Submission No 67

INFRASTRUCTURE FOR ELECTRIC AND ALTERNATIVE ENERGY SOURCE VEHICLES IN NSW

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Submission to the NSW Legislative Assembly's Inquiry on Infrastructure for electric and alternative energy source vehicles in NSW

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Executive Summary

The current 4-year NSW EV strategy (2021-2025) has been an incredible success and without doubt the most well-funded programme in the country.

It is critical that the NSW Government continue on the good foundation set by this strategy and continue to overcome the most significant barriers that would otherwise unduly limit the uptake of EVs in NSW.

The NSW Government should continue investing in the four main pillars of public EV charging and other matters as follows:

- **Public fast charging network** (DC charging 50 kW to 350 kW)
    - Conduct a thorough review of Rounds 1-3 of this "Drive Electric" programme with the Charge Point Operators, in particular the "lessons learned" by the CPOs to understand how and why the delivery under this programme has not been as rapid as anticipated/
    - Focus on public EV charging infrastructure in rural and remote areas as a priority and aim to eliminate single points of failure in the public charging network in these areas.
    - Consider regulatory reforms with DNSPs to create a new type of electricity tariff tailored for DC fast chargers which, unlike almost any other kind of network load, have a very high peak-to-average ratio in their electricity consumption.
- **Destination charging** (AC charging 7.2 to 22 kW)
    - Continue investment in destination charging and consider more advocacy with business owners as to the benefits of hosting destination chargers, using testimonials from those who have already had them installed.
- **Kerbside charging** (AC charging 7.2 to 22 kW)
    - Continue investment in kerbside charging as its cost advantages, speed of rollout and convenience of kerbside charging have already been demonstrated.
- **Supporting new and existing apartments to be EV ready**
    - This has been the least successful pillar to date, with no grants under the current strategy having been allocated to date. This needs to have increased effort in any updated EV strategy, with a strong focus on the "lessons learned" to date and what needs to be changed to fix it.
- **Funding of EV chargers**
    - Allocate sufficient funding the next NSW State Government Budget to continue its EV Strategy at a scale commensurate with the uptake of battery EVs.
    - Work with the Commonwealth to consider how a fair and equitable Road Usage Charge could be introduced for all vehicles (not just battery EVs) to contribute towards the costs of the transition to cleaner transport.
- **Use of existing infrastructure and measures to ensure a competitive market**
    - Under no circumstances should the ring-fencing rules be relaxed and DNSPs be permitted to deploy and own EV charging infrastructure on their assets (i.e. kerbside charging installed on DNSP power poles). The fundamental conflicts of interest cannot be adequately mitigated.

As an EV driver for over 10 years, I would be happy to appear before the committee to provide a customer view of what EV drivers need and want from public charging facilities.

Appendix: For any committee members who are unfamiliar with the different charging options for electric vehicles and their use cases, they are summarised in the Appendix at the end of this submission.

About the Author

Dr. Brendan Jones is a professional electrical engineer with a Bachelors Degree from Newcastle University and PhD degree from Macquarie University. His household acquired its first battery EV in 2014 and has been EV-only since 2019, with two vehicles that have together driven 175,000 emissions-free kilometres.

The author believes this experience in driving and living with fully electric vehicles over ten years places him in a good position to understand the needs of EV drivers and contribute towards the development of the next phase of the NSW Government's EV strategy.

1. Introduction

The current 4-year NSW EV strategy (2021-2025) has been an incredible success and without doubt the most well-funded programme in the country.

The number of battery electric vehicles (BEVs) registered in NSW has rapidly increased every year. Total numbers have grown from fewer than 500 in 2014, to 8,498 at the commencement of the current strategy in mid-2021, to 83,734 as at 1 May 2025[1] - a nearly ten-fold increase.

That means 1.3% of **all** vehicles registered in NSW are now fully electric. A total of 17,937 BEVs were delivered in Australia during the first quarter of 2025, or 6.1% of all new vehicles sold[2].

To support BEVs, ongoing government investment in public charging is essential. While the majority of current BEV drivers can charge at home, public charging is still required – either for people who cannot charge at home, or for people who can, but are away from home on road trips.

In terms of charging infrastructure, the number of public DC fast chargers in NSW has grown from 181 in mid 2021[3] to 294 in mid-2024[4]. It is more difficult to get a count of the growth in AC chargers since that market is more fragmented.

Some might argue that BEVs should stand on their "own merit" or that the government didn't subsidise "petrol stations" in the early years. The difference with EVs is that to meet the bipartisan plan of reaching net-zero CO_2 emissions by 2050, transport **must** be electrified by then. There is no other way to achieve that objective.

Organic change-out of the vehicle fleet to zero emissions equivalents, along with private investment in public charging, will occur too slowly if the NSW Government does nothing to support public charging. It is also critical to overcoming public anxiety and concerns about how to recharge their vehicles.

The Terms of Reference of this Legislative Assembly inquiry into Infrastructure for electric and alternative energy source vehicles in NSW are as follows:

1. Funding and location of electric vehicle chargers or infrastructure for other potential energy fuel sources;
2. The viability of alternative energy sources for freight, heavy vehicles and other licenced vehicles in regional communities;
3. Use of existing infrastructure and measures to ensure a competitive market, including 'ring fencing' policies;
4. Measures to ensure the transition of workers from affected industries and industry standards; and
5. Any other related matters.

This submission will cover items (1) and (3) from the Terms of Reference as follows:

- Funding and location of electric vehicle chargers:
  - Public fast charging network (DC charging 50 kW to 350 kW)
  - Destination charging (AC charging 7.2 to 22 kW)
  - Kerbside charging (AC charging 7.2 to 22 kW)
  - Supporting new and existing apartments or other "multi-unit dwellings" to be EV ready
  - Funding of EV chargers
- Use of existing infrastructure and measures to ensure a competitive market

[1] https://www.transport.nsw.gov.au/data-and-research/drives-reporting-portal/registration-snapshot-report

[2] https://www.drive.com.au/news/australian-new-car-sales-march-2025-ford-ranger-back-on-top-as-most-popular-new-model/

[3] Electric Vehicle Council "State of Electric Vehicles" August 2021, p. 11. https://electricvehiclecouncil.com.au/wp-content/uploads/2021/08/EVC-State-of-EVs-2021-sm.pdf

[4] Electric Vehicle Council "State of Electric Vehicles" September 2024, p. 21. https://electricvehiclecouncil.com.au/wp-content/uploads/2024/12/1734312344781.pdf

2. Funding and location of electric vehicle chargers or infrastructure for other potential energy fuel sources

This section of the submission will address the four pillars of EV charging required to successfully support a mass-market transition to zero emissions transport:

- Public fast charging network (DC charging 50 kW to 350 kW)
- Destination charging (AC charging 7.2 to 22 kW)
- Kerbside charging (AC charging 7.2 to 22 kW)
- Supporting new and existing apartments or other "multi-unit dwellings" to be EV ready

2.1. Public fast charging network (DC charging 50 kW to 350 kW)

The NSW Government has conducted three rounds of grants for public DC fast charging under the "Drive Electric" programme:

- Round 1: Opened January 2022, results published October 2022 (86 sites, 518 bays)
- Round 2: Opened December 2022, results published December 2023 (104 sites, 531 bays)
- Round 3: Opened June 2024, results not yet published

The objectives and requirements in each round have been slightly different in order to factor in learnings from the previous round as well as to tackle different needs around the state or to achieve specific outcomes.

Delivery of the sites funded under this programme has been a little disappointing. It is difficult to get an accurate count of just how many of the sites funded in Rounds 1 and 2 are actually installed and operating. The Charge Point Operators (CPOs) mostly point to delays in receiving the necessary Council approvals and delays in DNSP (Distributed Network Service Provider) power connections[5].

However, the "NSW Drive Electric" fast charging programme should be continued in some form as it is critical to facilitate EV travel around the state, as the NSW Government recognised in February this year with the launch of the "EV-friendly Road Tripping" campaign by Destination NSW[6].

In order to achieve this, the NSW Government should focus on the following:

1. Conduct a thorough review of Rounds 1-3 of this programme with the CPOs, in particular the "lessons learned" by the CPOs to understand how and why the delivery under this programme has not been as rapid as anticipated:
   a. Are Council approvals delaying deployment? If so, are there specific Councils which are proving more difficult to deal with than others? Are there any planning rules which need revision or amendment by the NSW Government in order to reduce or remove unreasonable roadblocks to the deployment of public DC fast chargers?
   b. Are DNSP approvals and connections delaying deployment? If so, what can the Government do to apply pressure to DNSPs to improve their performance in this regard? Does the Government need to introduce regulatory reform to require DNSPs to process CPO applications in specific timeframes?
   c. Are DNSP "demand charges" proving to be an unreasonable financial barrier to the ongoing economic viability of DC fast chargers? What regulations or policies need to change to address this?
2. Allocate sufficient funding the next NSW State Government Budget to continue this programme at a scale commensurate with the uptake of battery EVs (more on this in section 2.6)

[5] For example, Evie Networks "Lessons Learned" report to ARENA, March 2023 - https://arena.gov.au/knowledge-bank/evie-networks-lessons-learnt-report-march-2023-pdf-552kb/

[6] https://www.destinationnsw.com.au/newsroom/destination-nsw-powers-up-ev-friendly-road-tripping-in-nsw

3. Focus more on the deployment of DC fast chargers in rural and remote areas with multiple stalls so that they do not form "single points of failure" (SPoF) for road trips away from major highways and regional towns. Chargers in these locations are less likely to be commercially viable for commercially operated CPOs hence are more in need of government support. In contrast, the CPOs appear to be reaching a kind of critical mass in the larger urban areas reducing public charging anxiety and arguably no single points of failure.

With respect to point 1(c), there needs to be regulatory change to create a new type of demand tariff for public DC chargers. The existing demand tariff regime was created to cater for large industrial energy users which had a high but reasonably predictable electricity use which did not vary a lot hour to hour or day to day. The demand tariff was developed essentially to 'carve out' a known amount of capacity for such users, enabling the grid operators to plan their networks.

But this concept is not fit for purpose for a DC fast charger, which might have high peak power usage but a **much** lower average usage, because there will be extended periods in-between vehicle charges where the unit sits idle consuming almost no power. In other words, its "peak to average" ratio is much higher than any other kind of load in the network. Demand tariffs were never developed for this use case, because historically there were no electricity users which had such a profile. Figure 1 is a conceptual illustration of the difference.

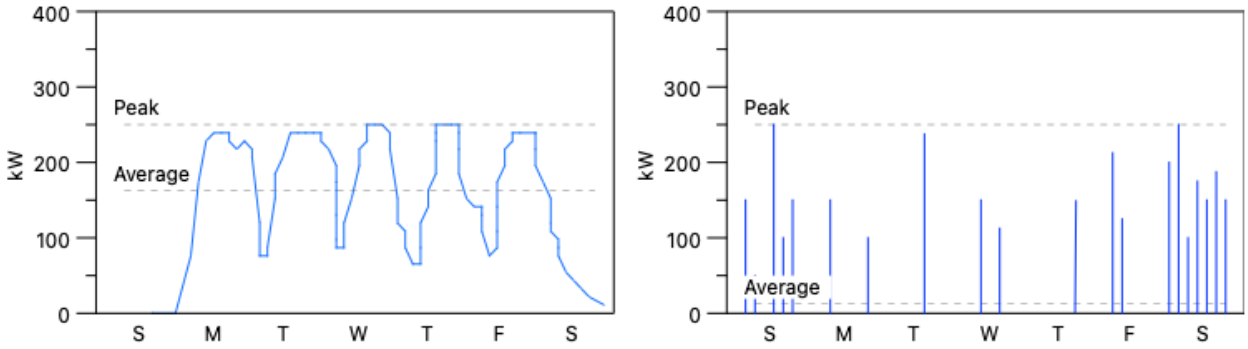

Figure 1 – Conceptual illustration of the difference in electricity demand between a conventional industrial user (left) and a DC fast charger (right). The DC fast charger might have the same peak, but a much lower average, and yet DNSP Demand Charges treat both as being exactly the same.

This kind of regulatory and financial reform is essential in order to cater for this new class of electricity user, lower the costs for CPOs to make their operations more financially viable, and to better reflect the actual network costs CPOs have on the DNSPs.

With respect to point (3), one only has to look at the Plugshare[7] app or website for DC fast chargers located in rural and remote areas to read posts by frustrated drivers who arrive at certain sites (particularly single stall sites) to find they are already occupied or not working.

The NSW Government should identify all locations in the state where such chargers are "single points of failure" for a trip, and work towards ensuring that a minimum of 4 stalls are installed in such locations, particularly where there are no other DC fast chargers within 100 km. It makes a very large difference as to how likely at least one stall is available when a driver arrives, and also provides redundancy in the event of hardware failures.

For example, the area north-west of Dubbo, which covers approximately one-quarter of the entire state, has only 8 towns with DC fast chargers (and a total of 10 stalls) all of which were installed by the NRMA (see Figures 2 and 3):

[7] https://www.plugshare.com

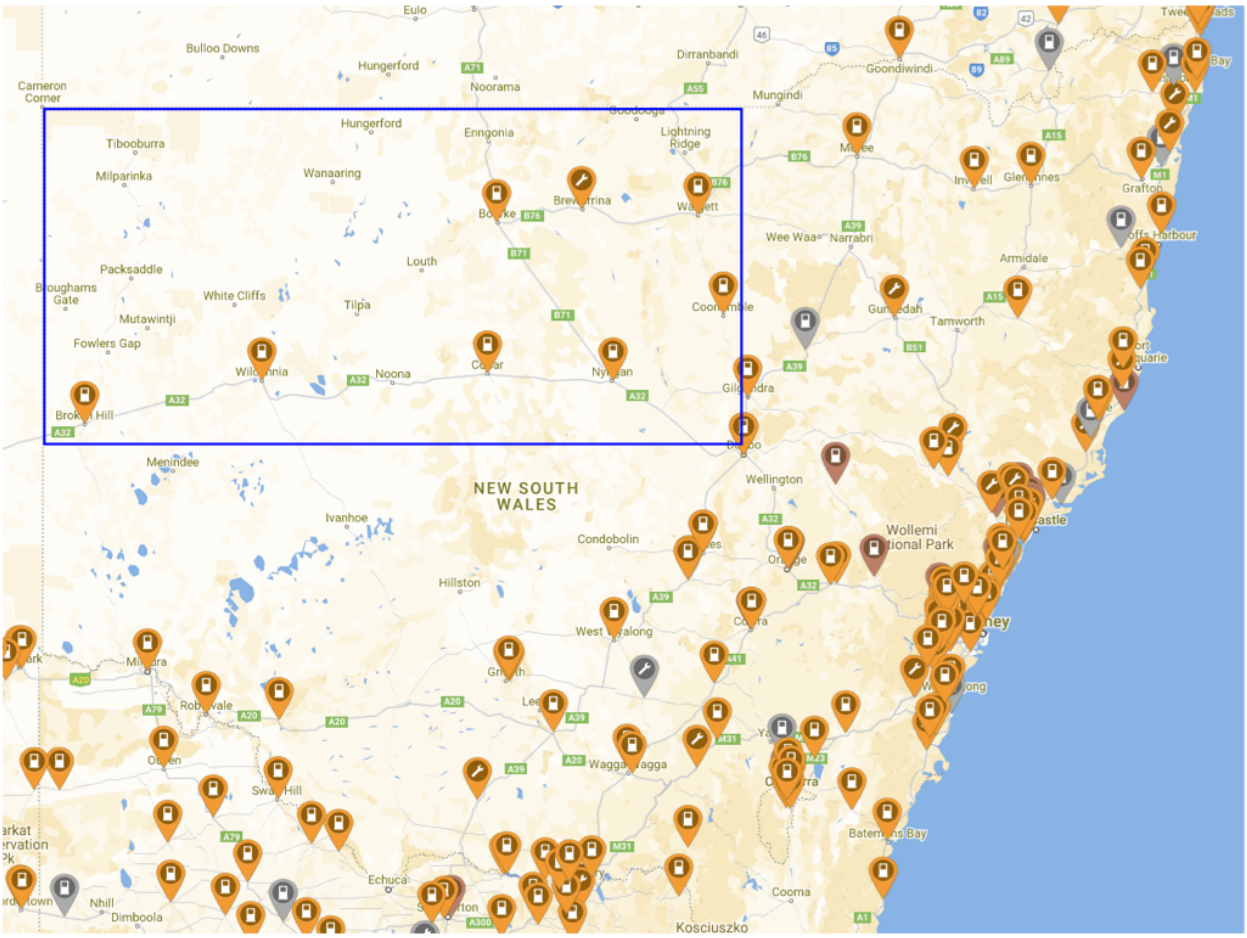

Figure 2 — The area northwest of Dubbo, covering approximately one-quarter of the entire state, is home to just eight DC fast charging sites, all built by NRMA. Source: Plugshare.

- **Coonamble** – two stalls to enable two cars to charge simultaneously.
- **Nyngan** – two stalls to enable two cars to charge simultaneously.
- **Cobar** – single stall.
- **Bourke** – two stalls, but one is a hardware backup and only activated if there is a hardware failure in the first unit.
- **Brewarrina** - two stalls, but one is a hardware backup and only activated if there is a hardware failure in the first unit. Both units have been vandalised and have been offline since December 2023.
- **Walgett** – single stall which has been vandalised and offline since April 2024.
- **Wilcannia** - two stalls, but one is a hardware backup and only activated if there is a hardware failure in the first unit.
- **Broken Hill** – single stall.

While the NRMA should be applauded for installing all these chargers in the first place, only two of the eight sites enable two vehicles to charge simultaneously, and two of the sites have been offline for more than a year, with no update from the NRMA as to if or when these sites will be repaired or replaced.

It should also be noted that the vandalised units in Walgett and Brewarrina had their screens broken, which are not essential for charger operation. The remainder of the units, including cable and plugs, appeared undamaged when I visited these sites in 2024. It is not clear why the screens could not be permanently covered and these units returned to service.

Rural and remote areas need to be a priority for the NSW Government in its future EV Strategy.

Coonamble

Nyngan

Cobar

Bourke

Brewarrina

Walgett

Wilcannia

Broken Hill

Figure 3 – all eight DC fast charger sites located in the north-west of NSW

2.2. Destination charging (AC charging 7.2 to 22 kW)

The NSW Government has conducted three rounds of grants for public AC "destination" charging:

- Round 1: Opened September 2022, applications closed November 2022
- Round 2: Opened November 2023, applications closed May 2024
- Round 3: Opened October 2024, applications closed March 2025

The Government has not released detailed results of individual grants (or even aggregated data on where the successful grant recipients are located), but stated that over $5 million in co-funding has been allocated so far (out of the total of $20 million earmarked for this programme), with 550 sites installed and operating, and over 1300 currently being installed[8].

Hence prima facie this programme appears to have been successful. Destination charging is a very important component of public EV charging because it relieves pressure from public DC fast charging and also allows people to make trips that otherwise might be very difficult if not impossible.

AC destination chargers are also relatively low-cost devices that can, in most cases, be easily installed without grid or electrical upgrades.

11 kW destination charging at a hotel, for example, enables most EV drivers to completely recharge their vehicle overnight while they sleep, leaving the next morning with a "full tank" (Figure 4).

Figure 4 – Example of destination charging at the Alabaster Inn, Taree. Photo: Plugshare

[8] https://www.energy.nsw.gov.au/business-and-industry/programs-grants-and-schemes/electric-vehicles/electric-vehicle-destination

Investment in destination charging should continue. The Government could consider more advocacy with business owners as to the benefits of hosting destination chargers, using testimonials from those who have already had them installed.

I have on occasion been disappointed with accommodation owners who either did not know about this programme, or were hostile to the concept of providing EV charging on their premises.

2.3. Kerbside charging (AC charging 7.2 to 22 kW)

Kerbside charging was not a component of the NSW Government's initial Electric Vehicle Strategy released in June 2021, but was added to it with $10M in funding in June 2022. The NSW Government subsequently conducted two rounds of grants for public kerbside charging:

- Round 1: Opened July 2023, applications closed November 2023, results announced May 2024 (671 charging ports at 391 sites)
- Round 2: Opened July 2024, applications closed December 2024, results not yet announced.

Kerbside charging in streets with limited or no off-street parking is a critical measure to enable residents in those streets to be able to choose an EV as their next vehicle. Kerbside charging replicates, as closely as possible, the convenience of charging at home for those who do not have off-street parking, or live in apartments without charging on-site.

The rollout of kerbside charging has been a great success:

- It is relatively low cost (both in terms of infrastructure deployment costs and charging costs for users). Kerbside charging grants have averaged just $6162 per bay, compared to $80,267 per bay for the first two rounds of the DC Fast Charging grants – 13 times higher per bay.
- It can be deployed extremely rapidly as it mostly attached to existing power poles, with power fed from above, hence requires no expensive or disruptive groundworks. EVX report that a kerbside charger can be installed in about 3-4 hours;
- It rarely requires any grid upgrades since the incremental peak load is comparable to a single new dwelling;
- The charging units are small and have minimal impact on the streetscape;
- Kerbside charging can be deployed very close to the end users; and
- Cars spend a long time parked near people's houses, so it doesn't matter if charging takes a few hours, or even occurs overnight.

For example, the Inner West Council (IWC) was the largest recipient of grants from Round 1, with 103 sites / 136 ports funded. Immediately following the grant announcement, the IWC conducted community consultation on the location of these chargers from July to September 2024. The overall level of public support for kerbside charging was 84%, with only six sites failing to win majority public support. An impressive 76 sites gained 75% support or more, and among these, 35 sites gained 100% support.

The IWC provided its final approval to the rollout on 12 November 2024. Within just 6 weeks, 26 chargers with 33 ports had been installed, and to date 73 sites / 90 ports have been installed. Only one charger could not be built due to power limitations.

The main providers of kerbside charging in the Sydney metropolitan area are AGL/Plus-ES, EVX and Intellihub/Schneider (co-funded by an ARENA grant and operated by Exploren)[9]. At the date of this submission, AGL had rolled out 150 sites / 150 ports, EVX had rolled out 60 sites / 120 ports,

[9] This does not include Jolt, whose kerbside chargers are modified street transformer boxes, and provide 25 kW DC charging, not 11-22 kW AC charging.

and Intellihub/Schneider had rolled out 50 sites / 50 ports, for a total of 260 sites / 320 ports. The Plugshare map of public AC charging in the inner-city area of Sydney is now as shown in Figure 5.

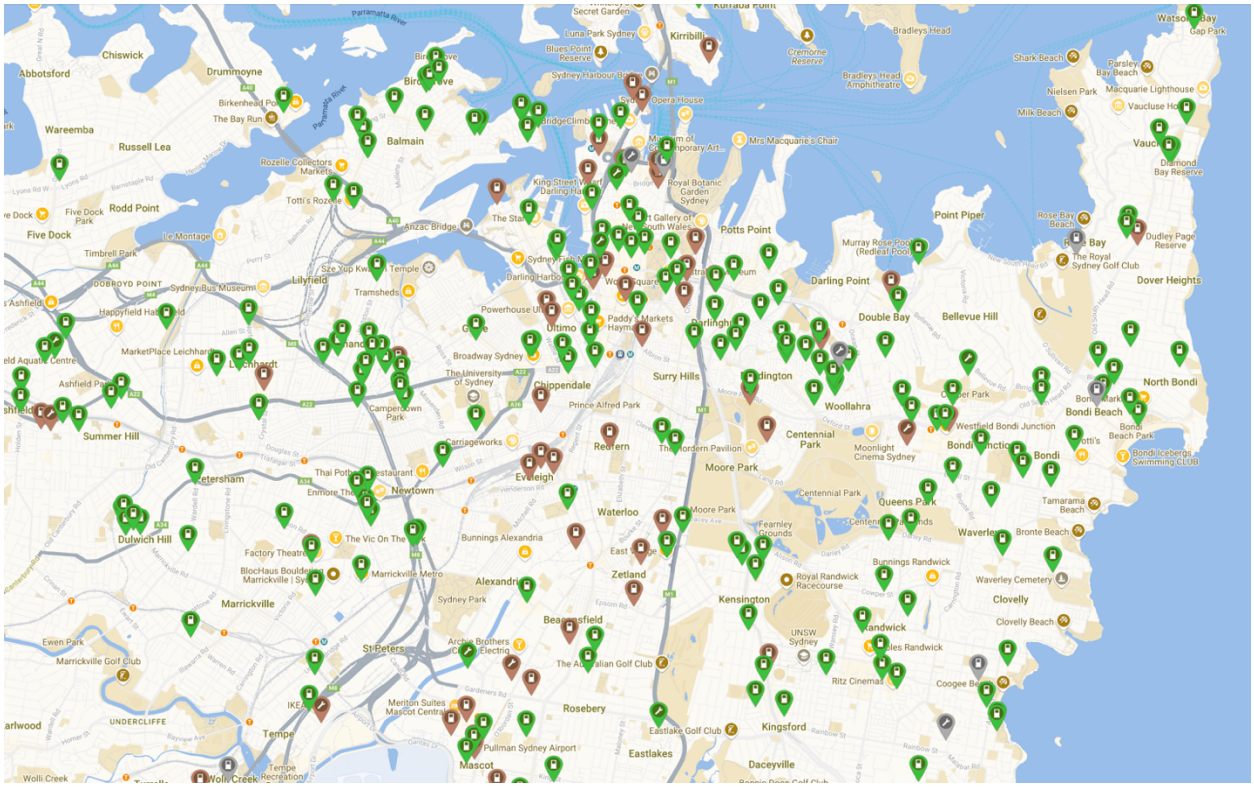

Figure 5 – Plugshare map showing public AC charging that is now available in the inner-city areas of Sydney. The vast majority of these are kerbside chargers installed under the first round of the NSW Government kerbside charger programme.

Figure 6 – Examples of kerbside charging units in Sydney. From left to right: EVX (dual port), AGL/Plus-ES (single port) and Intellihub/Schneider (single port, operated by Exploren).

The cost advantages, speed of rollout and convenience of kerbside charging shows that the NSW Government should continue to support and encourage kerbside charging rollout in its next EV Strategy. I will address "ring fencing" concerns regarding DNSP agitation to enter this business in Section 3.

2.4. Supporting new and existing apartments or other "multi-unit dwellings" to be EV ready

The fourth and final component of the current EV Strategy is tacking the challenge of providing EV charging facilities in multi-unit dwellings (MUDs). There are two streams:

- Financial, regulatory and technology support to retrofit EV charging capability in existing MUDs; and
- Policies and regulations to support new buildings of any kind (single residential dwellings, MUDs and commercial buildings) to be "EV ready". This does not mean that EV charging facilities are necessarily installed at the same time the building is completed, but that adequate provision has been made in the design and construction of the building to enable EV charging facilities to be added at a later time with minimal incremental cost. This could include installing ducting and cabling, provision for individual metering, and termination points for the later installation of 10A or 15A sockets in car spaces, or hard-wired EVSEs[10].

Progress in both of these areas has been limited and has been the weakest of the four pillars. It needs to be a focus of any new Government EV Strategy.

One achievement has been amending Strata Law to define EV charging infrastructure as "Sustainability Infrastructure" so that owners in a Strata scheme now only need a normal resolution of the Owners Corporation (OC) passed in order to install EV charging in an existing complex (50% of unit entitlements plus 1 to pass) instead of a special resolution being required (75% of unit entitlements plus 1 to pass).

However this is a small victory. The biggest constraint is still the practical complexities of retrofitting EV charging capability in an existing building, which covers things such as:

- Whether individual car spaces will be cabled, or "shared" EV charging will be installed;
- Metering of electricity use – can individual unit holders be exclusively metered for the electricity they use, or will the OC need to cover the cost and how will that be fairly shared among unit holders;
- Possibility that electricity supply upgrades would be required to the building;
- Would a third party be used to manage the EV charging facilities, or would individual unit holders be responsible for their own charging;
- Hugely varying design and installation costs depending on the specifics of the building.

The NSW Government's amended EV Strategy in June 2022 announced that *"$10 million to co-fund around 125 medium and large apartment buildings with more than 100 car parking spaces to make EV charging electrical upgrades"* would be provided.

Applications for this grant money opened on 17 October 2023 and closed on 15 December 2023. To my knowledge, not a single funding agreement has been signed in the 17 months since applications closed. Clearly this process is proving to be very difficult.

That does not mean it should cease – in fact in absolutely needs to continue. But clearly there are a lot of lessons to be learned from the progress of the current programme to date, and how any future programme should be designed and implemented.

The needs to have increased focus and effort by the NSW Government in any updated EV strategy.

[10] EVSE = Electrical Vehicle Supply Equipment. Strictly speaking, AC "chargers" are not chargers at all, because the "charger" is actually inside the electric vehicle. The EVSE merely supplies AC electricity to the EV under the control of the EV.

2.5. Fire safety concerns regarding EV charging in dwellings

A lot of misinformation has been spread about the risks of EVs catching fire and that this has, unfortunately, started to impact proposals to install EV charging in multi-unit dwellings and commercial premises, as well as what approach should be taken in the proposed 2025 Australian National Construction Code (NCC), which was consulted upon last year, but for which a draft code is yet to be produced.

This situation has not been helped by Fire+Rescue NSW "freelancing" its interpretation of the current NCC, unilaterally declaring EVs to be a "special hazard" under the NCC in a "position" published on its website[11]:

> *FRNSW consider EVs and EV charging stations to be special hazards under E1D17 and E2D21 of the National Construction Code (NCC) 2022. As such, the certifier should identify what additional provisions are being provided, if any, and whether the fire safety measures in the building are commensurate to the hazards and risk(s) associated with the proposed EV parking and/or charging, when certifying any related building application.*

The problem here is that FRNSW, as well-intentioned as they might be, is **not** the body responsible for interpreting the NCC. FRNSW do not write the NCC, they are not responsible for administering it, and they are not the entity responsible for interpreting it.

This was clearly conveyed by the Australian Building Codes Board (ABCB, the entity which **is** responsible for writing and interpreting the NCC) when its chief executive officer Gary Rake stated in May 2024 that the "special hazard" provision in the NCC was designed for 'unexpected' hazards and should **not** apply to electrically powered vehicles:[12]

> *Gary Rake, CEO of the Australian Building Codes Board, stated: "The presence of electric vehicles in a car park is now common enough to be reasonably 'expected' and 'usual' and therefore **not the original intent of the special hazards provisions when they were written**." He noted that the conditions should only apply if there is an unusual combination of electric cars and specific building features.*

Did this cause FRNSW to reassess its position? No – its position on its website remains unchanged.

Building developers do not get to interpret the NCC in any manner they wish. Nor do home builders or any construction workers. Their job is to follow the code, not to unilaterally decide what it means. The same applies to FRNSW. They do not get to decide what the NCC means or to apply their own interpretation.

This is not semantics or an irrelevant turf war – the FRNSW position is now materially impacting the ability of OCs and building owners to install EV charging facilities in their premises. That is because Building Certifiers and Fire Safety Engineers are heavily influenced by FRNSW positions, and so those professionals may refuse to certify EV charging installations if they are of the view that it does not comply with FRNSW's interpretation of the NCC. In fact FRNSW expressly state in their position that:

> *Any request for consultation or referral to FRNSW relating to any building that intends to incorporate EV parking and/or charging, should adequately identify the hazards and risks and demonstrate how they are being addressed within the design. The 'recognised person' should address the special hazards and how the provisions of this position statement and the AFAC Position have been considered and addressed.*

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[11] "Electric vehicles (EV) and EV charging equipment" – FRNSW Position June 2024. https://www.fire.nsw.gov.au/page.php?id=9447&position=8

[12] https://internationalfireandsafetyjournal.com/new-fire-safety-rules-for-ev-chargers-create-installation-challenges-in-queensland/

If FRNSW is of the view that they have evidence to support their risk position, the proper avenue for that would have been for FRNSW to submit their evidence to the ABCB as part of its 2024 NCC consultation. If that evidence was robust, fact- and evidence-based, and not grounded in anecdote or hearsay or unreasonable risk aversion, then the NCC can codify whatever measures it considers necessary to manage any material risks based on the evidence provided.

It is not up FRNSW to pre-empt that process, or to provide its own freelanced interpretation of the NCC, especially when the CEO of the ABCB has informed FRNSW that their current interpretation is incorrect.

The single biggest concern with lithium-ion battery fires is with small personal mobility devices, such as battery-powered electric scooters and bikes. These devices are largely unregulated, and often directly imported to Australia by individuals, bypassing any sort of safety checks or regulatory compliance.

These devices (particularly at the cheap end of the scale) often have very poor battery management systems (BMS), rarely have active thermal management of batteries, and if connected to incompatible chargers, can result in individual battery cells overheating and triggering thermal runaway and a Li-Ion battery fire.

This is where FRNSW and the NSW Government should be focussing their efforts in managing battery fire risks.

Battery EVs suffer none of these issues. Motor vehicles are required to pass strict safety regulations (as imposed by the Australian Design Rules or ADR) in order to be legally imported into this country. Vehicles also cannot be registered to be operated on public roads without them being ADR compliant. Every battery EV also has a sophisticated BMS, they have active thermal battery management, and use standardised plugs meaning it is not possible to charge them with an "incompatible charger"[13]

EV fire specialist EV FireSafe[14] reports that only 8 battery EV fires have occurred in Australia since the first OEM vehicles (not conversions) were imported into Australia in 2012:

- 3 resulted from an external fire spreading to the vehicle;
- 3 resulted from high-speed collisions (catastrophic damage to the battery pack);
- 1 resulted from arson; and
- 1 is unknown cause (but occurred outside).

The first three instances all occurred in enclosed spaces. The final instance occurred while a vehicle was plugged in and charging had been completed, but the battery has been ruled out as the cause the fire. EV FireSafe state that "connection to charging was **coincidental** and **did not** cause the fire".

Given we are approaching a quarter of a million battery EVs being registered in Australia, it appears the risk of BEV fires is incredibly small. In comparison, there are on average **8.7 fossil fuel vehicles fires <u>per day</u>** in NSW alone![15]

[13] Strictly speaking, AC chargers are not actually even "chargers". They are merely EVSEs, meaning they supply electricity under the control of the EV they are plugged into and nothing more. The "charger" is actually internal to the battery EV, designed and built by the car manufacturer, and cannot be interfered with. This completely changes the risk profile. Fast DC chargers are literal "chargers" but these are extremely expensive standardised devices that have to comply with strict electrical safety requirements.

[14] "Plug-In Electric Vehicle Battery Fires in Australia" - https://www.evfiresafe.com/_files/ugd/8b9ad1_a7393a755dea4608a272561393fa7056.pdf

[15] FRNSW reported 3174 vehicle fires in NSW in FY24, an average of 8.7 per day – see https://www.fire.nsw.gov.au/gallery/files/opendata/FRNSW%20Data%20Tables.xlsx

2.6. Funding of electric vehicle chargers

The current NSW Government EV Strategy is undoubtedly one of the best-funded in the country. A total of $633M was allocated across its four pillars over four years[16], dwarfing the programme of any other state by a considerable margin. For that both the previous and current NSW Governments should be congratulated.

I am in no position to advise the Government as to how much money it should allocate over the next 4 years to any updated EV Strategy. Clearly that depends on overall pressure on the state budget and its spending priorities.

However, I believe that substantial funding should be ongoing for all four pillars to the maximum extent possible, because electrifying transport is essential and relying on organic, commercially-driven growth will take too long. All major parties in NSW support reaching net-zero emissions by 2050 (indeed it is a legislated ambition of the NSW Parliament under the *Climate Change (Net Zero Future) Act 2023*) and that cannot be achieved unless transport is fully electrified.

It's also important to recognise that it will take at least 20 years to change out the 90%+ of the vehicle fleet, meaning there is no time to waste in accelerating the transition to EVs. The runway is rapidly running out.

It was the intention of the former NSW Government to partly fund this acceleration via the revenue that was proposed to be raised through a 2.5c/km Road Usage Charge (RUC) as defined in the *NSW Electric Vehicles (Revenue Arrangements) Act 2021*.

However in a 4-3 split judgment, the High Court ruled in 2023 in the *Vanderstock & Anor. vs The State of Victoria*[17] that an RUC is an 'excise' which only the Commonwealth has the power to levy. The *NSW Electric Vehicles (Revenue Arrangements) Act 2021* will therefore need to be amended or abolished before its RUC operative provisions come into effect as proposed in mid 2027.

In the absence of that, the States will need to discuss with the Commonwealth alternative and sustainable ways of supporting the national transition to EVs. One way would be for the Commonwealth to legislate for a national RUC, and delegate its powers to the States for its implementation and collection.

How to make an RUC 'fair' for all road users has been a vexing issue. Many EV drivers are not implacably opposed to an RUC, but believe that if an RUC was introduced, it should be applied to all vehicles, not just those with electric drivetrains. Part of the argument for that is that fossil-fuelled vehicles currently use the atmosphere as a free garbage dump, and Federal fuel excise does not come close to compensating society for the costs of that pollution.

It has been estimated that vehicle tailpipe pollution in Australia causes 11,000 premature deaths and is responsible for over 12,000 cardiovascular hospitalisations, 66,000 active asthma cases, and almost 7,000 respiratory hospitalisations per year[18]. So this is not just about CO2 emissions, but also the health costs imposed on society by the noxious and toxic gases emitted by burning fossil fuels (including NOx, carbon monoxide, SO2, benzene and PM2.5 particulate pollution).

Most governments would probably consider that adding an RUC on top of existing registration fees for motor vehicles, while the Commonwealth still imposes a national fuel excise, to be political suicide. But at some point difficult decisions will need to be made to penalise fossil fuel vehicles more to reflect their true cost to society which in turn can assist funding support for a transition to cleaner transport.

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[16] The current Labor Government reduced the costs of this programme in 2023 by removing the stamp duty exemption for BEVs and ending the $3000 cash rebate programme.

[17] https://www.hcourt.gov.au/cases/case_m61-2022

[18] https://thedriven.io/2023/02/24/new-study-reveals-catastrophic-health-impacts-of-petrol-and-diesel-cars/

If an RUC was to be introduced, I think it would need to be tiered in order to not unduly disadvantage those who need to drive long distances, which (unlike mythology) is not rural residents but those in the "commuter belts" – the fringe areas of the capital cities, and feeder satellite cities such as Wollongong and the Central Coast.

A possible way of doing that is outlined in Table 1. Note this is a conceptual example only, it is not intended to advocate for those specific rates or tiers. The RUC rates should also take into account other factors, such as the weight of a vehicle or its class, so that the charges imposed reflect the impact and costs of the vehicle to society.

Vehicle odometer readings in NSW are submitted annually by Authorised Inspection Stations as part of the annual vehicle registration requirements, hence there would be little administrative overhead in practice to implement an RUC in this state. RUC fees would be calculated once the vehicle was inspected, and that amount added to the annual registration fee prior to renewal being completed online by the vehicle owner.

For new vehicles under 5 years old in NSW, for which annual registration inspections are not required, odometer readings would need to be manually submitted by the vehicle owner to the RMS prior to completing registration. The most recently submitted odometer readings are already publicly visible for any vehicle as part of the current online vehicle registration checking system[19] and any odometer readings prior to the 5-year mark submitted by a vehicle owner should be publicly visible in the same way.

Any under-reporting of odometer readings by an owner who then attempts to sell their vehicle prior to the 5-year mark would get caught out by the prospective buyer, as clearly the buyer would check the actual odometer reading on the vehicle before purchase. They would not want to be liable for an RUC bill to cover any under-reported odometer figures, and the buyer would report the actual odometer reading as part of the transfer of vehicle registration process.

Any owner who under-reported their odometer readings, but kept their vehicle beyond the 5-year mark, will get caught out when an Authorised Inspection Station submits the correct odometer figure to RMS, triggering a massive RUC bill that catches up the difference.

Annual distance driven	**RUC rate (cents per km)**	**Total annual cost**
0 – 10,000 km	2.0 c/km	$0 - $200
10,000 – 20,000 km	$200 plus 1.5 c/km for km above 10,000	$200 - $350
20,000 – 30,000 km	$350 plus 1.0 c/km for km above 20,000	$350 - $450
30,000 – 50,000 km	$450 plus 0.5 c/km for km above 30,000	$450 - $550
50,000 km and above	$550 plus 0.5 c/km for km above 50,000 capped at $600	$550 - $600

Table 1 – Conceptual example of a tiered RUC regime for passenger vehicles 2T or less in weight

The Federal Treasurer was recently reported as discussing this matter with the State treasurers.

[19] https://check-registration.service.nsw.gov.au/frc

3. Use of existing infrastructure and measures to ensure a competitive market

I will focus on kerbside charging using DNSP power poles in this part of my submission.

As outlined in Section 2.3, the NSW Government's kerbside charging programme has been extremely successful. So far, NSW is the only state in the nation to have rolled out kerbside AC chargers at scale that use existing power poles.

However the DNSPs (which in NSW are Ausgrid, Endeavour Energy and Essential Energy) own the power poles and wires, and Ausgrid in particular has recently been increasing their advocacy that they be allowed to deploy kerbside EV charging infrastructure on their electricity assets.

Currently, that is prohibited under the Australian Energy Regulator's (AER) "ring fencing" rules. The objective of ring-fencing is to provide a level playing field for third party providers in new and existing markets for contestable services. It does this by restricting DNSPs from offering unregulated services and mitigating the advantage a DNSP may otherwise have in providing those services as the monopoly provider of network services.

Ausgrid presented at the **Everything Electric** exhibition in Sydney in March 2025 in a presentation titled *"Accelerating EV Uptake Through Ausgrid's Kerbside Charging Program"* advocating that DNSPs should be permitted to deploy such infrastructure on their assets, arguing they could do it more cost effectively and at a larger scale than commercial third-party providers.

The implication was that this would benefit end-user customers through faster rollouts and cheaper charging rates. Ausgrid also argued that kerbside charging infrastructure would not become part of their regulated asset base (RAB) but would be an "ancillary service" similar to the provision of street lighting.

Ausgrid completely avoided discussing the obvious and fundamental conflict of interest that would exist if the ring-fencing rules were relaxed to permit DNSPs to deploy EV charging infrastructure on their assets. It is the very reason the "ring fencing" rules were created in the first place.

Let's assume a DNSP set up a kerbside charging division called "KerbCo" which is 100% owned by the DNSP. Then consider the scenario where KerbCo and one or more third party kerbside charging providers applied to the DNSP for access to a specific power pole. Only one kerbside charger can ever be installed on a single pole, so for each targeted DNSP pole there has to be one winner and one or more losers.

How could the DNSP ever assess these competing applications in an unbiased manner? The DNSP is profoundly and fundamentally conflicted in this scenario. Every business in the country sets business targets for its operational divisions – namely revenue and growth targets. A DNSP would clearly set revenue and growth targets for KerbCo – it would not be a responsibly run business if it did not do that.

The DNSP is then in the position where if it grants access to KerbCo to a particular pole, the DNSP will grow its own business and assist KerbCo in meeting its revenue and growth targets, whereas not granting access to KerbCo will enhance a competitor's business, and hinder KerbCo in meeting its revenue and growth targets. There is no clearer conflict of interest than that.

What transparent criteria would the DNSP use to make such decisions? How could the third-party applicant ever have confidence that their application was treated fairly? I cannot see any regulatory, compliance, or enforcement regime that would ensure that any DNSP in this situation could be trusted 100% to always act completely independently and impartially in all circumstances and fully mitigate the conflicts of interest that would exist.

So under no circumstances should the ring-fencing rules be relaxed and DNSPs be permitted to deploy and own EV charging infrastructure on their assets.

A summary of the problems and issues that relaxing the ring-fencing rules are as follows:

- DNSPs have a fundamental conflict of interest as described above;
- There is a fundamental knowledge asymmetry. The DNSPs would likely have the 'inside running' as they have access to their own asset data that would inform them as to which power poles are suitable to host kerbside chargers and which are not, what their asset plans are in a given area, and what power limitations if any exist. Third party applicants may not have **unfettered** access to the same information ahead of making an application;
- There are no guaranteed mechanisms that could prevent a DNSP "land banking" suitable poles in order to frustrate or exclude competitors, or unreasonably reject third party applications. A DNSP could reject a third-party application on the basis that a given pole has been reserved for KerbCo's imminent kerbside charger deployment, or for other possibly specious reasons. The problem is there are so many plausible 'shades of grey' that the DNSP could argue that its actions were legitimate, e.g. KerbCo really did intend to deploy a kerbside charger there, but its plans later changed, or it genuinely thought there were problems with that pole, but further investigation revealed the pole was OK – by which time the third party might have removed its application for that pole, and KerbCo could lodge one. It would be virtually impossible for a third party to prove in a court of law that the DNSP was acting with the intent of reducing competition;
- Infrastructure competition is critical because the DNSP has little or no 'skin in the game' to ensure operational uptime and maintain its KerbCo charger network if it was a monopoly. The kerbside charging business is likely to be a marginal one – not a source of super-profits, but enough for a focussed, single-purpose business to maintain viability. Compared to a DNSP's entire business, revenue from kerbside charging is likely to be an asterisk or 'rounding error' in the balance sheet. But for a third-party kerbside charging operator, kerbside charging might be their only business or a significant part of it, and every minute of downtime impacts their ongoing cashflow and business viability. Hence they would be incredibly motivated to repair faulty stations as quickly as possible. That would unlikely to be true for a DNSP. It is difficult to see a DNSP prioritising repair of a kerbside charging unit over any other kind of grid repair (e.g. restoring downed power lines), particularly when they argue their ability to reduce costs is partly due to leveraging existing DNSP workforce capability, hence the DNSP would inevitably have to prioritise work activities.
- Any initial burst of enthusiasm by the DNSP to roll out a kerbside charging network could wane over time as the 'sexiness' wore off and the drudgery of expanding and maintaining the network became an easy target for cost control and cost-cutting. KerbCo might never be treated as 'core business' by the DNSP and so any wider operational pressures in the DNSP's business could see kerbside charging becoming a casualty.
- Some DNSPs claim they would focus on deploying kerbside charging in less viable locations that would not be considered by a third-party provider. "Less viable" locations means locations where the vast majority of residents have off-street parking hence do not need kerbside charging at all. Why would a DNSP hobble its own KerbCo from the start by insisting it runs its business at a loss by not prioritising the most profitable locations first? The proposition is risible.
- DNSPs do not have a reputation for entrepreneurship and flexible, fast-moving innovation. This is a reflection of the industry they are in. Electricity grids are massively complicated and critical infrastructure, and the consequences of any failures, even small ones, are massive. That inherently leads to a conservative risk-averse culture, which is perfectly reasonable given what is at stake. "Innovations" in the grid are incremental, planned in painstaking detail, implemented cautiously, and need to operationally prove themselves as robust and reliable over many years before any wider rollout is considered. This is not the culture that is desirable in a new business such as kerbside charging.
- The three main providers of kerbside charging to date in Sydney (see figure 6) are good examples of this issue. Would we have seen the home-grown innovative solution developed by EVX if it was not for third-party involvement in this business? The EVX solution is the only one of the three that was expressly designed for mounting on timber power poles. It is the only solution that is a single-box solution (AGL and Intellihub have separate EVSE and

metering boxes). It is the only solution that offers two charging ports per pole rather than one. It is the only solution that had attractive industrial design of its form factor as an objective, rather than modification of an existing foreign-made product.

- The AGL EVSE is an off-the shelf product from Etrel in Slovenia (the Etrel INCH Pro[20]). A bespoke stainless-steel mount had to be developed to enable it to be affixed to timber power poles. The separate metal metering box above this unit is not attractive.
- The Intellihub EVSE is a modified product from Schneider Electric in France (the EVlink Pro AC[21]). Similar to the above, a bespoke enclosure had to be developed to enable it to be affixed to timber power poles, and this solution also has an unattractive metal metering box installed above.

The end result, if the ring-fencing rules were relaxed, would be the slow death of third-party providers and the creation of a kerbside charging monopoly. I suspect third-party providers would eventually exit the market, having little confidence that they are being treated fairly and on an equal footing with any KerbCo. That would be a disaster for innovation and market responsiveness.

- END OF SUBMISSION -

[20] See https://etrel.com/inch-pro/

[21] See https://www.se.com/au/en/product/EVB3S22N4/charging-station-evlink-pro-ac-ac-metal-22kw-32a-3p+n-t2s-socketoutlet-rdcdd-6ma-mnx-aux

Appendix: Overview of EV Charging

In Australia, EV charging should be classified as AC or DC, with a power level in kW specified.

The de-facto standard EV plug type in Australia is the CCS2/Type 2 plug (the Type 2 plug is a subset of the CCS2 plug). Type 2 is used for AC charging, and CCS2 used for DC fast charging. The Type 1 and CHAdeMO plugs only appear on legacy vehicles and neither will ever be used on future EVs sold in this country. The Tesla proprietary connector (now called NACS in the USA) is **not** used in Australia – Tesla uses the CCS2/Type 2 plug in Australia.

Table 1 below shows the range of charging options and the use cases to which each is applicable.

Charging category	Plug type	Power level (kW)	Time to charge 75 kWh battery 20-80%[22]	Typical use cases
AC	Type 2 (single phase)	1.2 – 3.6 kW (5A – 15A)	13 – 40 hours	Domestic overnight charging off conventional 10 or 15A power point
		3.6 – 7.2 kW (15A – 32A)	6 – 13 hours	Domestic overnight charging off installed EVSE[23] Retail or commercial destination charging (car park, shopping centre, office, motel, cinema, etc.)
	Type 2 (three phase)	7.2 – 22 kW[24] (10A – 32A per phase)	2 – 6 hours	Domestic overnight charging off installed high power EVSE Retail or commercial destination charging (as above) On-street kerbside charging
DC	CCS2	25 kW	120 minutes	On-street 1-2 hour parking (e.g. Jolt network)
		50 kW	60 minutes	Short-stay or road-trip charging (e.g. NRMA, Chargefox)
		75 kW	36 minutes	Road-trip charging (e.g. Chargefox, Evie)
		150 kW	18 minutes[25]	Road-trip fast charging (e.g. Chargefox, Evie, Tesla)
		350 kW	10 minutes	Road-trip ultrafast charging (e.g. Chargefox, Evie, Tesla)

Table 1 – AC and DC EV charging categories and use cases. Note that different EVs have different maximum AC and DC charging rates, even if plugged into a charger of higher power.

[22] Assuming the vehicle is capable of sustained charging at the power level indicated. Very few EVs can charge at 350 kW.

[23] EVSE = Electric Vehicle Supply Equipment

[24] 11 kW is generally the highest AC charging rate in an EV. A small number of vehicles can charge at 22 kW AC.

[25] Not all EVs can charge at 150 kW or above. The indicated charge time depends on the EV's ability to charge at the rate indicated, the initial state of charge (SoC), the battery temperature and other factors. The charge rate will slow down as the target SoC is reached.