



20 JULY 2020

INITIATIVES TO DRIVE TRANSITION TO ZERO CARBON TRANSPORTATION IN THE ACT

CONSULTATION PAPER SUBMISSION BY THE ACT
BRANCH OF THE AUSTRALIAN ELECTRIC VEHICLE
ASSOCIATION (AEVA)

Prepared by



**ETHOS
URBAN**

Foreword by Everergi on submitting responses

Your time and considered feedback through this submission process is greatly appreciated, as it is only with such contribution that all stakeholders can benefit from a balanced and considered policy approach. Pending the outcomes of this first stage of engagement, further targeted engagement may be undertaken.

This document provides a preferred method for accepting submissions to the ACT Government's request for submissions on the topic of initiatives to drive transition to zero carbon transportation in the ACT.

Submissions are requested by **COB Monday 20 July**.

Provided below is a table of questions and space to provide related feedback. For each section, there is also a blank area where feedback that does not fit effectively into this structure can be provided.

Foreword by AEVA ACT

This response is submitted by the ACT Branch of the Australian Electric Vehicle Association (AEVA). We are a volunteer-run, not-for-profit organisation dedicated to promoting electric vehicle technology (including cars, trucks, buses, bikes and scooters) in the ACT. Our members include early adopters and DIY enthusiasts who have converted petrol cars to EVs. Our key motivations include abating emissions and decreasing Australia's dependence on imported fossil fuels. We celebrate the fact that EVs are cleaner, quieter, safer and more reliable.

We aim to promote the uptake of EVs in Canberra. We do this in a context of government support. The ACT Government has announced an Action Plan for transition to zero emission vehicles, and our Branch has been working with ACT Government officials to monitor progress on this Plan.

We draw attention to our website at <https://www.aeva.asn.au/ACT/>. In particular, we draw attention to these recommendations on EV charging in strata developments:

<https://www.aeva.asn.au/recommendations-on-ev-charging-facilities-in-new-strata-developments/>

Responses - Making new apartments & mixed-use developments EV ready

General Questions	
Question	Question Details
Q1	<ul style="list-style-type: none"> ● What are the key factors you would like to see further considered, particularly for: <ul style="list-style-type: none"> ○ Local development industry? ○ Consumers? ○ Utility providers? ○ Charging infrastructure manufacturers? <p><i>Preliminary comments</i></p> <p>As the ACT Branch of the Australian Electric Vehicle Association (AEVA ACT), we represent consumers – owners and drivers of EVs in the ACT.</p> <p>We believe that there is an urgent need for education of current and potential owners and users of EVs that discussions on installing, paying for and billing for charging hardware will not address. The net needs to be thrown wider to assess and meet the needs of users in Canberra.</p> <p>Existing owners of EVs are best placed to talk about EVs and charging requirements, not papers and studies, or surveys of the ‘uninitiated’. Canberra locals are also a better source of information than summaries of what may have happened overseas or interstate. The ACT is in a unique situation of being a current leader nationally and internationally on addressing emissions and promoting adoption of EVs. There is much achievement and experience to build upon.</p> <p>The outcomes of this consultation should align with the goal of net zero emissions by 2045 and beyond, and the promotion of public transport and last mile solutions, and acknowledge the incentives for EV ownership that the ACT Government currently has in place.</p> <p>Vehicle manufacturers and dealers should be encouraged, if not required, to participate in the process of facilitating efficient use of charging infrastructure, at a minimum by advertising locations to purchasers, providing sales data, promoting appropriate use and etiquette, reporting of issues and faults and celebrating new installations. This could be done in collaboration with government and community groups like AEVA.</p> <p>Developing consistent approaches to etiquette and enforcement of restrictions at charging locations is important. We note that the use of number plate recognition is already in use in the ACT, and this could be expanded.</p> <p>Planning for EV charging should consider not just financial costs, but also the well documented benefits intrinsic to EVs and how these relate to the broader goal of net zero emissions by 2045 and making Canberra a more liveable city.</p> <p>In the short term the main priority should be installing publicly accessible chargers as quickly as possible. If a choice needs to be made, preference should</p>

be given to fast charging units. Where the ACT Government supports installation of chargers, minimum down-time and service response expectations should be set.

Apartments

Turning to the issue of apartments, we are beginning to hear anecdotal accounts of people buying a new fossil fuel vehicle, in spite of their preference for an electric vehicle, because they could not be assured of being able to charge at home in a strata development. We suspect that the shift in consumer demand to EVs rather than fossil fuel vehicles will be rapid when it happens, and that it may happen much sooner than most governments, authorities and others expect.

Sales of new vehicles in general have been declining in the past few years while EV sales are rising rapidly, albeit from a low base. An interpretation of this is that consumers who might have bought a new car are holding off while waiting for an EV to appear with the right set of characteristics and price for them. This article (<https://thedriven.io/2020/07/07/the-osborne-effect-why-new-car-sales-will-be-all-electric-in-six-years/>) summarises a study suggesting that we have already seen the peak for hybrid vehicles and that the shift of new sales to almost exclusively battery electric personal vehicles will occur in the next six years.

Regardless of the exact timing of the shift to mostly electrified transport, we think partial measures, such requiring only fractional provision of vehicle charging in new strata developments, will soon prove to have been short-sighted. We agree with the UK Central Government observation that “The majority (around 80%) of all electric car charging happens at home ... the home to be central to the future charging ecosystem.”

We strongly encourage infrastructure to include metering of individual charging outlets enabling pro-rata billing in strata developments. This is to 1) encourage efficient use of resources and to discourage the purchase of unnecessarily large and inefficient vehicles and 2) to prevent ‘free-loading’ whereby heavy users could impose unreasonable costs on other residents of their building.

Our preferred option is for every unit’s allocated parking space to have a charging outlet wired back to the electricity meter of that unit. This would enable the resident of each unit to have their EV charging automatically included on their electricity account. The resident will be able to exercise a full choice of options among different electricity plans with different retailers and to respond as they prefer to market signals such as peak demand charges, off-peak rates, variable tariffs and demand response signals.

We note that charging in mixed use developments could allow for public and visitor charging through the day with the charging stations available for residents at night.

We recognise that some building configurations would make it impractical to have individual EV charging and the residential unit behind the same meter. The proposed changes include “If multi-unit housing with 4 or more storeys has chosen to have an embedded network, then special metering requirements apply”. It is not clear whether this refers to an embedded network supplying the residential units or just the cars. The requirements of the Australian Energy Regulator are very different between these two situations.

The metering and other requirements of an embedded network supplying ‘premises’ are considerably more stringent than apply to an embedded network supplying only vehicles. Vehicles, being mobile and capable of going elsewhere

	<p>to obtain energy, are not regarded as ‘premises’. If only supplying vehicles, it would be permissible for the owners corporation to have EV charging outlets unmetered behind the house meter. In that case, the cost of charging would fall on all unit owners regardless of whether they have a more or less efficient vehicle, driven a lot or a little.</p> <p>We strongly recommend that an embedded network supplying only vehicles should be metered to enable the owners corporation to arrange for pro-rata sharing of the costs of vehicle charging among residents but we note that this is not required by the Australian Energy Regulator.</p> <p>We did not notice any mention of load management systems in the consultation paper. In some situations, there could be a genuine constraint on the load that can be supplied at a site and it might be reasonable to allow a developer to provide for a lesser total charging load if a compelling case is made. Our view is that it is far more important and useful to have slow EV charging available to all units than to have faster charging available to some.</p> <p>We suggest that an option that might be permitted for the developer in such a situation would be to propose a load management system with networked EVSE outlets for each parking space. Charging rates would be reduced for all attached vehicles to keep the total load within some limit. As some vehicles stop charging the remaining vehicles are given a higher permitted charge rate. As yet more vehicles finish charging the few remaining vehicles are permitted to charge at the maximum rate allowed by the wiring capacity (We suggest 7kW/32A).</p> <p>Finally, we wish to make some comments on the longer term picture.</p> <p>The Consultation Paper notes that passenger cars will become shared and autonomous, but the impacts of these longer term changes have not been explored. Promotion of active travel, modal shifts including public transport with last-mile options already underway in ACT, and developing technologies will also support the reduction in numbers of personal cars.</p> <p>Despite this issue, we maintain that provision of a power point at each parking space will be beneficial even in cases where no car is owned.</p>
<p>Q2</p>	<ul style="list-style-type: none"> ● How prepared are you right now to manage with the changes proposed? <p>AEVA ACT is not a builder or developer so we would not have to manage any of the proposed changes.</p> <p>As consumers, we have members with experience on executive committees of owners corporations. The management of strata developments includes ensuring equitable ‘use and enjoyment’ of the common property and efficient use of the owners’ levy contributions.</p> <p>If the ability to charge was limited to only a subset of parking spaces within a shared parking area this could lead to conflict among residents if charging spaces are monopolised or only available to some residents. Even if all have access to charging, a mechanism should be in place to allow pro-rata billing.</p> <p>An executive committee and/or strata manager has enough to do without having to deal with parking disputes exacerbated by competition for access to charging-enabled spaces and resentment of some residents perceived as free-loading on a common supply. Unit Titles legislation includes provisions for an owners corporation to bill residents for services provided to them. Alternatively, the</p>

	<p>owners corporation could outsource the billing to a charging provider rather than manage it in-house with the strata managing agent, but the hardware needs to be in place for pro-rata billing.</p> <p>Equitable sharing of the electricity cost can be managed by the owners corporation but this would be our second-choice. Wherever it is practical to do so, it would be better for individual residents and the owners corporation if charging outlets are physically wired back to the electricity meters of the individual units.</p>
<p>Q3</p>	<ul style="list-style-type: none"> ● What more information can be provided to assist in preparing for any changes that might be enacted? <p>It is not clear to us from the list of features of the proposed 'minimum charging infrastructure' what "One parking space per dwelling with allocated car-parking is to be capable of being upgraded..." means in combination with "Mains cable, electrical room and meter requirements are completed to a point to ensure mixed use housing developments are electric vehicle ready".</p> <p>We suggest that this should mean that mains cable has been run to one residential parking space associated with each unit, not just that there is sufficient capacity and hardware in an electrical room, i.e. 'energised' rather than 'preserviced' as per Appendix A. With the metering in place and 32A-capable cables extending to the one allocated parking space per unit, then it is a trivial cost to go one extra step to terminate that cable with an ordinary power point rather than a blank box.</p> <p>The addition of that power point would mean that mode 2 charging is available to every unit from the start. That power point could be a three pin 20A socket to comply with the minimum recommended (not required) by the AS3000 standard. Sooner or much later, a unit owner could upgrade that to a 32A wall-mounted EVSE which could have additional 'smart' features such as load management, load sharing and demand response built in if they care to pay extra for that.</p> <p>The cost to include such 'smart' features will be increased if data cables are not in place. So, the 32A cable runs should ideally also include data cables, even though they won't be needed initially.</p> <p>If 'capable of being upgraded' does not mean cable all the way to the parking spaces, then this could leave a major disincentive in place if the cost of that upgrade is prohibitive due to the length of a cable run. It could also set up a substantial inequity between the unit with a parking space adjacent to the electrical room and the unit parking furthest away having a much higher cost to upgrade. A 20A three pin socket capable of being energized and ready to be used with a portable EVSE charge cable at the flick of a circuit breaker switch in the electrical room (or preferably the unit's distribution board) would ensure that no resident, owner or tenant, would face a disincentive to getting an EV.</p>
<p>Q4</p>	<ul style="list-style-type: none"> ● How would you prefer to be engaged and provide input following this submission process? <p>AEVA ACT can engage with and survey our ACT members about their experiences to date and ongoing. AEVA members around Australia can also provide details of their experiences, interstate and nationally. We can host information sessions, and engage with the public at planned or potential events.</p>

	<p>We are happy to read any further documents and provide written comment. We are also happy to meet with government representatives to discuss any aspect of this matter. We would also be happy to meet with representatives of other parties if they would like to have input from the point of view of experienced users of electric vehicles.</p>
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Questions of Scope

Question	Question Details
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If we consider the commitment to “Amend the (Territory Plan) to require all new multi-unit and mixed-use developments to install vehicle charging infrastructure”, then:

<p>Q5</p>	<ul style="list-style-type: none"> ● Are there aspects of defining ‘minimum charging infrastructure’ that you would like to comment on? <p>Defining a minimum standard seems to us to have four components:</p> <ol style="list-style-type: none"> 1) the charging rate achievable from an individual charging outlet. 2) the charging mode as shown in the diagram on p.6 of the consultation paper. 3) the number of outlets. 4) enabling the pro-rata allocation of charging costs back to the individual units. <p>In our opinion, a low minimum standard is acceptable on the first two components (charging rate and mode) if the third component of a minimum standard is satisfied, i.e. that every unit has assured access to a charging outlet in one parking space associated with that unit.</p> <p>Fast charging is rarely needed where one routinely parks for many hours. As typical capacities of car traction batteries increase, the need for fast charging at home reduces. Local trips will rarely deplete a battery so much that immediate charging is needed and routine charging to full is best avoided for battery longevity. Fast charging rates are generally only needed en route during longer trips out of town. Such longer trips are generally planned and an overnight slow charge at 10 or 15A is sufficient to add almost 200 or 300km of range, respectively. We think it was unnecessary for the AS3000 to recommend (not require) that EV charging should be at least 20A and that it must be assumed that all vehicles are charging at once for load calculations. Load management systems can limit the total load, if necessary.</p> <p>We do nonetheless suggest that all wiring should be of sufficient gauge to handle 32A single phase for ‘future proofing’. For example, a future load management system for a building might limit charging to (say) 20A if all vehicles are plugged in and charging but allow charging rates to be 32A if fewer vehicles are charging.</p> <p>So, in summary, we suggest the usual minimum standard should be:</p> <ul style="list-style-type: none"> -Charging outlets in a parking space for each unit. -Wiring back to the individual distribution boards behind the meters of each unit. -Wiring capable of 32A single-phase.
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	<p>-Charging outlets terminated with three-pin 15A sockets (adequate in our opinion) or 20A sockets (to comply with non-mandatory AS3000 recommendation).</p> <p>-If fewer parking spaces are provided than the total number of units and parking spaces are not allocated to individual units, then all spaces should have mode 3 EVSEs. Those EVSEs should be of a type that enables pro-rata billing of residents by electronically recording consumption following activation by phone app or RFID card, rather than by individual wiring back to individual meters. 100% installation should be required because an option whereby fewer EVSEs (say 10%) are provided could cause difficulties later where an owners corporation could inequitably require subsets of residents to fund additional outlets or a majority might vote to not fund EVSEs when >10% but fewer than 50% need at home charging.</p> <p>Permissible exceptions should be:</p> <p>-Separately metered circuits for each unit behind a house meter where it is impractical to wire back to each unit.</p> <p>-A reduced total load (ie less than no. of units X 20A) if a compelling case is made around a load constraint for the site and networked EVSEs are installed with load management.</p> <p>NB. The consultation paper's notes on 'mode 2' charging states "generally 10A etc." A wall socket for mode 2 could be 10A, 15A, 20A or 32A, single phase or three phase with an appropriately matching in-line EVSE. Most cars use type 2 sockets at the car which can be set to lock the cable onto the car both during and after charging, which prevents problems such as theft. A further incidental benefit of providing an ordinary three-pin socket at the parking space is that the resident can use the outlet for other purposes such as vacuuming inside their car or connecting an external charger to a suspect 12V battery in any car.</p>
<p>Q6</p>	<ul style="list-style-type: none"> ● Are there aspects of how 'minimum charging infrastructure' is applied that you would like to comment on? <p>See our response to Q5.</p>
<p>Q7</p>	<ul style="list-style-type: none"> ● Should different types and sizes of developments attract different definitions of 'minimum charging infrastructure'? <p>If it were decided that units with relatively open, shared parking remote from the units must have mode 3 charging, then we would suggest that units that have their own secure private car accommodation could still be provided in every case with a 32A-capable circuit terminated with a 15A (or 20A) three pin socket for later, optional, self-funded upgrade.</p> <p>The size of the development does not seem relevant. Each unit should have assured access to their own charging outlet. Where parking is not allocated, EVSEs will be needed in every space.</p>
<p>Q8</p>	<ul style="list-style-type: none"> ● Would you consider it appropriate and practical to apply requirements around 'minimum charging infrastructure' to major renovation works? <p>Yes. The minimum standards as above should apply.</p>

Questions of Enforceability & Exceptions

Question	Question Details
<p>If we consider the commitment to “Amend the (Territory Plan) to require all new multi-unit and mixed-use developments to install vehicle charging infrastructure”, then:</p>	
<p>Q9</p>	<ul style="list-style-type: none"> Should this establish a minimum standard, optional standards, or a combination of the two? <p>A minimum standard should include one mode 2 charging outlet for every unit. Optional extensions to that could include:</p> <ul style="list-style-type: none"> -mode 3 outlets set to 20A replacing simple mode 2 20A powerpoints -mode 3 outlets capable of higher charging rates such as 7kW/32A single phase, with or without networking for load balancing.
<p>Q10</p>	<ul style="list-style-type: none"> Should there be ‘relief valves’ in the requirement that allow applications for development to apply for a waiver or partial waiver of the minimum requirements, where they materially impact the development? <p>If there are parking spaces allocated to each unit, then the lowest a waiver should go is to require a mode 2 outlet in one parking space associated with each unit. We believe it is more important that slow charging is available to all from the start than for a higher but rarely necessary standard of faster charging to be provided only to some.</p> <p>If the development can present a compelling case that it faces a constraint on its total load, then it would be reasonable to permit a load management system as an alternative to requiring sizing as if all cars were charging at once at full power.</p>

Procedural and Compliance Questions

Question	Question Details
<p>If we consider the commitment to “Amend the (Territory Plan) to require all new multi-unit and mixed-use developments to install vehicle charging infrastructure”, then:</p>	
<p>Q11</p>	<ul style="list-style-type: none"> What processes should be used to ensure streamlined Development Approval? <p>We are unfamiliar with the usual practices for large scale Development Approvals so we can’t comment.</p>
<p>Q12</p>	<ul style="list-style-type: none"> In what form and with what weight would a statement of compliance or similar from the electricity network provider be required?

	We are unfamiliar with the usual practices for statements of compliance for general electrical work on large scale developments so we can't comment.
Q13	<ul style="list-style-type: none"> ● If a development does not comply with the new regulations, what do you believe would be the right remedy?
	We are unfamiliar with the usual practices for remedying failures to comply with building standards so we can't comment except to suggest that this should be considered to be a building defect that the developer must remedy.

Responses - Opportunities to promote investment in public charging infrastructure and car park solar

Questions	
Question	Question Details
Q1	<ul style="list-style-type: none"> Do you agree with the basic methodology for determining the number of chargers required to ensure that EV adoption is accelerated in the ACT? If not, can you provide other factors that should be considered? <p>It is very difficult to determine “the right level of charging for the ACT” because improved charging infrastructure will stimulate the uptake of EVs by apartment dwellers, which in turn will increase demand – there is a positive feedback loop. This positive feedback loop in combination with global factors could result in a rapid ‘tipping point’ – infrastructure that seemed ample one year could be woefully inadequate the next year.</p> <p>It is also worth noting that the number of battery EVs registered in the ACT increased from 446 in mid-January 2020 to 661 on 1 July 2020. There is clear potential for rapid increases from the current low base.</p>
Q2	<ul style="list-style-type: none"> If you are familiar with the area, does this business case for destination charging align with your expectations? If not, what other factors would you consider? <p><i>Preliminary observations</i></p> <p>We agree with the goals and success factors set out on page 19. In terms of the context (page 20) we suggest that some account be taken of the existing infrastructure, including the role played by ActewAGL, the willingness (or otherwise) of ActewAGL to continue to play this role, and the flaws in the existing infrastructure, which we list below. There has been no increase in the ActewAGL network for several years and most of their so-called ‘fast’ chargers are actually 7kW AC or less. We consider it important that ActewAGL communicate its strategy for the future of its EV charging network.</p> <p>We also note that charging is required for other forms of EV – such as bikes, scooters and other smaller vehicles. This may become a greater need for many Canberrans if greater adoption of public transport and modal shifts are to occur. There will be a need for charging points for both personally-owned and hired small EVs. It makes sense to have charging sites that will cater for multiple forms of EV.</p> <p>As we note below, visitors to Canberra will need charging both at their accommodation and at publicly available chargers. Data could be drawn from tourism records. There are probably other data sets about traffic and travel that could be drawn on establish where the greatest needs are, rather than scattering a few chargers around the city.</p> <p>There is also an opportunity to take a broader look at parking/loading zone/accessibility options across the city. For example, EV charging could be</p>

timed for the requirement of the charge rather than 15, 30 or 60 minute increments. This could be built into an app. Parking fees including charging - as already happens with the Parkmobile app at ACT Government sites - could be charged at different rates. EVs may need longer parking times.

Charging infrastructure will need to be available for disabled spots. Sharing of spaces for the purpose of disabled and EV charging - as has been observed on several occasions - may not be the best solution.

ACT Government has already purchased and committed to further purchases of EVs and installation of charging infrastructure. Making the charging units (already installed and planned) available to the greatest number of people 24 hours a day would lead to efficient use and have the potential to cater for charging requirements while other chargers become available.

To ensure maximum cost effectiveness, chargers (regardless of location, and main or initial purpose) should be easily accessible 24 hours a day. Some existing sites in ACT and across Australia are unavailable at times.

Reporting of faults and availability to servicing of charging units should be clear and simple. Service should be prompt and reliable, especially while charging units are at low saturation.

All charging locations should be near easily accessible amenities, esp toilets. This will become less important as chargers are installed at more locations.

All publicly available chargers on public and private land should have corresponding sign posts, line marking and signage to help located chargers, but also to raise the visibility of EVs and charging locations, lessen frustration of visitors (instructions on digital maps and apps are not necessarily sufficient) and build general awareness and acceptance. Chargers could also have information about how to find chargers nearby, whether by signage or advertising an app like PlugShare.

Local businesses should have clear information readily available and streamlined processes for the installation of 'destination chargers'.

Consideration should be given to the location of chargers based on proximity to services and businesses. (For example, Bathurst NSW had a temporary location for 2 Tesla superchargers in the centre of town. It was in a laneway, poorly lit and inadequately signposted and therefore difficult to find. However, it was in the centre of town within a few hundred metres of dozens of businesses - pubs, clubs, restaurants and tourist attractions. The permanent location of 6 superchargers and 1 NRMA charger is adjacent to the Visitor Information Centre. This is ideal for visiting and eating at the Visitor Information Centre while charging, but venturing further afield to eat or visit tourist sites on foot and returning is impractical within the time it takes to charge).

Formal feedback processes should be established for the installation of all new charging sites to assess usability, report issues and inform future policies and decisions in relation to charging infrastructure.

Consideration could be given to permanent or temporary charging sites convenient to major events that are held in Canberra.

All public charging locations could be used to promote ACT Government achievements and goals through stickers, signage or social media posts.

Special emphasis could be given to installing chargers at locations that offer outdoor dining, picnic locations or drive through food pickup. While the chargers

may not immediately attract a majority of EV users and owners, outdoor dining will be a much-improved experience as a result of reduced noise and cleaner air. Outdoor public locations that are accessible by car, bike, scooter and other small EVs would be excellent locations for multi-purpose EV charging for locals and visitors. AEVA ACT is considering a program of identifying EV-friendly venues and acknowledging them with certificates and stickers to advertise their support, and location of a destination charger if applicable.

The existence of charging infrastructure at shopping centres and the like will only be a point of difference for a short period of time as more chargers are installed in more locations. Consideration of detail as to the best site for a charger within a shopping centre may have more relevance to choosing to use one centre over the other, in particular, for people with special or complex needs within a very short space of time.

Increasing spend on consumable items on the basis of dwell times may not be the good idea that it appears to be if consumer behaviours are to be consistent with generating less pollution and less waste. Consideration could be given to ensuring shopping centres that offer charging also offer lounge style spaces for EV users and experiences that do not encourage consumption.

Accelerating implementation

We now wish to comment on the question “How can the ACT Government help to accelerate implementation of infrastructure?”.

In framing an answer to this question, the Consultation Paper creates a typology based on types of location: shopping centres, car parks, work places, etc. We suggest that an equally valuable framework would be based on categories of EV driver. We suggest the following categories:

- Canberra residents living in dwellings with access to electricity at their domestic parking space
- Canberra residents living in dwellings *without* access to electricity at their domestic parking space
- Visitors to Canberra who are staying overnight with family or friends
- Visitors to Canberra who are staying overnight at hotel accommodation
- Day visitors to Canberra
- Tourists passing close to Canberra (visiting the snowfields, for instance).

In the table below, we attempt to identify the needs of the drivers in each of these categories, and we suggest an investment strategy which may meet these needs.

CASE	NEEDS	PROPOSAL	INVESTMENT STRATEGY
[1] Canberra resident – with electricity at parking space	No significant needs except when touring	Meet regional touring needs. Example: rapid chargers at Braidwood and Marulan	ACT Government to co-invest where necessary – but see our answer to Q9
[2] Canberra resident – no electricity at parking space	Nearby rapid chargers	[A] Fix flaws in current infrastructure (see comments below) [B] Provide new rapid chargers in Belconnen,	ActewAGL or other providers to recover investment in setting prices. ACT Govt could provide support on a

		Gungahlin and Woden/Weston Creek	“level playing field” basis
[3] Visitors to Canberra – staying overnight with family or friends	[A] Same needs as case [1] or [2] [B] Ability to charge without possessing an ActewAGL card and account	[A] Same as case [2] [B] ActewAGL replace its dedicated RFID card with an app or credit card model	Same as case [2] ActewAGL could be encouraged to sell its network to a private provider if it is uninterested in further investment.
[4] Visitors to Canberra – staying overnight at hotel	Overnight trickle charging or 7 kW AC charging at a secure and convenient parking place	Hotels provide several parking spaces to support overnight trickle charging or 7kW AC charging	Hotels recover investment through surcharges and increased patronage
[5] Day visitors to Canberra	Conveniently located rapid charging for the return journey	New rapid chargers in key areas such as Parliamentary Triangle and major carparks.	ActewAGL or other providers recover investment in setting prices
[6] Tourists by-passing Canberra – eg visiting snowfields	Rapid charger located next to facilities	Provide new rapid chargers close to the Monaro Highway (eg Airport or Calwell Shops)	Providers recover investment in setting prices

We wish to explain what we mean by “flaws in the current infrastructure”. It is the view of AEVA ACT that rapid charging infrastructure in the ACT falls short of the requirements of two groups of EV owners – visitors to Canberra, and Canberra residents who live in apartments without their own charging facilities. The key shortcomings are as follows:

- There are no public rapid chargers in the towns of Woden/Weston Creek, Belconnen, or Gungahlin
- Two of the three existing ActewAGL DC chargers use the CCS1 rather than the CCS2 standard, which limits their usefulness
- The other ActewAGL so-called ‘fast’ chargers are relatively slow (7kW AC) charging outlets
- The only ActewAGL CCS2 rapid charger (at London Circuit) has been out of service on a number of occasions (including in parts of February and March 2020)
- To use the ActewAGL chargers, a visitor to the ACT needs to have ordered and received a dedicated RFID card and signed up to a charging plan.
- The only other DC rapid charger is the Chargefox charger in Dairy Rd., Fyshwick. This is limited to 22kW. It is privately owned by SG Fleet, whose vehicles have priority, and is available only between 7am and 7pm.

To deal with these shortcomings, we make the following proposals:

- That the ACT Government provide financial incentives for the installation of public rapid chargers in the towns of Woden/Weston Creek, Belconnen, and Gungahlin. The type of incentive needs careful consideration, as explained in our answer to Q9.

	<ul style="list-style-type: none"> • That the ACT Government liaise with the Federal Government and the major national cultural institutions to encourage the installation of at least one public rapid (50kW min.) charger and multiple AC (7kW min.) outlets in the zone bounded by the National Library, the National Gallery, and Parliament House. • That ActewAGL transform its two CCS1/CHAdeMO chargers into CCS2/CHAdeMO chargers; undertake more frequent maintenance of its rapid chargers; and consider replacing its dedicated RFID card payment model with an app or credit card model that would better suit the needs of visitors to Canberra. To recover the costs of these changes, ActewAGL could raise the prices for use of its EV chargers. Alternatively, ActewAGL may consider that its seed network has served its purpose of having some rather than no charging over the past several years and that now is a good time to sell it off to a commercial provider, who would commit to expanding it. <p>In terms of the typologies set out on page 28, we note that chargers at shopping centres and at workplaces would assist Canberra residents who lack access to electricity at their domestic parking space. Chargers at carparks could meet the needs of day visitors to Canberra.</p> <p>In terms of charging at hotels, international research has shown that 90% of EV drivers will seek out destinations that have charging points over those that don't, meaning that having a charging point provides an additional draw for hotels as the EV market continues to develop. The experience and behavior of AEVA members is consistent with this observation.</p> <p>The integration of public charging with fleet charging is suggested on page 30. We note that this option is provided already at the Dairy Rd site but we have noted above some shortcomings with this arrangement.</p>
<p>Q3</p>	<ul style="list-style-type: none"> • If you are familiar with the proposed business case for car park solar, does this business case align with your expectations? If not, what other factors would you consider? <p>We lack the experience to comment on this question, except to say that there may need to be an exemption from height restrictions for carparks adding solar to the open top level that might be at the maximum before a solar canopy over parking spaces is added. And we note that solar car parks have the added benefit of providing more under-cover, shaded parking.</p>
<p>If we consider the commitment to “promote investment in public charging infrastructure and car park solar”, then based on the list of regulatory and complementary measures presented above:</p>	
<p>Q4</p>	<ul style="list-style-type: none"> • Can you comment on which of these you would see as the most practical for ACT Government to implement, noting a balance between impact, complexity and cost? <p>AEVA ACT largely lacks the experience to comment on the relative merits of measures listed. All seem potentially valuable.</p>
<p>Q5</p>	<ul style="list-style-type: none"> • Are there any other measures that you think would be important that are not listed here? <p>See our responses to Qs 2, 10 and 11. The ACT could consider co-investment with private providers, although that might be difficult while also maintaining a</p>

	level playing field and avoiding conflict of interest as the regulator.
Q6	<ul style="list-style-type: none"> Which would not be practical. Why? <p>None seem impractical to us.</p>
Q7	<ul style="list-style-type: none"> Can you comment on examples of smart business or financing models, government supported or otherwise, that might be applicable to improve the business case and de-risk private sector investment in EV charging infrastructure? <p>We do not have the experience to comment on this question.</p>
Q8	<ul style="list-style-type: none"> Can you comment on whether there is a role in the short term for governments, like the ACT Government, to invest in 100% government owned public EV charging stations on ACT Government owned land? <p>An ACT Government co-investment with a commercial provider would give a return on investment to the ACT in the longer term while avoiding the problem that an early over-supply of free charging might have the perverse effect of discouraging private investment in the more extensive charging infrastructure that will soon be needed, as discussed below.</p>
Q9	<ul style="list-style-type: none"> What do you consider would be the impact on private investment of such an investment by the government? <p>This raises a significant dilemma. On the one hand, investment by the government would be valuable in stimulating the early installation of charging infrastructure and thus encouraging the take-up of EVs by apartment dwellers. For rapid chargers (eg greater than 20 kW DC chargers) there is a significant cost involved in leasing, site preparation and installation of equipment. Private investors must recover those set-up costs in addition to their recurrent costs.</p> <p>The business case for private operators can be undermined by the existence of free services (such as currently applies at Dairy Rd) and loss-making services (which we suspect is the case for the ActewAGL infrastructure). This creates a dilemma for the provision of financial incentives by Governments.</p> <p>EV drivers are more concerned about the availability of charging infrastructure than they are about prices. It is not in the long-term interest of EV drivers for the price of rapid charging to be subsidised. Therefore, any government investment must be accompanied by arrangements which ensure that prices are set at true market levels, and any assistance to charging providers must be on a “level playing field” basis, available to any operator that enters this market.</p> <p>The imperative to avoid subsidies does not apply to chargers with lower set-up costs, such as 7 kW AC chargers at hotels and shopping centres. These are often provided free of charge in order to attract more business.</p>
Q10	<ul style="list-style-type: none"> Can you comment on whether and to what extent there is a role for governments to co-contribute to infrastructure for interstate/major highways including EV chargers for freight/trucks?

	Co-investment with private providers of charging networks on routes beyond the ACT borders could be conditional on those providers also providing infrastructure within the ACT borders.
Q11	<ul style="list-style-type: none"> • What do you consider would be the impact on investment attraction, if the government considered a model of co-contribution?
	See our answer to Q9.
Q12	<ul style="list-style-type: none"> • Should the ACT Government consider requiring all new large public and private ACT car park developments, and new major commercial building developments with car parks, to be electric vehicle ready?
	<p>It is hard to say to what extent EV charging will be necessary in all categories and situations of non-residential parking since experience to date is that 80% of charging occurs 'at home'. We advise that residential parking should have a minimum of 100% availability of 'trickle charging' or 'mode 2' capability. On the other hand, we think it is reasonable and not an undue burden to require a modest level of EV readiness in all new non-residential parking.</p> <p>We suggest that any definition of a minimum 'EV readiness' standard could include permitting or even encouraging dynamic load management systems so that a larger number of cars could be charged from lesser and consequently cheaper supply capacities.</p> <p>There is a range of user characteristics and uses for vehicles that planning for parking needs to take into account. eg disability parking, parents with prams and young children, loading and unloading of people, equipment and large purchases. Charging will be needed for taxis and ride share services and autonomous fleets.</p>

Responses - Regulatory options to drive the transition to zero emissions commercial vehicle fleets

Barriers and Opportunities Questions	
Question	Question Details
Q1	<ul style="list-style-type: none"> ● Is your company looking at the EV transition, or have you started the transition?
	<p>This section is mostly not applicable for AEVA ACT.</p>
Q2	<ul style="list-style-type: none"> ● Is your company developing long term EV transition targets?
	<p>N/A</p>
Q3	<ul style="list-style-type: none"> ● What are the key barriers to transitioning fleets to electric vehicles, in your view?
	<p>The lack of vehicle emission standards in Australia is a serious problem. We risk becoming a dumping ground for fossil fuel vehicles with poor emission performance. The ACT government could make representations to the federal government and seek the support of other states.</p>
Q4	<ul style="list-style-type: none"> ● What do you see as the major opportunities?
	<p>The major opportunities are to continue to build on ACT Government actions and decisions so far, and to show the variety and benefits of EVs that already exist. We would greatly welcome Government support for World EV Day and other events planned.</p> <p>The ACT Government should collaborate with itself (ie across all departments and agencies) as much has been and continues to be done within government to facilitate and encourage EV adoption. Collaboration could also happen with national institutions and tourist attractions to support installation of charging and promotion of locations with charging units as EV friendly and therefore supporting the move to zero emissions.</p>

Potential policy and complementary measures - Questions

Question	Question Details
<p>If we consider the commitment to “Investigate regulatory options to drive the transition to zero emissions commercial vehicle fleets”, then based on the list of regulatory and complementary measures presented above:</p>	
<p>Q5</p>	<ul style="list-style-type: none"> ● Which of these do you think are the most feasible to implement? Why? <p>AEVA ACT largely lacks the experience to comment on this section.</p> <p>However, our members would certainly welcome advocacy in favour of ‘relaxation of import restrictions to allow more quality used electric vehicles into Australia’ and ‘simplification of used parallel importing processes, so that importing an electric vehicle is as simple as purchasing one from a dealer.’</p>
<p>Q6</p>	<ul style="list-style-type: none"> ● Are there any that you think would be impractical to implement? Why? <p>N/A</p>
<p>Q7</p>	<ul style="list-style-type: none"> ● Which would not be practical. Why? <p>N/A</p>
<p>Q8</p>	<ul style="list-style-type: none"> ● Are there any other measures that you think would be important that are not listed here? <p>Advocacy for the introduction of stringent vehicle emission standards.</p>
<p>Q9</p>	<ul style="list-style-type: none"> ● Who are the key organisations that the ACT Government should seek to partner with in its activities and interventions to help acceleration of electric vehicles in fleets within the ACT? <p>AEVA ACT can participate in information days for fleet buyers to address the “unfamiliarity with the technologies involved”. This could be expanded to emergency services, other departments and businesses.</p>