

# Recommendations on Electric Vehicle Charging Facilities in New Strata Developments.

23/1/2019 Australian Electric Vehicle Association, Canberra Branch.

Members of the Canberra Branch of the Australian Electric Vehicle Association are very supportive of the policy that new strata developments must include provision for EV charging. The success of this policy will depend on what charging facilities are deemed sufficient and required. As discussed at our meeting on 16/11/2018, we have taken cost into account to suggest low cost but adequate solutions.

## Key Points

- Every unit should have assured access to a charging outlet where they routinely park.
- Slow charging rates are adequate and may be necessary to avoid exceeding the supply capacity to a building, but cable gauges and circuits should be capable of carrying 32A to allow for later upgrades, including 'smart' charging systems.
- Ordinary Australian standard power points are sufficient. Dedicated, more expensive, wall-mounted EVSE charging outlets can be an optional upgrade that need not be provided by the developer.
- One or a few dedicated charging bays is not sufficient, even if higher charging rates are available.
- Physical wiring of charging outlets back to the meters of individual units is strongly preferred.
- Where it is unavoidable to provide EV charging through an 'embedded network' behind an Owners Corporation meter, there should be sub-metering to enable billing of individual units.
- A developer could engage a 3<sup>rd</sup> party to install charging infrastructure and then manage its maintenance and billing but they should be aware of the limits on contracts entered during the 'developer control period'.
- Some amendments to the Unit Titles (Management) Act 2011 may be necessary or helpful.

These recommendations refer mainly to 'class A' strata developments, generally apartment blocks. Class B units, generally townhouses, usually have carports or garages within the unit area. Where a unit has its own allocated parking attached or adjacent within the unit area, the requirement is simple and inexpensive – just require the developer to provide an ordinary power point, preferably at least 15A, in that parking space on a 32A-capable circuit.

## Shared charging outlets are not sufficient.

We believe that shared charging outlets are insufficient. A limited number of shared charging outlets would cause nuisance and inconvenience. Conflict could occur when the charging space(s) is blocked by a vehicle that is no longer charging and its owner cannot be found. Queuing would be inevitable. One out-of-service fault would

inconvenience all residents. The lack of assured access to charging would fail to encourage EV uptake.

An additional shared faster level 2 AC charging outlet or a very expensive level 3 DC charger might be an ‘icing on the cake’ option that a developer might offer but it should not be accepted as a substitute for each unit having assured access to a charging outlet in at least one of its allocated parking spaces.

#### Assured access to slow charging is sufficient.

Assured access to charging where one routinely parks is a strong incentive for the uptake of EVs, even if charging rates are slow. Even ordinary power points are sufficient so long as every resident can charge in a parking space allocated to their unit.

Slow charging is sufficient because vehicles spend long periods in their owners’ allocated parking spaces. Vehicles are rarely driven until their batteries are fully depleted as most trips are local and short and the range of new vehicles is increasing. Even when a battery is fully depleted, they rarely need to be fully charged before another trip is attempted. Even if a full charge is required, a partially charged car will soon be able to commence an intercity trip and then use a rapid DC charging station en route.

Vehicles are generally supplied with a portable ‘Electric Vehicle Supply Equipment’ (EVSE) charging cable fitted with a standard 10A or 15A plug. EVSE cables communicate with the vehicle’s on-board charger to limit the charging current to less than the rating of the outlet that its plug can fit. Many of the next generation of vehicles have 7kW (32A) on-board AC chargers. However, this does not mean that they must be charged at this rate. The car’s on-board charger will not charge faster than the limit specified by the portable EVSE cable or a wall-mounted EVSE. An EVSE’s limit can be 6A or 10A or 15A and so on.

#### Slow charging may be necessary.

Rapid charging of many cars simultaneously could exceed the capacity of the electrical supply to a building. Alternatively, making provision for rapid charging rates for many vehicles simultaneously could add unnecessarily to costs. As noted above, it is quite adequate for all electric vehicles to charge slowly, such as at 10A or 15A.

The current electrical standards (AS 3000:2018 – Appendix P CLS P5.2, P5.3) has a voluntary suggested minimum provision of 20A for every vehicle outlet and assumes they are all running simultaneously. However, in the first instance, we suggest that standard 15A sockets (even 10A as a bare minimum), rather than 20A or greater sockets, could be permitted as a way to limit the maximum possible current draw.

As noted below, ‘smart’ charging systems exist that regulate charging rates according to the number of vehicles that are charging at any particular time to avoid exceeding a supply limit. At a later time such ‘smart’ adaptable charging systems could be retrofitted (if the unit owners want to do so) as EVs become more common and such systems become cheaper. The ‘WattBlock’ report contains excellent technical advice on systems that may be staged to manage different levels of EV uptake.

Direct connection to the meters of individual units is preferred.

Whenever possible, it is highly preferable for charging outlets to be wired back to the meters of the individual units.

The advantages are simplicity, cost savings and greater flexibility:

- Individual residents will have the greatest opportunity to respond according to their preferences among different tariffs and options such as peak demand tariffs, time of use tariffs, timed off-peak and controlled load options that trade off convenience against price incentives in various ways to discourage charging at times of peak electricity demand.
- The user-pays principle is automatically applied.
- The Owners Corporation will not be burdened with obligations associated with meter reading, billing, strata legislation, maintenance and network regulations. Costs to each resident are likely to be higher if these obligations are outsourced to a third party provider, who would expect to make a profit.
- Individuals could upgrade their charging outlets according to their own preferences and requirements within constraints set by the individual unit's and building's electrical supplies.
- The developer does not need to supply and install a second set of meters.

Owners Corporation Rules on repair, maintenance and upgrades

We recommend that the Unit Titles (Management) Act 2011 (UTMA) be amended to make it unambiguous that a unit owner has the right to upgrade their charging outlets within their allocated parking space and an obligation to repair and maintain their charging equipment at their own expense subject to appropriate conditions imposed by the Owners Corporation, such as using appropriately licensed tradespeople and obtaining approval of the particulars of any work, whether the equipment is fully or partially on common property or within the unit area. Otherwise, where a unit's allocated parking is on the common property and/or cabling traverses common property, some or all of the charging infrastructure might be regarded (mistakenly) as the responsibility of the Owners Corporation to maintain (UTMA s.24) and default rule 4 (UTMA Schedule 4) might be interpreted as requiring an unopposed resolution, an unnecessarily high hurdle, every time a unit owner wishes to upgrade or modify a charging outlet. It may be sufficient just to add a note to s.24(e), to make it clear that a unit owner is responsible to repair and maintain, and potentially upgrade, charging equipment and cabling that is provided for the sole use of their unit, including parts which may be on or traversing common property. Such an amendment would be consistent with in the spirit of the Act which prohibits amendments to the rules that restrict the installation, operation or maintenance of sustainability or utility infrastructure (UTMA s.108(3)(d)).

Embedded networks.

In some building designs it will be necessary for the charging outlets to be behind an owners corporation (OC) meter because the preferable wiring back to individual unit meters might be impractical. This introduces complications that are manageable but

would ideally be avoided. In this situation, the owners corporation should be able to bill residents via 'child meters' for the cost of electricity added to the OC's 'parent' meter. This amounts to an 'embedded network'.

From the Australian Energy Regulator's (AER) published guidelines, categories of network exemptions "*include situations where electricity supply is incidental to the main purpose of a business, such as networks within ... apartments ... They are generally motivated by considerations other than profit... Situations that deemed exemptions apply to include selling or supplying electricity to ... electric vehicle charging stations*".

So, a deemed network exemption appears to apply – It is not necessary to apply for or register the exemption. Also, the AER is of the view that "*EV charging does not constitute the sale of energy under the National Energy Retail Law*" so a retail exemption is not required at all. The key distinction is that supply of energy to a vehicle is not regarded as supply of energy to 'premises'. A vehicle is not obliged to take its energy supply in only one place; it has the option go elsewhere for a charge.

The situation becomes different and considerably more complex if the owners corporation supplies electricity to the residential units (i.e. premises) as well as to vehicles. We suggest that such more elaborate embedded networks should be avoided unless preferred for other reasons. It is possible for an OC to apply for network and retail exemptions in order for the OC to negotiate a cheaper electricity supply on behalf of all residents. This might be coupled with renewable generation and storage managed by the OC. This requires an active OC with an Executive Committee (EC) which is fully alert to its statutory obligations. We suggest that this type of supply should remain optional and not be confused with considerably simpler vehicles-only supply.

### Third Party Provision with Service Contract

An option for the installation and management of EV charging facilities is to have the infrastructure installed by a 3<sup>rd</sup> party who then manages billing and maintenance. This would have the attractions of not requiring the developer to have any EV expertise and relieving the OC of some management responsibility. Jetcharge ([jetcharge.com.au](http://jetcharge.com.au)) is an example of a service provider that "*can advise on how to set up a new building, or how to retrofit an existing one ... supply the hardware, upgrade the electrical infrastructure, fit out the building and look after your residents and tenants.*"

The UTMA puts strict limits on the lengths of contracts that can be entered into by an OC during and after the 'developer control period':

UTMA s.33 generally prohibits a developer from entering into a contract longer than 2 years unless authorized by the ACT Civil and Administrative Tribunal (ACAT), which may approve a longer contract "*if satisfied that the terms of the contract are reasonable in all the circumstances.*" The examples given of matters the ACAT may consider relevant are "*1) short and long-term economic benefits disadvantages of the contract 2) the existence of a financing agreement related to the contract 3) environmental sustainability measures provided for by the contract*".

UTMA s.60 “An owners corporation for a units plan may, by ordinary resolution, enter into a service contract ... However, the owners corporation must not enter into a service contract for a period longer than 3 years (including any period for which the contract may be renewed or extended) unless the contract is authorised by special resolution and made after the end of the developer control period for the units plan ...”

The developer might engage a service contractor to install and manage charging equipment but the equipment must be of a design that could be maintained and managed by a different service contractor if the OC preferred to change contractor. If the business model of charging service installer/providers such as Jetcharge reasonably requires a longer initial contract period (say 5 years) it might be necessary to amend the UTMA to remove the need for each developer to apply separately to the ACAT for approval of the longer contract period.

### Unallocated Parking

Where parking is shared on the common property and parking spaces are not allocated to specific units, there should be at a minimum as many charging outlets as there are units. Since electricity taken from an outlet in any particular parking bay would not automatically correspond to a particular unit, the OC would be left funding residents' transport costs inequitably. It would seem unwise for the developer to set up the future OC to fund the costs of vehicle charging without any means to charge in proportion to consumption and with no disincentive to excessive consumption. Therefore, in this situation, the developer should install card activated wall/post-mounted EVSE systems to enable equitable billing by the OC or a third party provider. We suggest it would be cheaper for the developer to register the Units Plan with parking spaces allocated to particular owners to avoid this situation.

### Future Proofing

The wiring for ordinary 'dumb' power outlets with basic metering should be compatible with 'smart' upgrade options. Put simply, the wiring should be capable of handling 32A, even if a developer initially only installs standard 15A power points. An option would be to use securable power points.

Systems of networked EVSEs exist in which 'smart' outlets negotiate with each other and their attached vehicles to decide how much current each outlet can supply. When some outlets are supplying low or no current, other outlets can permit their attached vehicles to draw more current for faster charging. Hence the strong recommendation to require the installation of cabling capable of carrying 32A. Such outlets can log the total energy delivered at each outlet for electronic billing purposes and some might be able to accommodate Time-of-Use billing rates. 'Smart' systems like this are still expensive but the wiring to 'dumb' outlets should at least be installed at a sufficient gauge to allow retro-fitting of 'smart' charging systems.

The type of 'smart' charging system described above makes the best and fairest use of a constrained electrical supply to a building. It might lock out vehicle charging for a few hours of evening peak demand and it might only permit charging at (say) 6 amps if many or all vehicles are attempting to charge. As fewer vehicles remain charging, the system can adjust to allow progressively higher charging rates such as 10A, or

15A or 20A or 32A for the remaining vehicles without exceeding the total supply capacity. Some such systems can also monitor the consumption of the rest of the building and then adjust the total current available for vehicle charging so that the total available supply to the building is not exceeded.

Assured access to slow charging where one routinely parks is sufficient to support virtually all patterns of local urban car travel, especially as larger battery capacities are becoming the norm. For extra-urban trips one might sometimes commence without a fully charged battery but one will then be able to make use of rapid DC level 3 charging en route.

### Resources

WattBlock Report for City of Sydney:

<https://www.wattblock.com/recharge.html>.

AER Network exemption guidelines:

<https://www.aer.gov.au/networks-pipelines/network-exemptions>

Example Service Contractor for EV charging installation and management:

[Jetcharge.com.au](http://Jetcharge.com.au)