Bulletin: Electric Vehicle Ready Requirements

New Residential Buildings – Effective April 1, 2024

Bulletin # 24-02
Created: February 2024

This bulletin is for informational purposes only. Please be sure to consult the relevant City of Kelowna bylaw.

If any contradiction between this guide and the relevant Municipal Bylaws and/or applicable codes is found, such bylaw and/or codes shall be the legal authority.

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Purpose

This document provides guidance for meeting the **Electric Vehicle (EV)** Ready Requirements for new residential developments, pursuant to Kelowna Zoning Bylaw No. 12375, Section 8.2.18.

Background

Effective April 1, 2024, Kelowna Zoning Bylaw No. 12375 requires EV Ready charging infrastructure in all new all new Part 9 and Part 3 residential developments.

"EV Ready" (or "EV Readiness") means that a parking space features an **energized outlet** capable of **level 2 charging**, via installation of dedicated circuits or an **electric vehicle energy management system (EVEMS)**. **Electric vehicle supply equipment** is not required at the time of development. See terminology section below for full definitions.

EV Ready requirements apply only to new residential developments, not to renovations, additions, or a change of use to an existing building.

These requirements do not apply to in-stream development projects that have already applied for a development permit (Part 3) or a building permit (Part 9), prior to April 1, 2024.

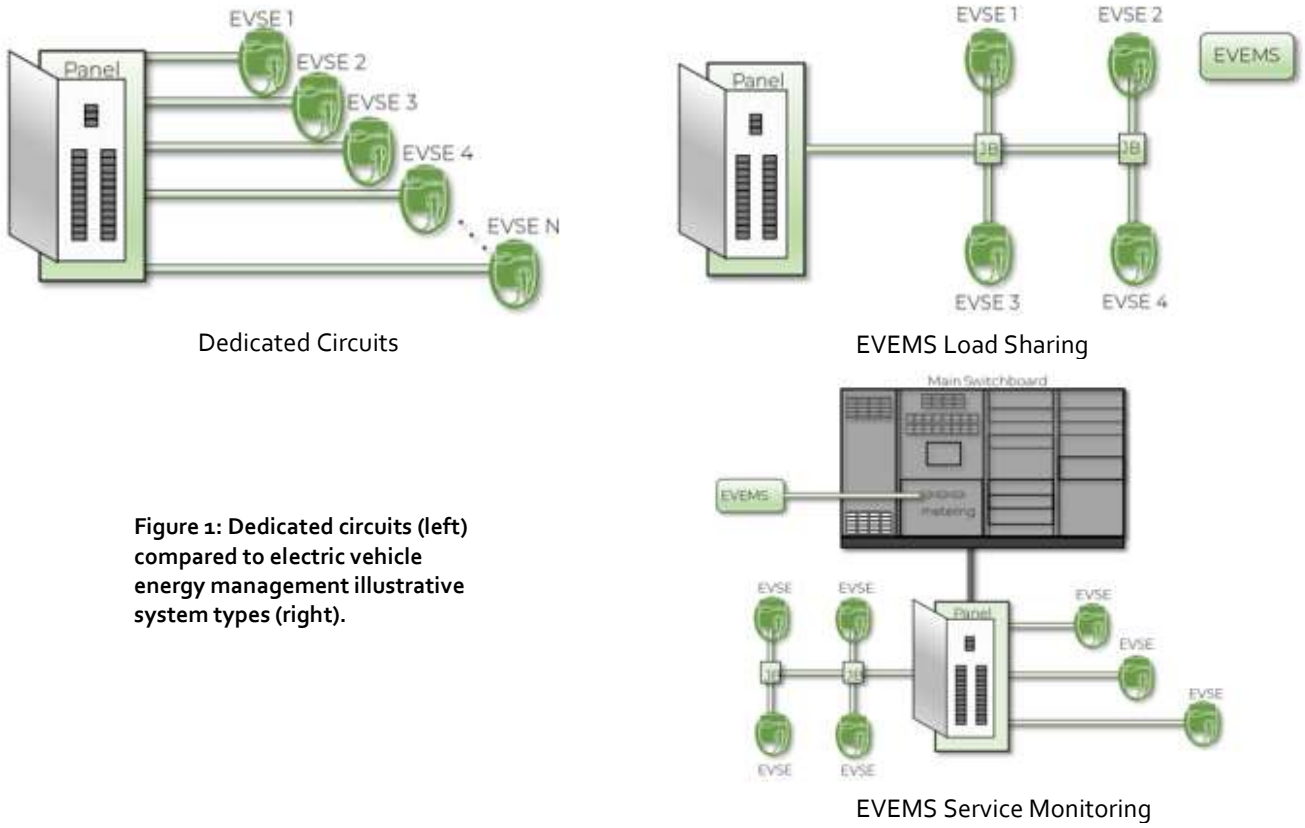
Electric Vehicle Charging Requirements in Kelowna

Any development with residential dwelling units that provides an on-site parking space for that dwelling unit must provide an electric vehicle **energized outlet** capable of providing **level 2 charging**. The rate shall be one energized space per dwelling unit that is provided a parking space. For example, if a development does not provide a parking space onsite for that dwelling unit then there is no requirement for an electric vehicle energized outlet for that dwelling unit.

a) The minimum energized electric vehicle energized outlets do not apply to the visitor parking. Energized outlets provided to visitor parking will not count toward meeting the requirements.
b) **Energized outlets** must be labelled for their intended use for electric vehicle charging only.
c) **Energized outlets** must be assigned to an individual vehicle parking space and must be located no further than 1.0 metre from that parking space.
d) No more than one **energized outlet** may be assigned to an individual vehicle parking space.
e) The minimum electric vehicle **energized outlets** do not apply to secondary suites or carriage houses.
f) The minimum amount of electric vehicle **energized outlets** per parking space capable of providing **level 2 charging** can be reduced by 75% if the lot is zoned with a "r – rental only" sub-zone that restricts the dwelling units to a rental only tenure and prohibits any building stratification or bareland stratification.
g) The effective date these regulations is April 1st 2024.

Meeting the Requirements

EV ready infrastructure must be installed using either dedicated circuits or **electric vehicle energy management systems (EVEMS),** to comply with Kelowna Zoning Bylaw No. 12375 (see Figure 1).



Dedicated Circuits

EVEMS Load Sharing

EVEMS Service Monitoring

Figure 1: Dedicated circuits (left) compared to electric vehicle energy management illustrative system types (right).

- Option 1 - Dedicated Circuit(s): Provide a dedicated circuit and **energized outlets** of 208-240V AC 1-phase, minimum 32 amp circuit (on 40 amp branch breaker), to each required EV ready parking space.

    a. Dedicated circuits are typically installed in developments with private parking stalls containing individually serviced electrical infrastructure (e.g., single detached, semi-detached, duplex, and some townhouses), but are permitted in all residential development types.

    b. Load Switching: In cases where an additional circuit for the **energized outlet** exceeds an electrical panel's calculated load, load switching equipment (a "load-miser" or "watt-miser") can be installed to prevent simultaneous operation of the charging equipment with other circuit loads so the calculated demand of the circuit is not exceeded.

- Option 2 – Electric Vehicle Energy Management System (EVEMS): These technologies and services control the rate and timing of EV charging to allow multiple energized outlets to safely use a single branch circuit simultaneously.

    a. **EVEMS** are typically installed in multi-unit developments with shared parking areas containing shared electrical infrastructure (e.g., apartments and some townhouses).

    b. **EVEMS** must be installed (online and/or as hardware) as part of the EV electrical infrastructure. Where an **EVEMS** is installed, the allowable maximum number of electric vehicles per circuit breaker amperage is as follows:

Circuit Breaker Amperage	Maximum Number of Energized Electric Vehicle Outlets
40	1-4
50	5
60	6
70	8
80	10
100	12
125	15
Note: Greater allowable levels of sharing are permitted beyond 125A, given the greater diversity of electrical loads possible at these higher amperages	

c. Projects implementing **EVEMS** must provide the necessary communications technology for the function of the chosen **EVEMS** (e.g., cellular repeaters, wireless access points, or cabled infrastructure).

Metering

In buildings with shared parking and electrical infrastructure, EV electrical infrastructure must be separately metered from the common areas so that stratas, building owners, and utility providers can distinguish between common area electrical usage and EV charging electrical usage associated with a particular dwelling.

Installation Requirements

All equipment must be installed in accordance with Canadian Electrical Code and approved for use by Technical Safety BC. Energized outlets shall be labelled for the use of EV charging to deter non-EV uses and to be consistent with the requirements of the Canadian Electrical Code: "Each receptacle for electric vehicle charging be labelled in a conspicuous, legible, and permanent manner, identifying it as an electric vehicle supply equipment receptacle."

Permit Submission Requirements

Part 9 Buildings

All plans submitted for Building Permit applications must indicate EV Ready parking spaces in accordance with Table 8.2.18 in Zoning Bylaw No. 12375.

Part 3 Buildings

Upon application for a i) Development Permit and ii) Building Permit, applicants shall:

- Show EV Ready parking spaces on building plans, including a schedule indicating the parking provided spaces per dwelling unit type, and the number of EV ready spaces provided, per dwelling unit type, in accordance with Table 8.2.18 in Zoning Bylaw No. 12375.
- Building Plans are required to confirm provision of **level 2 energized outlets** in accordance with the performance requirements outlined in this bulletin.

System Management Guidelines and Best Practice

In buildings with shared parking and electrical infrastructure, provisions for management and maintenance are to be provided to the building owner, strata, and/or dwelling unit owner. The following are recommended to be included in the strata rules or bylaws, as a minimum:

- The party (Strata or dwelling unit owner) responsible for electric vehicle supply equipment purchase and installation is clearly delineated, and appropriate permissions and procedures outlined to ensure accessibility to energized outlets for the purposes of EV charging,

- **Electric vehicle supply equipment** ownership is defined, with additional consideration for parking space, electrical infrastructure, and supply equipment ownership and responsibilities,
- Billing rules and procedures are established, and
- Where an **EVEMS** is implemented, the **electric vehicle supply equipment** must be compatible with that **EVEMS**.

Terminology

Electric Vehicle (EV) means a vehicle that uses electricity for propulsion, and that can use an external source of electricity to charge the vehicle's batteries.

Electric Vehicle Supply Equipment (EVSE) means a complete assembly consisting of conductors, connectors, devices, apparatus, and fittings installed specifically for the purpose of power transfer and information exchange between a branch electric circuit and an electric vehicle.

Electric Vehicle Energy Management System (EVEMS) means a system to control electric vehicle supply equipment electrical loads comprised of monitor(s), communications equipment, controller(s), timer(s) and other applicable devices. EVEMS includes, but is not limited to, systems that allow for load sharing (one circuit shared by multiple EVSE) and service monitoring (monitoring the service and controlling EVSE to avoid overloading the service).

Energized Outlet means a connected point in an electrical wiring installation at which current is taken to supply electric vehicle supply equipment. An **energized outlet** can take the form of an outlet box with a cover, or an electrical receptacle of an appropriate configuration required for EVEMS or EVSE (see examples below).

Examples: Outlet box with cover; or electrical receptacle (commonly NEMA 14-50R receptacle, or NEMA 6-50R), as required by design. Energized outlets are to be labelled in a conspicuous, legible, and permanent manner, identifying it as an electric vehicle receptacle.

Level 2 Charging means a Level 2 **electric vehicle** charging level as defined by SAE International's J1772 standard, and may include variable rate charging that is controlled by an **EVEMS**. The standard currently defines it as a 208/240 volt circuit with a ≤ 80 amp rating. The amperage rating for EV circuits required by most **EVSE** is 40A, but may differ depending on the system design.

Additional Information and Resources

- Residential EV Charging: A Guide for Local Governments (BC Hydro)
- Electric Vehicle Charging Infrastructure in Shared Parking Areas (BC Hydro)
- Guide to EV Charging in Multi-Unit Residential Buildings (NRCan)
- Information Bulletin: Electric Vehicle Supply Equipment and Electric Vehicle Energy Management Systems (Technical Safety BC)
- Managing EV charging infrastructure in residential strata buildings (EVCondo)
- Installing Electric Vehicle charging in your building (PlugInBC)
- Model Bylaws (PlugInBC)