ADOPTION OF THE CANADIAN ELECTRICAL CODE 2015 EDITION
Consultation Discussion Paper

Date of issue: April 7, 2015

BC Safety Authority (BCSA) is inviting feedback on proposed BC amendments to the 2015 edition of the Canadian Electrical Code.

CONSULTATION PERIOD AND PROCESS

The objective of this consultation is to seek feedback from stakeholders for a recommendation to the Province of BC on proposed BC amendments to the 2015 edition of Part I of the Canadian Electrical Code (CEC).

We invite the electrical industry to read this consultation discussion paper and provide us with your feedback on these recommendations. The discussion paper describes proposed BC amendments, reasons behind these recommendations and impacts related to the changes introduced to the 2015 edition of the Canadian Electrical Code.

In the interest of transparency and fairness, we would like feedback from the electrical industry before we submit this recommendation. Your feedback is essential in making sure that any impacts to the BC electrical industry and the public are identified and carefully considered in this process.

The consultation period is open from now until May 15, 2015. Following consultation, BCSA will review the feedback and submit a recommendation, endorsed by the Electrical Technology Advisory Committee, to the Province of BC to adopt the Canadian Electrical Code with BC amendments.

BACKGROUND

The Canadian Electrical Code is developed via a consensus process by electrical stakeholders at the national level and published by the Canadian Standards Association (CSA). The updated CEC is published on a three-year cycle. BCSA is an independent, self-funded not-for-profit organization established by the Province of BC to administer the Safety Standards Act and Electrical Safety Regulation, among other regulations. After each new edition of the CEC is published, it is reviewed by BCSA via the Electrical Technical Advisory Committee, and after this review, BCSA then submits a recommendation to the Province of BC to adopt the new edition of the code along with any BC-specific amendments. The Province of BC, upon the recommendation of BCSA, adopts the CEC with the applicable BC amendments as the BC Electrical Code into the Electrical Safety Regulation.

BCSA’s Electrical Technical Advisory Committee, an advisory body made up of stakeholders working in the electrical industry, has reviewed and accepted recommendations from their Working Group on Canadian Electrical Code 2015 adoption. The Canadian Electrical Code 2015 adoption Working Group evaluated revisions to the 2012 edition of the Canadian Electrical Code based on the following criteria:
1. Consistency with provisions of the Safety Standards Act;
2. Improvements to electrical safety; and,
3. Clarification of ambiguous language which might create inconsistency and confusion by the Code users.

In addition, the committee identified issues that require further action by the Provincial Electrical Safety Manager, including issuing information bulletins and directives. These recommendations are detailed in the Appendix, as well as the recommendations for amendment and impacts, listed by Section number.

PROPOSED AMENDMENTS

The proposed BC amendments to the 2015 Canadian Electrical Code are as follows:

Section 0
Recommendation:
Adopt Section 0 with amendment to the definition of “electrical contractor” and adding the definition of “National Building Code”.

Current text:
“Electrical contractor” any person, corporation, company, firm, organization, or partnership performing or engaging to perform, either for their or its own use or benefit, or for that of another, and with or without remuneration or gain, any work with respect to an electrical installation or any other work to which this Code applies.
No definition for “National Building Code of Canada”

Proposed revised text:
“Electrical contractor” any person, corporation, company, firm, organization, or partnership performing or engaging to perform, either for their or its own use or benefit, or for that of another, and with or without remuneration or gain, any work with respect to an electrical installation or any other work to which this Code applies means a licensed electrical contractor, as defined in the Electrical Safety Regulation;
“National Building Code of Canada” means the British Columbia Building Code and local building bylaws;

Impacts:
No impacts.

Rationale:
Retains existing definitions for consistency with provincial laws.

Section 2
Recommendation:
Adopt Section 2 except for subrule 2-104(1).

Current text:
All electrical equipment marked with a short-circuit current rating or withstand rating shall have ratings sufficient for the voltage employed and for the fault current that is available at the terminals.

Proposed revised text:
All electrical equipment marked with a short-circuit current rating or withstand rating shall have ratings sufficient for the voltage employed and for the fault current that is available at the terminals.

Impact:
None. This was a newly introduced rule in the 2015 edition of the Canadian Electrical Code.

Rationale:
Standards cannot be achieved as written.

Section 10
Recommendation:
Adopt Section 10 with amendments by:
- adding Appendix B Note to the title of Rule 10-002
- amending Rule 10-802 by amending Subrule (1), adding new Subrules (2) and (3), and renumbering existing Subrule (2) as the new Subrule (4)

Current text:
10-002 Object

10-802 Material for system grounding conductors
(1) The grounding conductor shall be permitted to be insulated or bare and shall be of copper, aluminum, or other acceptable material.

(2) The material for grounding conductors shall be resistant to any corrosive condition existing at the installation or shall be protected against corrosion.

Proposed revised text:
10-002 Object (See Appendix B)

10-802 Material for grounding conductors
(1) Except as permitted by Subrules (2) or (3), the grounding conductor shall be insulated or bare and shall be of copper, aluminum, or other acceptable material.
(2) A grounding conductor shall be permitted to be of aluminum for installation in dry locations only.
(3) Where a deviation has been allowed in accordance with Rule 2-030, the grounding conductor shall be permitted to be of other acceptable material.
(2)/(4) The material for grounding conductors shall be resistant to any corrosive condition existing at the installation or shall be protected against corrosion.

Impact:
No impact. Installers will be able to continue use aluminum as an acceptable material for grounding conductors in dry locations.
Rationale:
These amendments enable the continued use of aluminum in dry locations, which provides a cost-effective alternative to using copper wiring, and is less likely to be stolen. BCSA will publish an information bulletin providing rationale and clarifications on amended provisions.

Appendices

Recommendation:
Adopt appendices with the addition of proposed Appendix B Note on Rule 10-002(1)

Current text:
No Note on Rule 10-002(1) currently exists; original text is from Rule 10-500 of CEC 2012, which was deleted from CEC 2015:
To have an impedance sufficiently low to:
(a) facilitate the operation of the overcurrent devices in the circuit on the occurrence of a fault of negligible impedance from an energized or phase conductor to exposed metal; and

(b) limit the duration of the voltage above ground on this exposed metal the complete fault path (line ground loop) of the grounding and bonding arrangement of the consumer’s installation would normally have to be such that a current of not less than five times the rating of the overcurrent device protecting the circuit will flow on the occurrence of a fault of negligible impedance.

Revised text:
Objective of bonding is to have an impedance sufficiently low in order to:
(a) facilitate the operation of the overcurrent devices in the circuit on the occurrence of a fault of negligible impedance from an energized or phase conductor to exposed metal; and

(b) limit the duration of the voltage above ground on this exposed metal. This objective is accomplished by means of the completeing the fault path (line ground loop) of the grounding and bonding arrangement of the consumer’s installation which would normally have to be such that a current of not less than five times the rating of the overcurrent device protecting the circuit will flow on the occurrence of a fault of negligible impedance via a bonding conductor back to the solidly grounded source.

Impact:
None.

Rationale:
Retains information from Rule 10-500 of the 2012 edition of the Canadian Electrical Code, which was removed from the 2015 edition.

All other sections

Recommendation:
Adopt all other Sections, Rules and Subrules, Tables and Appendices without BC amendments.
IMPACTS OF CHANGES BETWEEN CEC 2012 AND CEC 2015

No changes are currently being proposed for the below sections; however, there may be some impacts to the electrical industry and the public to be considered.

Section 4
Fixes conductor ampacities issue from the 2012 edition of the CEC

*Impacts:*
None. Reflects current practice.

Section 26
New safety requirements for AFCI protection of circuits in Rule 26-724

*Impacts:*
Estimated possible cost increases for a typical wood frame 2 bedroom apartment:
- If combination-type AFCI circuit breakers are installed: $400-500 increase
- If blank/deadfaced-type AFCI's are installed: $400 increase
- If receptacle-type AFCI’s are installed: $450 increase

Estimated possible cost increases for a high rise concrete constructed apartment:
- If AFCI-type receptacles are installed: $250 increase

Estimated possible cost increases for a 3000 square foot house:
- If combination-type AFCI circuit breakers are installed: $850-950 increase
- If blank/deadfaced-type AFCI's are installed: $730 increase
- If receptacle-type AFCI’s are installed: $830 increase

Section 64
New requirements for photovoltaic systems

*Impacts:*
Installation costs are expected to increase for new safety requirements: additional equipment, training requirements and correlation with other relevant standards.

Section 66
Additional requirements for temporary electrical equipment

*Impacts:*
Some costs are expected to increase with additional equipment required for safety.

Section 76
*Recommendation:*
Adopt without BC amendments for special permission (redline) currently in effect.
**Current text (in BCEC 2012):**

Rule 76-016

Receptacles having CSA configuration 5-15R or 5-20R installed to provide power for buildings or projects under construction or demolition shall be protected by ground fault circuit interrupters of the Class A type except by special permission.

**Proposed text:**

Rule 76-016

Receptacles having CSA configuration 5-15R or 5-20R installed to provide power for buildings or projects under construction or demolition shall be protected by ground fault circuit interrupters of the Class A type **except by special permission**.

**Impact:**

Low impact. Special permission for WorkSafeBC’s assured grounding program can be authorized under Rule 2-030 if this rule should not apply.

**GIVING YOUR FEEDBACK**

We invite you and any interested stakeholders to review this proposal and provide feedback. BCSA will be accepting feedback until **May 15, 2015**. We will consider all stakeholder feedback before submitting a final recommendation on the BC amendments to the 2015 edition of the Canadian Electrical Code to the Province of BC. We hope to publish the results of this consultation and submit the Recommendation For Amendment to the Province of BC in late May 2015.

There are a number of ways to provide your feedback:

1. **Feedback Form:** Submit comments through our online form available at [www.safetyauthority.ca/cec-2015-consult](http://www.safetyauthority.ca/cec-2015-consult)

2. **Online Meeting:** Attend a webinar meeting on **April 29, 2015** at 10:00am PDT
   Go to: [https://global.gotomeeting.com/join/255291845](https://global.gotomeeting.com/join/255291845)
   Phone: 1-866-643-2939 / Conference ID 4442830

Alternatively, you may also provide comments via one of the following:

3. **Email:** stakeholder.engagement@safetyauthority.ca

4. **Mail:**
   BC Safety Authority
   #200 - 505 6th Street, New Westminster BC V3L 0E1
   Attn: Meryl Howell-Fellows, Stakeholder Engagement Programs Coordinator

For up-to-date information and background materials, please refer to the consultation webpage at [www.safetyauthority.ca/cec-2015-consult](http://www.safetyauthority.ca/cec-2015-consult)

Please note that all comments become part of BCSA’s Stakeholder Engagement Programs database and may be published, including the identity of organizations and those participating on behalf of organizations. The identity of those who have participated on their own behalf will be kept confidential according to the provisions of the Freedom of Information and Protection of the Privacy Act.
## APPENDIX

Summary of proposed BC amendments, areas requiring clarification and major changes between the 2012 and 2015 editions of the Canadian Electrical Code, by Section

<table>
<thead>
<tr>
<th>CEC 2015 Section</th>
<th>CEC 2015 Issue</th>
<th>Proposed BC Amendment</th>
<th>Recommendation, Impacts and Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Definitions of “Electrical contractor”&lt;br&gt;“National Building Code of Canada”</td>
<td>“Electrical contractor” means a licensed electrical contractor, as defined in the Electrical Safety Regulation;&lt;br&gt;“National Building Code of Canada” means the British Columbia Building Code and local building bylaws;</td>
<td>Recommendation: Adopt Section 0 with amendment to definition of “electrical contractor” and adding definition of “National Building Code of Canada”.&lt;br&gt;Impacts: No impacts.&lt;br&gt;Rationale: Retain existing definitions for consistency with provincial laws.</td>
</tr>
<tr>
<td>2</td>
<td>Subrule 2-104(1) Electrical equipment ratings All electrical equipment marked with a short-circuit current rating or withstand rating shall have ratings sufficient for the voltage employed and for the fault current that is available at the terminals.</td>
<td>Delete subrule 2-104(1).</td>
<td>Recommendation: Adopt Section 2 except for subrule 2-104(1).&lt;br&gt;Impact: None. This was a newly introduced rule in the 2015 edition of the Canadian Electrical Code.&lt;br&gt;Rationale: Standards cannot be achieved as written.</td>
</tr>
<tr>
<td>8</td>
<td>Rule 8-106 Use of demand factors Reference to “qualified person” in Rule 8-106 for demonstrated load and not calculated load.</td>
<td>None.</td>
<td>Recommendation: Adopt with no amendments. BCSA will publish an information bulletin on the application of “qualified person” in Rule 8-106.&lt;br&gt;Rationale: Clarification can be achieved through a directive or information bulletin.</td>
</tr>
<tr>
<td>10</td>
<td>Rule 10-802 Material for system grounding</td>
<td>Rule 10-802 Material for system grounding</td>
<td>Recommendation: Adopt Section 10 with</td>
</tr>
</tbody>
</table>

**APPENDIX:**

Summary of proposed BC amendments, areas requiring clarification and major changes between the 2012 and 2015 editions of the Canadian Electrical Code, by Section.
conductors
(1) The grounding conductor shall be permitted to be insulated or bare and shall be of copper, aluminum, or other acceptable material.
(2) The material for grounding conductors shall be resistant to any corrosive condition existing at the installation or shall be protected against corrosion.

conductors
(1) Except as permitted by Subrules (2) or (3), the grounding conductor shall be insulated or bare and shall be of copper, aluminum, or other acceptable material.
(2) A grounding conductor shall be permitted to be of aluminum for installation in dry locations only.
(3) Where a deviation has been allowed in accordance with Rule 2-030, the grounding conductor shall be permitted to be of other acceptable material.
(4) The material for grounding conductors shall be resistant to any corrosive condition existing at the installation or shall be protected against corrosion.

Appendix B Note on Rule 10-002(1)
To have an impedance sufficiently low to:
(a) facilitate the operation of the overcurrent devices in the circuit on the occurrence of a fault of negligible impedance from an energized or phase conductor to exposed metal; and
(b) limit the duration of the voltage above ground on this exposed metal the complete fault path (line ground loop) of the grounding and bonding arrangement of the consumer’s installation would normally have to be such that a current of not less than five times the rating of the overcurrent device protecting the circuit will flow on the occurrence of a fault of amendments to Rule 10-802.

Impact:
No impact. Installers will be able to continue use aluminum as an acceptable material for grounding conductors in dry locations.

Rationale:
These amendments enable the continued use of aluminum in dry locations as a cost-effective and safe alternative to copper. BCSA will publish an information bulletin providing rationale and clarifications on amended provisions.

Appendix B Note on Rule 10-002(1)
Objective of bonding is to have an impedance sufficiently low in order to:
(a) facilitate the operation of the overcurrent devices in the circuit on the occurrence of a fault of negligible impedance from an energized or phase conductor to exposed metal; and
(b) limit the duration of the voltage above ground on this exposed metal. This objective is accomplished by means of the completing the fault path (line ground loop) of the grounding and bonding arrangement of the consumer’s installation which would normally have to be such that a current of not less than five times the rating of the

Recommendation:
Add Appendix B Note on Rule 10-002(1) using modified text from Rule 10-500 of CEC 2012.

Impact:
None.

Rationale:
Retains information from Rule 10-500 of the 2012 edition of the Canadian Electrical Code, which was removed from the 2015 edition.
<table>
<thead>
<tr>
<th>Rule</th>
<th>Description</th>
<th>Recommendation</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Installation of separate insulated bonding conductors.</td>
<td>None.</td>
<td><strong>Recommendation:</strong> Adopt with no amendments. <strong>Rationale:</strong> BCSA will publish an information bulletin for Rule 12-1414 explaining that a neutral / grounded service conductor can be used as an in-service bonding conductor when EMT is used as an overhead service raceway.</td>
</tr>
<tr>
<td>14 and 16</td>
<td>Changes from 2012 edition of CEC.</td>
<td>None.</td>
<td><strong>Recommendation:</strong> Adopt with no amendments.</td>
</tr>
<tr>
<td>18</td>
<td>Rule 18-064 Intrinsically safe electrical equipment and wiring Changed “classes” of wood dust to “zones”.</td>
<td>None.</td>
<td><strong>Recommendation:</strong> Adopt with no amendments. BCSA will develop information bulletin about hazards associated with combustible/explosive wood dust <strong>Rationale:</strong> Clarification can be achieved through a directive or information bulletin.</td>
</tr>
<tr>
<td>20, 22 and 24</td>
<td>Changes from 2012 edition of CEC</td>
<td>None.</td>
<td><strong>Recommendation:</strong> Adopt with no amendments.</td>
</tr>
<tr>
<td>26</td>
<td>Rule 26-702 Receptacles exposed to the weather Cover plate and outlet box requirements</td>
<td>None.</td>
<td><strong>Recommendation:</strong> Adopt with no amendments. BCSA will develop information bulletin for 26-702 about acceptable locations for boxes for receptacles exposed to the weather, and acceptable use of cover plates. <strong>Rationale:</strong> Clarification can be achieved through a directive or information bulletin.</td>
</tr>
<tr>
<td></td>
<td>Rule 26-724 Branch circuits for dwelling units</td>
<td>None.</td>
<td><strong>Recommendation:</strong> Adopt with no amendments.</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td>Impacts</td>
<td>Recommendation</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>---------</td>
<td>----------------</td>
</tr>
<tr>
<td>34, 36, 38, 40, 44, 46, 54, 60 and 62</td>
<td>Changes from 2012 edition of CEC</td>
<td>None.</td>
<td>Recommendation: Adopt with no amendments.</td>
</tr>
<tr>
<td>64</td>
<td>New requirements for photovoltaic systems</td>
<td>None.</td>
<td>Impacts: Cost increase for training requirements and additional equipment requirements to increase safety. Recommendation: Adopt with no amendments.</td>
</tr>
<tr>
<td>66</td>
<td>Temporary electrical equipment</td>
<td>None.</td>
<td>Impacts: Cost increase for additional equipment requirements to increase safety. Recommendation: Adopt with no amendments.</td>
</tr>
<tr>
<td>68 and 70</td>
<td>Changes from 2012 edition of CEC</td>
<td>None.</td>
<td>Recommendation: Adopt with no amendments.</td>
</tr>
<tr>
<td>76</td>
<td>Rule 76-016 Receptacles</td>
<td>None.</td>
<td>Recommendation:</td>
</tr>
</tbody>
</table>
Receptacles having CSA configuration 5-15R or 5-20R installed to provide power for buildings or projects under construction or demolition shall be protected by ground fault circuit interrupters of the Class A type **except by special permission**.

Adopt without previous BC code amendment that included "except by special permission".

**Rationale:**
Special permission authority under Rule 2-030 can be used if this rule should not apply.

| 78 and 86 | Changes from 2012 edition of CEC | None. | **Recommendation:** Adopt with no amendments. |
| Tables | Changes from 2012 edition of CEC | None. | **Recommendation:** Adopt with no amendments. |
| Appendices | Changes from 2012 edition of CEC | See Appendix B Note on Rule 10-002(1) above. | **Recommendation:** Adopt with the addition of proposed Appendix B Note on Rule 10-002(1) (see above). |