

**Proposed changes to Ontario Amendments in OESC 2024** (Click on the Proposal Number to view the full description.)

<b>Proposal number</b>	<b>Rule</b>	<b>Description of Change</b>	<b>Proposed by</b>
<a href="#">2024-OA-001</a>	2-000 a), amended	Amend existing Ontario amendment to remove exemption of licensed generators in the Scope of OESC.	Electrical Safety Authority
<a href="#">2024-OA-002</a>	2-004 1), amended	Amend Ontario amendment to delete the 48 hour easement for filing a notification.	Electrical Safety Authority
<a href="#">2024-OA-003</a>	2-010, new	Add Plan Review requirements for the installation of electric vehicle supply equipment in other than a single dwelling unit.	Electrical Safety Authority
<a href="#">2024-OA-004</a>	2-010 1) e), amended	<ol style="list-style-type: none"> <li>1. Amend existing Ontario amendment to require submission of the electrical design for electric-power-generating equipment and energy storage systems for off-grid installations.</li> <li>2. Delete the reference to Ontario Energy Board (OEB) definition and add bi-directional electric vehicle supply equipment (EVSE) as electric-power-generating equipment.</li> </ol>	Electrical Safety Authority
<a href="#">2024-OA-005</a>	6-100 and 6-200, new	Add Ontario amendment to permit the use of meter-mounted transfer switches.	Electrical Safety Authority
<a href="#">2024-OA-006</a>	8-002; 8-106; Appendix B to Rule 8-106 10); and 8-500, amended	Add Ontario Amendment to permit the use of other types of energy management systems in addition to electric vehicle energy management system (EVEMS).	Electrical Safety Authority
<a href="#">2024-OA-007</a>	8-202 3) d), new	Add Ontario amendment to require the addition of electric vehicle supply equipment (EVSE) loads that are supplied from a panelboard within a dwelling unit.	Electrical Safety Authority

<b>Proposal number</b>	<b>Rule</b>	<b>Description of Change</b>	<b>Proposed by</b>
2024-OA-008	10-004 and 10-116 6) and Definition, delete	Delete Ontario Amendment (OA) special terminology for “Effectively grounded metal structural frame of a building” in Rule 10-004 and delete OA to Rule 10-116 6) and associated Appendix B note.	Electrical Safety Authority
2024-OA-009	36-200, new	Add Ontario amendment to permit Supply Authority owned primary metering equipment installed ahead of the consumers service equipment.	Utility Advisory Committee
2024-OA-010	Section 56, delete	Delete CE code Section 56, Optical Fiber Cables from the Scope of the OESC	Electrical Safety Authority
2024-OA-011	68-072, delete	Delete Ontario Amendment about maintenance disconnecting means for pools and associated Appendix B note.	Electrical Safety Authority
2024-OA-012	Table 104, amended	Amend current Ontario amendment to Table 104 to include additional depth of setting of poles in soil.	Electrical Safety Authority
2024-OA-013	75-814, amended	Amend Ontario amendment Subrule 3) about maximum permissible neutral voltage.	Electrical Safety Authority

**Rule(s):**  
2-000 a)

**Description of Change:**

Amend existing Ontario amendment to remove exemption of licensed generators in the Scope of OESC.

**Submitted by:**

Electrical Safety Authority.

**Background:**

The current Scope of the Ontario Electrical Safety Code (OESC), Rule 2-000 a), exempts electrical equipment and electrical installations used exclusively in the generation, transmission, or distribution of electrical power or energy intended for sale or distribution to the public from the requirements of the OESC, UNLESS an authorization to connect from the Electrical Safety Authority (ESA) is required as per Part V of the Ontario Energy Board Act.

Appendix B note to Rule 2-000 a) further clarifies that where Codes issued by the Ontario Energy Board under Part V of the Ontario Energy Board Act, 1998, require a connection authorization, the OESC applies to electrical installations specified in Subrule a).

There are 428 licensed generators in Ontario, historically all required a connection authorization and complied with the Code.

The expectation is that Distributed Energy Resources (DERs) installation will be increasing as part of the energy transition as another way for communities to meet their energy needs. DERs generally refer to resources, such as battery storage, rooftop solar panels, and electric vehicles (EVs) paired with smart chargers. The likelihood of widespread adoption of DERs could have significant implications on distribution systems. Safety is paramount for installation and integration of DERs into distribution systems; therefore, including licensed generators in the scope of OESC is the necessary step.

**Rationale**

As generation facilities are required to obtain authorization to connect in order to be connected to the grid, they are not exempted from the scope of the OESC as per Rule 2-000 a). Electrical installations (as defined in the OESC) in generation facilities are required to follow all OESC requirements including but not limited to notifications, plan review submissions, ground potential rise (GPR) studies, etc.

Deletion of Rule 2-000 a) iii) will eliminate contradictions between the requirements of the Ontario Energy Board Act and the OESC. Furthermore, this change is in alignment with the current practice.

OESC Bulletin 2-28-\* provides additional clarification and could be deleted if this OA is adopted.

**Proposed Change:**

**Modify current Ontario Amendment to Rule 2-000 a) and delete Subrule a) iii).**  
2-000 Scope (see Appendix B)

*This Code does not apply to*

*a) electrical equipment and electrical installations used exclusively in the **generation**, transmission, or distribution of electrical power or energy intended for sale or distribution to the public as specified in Item i), ~~or ii), or iii), except where the Ontario Energy Board requires an authorization to connect from the Electrical Safety Authority in accordance with Part V of the Ontario Energy Board Act, 1998:~~*

*i) the distributor is licensed to own or operate the distribution system under Part V of the Ontario Energy Board Act, 1998; **or***

*ii) the transmitter is licensed to own or operate the transmission system under Part V of the Ontario Energy Board Act, 1998; ~~or~~*

*~~iii) the generator is licensed to own or operate the generation system or is licensed to provide ancillary services for sale through the IESO-administered markets or directly to another person, under Part V of the Ontario Energy Board Act, 1998;~~*

**No changes in Subrules b), c), d), e), f), g) and h)**

**Modify current Appendix B Note to Rule 2-000 a).**

~~*Where Codes issued by the Ontario Energy Board under Part V of the Ontario Energy Board Act, 1998, require a connection authorization, this Code applies to electrical installations specified in Item a). Codes issued by the Ontario Energy Board can be referenced on the Ontario Energy Board website.*~~

~~*This Code applies to electrical equipment and electrical installations used in the generation of electrical power or energy intended for sale or distribution to the public. Where electrical equipment and associated systems of the generating stations are under Federal or other Provincial jurisdictions (such as Technical Standard and Safety Authority "TSSA", Canadian Nuclear Safety Commission "CNSC", etc.), these electrical equipment and associated control systems are outside of the Scope of this Code.*~~

**Rule(s)**

2-004 1)

**Description of Change:**

Amend Ontario Amendment to delete the 48-hour easement for filing a notification.

**Submitted by:**

Electrical Safety Authority

**Background:**

To commence the partnership between the regulator, ESA, and the industry, a notification is required to establish the parameters of the relationship. This is also reflected in the CE Code, rules 2-004 through 2-010, with the same principal being established and delineated in the CE Code. In Ontario the rule has been refined to be more reflective of the processes and policies of ESA, as well as the structure of ESA's mandate as established in the Electricity Act. Through this refinement, it has historically included that the contractor can file for a notification within 48-hours of starting work. The rationale of this buffer is not accessible; however, it is assumed that this was included to address the hours of the regulator and the options available to the contractor to file the notification.

**Rationale:**

The regulator, ESA, has implemented new processes and systems as they adopt new technology that has provided additional pathways for contractors to file a notification. Some of these systems are available 24 hours a day, 7 days a week, providing a means for a contractor to efficiently identify their project and scope. The regulator also has the responsibility to manage contractor licencing and to be actively working to address the underground economy. From an electrical installation perspective, the underground economy could be defined as working on an installation without a notification most succinctly, as this is a common element of that work regardless of the qualification of the installer or as the OESC defines them, the contractor. With the option omnipresent to delay filling for a notification for 48-hours, this has seemingly become the default mindset of the industry. This reality has limited the ability of ESA to address the underground economy since if an inspector is made aware of, through reporting or happenstance, a project that is underway and an active notification is not found from a search in ESA's database, addressing the noncompliance is minimized with the buffer established in the current rule. It is also reducing the data available to ESA to properly identify the size of the underground economy, or the effectiveness of ESA's efforts to address this as the application of the 2-004 1) defect would be the most effective tool at ESA's disposal to identify the quantity of sites that have been identified without a

notification. Sites that come into compliance are not identified in the data available although they had initially been non-compliant until approached by ESA.

**Proposed Change:**

***Amend Ontario Amendment to Rule 2-004 1) to delete item b).***

**2-004 Notification of work (See Appendix B)**

- 1) A contractor shall file a notification with the Electrical Safety Authority of any work on an electrical installation
  - a) prior to commencement of the work whether or not electrical power or energy has been previously supplied to the land, building, or premises on which the work is performed; ~~or~~
  - ~~b) within 48 h after commencement of the work where compliance with Subrule 1) a) is not practicable~~

***Add an Appendix B note:***

*For unplanned electrical work, where a notification cannot be filed prior to commencing the work and the Electrical safety Authority is notified by other means (such as a registered call to the customer service centre, etc.), this will be considered to meet the intent of the Rule.*

**Rule(s):**  
2-010 1)

**Description of change:**

Add Plan Review requirements for the installation of electric vehicle supply equipment in other than a single dwelling unit.

**Submitted by:**

Electrical Safety Authority

**Background:**

As new technologies, including electric vehicle supply equipment (EVSE), are introduced to the market, the installation of this equipment will change the circuit loading and demand of existing electrical infrastructure. To proactively address this issue, and to manage the impact of the new technology on existing electrical installations, it is prudent to provide guidance where emerging technologies are installed. The proposed Ontario amendment (OA) provides an update Rule 2-010 to include requirements for the submission of plans where EVSE is to be installed to assist the industry in ensuring compliance prior to undertaking the any work.

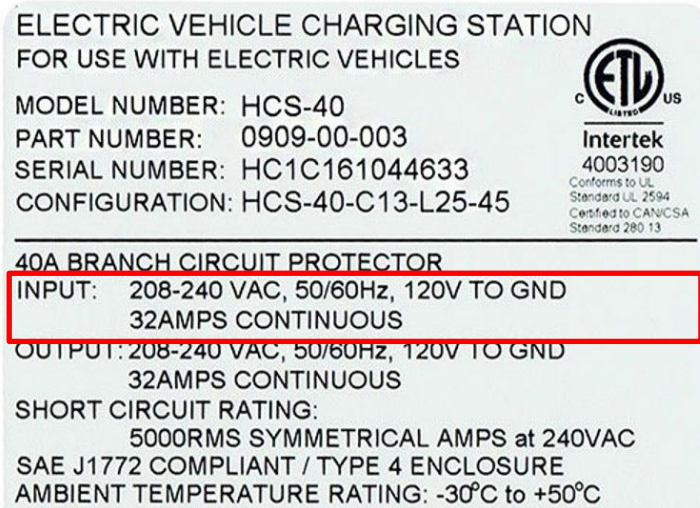
**Rationale:**

The addition of significant electrical loads to existing electrical infrastructure introduces the possibility of placing demand on electrical equipment that creates the possibility of fire hazards. The proposal acknowledges the ability to address this issue under the plan review process in the connection of EVSE to existing electrical infrastructure. The proposal will also allow contractors to avoid additional cost, when undertaking upgrades, where the existing installations require replacements to facilitate the installation of EVSE. The submission of plans under Rule 2-010 based on the nameplate value will also allow for the evaluation in the application of derating of equipment through the use of energy management systems or field settings within the equipment itself. The threshold for the submission of plans under Rule 2-010 has been proposed to be established at either more than two EVSEs or if the added EVSEs have a total of 20% of the rating of the service equipment, according to Rule 8-104, and is based on the total nameplate ratings of the EVSE being installed. The 20% value is derived from the provisions of Rule 64-112 4) c) for non residential electrical installations.



**Examples:**

The following provides an example of the calculation for undertaking the submission under Rule 2-010. The example is based on a consumer service with a rating of 1000 A, as follows:



Electrical Vehicle Supply Equipment Submission Calculation		
Single Phase		
	Scenario 1	Scenario 2
Rating of Service	1000 Amps	1000 Amps
Nameplate Rating of EVSE*	32 Amps	32 Amps
Number of EVSE*	5	8
Total Additional Load Single Phase	160 Amps	256 Amps
Percent of service rating	16 %	25.6 %
Submission Required	NO	YES
Three Phase		
	Scenario 1	Scenario 2
Rating of Service	1000 Amps	1000 Amps
Nameplate Rating of EVSE*	32 Amps	32 Amps
Number of EVSE*	10	15
Total Additional Load	320 Amps	480 Amps
3 Phase Adjusted Value Three Phase	185.0 Amps	277.5 Amps
Percent of service rating	18 %	28 %
Submission Required	NO	YES

\*EVSE (Electric Vehicle Supply Equipment)

**Proposed Change:**

**Add new item f) to Ontario Amendment Rule 2-010 1).**

**2-010 Plans and specifications** (see Appendix B)

1) *Electrical work on any electrical installation shall not commence until plans have been submitted*

*and examined by the Electrical Safety Authority where the electrical installation involves*

- a) *a three-phase consumer service or standby generation equal to or in excess of 400 A circuit capacity;*
- b) *a single-phase consumer service or standby generation equal to or in excess of 600 A;*
- c) *a feeder greater than 1000 A;*
- d) *an emergency power supply for life safety systems as per Section 46, excluding unit equipment;*
- e) *any installations involving electric-power-generating equipment or energy storage systems, with a rating in excess of 10 kW (Microsize) as defined by the Ontario Energy Board, and operating in parallel with a supply authority system; ~~or~~*
- f) *any installation of electrical vehicle supply equipment, with the exception of a single dwelling unit, where:*
  - i) *the installation involves more than two electrical vehicle supply equipment; or*
  - ii) *the total nameplate rating(s) of the electrical vehicle supply equipment including both existing and new is greater than 20% of the rating of the service equipment; or*
- g) *any installation operating in excess of 750 V, excluding*
  - i) *installations of pole lines exclusively within the scope of Section 75*
  - ii) *that portion of an underground installation between a supply authority-owned transformer and the related supply authority-owned switch; or*
  - iii) *replacement of electrical equipment as permitted by Subrule 2 c)*

*No change to Subrules 2) to 6).*

**Rule(s):**

2-010 1) e)

**Description of Change:**

1. Amend existing Ontario amendment to require submission of the electrical design for electric-power-generating equipment and energy storage systems for off-grid installations.
2. Delete the reference to Ontario Energy Board (OEB) definition and add bi-directional electric vehicle supply equipment (EVSE) as electric-power-generating equipment.

**Submitted by:**

Electrical Safety Authority

**Background:**

1. The current Plan Review submission requirements for electric-power-generating equipment or energy storage systems rated more than 10 kW also requires the system(s) to be operating in parallel with the supply authority. The intent of this proposal is to remove the requirement to be operating in parallel with the supply authority and base the submission on the system rating only.
2. The current Ontario amendment references an OEB definition that was applicable to a program that no longer exists. In addition, the current Plan Review submission requirements for electric-power-generating equipment and energy storage systems (ESS) rated more than 10 kW does not include bi-directional EVSE. The intent of this proposal is to clarify these submission requirements to align with the current ESA direction.

**Rationale**

1. These systems have evolved significantly in both functionality and complexity since the submission requirement was first introduced in the OESC 23<sup>rd</sup> (edition 2002). The 23<sup>rd</sup> edition of the code contained only a few pages of requirements across Sections 50 and 84. Since then, Section 64 has been developed and continues to grow with many requirements. With multiple sources at a single installation, being connected to the same equipment and conductor, the determination of code compliance has become more challenging while considering current flow in different directions. This can become even more challenging for off-grid (not connected to the supply authority) systems, where there is an increased chance that the designer/installer are the owner and not familiar with the OESC requirements.
2. The current inclusion of "... (Microsize) as defined by the Ontario Energy Board..." was in reference to a definition that was part of the Feed-In Tariff (FIT) program that was launched in 2009 and subsequently closed in 2016. Although

this definition may still be referenced in some OEB documents, current discussion within the OEB's Distribution Energy Resources (DERs) working group indicate that this definition may change in the future, which would create a conflict with the current wording.

Bi-directional EVSE is another solution to provide power back to the grid ("Vehicle-to-grid (V2G)"), buildings ("Vehicle-to-building (V2B)"), or homes ("Vehicle-to-home (V2H)"). Bi-directional EVSE is referenced in Rule 86-308 as being an "electric power production source" and as such, would be subject to Plan Review submission requirements. This clarification is currently documented in ESA Bulletin 2-11-\*

Finally, there have been ongoing questions regarding which portion of the design/installation is to be used to base the "rating in excess of 10 kW" on. To align with current ESA direction, the addition of "output" is meant to clarify that submission requirements are based on the equipment/inverter output ratings, not the input sources.

**Proposed Change:**

***Amend current Ontario amendment to Rule 2-010 1) e)***

*Add Rule 2-010 1) e) as follows:*

*2-010 Plans and specifications (see Appendix B)*

*1) Electrical work on any electrical installation shall not commence until plans have been submitted and examined by the Electrical Safety Authority where the electrical installation involves*

*a) a three-phase consumer service or standby generation equal to or in excess of 400 A circuit capacity;*

*b) a single-phase consumer service or standby generation equal to or in excess of 600 A;*

*c) a feeder greater than 1000 A;*

*d) an emergency power supply for life safety systems as per Section 46, excluding unit equipment;*

*e) any installations ~~involving electric power generating equipment within the scope of Section 64 or bi-directional electrical vehicle supply equipment or energy storage systems, with an output rating in excess of 10 kW (Microsize) as defined by the Ontario Energy Board, and operating in parallel with a supply authority system;~~ or*

*f) any installation operating in excess of 750 V, excluding*

*i) installations of pole lines exclusively within the scope of Section 75;*

*ii) that portion of an underground installation between a supply authority-owned transformer and the related supply authority-owned switch; or*

*iii) replacement of electrical equipment as permitted by Subrule 2 c).*

**Rule(s):**

6-100 and 6-200

**Description of Change:**

Add Ontario amendment to permit the use of meter-mounted transfer switches.

**Submitted by:**

Electrical Safety Authority

**Background:**

For many years in Ontario, using meter-mounted transfer devices has been accepted as a safe and cost-effective method for connecting a generator to provide temporary power for residential dwellings. Currently, the Ontario Electrical Safety Code (OESC) Bulletin 2-07-\*, “*Approval of electrical equipment,*” provides available options on the acceptable approval methods for these devices, including Field Evaluation to SPE 1000 by a recognized Field Evaluation agency, or certification to UL standard UL1008M.



**Rationale:**

Rule 6-100 is amended in the 26<sup>th</sup> edition of the Canadian Electrical Code (CE Code) to include a definition for “Meter-mounted transfer switch,” along with an Appendix B note. Also, a new Subrule 4) is added to Rule 6-200 that permits the installation of meter-mounted transfer switches. However, since currently there are no Canadian approval standards available, the CE Code delayed amending the rules until 2027.

Adding an Ontario Amendment will permit Ontarians to continue installing meter-mounted transfer switches to safely provide back-up power to homeowners and prevent backfeeding to the utility’s grid, risking the safety of their workers.

**Proposed Change:**

***Add the following definition to Rule 6-100 and associated Appendix B Note:***

**6-100 Special terminology** (see Appendix B)

**Meter-mounted transfer switch** – a transfer switch that is mounted between the jaws of the meter mounting device and the supply authority meter.

**Appendix B note to Rule 6-100**

Meter-mounted transfer switches are covered under Standard ANSI/CAN UL1008M, *Transfer Switch Equipment, Meter Mounted*.

***Add new Subrule 4) to Rule 6-200:***

**6-200 Service equipment**

- 1) Except as provided in Subrule 2), each consumer's service shall be provided with a single service box.
- 2) More than one service box shall be permitted to be connected to a single consumer's service, provided that
  - a) the subdivision is made in a multiple or dual lug meter mounting device rated at not more than 600 A and 150 volts-to-ground; and
  - b) the meter mounting device is located outdoors.
- 3) For the application of Rule 6-104, each subdivision of the meter mounting device shall be considered a consumer's service.
- 4) Meter-mounted transfer switches shall be permitted to be connected on the line side of the service box provided that
  - a) the meter-mounted transfer switch is rated for the calculated load in accordance with Rule 8-104; and
  - b) the meter-mounting device is rated not more than 200 A and installed in accordance with Rule 6-402 2).

**Rule(s):**

8-002; 8-106; Appendix B to Rule 8-106 10); and 8-500

**Description of Change:**

Add Ontario Amendment to permit the use of other types of energy management systems in addition to electric vehicle energy management system (EVEMS).

**Submitted by:**

Electrical Safety Authority

**Background:**

The 2018 Canadian Electrical Code accepted a proposal to Section 8 to recognize the use of electric vehicle energy management systems (EVEMS). These rules were included in the 27<sup>th</sup> edition of the Ontario Electrical Safety Code (OESC) when it was enforced in May of 2019.

**Rationale:**

The technology used for managing the electric vehicle supply equipment has shown promise to also manage other loads at a property and ensure that the service or feeders are not overloaded as identified in Rule 8-104, when it is installed as a component of the distribution equipment. Expanding this technology to address other loads provides options for sites or projects where increasing the service or feeders may not be possible or practicable for multiple reasons. By removing the limitations of this accepted practice, it will assist the industry in addressing the electrification of the Province as we pivot to more sustainable energy and reduce the collective carbon footprint. The technology for energy management coupled with renewable energy and storage can be a dynamic opportunity for designers to meet the ever-changing industry, and the needs of the consumers to incorporate additional loads into established infrastructure.

For clarity, the first section shows the modifications being proposed to the existing rules in the OESC and the second section is a clean copy.



**Proposed Change:**

**Amend CE Code Rule 8-002, Rule 8-106 10) and associated Appendix B note, Rule 8-106 11), title of Subsection with Rule 8-500 and Rule 8-500.**

**Rule 8-002 Special terminology** (see Appendix B)

In this Section, the following definitions shall apply:

*No change for any of the other definitions.*

**Electric vehicle eEnergy management system** — a means used to control electric ~~vehicle supply equipment~~ loads through the process of connecting, disconnecting, increasing, or reducing electric power to the loads and consisting of any of the following: a monitor(s), communications equipment, a controller(s), a timer(s), and other applicable device(s).

**Rule 8-106 Use of demand factors** (see Appendix B)

*No change for Subrules 1) to 9).*

10) Where ~~electric vehicle supply equipment~~ loads are controlled by an ~~electric vehicle~~ energy management system, the demand load for the ~~electric vehicle supply~~ equipment shall be equal to the maximum load allowed by the ~~electric vehicle~~ energy management system.

11) For the purposes of Rules 8-200 1) a) vi), 8-202 1) a) vii), 8-202 3) d), 8-204 1) d), 8-206 1) d), 8-208 1) d), and 8-210 c), the demand load for the electrical ~~vehicle supply~~ equipment shall not be required to be considered in the determination of the calculated load where an ~~electric vehicle~~ energy management system as described in Subrule 10) performs the functions of

- a) monitoring the consumer's service, feeders, and branch circuits; and
- b) controlling the electric ~~vehicle supply~~ equipment loads in accordance with Rule 8-500.

**Appendix B**

**Rule 8-106 10)**

It is intended by this Subrule that the loads of the ~~electric vehicle supply~~ equipment controlled by an ~~electric vehicle~~ energy management system should be considered to have a demand within the maximum limits allowed by the ~~electric vehicle~~ energy management system.

The ~~electric vehicle~~ energy management system is provided with a maximum load rating, which determines the branch circuit, feeder, and service loading.

**~~Electric vehicle eEnergy management systems~~**

**8-500 ~~Electric vehicle eEnergy management systems~~**

- 1) ~~Electric vehicle e~~energy management systems shall be permitted to monitor **and control** electrical loads ~~and to control electric vehicle supply equipment loads.~~
- 2) An ~~electric vehicle~~ energy management system shall not cause the load of a branch circuit, feeder, or service to exceed the requirements of Rule 8-104 5) or 6).
- 3) An ~~electric vehicle~~ energy management system shall be permitted to control electrical power by remote means.

**Rule(s):**

8-202 3) d)

**Description of Change:**

Add Ontario amendment to require the addition of electric vehicle supply equipment (EVSE) loads that are supplied from a panelboard within a dwelling unit.

**Submitted by:**

Electrical Safety Authority

**Background:**

The current Subrule 8-200 2) does not exclude the demand factors for EVSE loads from being calculated as per Rule 8-202 3) a) i) to v). Having the EVSE loads included together with other loads per Rule 8-202 3) a) i) to v) drastically reduces the EVSE load demand as compared to 100% demand factor.

In the 2024 edition of the Canadian Electrical Code (CE Code), Rule 8-200 2) was changed and has added EVSE supplied from a panelboard installed in the dwelling unit to the list of excluded loads together with heating and air-conditioning. The newly excluded EVSEs loads are not being added back within Subrule 8-202 3) b) to e).

**Rationale**

In the 2024 edition of the CE Code, Rule 8-200 2) will exclude the EVSE loads together with the electric space heating and air conditioning loads from the applicable demand factors on items 8-202 3) a) i) to v). Additionally, item d) of Rule 8-200 3) has been modified in the 2024 CE Code to add EVSE loads that are not supplied from a panelboard installed in a dwelling unit at 100% demand factor, or as permitted by Rules 8-106 10) and 8-106 11). However, this does not include the EVSE loads that are extracted by the new Rule 8-200 2), which are supplied from a panelboard installed in a dwelling unit.

**Proposed Change:**

***Amend CE Code Rule 8-202 3) d) and add new Appendix B Note to Rule 8-202 3) d).***

**8-202 Apartment and similar buildings (see Appendix B)**

*No change to Subrules 1) and 2)*

3) The calculated load for the consumer's service or feeder supplying two or more dwelling units shall be based on the calculated load obtained from Subrule 1) a) and the following:

Δ a) excluding any electric vehicle supply equipment loads, electric space-heating loads and any air-conditioning loads, the load shall be considered to be

i) 100% of the calculated load in the unit having the heaviest load;

plus

ii) 65% of the sum of the calculated loads in the next 2 units having the same or next smaller loads to those specified in Item i); plus

iii) 40% of the sum of the calculated loads in the next 2 units having the same or next smaller loads to those specified in Item ii); plus

iv) 25% of the sum of the calculated loads in the next 15 units having the same or next smaller loads to those specified in Item iii); plus

v) 10% of the sum of the calculated loads in the remaining units;

b) if electric space heating is used, the sum of all the space-heating loads as determined in accordance with the requirements of Section 62 shall be added to the load determined in accordance with Item a), subject to Rule 8-106 3);

c) if air conditioning is used, the sum of all the air-conditioning loads shall be added, with a demand factor of 100%, to the load determined in accordance with Items a) and b), subject to Rule 8-106 3);

Δ d) except as permitted by Rule 8-106 10) or Rule 8-106 11), any electric vehicle supply equipment loads ~~not supplied from a panelboard installed in a dwelling unit in accordance with Rule 8-202 1) a) vii)~~, shall be added with a demand of 100%; and

e) in addition, any lighting, heating, and power loads not located in dwelling units shall be added with a demand factor of 75%.

*No change to Subrule 4)*

**Add Appendix B Note as follows**

**Rule 8-202 3) d)**

Item d) applies to installations when electric vehicle supply equipment is either supplied from a panelboard installed in a dwelling unit or outside of a dwelling unit.

**Rule(s):**

10-004 and 10-116 6)

**Description of Change:**

Delete Ontario Amendment (OA) special terminology for “Effectively grounded metal structural frame of a building” in Rule 10-004 and delete OA to Rule 10-116 6) and associated Appendix B note.

**Submitted by:**

Electrical Safety Authority

**Background & Rationale:**

The definitions of “solidly grounded systems” and “system bonding jumper” in Rule 10-004 have been revised for the 2024 Canadian Electrical Code (CEC) to include all methods of achieving a grounding connection for solidly grounded systems, such as using a non-current-carrying conductive body (e.g., a steel beam) to extend the grounding connection.

From the 2024 CEC Rule 10-004:

- **Solidly grounded systems** – an electrical system in which a point **of that system** is connected, without inserting an impedance grounding device,
  - a) to a system bonding jumper; and
  - b) ~~by a grounding conductor~~ to a grounding electrode or to a conductive body that extends the ground connection.
- **System bonding jumper** – a connection between the ~~system grounded~~ point of **an electrical system to be solidly grounded** and the non-current-carrying conductive parts of ~~an that electrical system to be established a solidly grounded system~~.

This revision encompasses the intent of the OA special terminology that defined an “effectively grounded metal structural frame of a building” as a metal structural frame of a building with members (including columns and beams) that are permanently bonded to each other and to the main service grounding conductor or electrode; and therefore, the intent of Subrule 6) in the OA for Rule 10-116. Although the current OA to Rule 10-116 is applicable to separately derived systems only, there are no safety concerns for allowing consumer service to be grounded to a metal structural frame as an extension of a grounding connection.

**Proposed Change:**

***Delete the current Ontario Amendment to Rule 10-004 and Rule 10-116 6) and associated Appendix B note.***

**10-004 Special terminology** (see Appendix B)

In this Section, the following definitions shall apply:

**Add the following definition:**

~~Effectively grounded metal structural frame of a building — a metal structural frame of a building with members (including columns and beams) that are permanently bonded to each other and to the main service grounding conductor or electrode.~~

**10-116 Installation of grounding conductors** (see Appendix B)

- 1) The grounding conductor shall be electrically continuous throughout its length.
- 2) Where necessary, devices to control the effects of stray earth current shall be permitted to be connected in series with the grounding conductor.
- 3) A grounding conductor shall be protected from damage
  - a) mechanically; or
  - b) by location.
- 4) Raceways or sleeves constructed of magnetic materials used to enclose grounding conductors shall be connected to the grounding conductor at both ends.
- 5) A grounding conductor installed in the same raceway with service conductors shall be insulated, except that an uninsulated grounding conductor shall be permitted where the length of the raceway
  - a) does not exceed 15 m between pull points; and
  - b) does not contain more than the equivalent of two 90° bends between pull points.

**Add Rule 10-116 6) as follows:**

~~6) For separately derived systems, the grounding conductor connection shall be permitted to be made to the effectively grounded metal structural frame of a building as defined in Rule 10-004.~~

**Add Appendix B Note to Rule 10-116 6) as follows:  
Rule 10-116 6)**

~~The effectively grounded metal structural frame of a building as defined in Rule 10-004 is permitted to be used as a common grounding conductor to a grounding electrode, but is not considered as part of a grounding electrode.~~

**Rule(s):**  
36-200

**Description of Change:**

Add Ontario amendment to permit Supply Authority owned primary metering equipment installed ahead of the consumers service equipment.

**Submitted by:**

Utility Advisory Committee

**Background:**

The supply authority (Distributor) owns and maintains all retail metering equipment per the Distribution System Code. Metering equipment owned by the Distributor is embedded equipment when it is placed after the ownership demarcation point. High voltage Primary Metering Equipment (PME), also known as a Primary Metering Unit (PMU), would be an example of such metering equipment.

Some supply authorities require that the Primary Metering Equipment (PME) be located after the ownership demarcation point but ahead of the consumer's service equipment (Refer to Diagram 1). This now causes the consumer to be non-compliant with the current OESC Rule 6-402 in order to align with the supply authority's requirements.

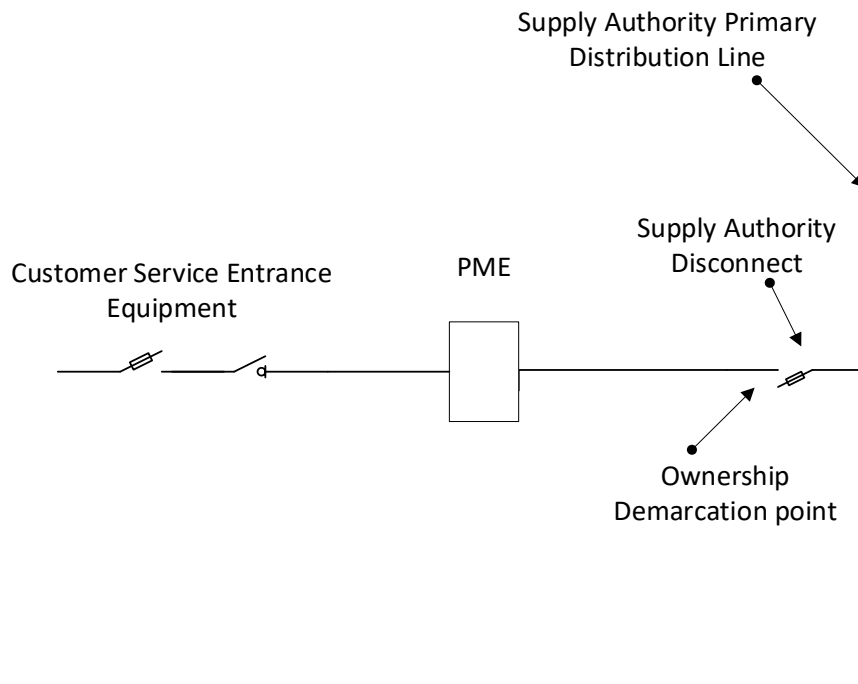


Diagram 1: Basic Service Layout

**Rationale:**

ESA has brought up this concern with members of the Utility Advisory Council (UAC). It was the UAC's recommendation that a survey be sent to the Distributor's in Ontario. The results of the survey included the following reasons for the location of the PME to be after the ownership demarcation point and ahead of the consumer's service equipment:

- This arrangement would create isolation points on both sides of the PME. These isolation points would provide a safe work zone through a condition guarantee state if any work is required to the PME.
- Improves ease of access for the Distributor. In order to comply with the current Rule 6-402, the PME would need be located deeper in the consumer's property. The more equipment the Distributor owns on these types of installations, the more difficult it becomes to operate and service the equipment since it becomes more inaccessible and it is often found behind locked gates, fences or through or on difficult terrain. Distributors always prefer that their equipment is installed in accessible locations, making it safer and easier for Distributor's employees to reach and work on.
- May reduce the risk of PME failure causing damage to consumer's switchgear.
- May reduce the risk of consumer's switchgear equipment failure resulting in damage to Distributor's PME.
- Improves safety for the Distributor's employees. They do not have to access or enter consumer's switchgear where maintenance by the consumer is unknown.
- Locating the PME ahead of the consumer's service equipment will prevent the meter from losing potential if the consumer opens their disconnect. When a meter loses potential, this causes the Distributor's system to flag this loss of potential and require the Distributor to attend the site for a meter investigation or a trouble call.

The scope of Section 36 applies to high voltage installations. Adding a new amendment will permit the Distributor owned PME to be located ahead of the consumer's service equipment to align with the Distributor's requirements.

**Proposed Change:**

***Add Ontario amendment to Rule 36-200:***

36-200 Service equipment **and metering** location

- 1) Service equipment shall be installed in a location that complies with the requirements of the supply authority and, in the case of a building, shall be at the point of service entrance.
- 2) Metering equipment shall be connected on the load side of the service equipment, except that it shall be permitted on the supply side when the metering equipment is owned by the supply authority.



**Rule(s):**

56-000

**Description of Change:**

Delete CE code Section 56, *Optical Fiber Cables* from the Scope of the Ontario Electrical Safety Code (OESC).

**Submitted by:**

Electrical Safety Authority

**Background:**

Fiber optic cables are a mainstay for communication systems, both for voice and data, but have yet to find a foothold in other systems or installations which fall under the scope of Electrical Safety Authority's (ESA) mandate as identified in its Mandate, Mission or Vision.

At present, there is an Ontario amendment to Rule 56-106, which defines that the installation of optical fiber Cables by utilities that are not exempt from the application of the Ontario Electrical Safety Code (OESC); this is contrary to ESA's historical approach to these installations and to enforce these requirements will have resistance from external stakeholders.

**Rationale:**

ESA has not been requested by the industry to inspect any optical fiber installations and does not have any work items in their fee guide for these projects. Optical fiber also continues to be a niche industry and installers almost universally are installed by communication companies as the trade that encompasses installation, termination and testing of optical fiber cables is the Network Cabling Specialist, which has not been included in the list of trades that can request a notification from ESA.

Retaining this section in the province creates the impression to those outside the industry that there is oversight by a regulator in this field, which is not supported by the data from ESA's notification data base.

**Proposed Change:**

*Delete CE Code Section 56 and associated Appendix B note.*

~~**Section 56 — Optical fiber cables**~~

~~**Scope**~~

~~**56-000 Scope**~~

~~This Section applies to the installation of optical fiber cables in conjunction with electrical systems and supplements or amends the general requirements of this Code.~~

~~**General**~~

~~**56-100 Special terminology**~~

~~In this Section, the following definition shall apply:~~

~~**Optical fiber cable** — a cable consisting of one or more optical fibers that transmits modulated light for the purpose of control, signalling, or communications.~~

~~**56-102 Types**~~

~~Optical fiber cables shall be grouped into the following three types:~~

- ~~a) non-conductive cables that contain no metal members and no other electrically conductive materials;~~
- ~~b) conductive cables that contain non-current-carrying conductive members such as metal strength members, metal vapour barriers, or metal sheaths or shields; and~~
- ~~c) hybrid cables that contain both optical fiber cables and current-carrying electrical conductors.~~

~~**56-104 Approvals**~~

- ~~1) Optical fiber cables placed within buildings shall be of the types selected in accordance with Rule 12-102.3)~~
- ~~2) Optical fiber cables outside buildings shall be suitable for outdoor installation.~~

~~*Delete CE Code Rule 56-106.*~~

~~**56-106 Acceptance of inspector**~~

~~Installations of optical fiber cables by an electrical utility or a communication utility in the exercise of its function as a utility shall not be subject to the acceptance of an inspector.~~

**Installation methods**

**~~56-200 Non-conductive optical fiber cables (see Appendix B)~~**

- ~~Δ 1) Non-conductive optical fiber cables shall not occupy the same raceway with insulated conductors of electric lighting, power, or Class 1 circuits, unless~~
- ~~a) the non-conductive optical fiber cables are functionally associated with the electric lighting, power, or Class 1 circuit not exceeding 750 V; and~~
  - ~~b) the number and size of non-conductive optical fiber cables and other types of insulated~~
  - ~~c) conductors in the raceway meet with the applicable requirements for the electrical wiring method.~~
- ~~Δ 2) Non-conductive optical fiber cables shall not occupy the same cabinet, panel, outlet box, or similar enclosure housing the electric terminals of a lighting, power, or Class 1 circuit, unless~~
- ~~a) the non-conductive optical fiber cables are functionally associated with the lighting, power, or Class 1 circuit not exceeding 750 V, and the number and size of non-conductive optical fiber cables and other types of insulated conductors in the enclosure meet with the applicable requirements for the electrical wiring method; or~~
  - ~~b) the non-conductive optical fiber cables are factory assembled in the enclosure.~~
- ~~3) Notwithstanding Subrules 1) and 2), for industrial establishments only, where conditions of maintenance and supervision ensure that only authorized persons service the installation, non-conductive optical fiber cables shall be permitted to occupy the same raceway, cabinet, panel, outlet box, or similar enclosure as electric power, control, or instrumentation cables.~~

**~~56-202 Conductive optical fiber cables~~ (see Appendix B)**

~~1) Conductive optical fiber cables shall be permitted to occupy the same raceway with any of the following systems:~~

- ~~a) Class 2 circuits in accordance with Section 16;~~
- ~~b) communication circuits in accordance with Section 60; or~~
- ~~c) community antenna distribution and radio and television circuits in accordance with Section 54.~~

~~Δ 2) Conductive optical fiber cables shall not occupy the same raceway, panel, cabinet, or similar enclosure housing electric lighting, power, or Class 1 circuits.~~

~~3) Conductive optical fiber cables shall not occupy the same cabinet, panel, outlet box, or similar enclosure housing the electrical terminals of a Class 2, communications, community antenna distribution, or radio and television circuit, unless~~

- ~~a) the conductive optical fiber cables are functionally associated with the Class 2;~~
- ~~b) communication, community antenna distribution, or radio and television circuit; or~~
- ~~c) the conductive optical fiber cables are factory assembled in the enclosure.~~

~~4) The conductive non-current-carrying members of conductive optical fiber cables shall be grounded in accordance with Section 10.~~

**~~Δ 56-204 Hybrid cables~~**

~~1) Optical fibers shall be permitted within the same hybrid cable for electric lighting, power, or Class 1 circuit conductors not exceeding 750 V, or within the same hybrid cable for Class 2, communications, community antenna, or radio and television circuit conductors, provided that the functions of the optical fibers and the insulated conductors are associated.~~

~~2) Hybrid cables shall be classed as cables in accordance with the type of circuit in the insulated conductors and shall be installed in accordance with the Code Rules applicable to the insulated circuit conductors.~~

**~~56-206 Penetration of a fire separation~~**

~~Optical fiber cables extending through a fire separation shall be installed to limit fire spread in accordance with Rule 2-128.~~

**~~56-208 Optical fiber cables in a vertical shaft~~ (see Appendix B)**

~~1) Optical fiber cables in a vertical shaft shall be in a totally enclosed non-combustible raceway.~~

~~2) Notwithstanding Subrule 1), conductive and non-conductive optical fiber cables shall be permitted to be installed in a vertical shaft without a totally enclosed non-combustible raceway, provided that these cables meet the flame spread requirements of the *National Building Code of Canada* or local building legislation for buildings of non-combustible construction.~~

~~**56-210 Optical fiber cables in ducts and plenum chambers**~~

~~Optical fiber cables shall not be placed in ducts or plenum chambers except as permitted by Rules 2-130 and 12-010.~~

~~**56-212 Raceways**~~

~~Raceways shall be installed in accordance with the requirements of Section 12.~~

~~**Δ 56-214 Grounding of entrance cables (see Appendix B)**~~

~~Where conductive optical fiber cables are exposed to lightning or accidental contact with insulated lighting or power conductors, the metal members of the conductive optical fiber cable shall be grounded in the building as close as possible to the point of cable entry.~~

~~**Appendix B note:**~~

~~**Section 56**~~

~~**Rules 56-200 1) and 56-202 1)**~~

~~The intent of Rules 56-200 1) and 56-202 1) is to allow installation of non-conductive and conductive optical fiber cables in raceways, including cable trays, provided that the other requirements in Section 56 are met and such cables are listed in Table 19.~~

~~**Rule 56-208**~~

~~Where hybrid cables are installed in a vertical shaft, they should be located in a totally enclosed non-combustible raceway, as these cables are classed as electrical cables in conformance with Rule 56-204 2).~~

~~Conductive and non-conductive cables should be allowed to be installed in a vertical shaft of a building of combustible or non-combustible construction without a totally enclosed non-combustible raceway, provided that these cables will meet the flame spread requirements for buildings of non-combustible construction. CSA marking for wires and cables meeting the flame spread requirements for the *National Building Code of Canada* for installation in buildings of non-combustible construction is FT4.~~

~~**Rule 56-214**~~

~~The point at which the exposed conductive optical fiber cables enter a building is considered to be the point of emergence through an exterior wall, through a concrete floor slab, or from a totally enclosed non-combustible entrance raceway.~~

**Rule(s):**

68-072 & Appendix B Note.

**Description of Change:**

Delete Ontario Amendment about maintenance disconnecting means for pools and associated Appendix B note.

**Submitted by:**

Electrical Safety Authority

**Background & Rationale:**

The Canadian Electrical Code 26<sup>th</sup> edition has adopted the Ontario Amendment.

**Proposed Change:**

***Delete current Ontario Amendment 68-072 and associated Appendix B Note.***

~~△ Add Rule 68-072 as follows:~~

~~68-072 Maintenance disconnecting means for pool pumps, spas, and hot tubs (see Appendix B)~~

~~A disconnecting means rated to interrupt the connected load shall be~~

- ~~a) readily accessible;~~
- ~~b) located outdoors when the equipment is located outside of a dwelling;~~
- ~~c) located not closer than 1.5 m from the inside walls of the pool, spa, or hot tub unless behind a permanent barrier that will prevent the occupant of the pool, spa, or hot tub from contacting the device; and~~
- ~~d) capable of being locked in the open position when not within sight of the equipment.~~

~~Add Appendix B Note to Rule 68-072 as follows:~~

~~Rule 68-072~~

~~For a pool pump, spa, or hot tub with a factory-installed attachment plug, the plug serves as the disconnecting means.~~

~~As per Rule 68-068, a disconnecting means that incorporates GFCI protection is required to be located not less than 3 m from the inside wall of the pool, spa, or hot tub.~~

**Rule(s):**

Table 104

**Description of Change:**

Amend current Ontario amendment to Table 104 to include additional depth of setting of poles in soil.

**Submitted by:**

Electrical Safety Authority

**Background:**

ESA has seen a few installations where some customer owned poles are exceeding the 15.2 m (50 ft) pole length identified in Table 104. Inspectors have questioned the depth of the pole since the side markings are located above the required height above grade as listed in Table 104.

**Rationale:**

In accordance with the Standard CSA 015-15 for wood poles, Section 6.5.2.2 states

**6.5.2.2 Side marking**

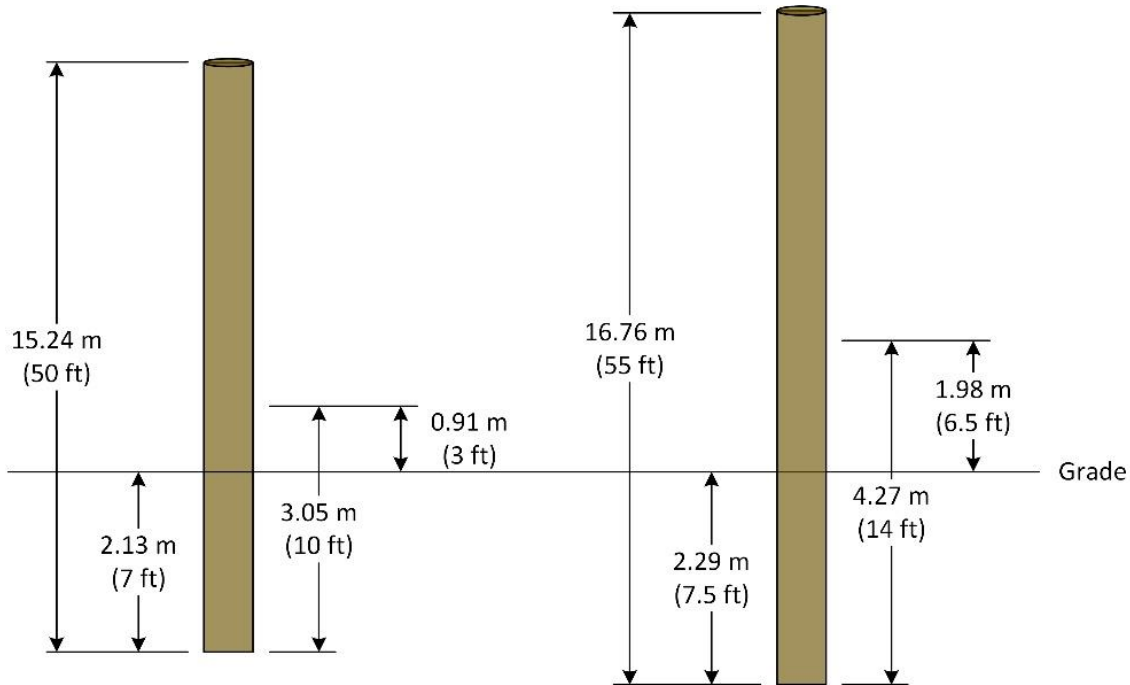
*The bottom of the side mark shall be located on the face of the pole at 10 ft ± 2 in from the butt of poles 50 ft or less in length, and at 14 ft ± 2 in from the butt of poles 55 ft or more in length. In the case of 10 ft, 11 ft, and 13 ft stubs, the mark should be 1 ft from the top.*

Since there are no standards for pole depth, depth of pole rule of thumb = 10% of length + 2 ft. This aligns with Electrical Distributor's approved engineered standards.

For example: for a 55 ft pole

Depth of pole = 5.5 ft + 2 ft = 7.5 ft (2.3 m) below grade

Side markings = 14 ft – 7.5 ft = 6.5 ft (2 m) above final grade



**Proposed Change:**

**Amend Ontario amendment Table 104:**

**Table 104**

**Depth of setting of poles in soil**

(See Rules 75-104, 75-122, 75-144, 75-146, 75-164, 75-166, 75-182 and 75-184)

<b>Pole length, m (ft)</b>	<b>Minimum depth of pole (m)</b>	<b>Max. height of marking (m) above grade</b>
9.2 (30)	1.7	1.3
10.7 (35)	1.7	1.3
12.2 (40)	1.8	1.2
13.7 (45)	2	1.1
15.2 (50)	2.1	1
<b>16.8 (55)</b>	<b>2.3</b>	<b>2</b>
<b>18.3 (60)</b>	<b>2.4</b>	<b>1.8</b>
<b>19.8 (65)</b>	<b>2.6</b>	<b>1.7</b>
Col. 1	Col. 2	Col. 3



**Rule(s):**

75-814

**Description of Change:**

Amend Ontario amendment Subrule 3) about maximum permissible neutral voltage.

**Submitted by:**

Electrical Safety Authority

**Background:**

The scope of Section 75 applies to the installation of consumer-owned powerlines. Since the beginning of the Ontario Regulation 22/04, the Electrical Safety Authority (ESA) has issued over 60 utility public safety concerns informing the Distributor that members of the public are receiving electric shocks from stray voltages on the consumer's premises. A licensed electrical contractor (LEC) performed testing on the consumer's electrical equipment and installation and determined that the source is external from the Distributor's distribution system.

Distributors have mitigated contributions from their system by repairing deteriorated neutral connections and installation of additional grounding electrodes to their system. Neither distributor standards nor industry standards contain any acceptable thresholds for maximum allowed neutral voltage. Since the scope of Section 75 applies to consumer-owned powerlines, Distributors have misapplied Rule 75-814 3) which will allow up to 10 V to ground. Once a Distributor mitigates the voltage below the 10 V threshold, the Distributor would typically cease to reduce the voltage and to determine the source, even though the consumer could still receive electric shocks.

**Rationale:**

This amendment removes the 10 V threshold for maximum permissible neutral voltage to ground, but still requires further investigation and solutions to reduce the voltage and current to a level where a person will not feel a sensation of shock. The amendment also recognizes that since the distribution system is a multi-grounded system, the complete elimination of voltage and current over the neutral conductor may not be possible.

**Proposed Change:**

***Amend Ontario amendment, Subrule 3) of Rule 75-814 and add a new Appendix B note.***

**75-814 Multiple grounding of system neutral on primary lines (See Appendix B)**

- 1) The system neutral on primary distribution lines shall be multi-grounded.
- 2) The standard number of grounds per km of circuit shall be four.
- 3) ~~The neutral potential shall not exceed 10 V rms to a remote ground at any point under steady-state conditions.~~ The neutral voltage and current to a remote ground at any point under steady-state conditions shall be limited to reduce potential shock hazard.

Add Appendix B Note

**75-814 3)**

The neutral voltage (measured between two separate reference points) should be reduced to achieve safety and prevent potential shock hazard.

Other jurisdictions and authorities may have codes and standards with threshold requirements for stray voltages and currents that can be related to other applications, such as animal contacts.