Department of Planning and Environment

Drive electric NSW EV ready buildings

Commercial building quick reference guide

Making a building EV ready refers to the process of retrofitting an existing building with the electrical infrastructure needed to connect electric vehicle supply equipment (EVSE) to allow electric vehicle (EV) charging.

It involves identifying a building's maximum electricity demand, the number of charging points that may be installed (now and in the future), the likely costs and funding sources, and any approvals that need to be granted.

Note: Owners are responsible for developing an EV charging strategy, selecting the best option for their building and ensuring appropriate approvals are in place.

This guide summarises what owners and tenants may need to consider when connecting EVSE, which are outlined in detail on **www.energy.nsw.gov.au/electric-vehicles**.

If you have any further questions email **electric.vehicles@environment.nsw.gov.au**.

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Basic glossary

Building class
Classification grouping buildings by their function and use, which are then used by the National Construction Code (NCC). The NCC sets minimum technical requirements for new building works in existing buildings.

Connection
The connection of the EVSE to the EV charging infrastructure.

Electrical capacity
The maximum power or electricity that can be delivered through a connection point, such as the incoming connection to a building, without a circuit breaker or fuse acting to cut the supply in order to protect the installation from fire. Power is calculated from the current which is measured in Amps and may be single phase or three phase.

Electrical supply upgrade
An upgrade to the electrical supply to the building, including main distribution panels, for which costs vary markedly. In every case a separate quote is required from the distributed network service provider (DNSP).

Energy management system (EMS)
A computer-aided tool used by power system operators to monitor, control, and carry out optimal energy management. See also *load control*.

EV charging station
EVSE installed on common or public space for general or public use; owned by the owner or EV operator as turnkey supplier.

EV operator
A company or organisation that provides EV charging services, including responding to quotes, installation, maintenance and billing; many provide a 'turnkey' solution.

EV supply equipment (EVSE)
A device used to connect an EV into the building electricity system for the purpose of charging the EV. The EVSE is normally owned and supplied by an EV owner.

Load control
An approach or mechanism to ensure the peak electrical supply to the building is not exceeded. CT = Current Transformer. DMS = Demand Management System.

Owner
For the purpose of this document refers to commercial property owner.

Peak demand
The maximum power that is or has been delivered through a connection point; usually measured in kVA (kilo-volt-amps). If peak demand exceeds electrical capacity, various protection mechanism like circuit breakers or fuses activate which will cut the energy supply.

Approach considerations when connecting EV supply equipment

Select the right approach (or combination of) for your building, by considering how long your customers/tenants are parking and their charging expectations.

	Overnight charging	Part/whole day charging	Short stop charging (1-2 hours)
Class of building	Class 3, 4, 5 and 7 buildings: car parks, hotels, short stay, caravan parks, commercial building overnight car-pool and multi-unit mixed use.	Class 3, 5, 7, 8 and 9 buildings: commercial office space, car park, hotels, short stays, medical centres universities and factories.	Class 6 and 7 buildings: shopping centres, restaurants, some tourist destinations and car parks.
Charging requirement options	Slow overnight: level 1 (2 kW) or level 2 (7 kW). Dedicated overnight car spaces for EV users.	Level 2 (22 kW AC max) or level 3 (25 kW DC). Shared tenant/staff spaces for EV users. Permanent 'on-title' car spaces upon request from tenant.	'Fairly fast' level 3 (25 kW to 100 kW DC depending on budget).
Potential range added	Level 1: 13 km per hour. Level 2: 40 km per hour.	Level 2: 60-120 km per hour (limited by the rectifier in the vehicle). Level 3: 150 km per hour.	Level 3: 25 kW (150 km per hour) or 100 kW (up to 40 km every 10 minutes).
EV supply equipment (EVSE)	Charging station installed and owned by owner for convenience of customers, or turnkey solution by private EV charging operator.	Owned and installed by tenant or charging station installed and owned by owner depending on the commercial arrangements.	Charging station installed and owned by owner for convenience of customers, or turnkey solution by private EV charging operator.
Electrical capacity	Unlikely to be a problem as plenty of off-peak energy available.	Requires assessment -depends on efficiency savings and peak demand vs electrical capacity during the day.	Requires assessment -depends on efficiency savings and peak demand vs electrical capacity during the day.

	Overnight charging	Part/whole day charging	Short stop charging (1-2 hours)
Recommended load control	None, off peak timer or CT.	Depends on the electrical assessment but CT or DMS as required.	Depends on the electrical assessment, but user expectation is 24/7 availability, so load control may not be appropriate.
Payment and usage billing options	Free as a service. Flat fee paid to owner or EV operator. Outsourced to EV operator.	Initially free as a service until worth the cost of administering billing. Flat fee paid to owner or EV operator. Outsourced to EV operator. Included in tenant metering.	Initially free as a service until worth the cost of administering billing. Flat fee paid to owner or EV operator. Outsourced to EV operator.
Funding – capital cost	Owner pays.	Tenant pays or owner pays and may recover costs over time.	Owner pays and may recover cost over time from users.
Cost estimate including installation per EVSE Note: Installation and supply upgrade costs vary significantly between buildings.	$2,000 to $5,000 including EVSE and simple installation.	Level 2 charging: $2,000 to $5,000, including EVSE and simple installation. Level 3 25 kW: $20,00 to $30,000, including EVSE and simple installation; excludes electrical supply upgrade if required.	Level 3 25 kW: $20,000 to $30,000. Level 3 50kW: $50,000 to $80,000. All costs include EVSE and simple installation; excludes electrical supply upgrade if required.
Approvals	Owner determines.	Tenant submits business case and owner determines.	Owner determines.
Installation and maintenance	EV operator or independent electrician.	EV operator or independent electrician.	EV operator or independent electrician.

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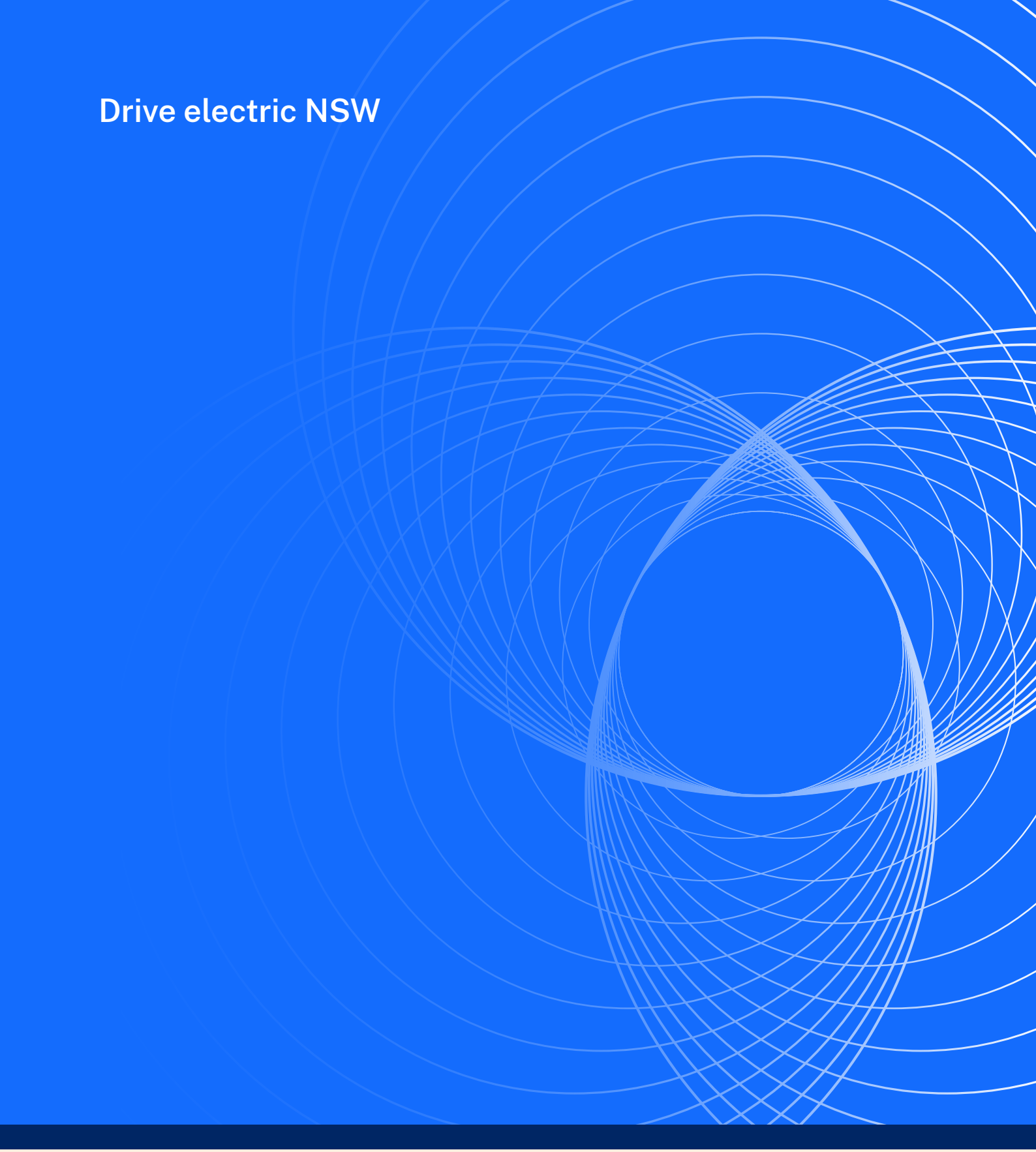

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