

A Beginner's Guide to EV Chargers

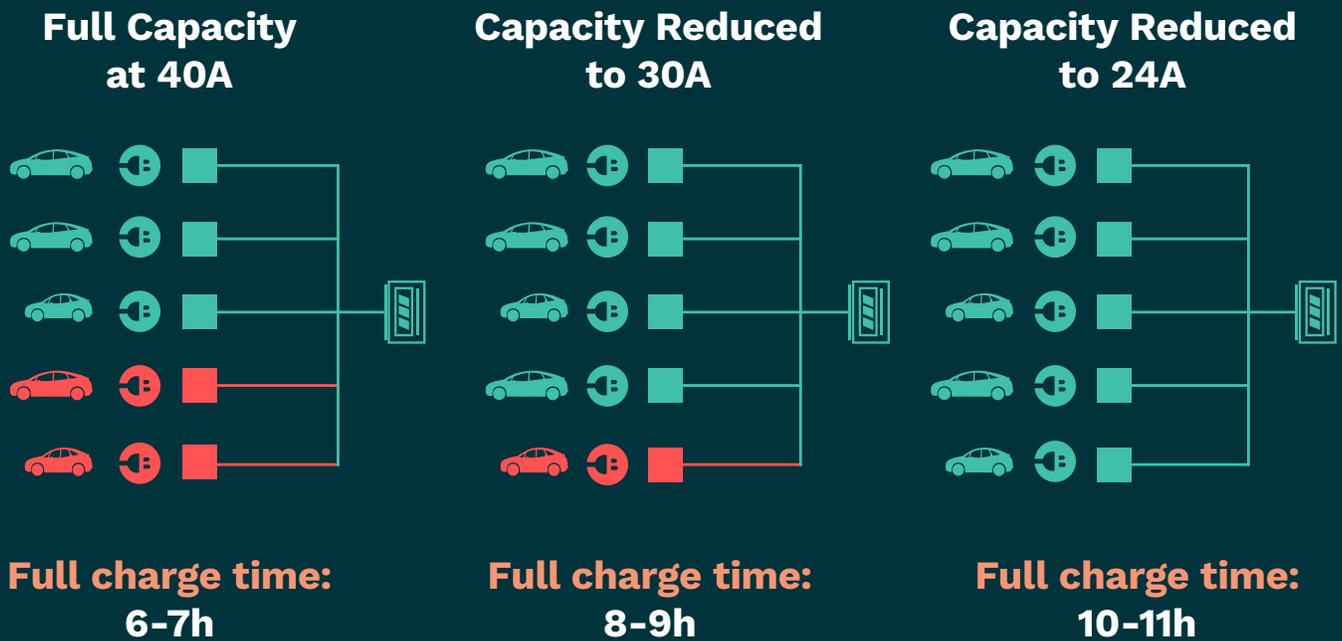
As electric vehicles (EV) grow in popularity and major manufacturers announce new EV models and their plans to phase out gasoline-powered vehicles, here are the basics on EV chargers.

Types of EV Chargers

	Level 1	Level 2	Level 3
Typical Output	1.5kW (120V)	7.2-11.5 kW (240 V)	50-350 kW (4-800 V)
Range Added per hours	8km	40+ km	300+ km
Typical use locations	Homes	MURBs, commercial, public spaces	Major corridors, public spaces
Other comments	Usually comes with the EV at purchase	Not all level 2 chargers have the same charging speed. <u>Most level 2 chargers range from 32A to 48A</u>	Ex. Tesla superchargers in major roads

Load Management – allows a building's existing electrical panel power capacity to charge multiple vehicles via charging station communication, releasing a steady current to each station.





Basic vs. Smart Chargers:

Smart: offers networking solutions including pay per hour, load management, live on-line status Recommended for: public / visitor parking; designated parking if load management is required

Basic: no networking; can be connected to Wi-Fi for live status Recommended for: single homes; designated parking in MURBs

Open vs. closed communication (for smart chargers):

Open Charge Point Protocol (OCPP): The Open Charge Point Protocol is an application protocol for communication between Electric vehicle charging stations and a central management system, also known as a charging station network, similar to cell phones and cell phone networks. Typical Suppliers: Siemens, ABB, EV Box, EVoCharge, LiteOn, BTC, CMI, etc.

Verticalized OEMs: chargers communicate only within the same network which is managed by the manufacturer (e.g., Flo, ChargePoint)

Chargers also differ on several other characteristics:

Access Control: Authentication options (e.g., physical locks, RFID, apps, Plug & Charge)

Communications: Chargers communicate in different ways that appeal to different projects (e.g., WIFI, cellular 3G/4G, parent vs. child)

Warranty: Typically 3 years, extended up to 5 years – note that useful life is typically 10 years

Installation: Wall-mounted or pedestal base

Operating Temperature Range: Suitable for Canadian temperature extremes.

Look for a NEMA 3 or 4 rating

Visit [ChargeHub](#) or [PlugShare](#) for a comprehensive list of educational resources.