and is only required to have the capacity to supply the maximum intended power to the alarm for 8 hours in the standby condition and thereafter be able to operate the alarm for an alarm signal for at least 12 hours continuously, followed by not less than 7 consecutive days of trouble signal.*

See also CAN/ULC-S531-14 Standard for smoke alarms, clauses 1.6 and 31.1 to 31.2.5.

A proposal to have this change included in the 2018 CEC (Subject 3938) has also been submitted and voted on positively at the sub-committee level.

Code Proposal

OESC Code Rule 32-110(e)

32-110 Installation of smoke alarms and carbon monoxide alarms in dwelling units (see Appendices B and G)

The following requirements apply to the installation of permanently connected smoke alarms and carbon monoxide alarms in dwelling units:

- (a) Except as permitted by item (e), smoke alarms and carbon monoxide alarms shall be supplied from a lighting circuit, or from a circuit that supplies a mix of lighting and receptacles, and in any case shall not be installed
 - (i) where prohibited by Rules 26-722 to 26-726; and
 - (ii) where the circuit is protected by a GFCI or AFCI;
- (b) there shall be no disconnecting means between the smoke alarm or the carbon monoxide alarm and the overcurrent device for the branch circuit;
- (c) the wiring method for smoke alarms and carbon monoxide alarms, including any interconnection of units and their associated equipment, shall be in accordance with Rules 32-100 and 32-102; and
- (d) notwithstanding Item (c), where a smoke alarm or carbon monoxide alarm circuit utilizes a Class 2 power supply for the interconnection of the smoke alarms and carbon monoxide alarms and their associated equipment, Class 2 wiring methods shall be permitted in buildings of combustible construction, provided that the conductors are installed in accordance with Rules 12-506 to 12-524 inclusive.
- (e) Where a smoke alarm or a device that represents a combination of a smoke alarm and a carbon monoxide alarm, have an integral battery as a secondary supply source, such smoke alarm or a combination of a smoke alarm and carbon monoxide alarm shall be permitted to be connected to a GFCI or AFCI protected circuit.