

Proposal Number: 2021-OA-016

Rule 75-710

Description of Change: Amend current Ontario Amendment to Rule 75-710 to include of new structures under or near existing customer owned powerlines

Submitted by: Section 75 Committee

Background:

Scope of Section 75 applies to the installation of customer owned primary and secondary lines (powerlines). When a customer installs an overhead powerline, they are required to meet the applicable clearances from existing buildings or structures on the property as per Rule 75-708 and 75-710. However when installing a new structure such as an entertainment tent or flag pole near or under an existing customer owned overhead powerline, Rule 75-710 would not apply since the rule does not indicate the clearances are to be maintained once the powerlines have been installed.

The installation of a structure such as event tents may pose electrical shock hazards to the installers or public during and after the installation. Their typical setup and taken down schedules are short and often involve installers working long hours, many times after sundown and/or in poor weather conditions, further increasing the chances of a contact. Additionally, direct contact with the metallic tent pole doesn't have to occur for a member of the public or a worker to receive an electrical shock; an arc may occur under the right conditions if the tent pole is erected in close proximity to the overhead powerline.

Five members of a crew setting up an outdoor tent received electric shocks when a tent pole they were erecting made contact with a 4.8 kV customer overhead power line. One victim succumbed to his injuries, three suffered critical injuries and one non-critical injury.



Entertainment tent contact –fatality & multiple injuries

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Fair tent set up under overhead powerlines



Carnival tent set up under overhead powerlines

Another incident involved a 19 year old worker was tasked to replace the flags on the flag poles with the use of a scissor lift. The existing flag poles were directly under the customer owned 27.6 kV lines. While a loft in the lift and in the process of changing the flags, the flag pole contacted the primary line resulting in the worker succumbing to his injuries.



Fatality involving a young worker

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Rationale:

When an ESA inspector identifies a location where a structure is in close proximity to an overhead customer owned* powerline, the inspector cannot issue a defect against the property owner to have the issue resolved.

() Note: If a structure was placed in close proximity to a utility owned overhead powerline, we do have utility public safety concern process through Ontario Reg. 22/04 Electrical Distribution Safety Regulation to which a utility public safety concern letter is sent to the utility and they will work with the customer to have the structure removed or the powerlines relocated.*

The proposal introduces the addition of clearances to be “maintained” around overhead powerlines. Currently the OESC has other rules requiring an owner to **maintain** clearances around equipment. For example:

- **Rule 2-308 Working space around electrical equipment**
 - 1) A minimum working space of 1 m with secure footing shall be provided and **maintained** about electrical equipment that contains renewable parts, disconnecting means, or operating means; or requires examination, adjustment, operation, or maintenance
- **Rule 2-312 Transformer working space**

Except as provided for in Rule 26-242 and notwithstanding Rules 2-308 and 2-310, for transformers rated greater than 50 kVA, a minimum horizontal working space of 1 m shall be provided and **maintained** on the sides of the transformer that provide access to conductor connections.
- **Rule 36-110 Guarding of live parts and exposed conductors**
 - 1) Bare conductors, insulated conductors unless enclosed in or in contact with grounded metal, and other bare live parts shall be
 - a) accessible only to authorized persons; and
 - b) isolated by elevation or by barriers.
 - 2) Where the conductors or live parts mentioned in Subrule 1) are isolated by elevation, the elevations and clearances **maintained** shall be as specified in Tables 32, 33, and 34, except that
 - a) for voltages in excess of those specified in Tables 32, 33, and 34, the elevations and clearances **maintained** shall be in accordance with the requirements of CSA C22.3 No. 1; and
 - b) for conductors crossing highways, railways, communication lines, and other locations not covered in this Code, the elevations and clearances **maintained** shall be in accordance with the requirements of CSA C22.3 No. 1 or the applicable standard, whichever are greater.
 - 3) For a given span, the clearances specified in Table 34 shall be increased by 1% of the amount by which the span exceeds 50 m.

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- **Rule 75-700 Clearances between power conductors and communication circuits**
*1) Electrical equipment, power conductors, communication circuits, and equipment shall be constructed and **maintained** so as to create no undue hazard to previously installed facilities.*
- **Rule 75-712 Tree Trimming**
*All trees and woody growth adjacent to a line shall be trimmed and **maintained** so that a minimum clearance to the nearest conductor, measured radially from the conductor at rest, is*
 - a) 1 m for secondary lines; and*
 - b) 4 m for primary lines.*

Other regulations such as the Ontario Building Code (OBC) does not contain clearance requirements from structures to overhead powerlines. Subsection 3.1.19 contains clearances from new buildings (includes Part 3 exceeding three storeys and Part 9 three or fewer storeys) to existing above ground electrical conductors. Additionally, Subsection 3.15.5.2 clearance for exterior signs is required to meet the new building clearance in Subsection 3.1.19. For tents, air supported structures or flag poles, the OBC has no clearance requirements to existing overhead powerlines.

Other standards such as CAN/CSA 22.3 No.1 Overhead Systems applies to electric supply and communication lines and equipment located outside of buildings employed by a utility.

In 2017, ESA had submitted a code proposal to the CEC Section 66 technical subcommittee to address this requirement, however it is still under review. Since ESA has been seeing fatalities resulting from structures placed near or under overhead powerlines, amending Rule 75-710 will be used as a mechanism to defect a property owner when a structure is found near or under and customer owned overhead powerline. ESA's 2020-2025 strategic plan's goal 1 is to further reduce electrical related harm such as powerline contacts.

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Proposed Change:

75-710 Clearances ~~between of~~ conductors ~~from and other~~ structures (see Appendix B)

~~1)~~ Notwithstanding Rule 36-110, ~~clearances between~~ conductors of an overhead primary line ~~or secondary line and temporary or permanent structures~~ shall ~~be installed and maintained as to~~ meet the minimum clearances ~~from a structure~~ specified in Rule 75-708 ~~1), 2), and 3),~~ and

- a) not be located closer than 12 m measured horizontally from silos to the closest conductors, with the conductor at rest;
- b) not be located closer than 12 m measured horizontally over wells from which pump rods may be lifted and come in contact with the conductors at rest;
- c) except for free-standing engineered structures, have sufficient clearance from free-standing poles that support flood or area lighting, signs, flagpoles, antennae, or other similar structures so as to permit the structure to fall in an arc without touching the conductors at rest;
- d) not be located within 6 m, measured horizontally from **windmills wind driven** or similar structures, to the closest conductor, with the conductor at rest; and
- e) have a minimum vertical clearance of 3.1 m above fencing at maximum sag.

~~2) A overhead secondary line conductor shall meet the minimum clearance requirements of Rule 75-708 3) and 4).~~

Appendix B

Rule 75-710

Structures **may includes but not limited to;** flood lighting poles, signs, flagpoles or other high reach objects, mobile homes, trailers, tents and amusement devices used for events such as carnivals and entertainment.

Rule 75-710 1) c)

Free-standing engineered structures are structures such as wind turbines, communication towers, and transmission towers, which are engineered to self-support and do not rely on lateral supports.