

Submission to

NSW DPIE “Promoting innovation for NSW  
energy customers” consultation paper.



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## Introduction

NSW DPIE has issued a consultation paper with the intent to identify reforms to improve customer access to and uptake of new energy technologies and innovation:

<https://www.energy.nsw.gov.au/sites/default/files/2021-12/promoting-innovation-for-nsw-energy-customers-consultation-paper.pdf>

This work is occurring in parallel with multiple other workstreams by other agencies. The consultation paper does not seek to duplicate the work of national reform processes and ongoing NSW-specific reforms. Instead, the NSW Government is seeking to understand stakeholders' perspectives on issues in New South Wales, as well as some issues the NSW Government could advocate for through national reform processes.

One section of this consultation paper relates to electric vehicle charging infrastructure, particularly with a view to informing further strategies to support customer uptake of EVs by improving access to private and shared EV charging infrastructure in homes, townhouses and apartment buildings.

The Electric Vehicle Council (EVC) is the peak body in Australia representing the interests of manufacturers and suppliers of EV charging equipment (EVSE), software service providers in the field of EV charging orchestration, and Electric Vehicle manufacturers. The EVC has been heavily involved in the development of the current draft National Construction Code requirements with respect to EV readiness in apartment complexes, as well as the NSW Apartment Design Guide requirements around EV readiness. We are well placed to address the questions raised in section 13 of this consultation.

Given that many of these questions cross multiple regulatory and legal jurisdictions (electrical installation law, strata law, consumer law, energy retail law, health and safety regulations, etc), the EVC feels it would be prudent for DPIE to run workshops involving interested parties prior to executing any reforms.

## Consultation questions relating to EVs

### Issue 13 consultation questions

#### General

13a. How can the NSW Government support the residential deployment of electric vehicles and associated charging infrastructure?

#### EV charging infrastructure installation practices

13b. What are the roadblocks to the installation of EV charging infrastructure in apartment buildings?

13c. Of the three methods listed above, what is the preferred method for connecting EV charging infrastructure in apartment buildings?

13d. Do owners' corporations or strata managers have any concerns about residents contracting licensed electricians to install private charging infrastructure in their parking space and connecting it to their apartment's electricity meter?

13e. Should there be different connection requirements based on the size or capacity of the EV charging infrastructure (i.e. 7 kilowatt or 50 kilowatt chargers)?

#### EV charging infrastructure usage and billing practices

13f. Who would be best placed to own and operate EV charging infrastructure in apartment buildings?

13g. How should the costs of the EV charging infrastructure in the apartment building be accounted for?

13h. Do electricity retailers or any other entities offer any specialised plans or discounts to incentivise EV charging infrastructure in apartment buildings?

13i. Would it be fair to charge EV charging infrastructure users fees for installing, maintaining and operating the EV charging infrastructure in strata schemes (in addition to energy consumption charges)? Who should pay for these and why?

13j. Should energy consumption from EV charging infrastructure on common property be paid for by users or borne by the owners' corporation?

13k. Who should be responsible for managing and controlling the use of EV charging infrastructure on common property?

### 13a: How can the NSW Government support the residential deployment of electric vehicles and associated charging infrastructure?

There are many measures that government can take which will accelerate the uptake of EVs and associated charging infrastructure. Many of these measures are already underway in NSW with NSW state government and federal support. There are others which the EVC has advocated for over several years which are not yet in place. The notes below are not intended as a substitute for the EVC's existing advocacy and policy positions but may be a useful supplement in the specific context of residential settings.

#### Established apartment complexes:

With reference to item 13b, below, the EVC is of the view that the key challenges in the context of apartment buildings are that:

- 1) Existing apartment buildings are not designed to support the easy retro-fit of EV charging equipment,
- 2) Existing apartment buildings are not consistent in design or circumstance, so there is not a 'one-size-fits-all' solution.

This creates a barrier to the deployment of EV charging equipment in allocated parking spaces in apartment complexes. For example, before it is possible to install an EV charger in an allocated parking space in a given building, it might first be necessary to modify the main switchboard and run new electrical wiring from the main switchboard to the car parking area, at a cost of tens of thousands of dollars. This one off expense would then enable the future installation of many EV chargers, but it needs to be paid for upfront.

With this in mind, the EVC would suggest consideration of financial support, made available to owners corporations, intended to support the deployment of EVs and EV charging equipment in the context of established apartment blocks. The approved approaches for use of the financial support could potentially include:

- 1) Bringing existing apartment buildings up to the EV readiness standard defined in the NSW apartment design guide. This level of readiness enables all individual dwelling owners to install EV charging in their allocated parking spaces at their cost as and when they choose to do so.
- 2) Deploying EV readiness in a modular fashion to serve a more limited number of dwellings within a complex. This would be appropriate for older buildings that aren't expected to still be standing by the time EVs have substantially replaced the existing vehicle fleet.
- 3) Deploying EV charging equipment in shared parking areas (such as visitor parking spaces) for use by all residents and visitors. Individual residents could pay a fee for use of the charger, which would enable the owners corporation to cover the cost of electricity delivered through the shared chargers.
- 4) Shared Electric Vehicle(s), plus supporting charging infrastructure, for the use of the residents. The EV(s) would be parked in a location dedicated for carshare use in the building. Fees for use of the EV would cover the ongoing costs associated with the deployment and operation of the vehicles and the charging infrastructure.

The financial support could be offered in the form of a 100% grant to the owners corporation, a grant to the owner's corporation with a percentage of co-investment required, or a zero interest loan, along the lines of similar schemes designed to support solar and battery deployments.

A grant program would likely be maximally useful, but a long-term low interest loan would potentially have significant value as well. Owners Corporations are able to access finance, but typically at 5-7%, so a zero interest loan would make a significant difference if applied to options 1 or 2 above over a 25-30 year period. The length of the loan could be aligned with the nature of the project. Deploying all the electrical infrastructure to support 100% EV adoption in future could reasonably attract a 30 year loan, because the electrical installation will last at least that long, and the upfront cost would potentially be measured in hundreds of thousands of dollars. Deploying a single shared EV charger in a visitors car parking space would not need a loan period of the same duration, because the upfront cost would be a lot lower, and the opportunity to recover costs from the residents with which to repay the loan would come sooner.

#### New apartment complexes

For new apartment complexes, many of the challenges can be avoided with a certain amount of EV readiness infrastructure being built in at time of construction.

The EVC has worked closely with the ABCB on the National Construction Code, and the DPIE on the SEPP and the apartment design guide, with the goal of ensuring that newly built apartments are ready for the uptake of EVs.

The EVC is very keen to continue to be involved in these discussions as they progress.

Terrace housing, and homes without off street parking.

Standalone homes with off street parking present very little challenge in terms of deployment of EV charging infrastructure. In many cases, the consumer can use the existing powerpoint on the wall, and if they wish to install a dedicated EV charger, it's typically a straightforward process.

For consumers who park their vehicle on the street, however, a known risk is that the driver will pull an extension lead across the footpath between the car and the home, creating a trip hazard for pedestrians.

High power DC charging equipment in the local area (for example at shopping centres, local government buildings, petrol stations) is part of the answer to this issue. There is also the potential for the installation of kerbside EV charging in these settings.

Kerbside EV charging is in it's infancy in Australia, presently being trialled in City of Port Phillip in Melbourne. There would be merit in DPIE reviewing the outcomes of that trial program to assess suitability for parts of Sydney with similar housing mix.

## 13b. What are the roadblocks to the installation of EV charging infrastructure in apartment buildings?

### Wiring to the EV chargers:

In low rise apartment buildings, it will be practicable in some cases to supply the charger from downstream of the individual resident's energy meter. In these cases, all the energy meters are in a room next to the main switchboard in the building, or it may be that there's a comms and power riser in the building that is suitable for running wiring down to the car park from metering equipment on the 2<sup>nd</sup> or 3<sup>rd</sup> floor. This is useful, because it means that billing for energy use turns up on the resident's existing energy bill, without need for additional billing infrastructure or management.

In other building typologies (particularly in high rise) it's typically not practical to run the wiring from the individual energy meter to the car parking spaces. In these cases, the energy supply for EV charging needs to come from the common property supply. The best way to do this will typically be to install new distribution board(s) in the car park and feed the EV chargers individually from there. The cost of putting in the new distribution board(s) is a shared expense, as is the cost of running cabling to them from the main switchboard, and any associated upgrade costs to the main switchboard. Under this approach, each unit holder pays for their own charger when they want it installed.

### Billing for energy drawn from the EV chargers:

If the chargers are fed from the individual dwelling energy meters, then the owners corporation doesn't need to worry about this element, as the usage turns up on the resident's electricity bill.

It is not reasonable for the energy usage associated with a specific driver's EV to be washed across all energy users in the building, so if the chargers are supplied from common property power, some form of cost allocation is needed. Some possible approaches to this are:

1. Flat fee. The owners corporation could set a requirement that anyone installing an EV charger pays (for example) \$500 per year for the right to use it.
2. Owners corporation based billing. A simple energy meter is installed upstream of each EV charger, the building manager reads it once a quarter and uses the reading to add a line item to strata fees.
3. Smart/cloud based. Multiple services providers will handle this requirement for a fee, typically about \$40 per charger managed per month.

All of these approaches will require updates to strata bylaws, and consideration of relevant regulations around the sale of electricity.

These approaches having varying levels of likely acceptability. In particular, there will be varying levels of acceptance around the concept of flat fees, levied independent of measured energy usage.

These approaches are also not an exhaustive treatment of possible solutions to this challenge.

### Load management of EV charging:

Unlikely to be a problem in the short term, but in the long term if there's no plan for limiting peak demand, allowing lots of EV chargers to be installed without any form of control may overload the building's existing electrical systems.

Load management can be as simple as timers to turn them on at 11pm, or it can be a smart/cloud based solution, done by the same organisations that handle billing services. It's also possible for local smart solutions to be deployed, without reference to the cloud.

Simple solutions like 'turn them on at 11pm' will work to a degree until EV adoption reaches ~25% of the drivers in the building, at which point smarter solutions (or switchboard upgrades) will become necessary.

Importantly, the need for load management applies independently of the billing consideration.

#### Legal considerations:

The EVC would highly recommend DPIE engage with the Owners Corporation Network on this issue. They've done a lot of work developing suitable bylaws to cover the retrofitting and operation of EV charging equipment in apartment complexes.

### **13c. Of the three methods listed above, what is the preferred method for connecting EV charging infrastructure in apartment buildings?**

In the context of an apartment complex, recharging from an existing common property powerpoint is not likely to be particularly suitable or scalable.

Suitability is an issue because of billing considerations. In the absence of some form of measurement and billing solution, the only option for cost recovery of energy drawn from a common property power source will be a flat fee arrangement.

Scalability is a function of load management and will be an issue as soon as more than one EV connects to the circuit feeding the powerpoint. This is because it is common practice for a single 20A single phase circuit breaker to feed many powerpoints. Plug two EVs into powerpoints that share a 20A circuit breaker, and the circuit breaker will likely trip if there are any other loads connected.

Regarding the connection of the EV charger to the individual dwelling power supply, where this is practicable, it will generally deliver a lower cost and lower complexity outcome than supplying the EV charger from common property power. It is likely to often be practicable to wire the individual resident's EV charger from the dwelling power supply in low rise buildings, particularly in cases where the energy meters are co-located near the parking area. It is important to note that this arrangement does not solve the load management question, it just solves the billing question. A system of some kind will still be needed to ensure that total load in the building does not exceed the capacity of the main incoming connection to the site.

Where the energy meters for the dwellings are spread out through the building (typical for high rise), an appropriate wiring arrangement for EV charging is more likely to be a dedicated EV charger in the resident's allocated space, supplied by common property power.

### **13d. Do owners' corporations or strata managers have any concerns about residents contracting licensed electricians to install private charging infrastructure in their parking space and connecting it to their apartment's electricity meter?**

Yes. Two key reasons:

- 1) Because the wires connecting the EV charger to their dwelling energy supply will need to run through common property. The end points may be on the individual owners title, but not the space in between.
- 2) Because the additional EV load has the potential to overload the circuit breaker supplying multiple dwellings.

This second issue is the same challenge that results in owners corporations in older buildings putting restrictions in place around the installation of air conditioning equipment and limiting the replacement of gas appliances with electric. If the main building electrical assets were not designed with those loads in mind, and individual residents add those loads and use them at peak times, there is a significant risk of interruption to power supply in the building as a whole.

### **13e. Should there be different connection requirements based on the size or capacity of the EV charging infrastructure (i.e. 7 kilowatt or 50 kilowatt chargers)?**

The EVC would recommend that DPIE leave the regulation of these aspects to the NSW Service and Installation Rules and AS/NZS3000:2018.

## **EV charging infrastructure usage and billing practices**

### **13f. Who would be best placed to own and operate EV charging infrastructure in apartment buildings?**

The hardware can potentially be owned by the resident in whose parking space it is located, or the owners corporation as common property, or by a third party.

Assuming there is an active load management and billing solution in place, the owners corporation owns the responsibility for it, and can potentially contract a third party service provider to manage it – in the same way that a third party is contracted to ensure the elevators are in working order.

It is also possible for ownership of the charging equipment to be vested with a third party and made available to the residents on a contractual basis. For example, a shared charging asset could be leased to the owners corporation, with residents paying per use for energy. In such a model, it would be important to ensure that appropriate consumer protections were in place to avoid some of the challenges that embedded networks have historically caused.

The EVC is of the view that it is probably too early to call which of these approaches is the best, and that it would be prudent to leave room for the market to evolve.

### **13g. How should the costs of the EV charging infrastructure in the apartment building be accounted for?**

The EVC is of the view that there are a range of possible approaches here, that it is probably too early to call which of these approaches is the best. It would be prudent to leave room for the market to evolve.

In broad strokes, for EV charging equipment to be deployed in a dedicated parking space, there is a need for several elements:

- 1) Individual charger in the parking space and wiring to it. The cost for these elements could reasonably be ascribed to the individual owner and be paid for as and when the owner wishes to install an EV charger.
- 2) Shared infrastructure. This will incorporate any necessary upgrades to the building main switchboard, the addition of new distribution boards and supporting wiring in the car parking area. It could also include shared EV charging equipment in visitor parking spaces. The cost for this should be shared across the owners in the building, rather than being paid by the first EV adopters, but it can be a significant expense and will require a majority vote to approve. This is the reason for the EVC suggestion of a zero interest loan facility to question 13a.
- 3) Ongoing management elements. Billing services are an ongoing cost, and load management, depending on how it is done, may also be an ongoing cost. Various models exist in this space.

### **13h. Do electricity retailers or any other entities offer any specialised plans or discounts to incentivise EV charging infrastructure in apartment buildings?**

Multiple organisations are offering solutions in the apartment complex space relating to EV charging, and we expect more solution providers will emerge with innovative offerings as the market develops.

The risk to manage here is one of consumer lock-in. If a choice made by a developer or an owners corporation results in a particular vendor being locked in to the building on an ongoing basis, without the owners corporation being able to easily change suppliers, the end consumers in the building may well end up commercially disadvantaged. This has played out before in the embedded network space.

### **13i. Would it be fair to charge EV charging infrastructure users fees for installing, maintaining and operating the EV charging infrastructure in strata schemes (in addition to energy consumption charges)? Who should pay for these and why?**

Ultimately the installation, operation, and maintenance of EV charging equipment will cost money. The question of the model under which that cost is recovered, and how the solution providers delivering the solution draw a profit from the upfront and ongoing cost elements, is very broad.

Ultimately in the context of an apartment complex, the key risk to manage is the same one as above, with regard to vendor lock-in. Assuming that risk is managed, the EVC is of the view that there are a range of possible approaches here, that it is probably too early to call which of these approaches is the best.



### **13j. Should energy consumption from EV charging infrastructure on common property be paid for by users or borne by the owners' corporation?**

Energy consumption from EV charging infrastructure should be paid for by the person deriving the benefit – the driver of the car. There are multiple pathways by which this could be achieved. See 'how to handle billing' at 13b.

### **13k. Who should be responsible for managing and controlling the use of EV charging infrastructure on common property?**

The Owners Corporation will need to set bylaws governing the use of EV charging infrastructure on common property. They will also need to govern the use of EV charging equipment which is supplied by assets held as common property - essentially wherever the strata title includes an asset like a main switchboard, the Owners Corporation will need to be able to define when charging can occur.

If the individual residents wish to be able to use EV charging at any time, then eventually a site electrical upgrade will be required, which a majority of unit holders would need to vote for – so it comes back to the Owners Corporation anyway.

The Owners Corporation may elect to have a third party manage this service for them, in the same way that any other service in the building is managed.

## Issue 11: Improving the visibility of residential DER and data management

### Issue 11 consultation questions

- 11a. Is the AEMO DER register the best way to improve the visibility of DER in New South Wales? What better approaches should be considered?
- 11b. What should the NSW Government do to help improve the visibility of changing operating conditions across the distribution network? Are behind the meter DER assets a viable and cost-effective solution?
- 11c. What would an ideal system, data collection and notification process look like to have the best oversight of these assets? Who should be responsible for this system?
- 11d. Should there be different notification requirements based on the size or capacity of the EV charging or other DER infrastructure not already captured by the DER register (i.e. 7 kilowatt or 50 kilowatt chargers)?
- 11e. How can installers of DER be supported to ensure robust reporting of DER data to networks and AEMO? How should compliance be enforced?
- 11f. What should the NSW Government consider in working with AEMO to expand the DER register to incorporate new controllable loads not already captured by the register?

### Response to issue 11, with respect to electric vehicles

Over the near term, visibility over the uptake of EVs and EVSE at a spatially granular level will be important to the DNSPs from a network planning perspective. The key value case for visibility of this data is to identify emergent clusters of EVs – cases where a particular group of homes fed by a single transformer take up EVs at a rate significantly faster than the average across the network.

This is important because in the absence of monitoring at the transformer level, consumers switching to EVs in large numbers in specific areas creates a risk of the transformers approaching their operational limits without being detected until a fuse blows, cutting access to electricity to (typically) several dozen homes. Knowledge of the specific areas where EVs are being taken up earlier than average will enable targeted monitoring of the specific transformers in those areas, in order to prevent this occurrence through timely and focused intervention.

The EVC would observe that EVSE could reasonably be included in a DER register, or other equivalent reporting mechanism related to the installation of electrical equipment. This would potentially include details of power level of EV charger installed and the address of the installation. It would be important to clearly understand the administrative burden imposed by a move of this type, and also clearly understand the quality of data likely to be collected through a process of this type. Without some degree of inspection and oversight with consequences for non-compliance, a reporting scheme like this would potentially fail to capture a non-trivial percentage of installations (relates to question 11e).

In addition to the above, a growing trend that has been observed in Australia and in similar jurisdictions around the world is that a majority of consumers are not installing EVSE to support charging their EV at home, instead electing to charge their vehicle from an existing powerpoint in their garage. A DER register-style approach to identifying the presence of new load at the household level will not be able to capture this situation, because there is no electrical installation being undertaken.

An alternative approach to identifying the uptake of EVs at a spatially granular level for the purpose of enabling DNSP planning would be to investigate the scope for limited data sharing between Transport for NSW and the DNSPs operating the network. This could look like a register maintained by TfNSW of addresses at which an EV is registered, accessible by the DNSPs under an appropriate data sharing agreement. The networks would map this data against their existing database of served addresses, with the goal of identifying potential emergent clusters. To the extent that these

addresses have smart meters, the networks would also potentially be able to analyse aggregate consumer behaviour pre- and post- acquisition of EVs, which would feed in to longer term planning for a future where larger numbers of vehicles are electric.

To the extent that the goal is to facilitate future orchestration of EV charging, a DER register is probably not the best instrument to consider at this stage. The vast majority of EVSE being deployed in consumers homes today is not 'smart' or externally controllable, so collecting installation location data won't serve this purpose today. In future, a campaign to enrol EV owners in a demand orchestration scheme could reasonably be run using vehicle registration data that is already held by TfNSW.

If the goal is to facilitate future EV charging orchestration, we would suggest DPIE observe and give close consideration to the South Australia EV smart charging subsidy program announced in December 2021. The EVC notes that this is not a particularly urgent problem to solve, and it is probable that market ready scalable solutions will become apparent through work done in other Australian jurisdictions over the next 12-18 months.