

HANDOUT: Finding Information in the Code: Electrical (4 pages)
Skill Builders: Key Words & Phrases, Skimming, Scanning, Navigating Regulations

IN THE WORKPLACE: The purpose of the Canadian Electrical Code is to ensure safe installation and maintenance of electrical equipment in order to prevent hazards and ensure proper maintenance and operation. It is the responsibility of apprentices and journeypersons to be certain their work is consistent with the latest version of the Code.

Refer to **Section 86: 2018 Electrical Code** to complete the tasks and locate answers to the questions.

1. What are the 4 main categories of information in Section 86?

2. What are the rule and/or subrule numbers of information that is new in this version of the Code?

3. Complete the rule number for control and protection: 8 - 00

4. Complete the rule number for voltages: 8_ - _____

5. Complete the rule number for connected loads: 6 - 0_

6. What information must be included on warning signs?

7. What vehicle types are not covered by Section 86?

8. What is the maximum voltage for vehicles covered under Section 86?

9. Where can you find more information on branch circuits?

10. What 3 conditions must be met for the vehicle supply equipment to be considered disconnected?

11. What are 3 sources of electrical current to vehicle motors?

12. Where can you find more information on the max connected load?

13. What provision must be made for a charging receptacle installed outside?

14. When is it permissible to supply equipment from a branch circuit that is supplying another load as well? Provide the full rule number where you found the answer.

Section 86 — Electric vehicle charging systems

Scope

86-000 Scope

This Section applies to the installation of

- a) the insulated conductors and cables and the equipment external to an electric vehicle that connect it to source of electric current by conductive or inductive means; and
 - b) equipment and devices related to electric vehicle charging.
- 2) This Section supplements or amends the general requirements of this Code.

General

86-100 Special terminology (see Appendix B)

In this Section, the following definitions shall apply:

Electric vehicle — an automotive-type vehicle for use on public roads that

- a) includes automobiles, buses, trucks, vans, low-speed vehicles, motorcycles, and similar vehicles powered by one or more electric motors that draw current from a fuel cell, photovoltaic array, rechargeable energy storage system (such as a battery or capacitor), or other source of electric current;
- b) includes plug-in hybrid electric vehicles (PHEVs); and
- c) excludes off-road electric vehicles, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, and mobility scooters for persons with disabilities.

Electric vehicle connector — a device that, when electrically coupled to a mating device on the electric vehicle, establishes means for power transfer and information exchange between an electric vehicle and electric vehicle supply equipment.

Δ Electric vehicle supply equipment (EVSE) — a complete assembly consisting of cables, connectors, devices, apparatus, and fittings installed for the purpose of power transfer and information exchange between the branch circuit and the electric vehicle.

Plug-in hybrid electric vehicle (PHEV) — a type of electric vehicle having an additional energy source for motive power.

86-102 Voltages

The nominal ac system voltages used to supply equipment covered in this Section shall not exceed 750 V.

86-104 Permanently connected and cord-connected equipment

Rules 86-300 to 86-404 apply to installation of permanently connected and cord-connected electric vehicle supply equipment.

Equipment

86-200 Warning sign

Permanent, legible signs shall be installed at the point of connection of the electric vehicle supply equipment to the branch circuit wiring, warning against operation of the equipment without sufficient ventilation as recommended by the manufacturer's installation instructions.

Control and protection

86-300 Branch circuits (see Appendix B)

- 1) Electric vehicle supply equipment shall be supplied by a separate branch circuit that supplies no other loads except ventilation equipment intended for use with the electric vehicle supply equipment.
- Δ 2) Notwithstanding Subrule 1), electric vehicle supply equipment shall be permitted to be supplied from a branch circuit supplying another load(s), provided that an electric vehicle energy management system is installed in accordance with Subrule [8-106](#) 11) or 12).
- 3) For the purposes of Subrule 2), the calculated demand shall be determined in accordance with Section [8](#).

86-302 Connected load

The total connected load of a branch circuit supplying electric vehicle supply equipment and the ventilation equipment permitted by Rule [86-300](#) shall be considered continuous for the purposes of Rule [8-104](#).

86-304 Disconnecting means

- A separate disconnecting means shall be provided for each installation of electric vehicle supply equipment rated at 60 A or more, or more than 150 volts-to-ground.
- 2) The disconnecting means required in Subrule 1) shall be
 - a) on the supply side of the point of connection of the electric vehicle supply equipment;
 - b) located within sight of and accessible to the electric vehicle supply equipment; and
 - c) capable of being locked in the open position.

86-306 Receptacles for electric vehicle supply equipment (see Appendix B)

- 1) Each receptacle for the purpose of electric vehicle charging shall be labelled in a conspicuous, legible, and permanent manner, identifying it as an electric vehicle supply equipment receptacle and shall be
 - a) a single receptacle of CSA configuration 5-20R supplied from a 125 V branch circuit rated not less than 20 A; or
 - b) of the appropriate CSA configuration in accordance with Diagram [1](#) or [2](#) when supplied from a branch circuit rated at more than 125 V or more than 20 A.
- 2) When the receptacle referred to in Subrule 1) a) is installed outdoors and within 2.5 m of finished grade, it shall be protected with a ground fault circuit interrupter of the Class A type.

Adapted from source: **CSA C22.1-18 Canadian Electrical Code (24th edition), Part 1 Safety Standard for Electrical Installations**. © 2018 Canadian Standards Association. Please visit store.csagroup.org