Legislative Assembly for the Australian Capital Territory

Standing Committee on Planning, Transport and City Services

Inquiry into electric vehicle (EV) adoption in the ACT

Legislative Assembly for the Australian Capital Territory
Standing Committee on Planning, Transport and City Services

Approved for publication

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About the committee

Establishing resolution

The Assembly established the Standing Committee on Planning, Transport and City Services on 2 December 2020.

The Committee is responsible for the following areas:

- City Renewal Authority;
- Suburban Land Agency;
- Planning and Land Management (excluding parks and conservation);
- Transport;
- City Services including waste and recycling;
- Housing (excluding service provision); and
- Building and Construction.

You can read the full establishing resolution here.

Committee members

Ms Jo Clay MLA, Chair

Ms Suzanne Orr MLA, Deputy Chair

Mr Mark Parton MLA

Secretariat

Ms Miona Ikeda, Acting Committee Secretary (from 21 November 2022)

Ms Kate Mickelson, Assistant Secretary (Acting Committee Secretary from 12 September 2022 until 21 November 2022)

Ms Joanne Cullen, Acting Committee Secretary (until 11 September 2022)

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About this inquiry

Under Standing Order 216, a Standing Committee can self-initiate an inquiry into any subject area for which it is given responsibility by the establishing resolution. The Standing Committee on Planning, Transport and City Services resolved to conduct an inquiry into electric vehicle (EV) adoption in the ACT on 26 May 2022.

The Committee informed the Assembly of its intention to conduct this inquiry on 2 June 2022.

Terms of Reference

That the Standing Committee on Planning, Transport and City Services inquire into barriers to EV uptake and solutions and incentives to encourage uptake in the Territory, including:

a. Skills development needs to support an expanding EV uptake;

b. Industry development opportunities;

c. Planning laws and regulations and education and promotions in relation to charging infrastructure requirements in a variety of residential, public and commercial configurations and precincts;

d. ACT Government's role in providing charging infrastructure;

e. Regional charging infrastructure and whether this is a barrier to local uptake, end-of-life battery disposal, and impact of EVs on ACT power supply requirements and vehicle-to-grid issues;

f. Application of Territory taxes and charges for EV purchases including registration charges;

g. Federal taxes and charges for EV purchases, including import taxes;

h. Other Federal barriers to EV uptake, cost and availability of EVs, including fuel efficiency standards, impact of EV uptake on existing motor and service industry sectors including possible transition assistance, equity and just-transition issues for people on lower incomes; and

i. Any other matter relevant to this issue.

Contents

Acronyms and abbreviations

Acronym	Long form
AC	Alternating current
ACT	Australian Capital Territory
ACTCOSS	ACT Council of Social Service
The Action Plan	Transition to Zero Emissions Vehicles Action Plan 2018-21
AEVA-ACT	Australian Electric Vehicle Association Australian Capital Territory
The Agreement	Parliamentary and Governing Agreement for the 10th Legislative Assembly
The Assembly	The ACT Legislative Assembly
ATA	Australian Trucking Association
BEV	Battery electric vehicle
^{o}C	Degrees Celsius
CapEx	Capital expenditure
CIT	Canberra Institute of Technology
CO_2	Carbon dioxide
The Committee	Standing Committee on Planning, Transport and City Services
CPI	Consumer price index
DC	Direct current
e-bike	Electric bicycle
e-waste	Electronic waste
EPSDD	Environment, Planning and Sustainable Development Directorate
EV	Electric vehicle
EVSE	Electric vehicle supply equipment
FCAI	Federal Chamber of Automotive Industries
FCEV	Fuel cell electric vehicle
GST	Goods and services tax
HEV	Non-plug-in hybrid electric vehicle
HMCA	Hyundai Motor Company Australia
HV	High volt
ICE	Internal combustion engine
km	Kilometre(s)
kt	Kilotonne(s)
kV	Kilovolt(s)

kW	Kilowatt(s)
LCV	Light commercial vehicle
LPG	Liquefied petroleum gas
LULUCF	Land Use, Land-Use Change and Forestry
Minister Rattenbury	Mr Shane Rattenbury MLA, Minister for Water, Energy and Emissions Reduction
Minister Steel	Mr Chris Steel MLA, Minister for Transport and City Services
MLA	Member of the Legislative Assembly
MW	Megawatt(s)
NEM	National Electricity Market
NRMA	National Roads and Motorists Association
NSW	New South Wales
OC	Owners Corporation
OCN	Owners Corporation Network
OEM	Original equipment manufacturer
PHEV	Plug-in hybrid electric vehicle
RRP	Recommended retail price
RUC	Road-user charge
SUV	Sport utility vehicle
TAFE	Technical and Further Education
TCCS	Transport Canberra and City Services Directorate
Territory	Australian Capital Territory
UFU ACT	United Firefighters Union (ACT Branch)
UG	Underground
V2G	Vehicle-to-Grid
V2H	Vehicle-to-House
ZEV	Zero emissions vehicle
The ZEV Strategy	ACT Zero Emissions Vehicles Strategy 2022-30
ZLEV	Zero and low emissions vehicles

Recommendations

Recommendation 1

The Committee recommends that the ACT Government work closely with the Commonwealth Government and advocate for national fuel emissions standards that are consistent with those set in Europe.

Recommendation 2

The Committee recommends that the ACT Government work with other jurisdictions to plan and implement charging infrastructure along major routes to and from Canberra, to ensure that ACT residents can have confidence in travelling long distances using an EV.

Recommendation 3

The Committee recommends that the ACT Government review the proposed rollout of charging infrastructure to ensure an equitable spatial distribution of chargers occurs and report the findings to the Assembly.

Recommendation 4

The Committee recommends that the ACT Government consider encouraging Tesla to include a charging location within the ACT in its pilot program extending the 'supercharger' network to non-Tesla vehicles.

Recommendation 5

The Committee recommends that the ACT Government, when providing support for charging infrastructure installation, require service guarantees for reliability and develop a maintenance policy for public electric chargers including service level standards to ensure chargers are properly maintained and reliably available.

Recommendation 6

The Committee recommends that the ACT Government investigate the feasibility of installing kerbside chargers for EVs in areas where off-street parking is not allocated for each residence, to supplement both public and private charging infrastructure.

Recommendation 7

The Committee recommends that the ACT Government consider whether more hydrogen refuelling is required in the ACT or surrounding regions and take steps to ensure that this is adequately provided if hydrogen refuelling is a barrier to greater EV uptake in private and freight vehicles.

Recommendation 8

The Committee recommends that the ACT Government provide one-off grants to body corporates of existing multi-dwelling units to assess whether their building can be retrofitted to accommodate charging infrastructure and the most practicable way the building can be retrofitted.

Recommendation 9

The Committee recommends that the ACT Government engage in a cost-benefit analysis that demonstrates to property owners the increase in the value of a property relative to the initial cost of implementing EV charging infrastructure.

Recommendation 10

The Committee recommends that the ACT Government better promote its existing advisory service and write to all body corporates in the ACT to ensure that all multi-unit buildings are aware they can receive targeted advice about how to offer EV charging services.

Recommendation 11

The Committee recommends that the ACT Government review the *Unit Titles (Management) Act 2011* to ensure the provisions of the Act are adequate for body corporates to manage EV related matters for example the installation of charging infrastructure.

Recommendation 12

The Committee recommends that the ACT Government closely monitor the progress of Vehicle-to-Grid technologies to align uptake with available technology that is commercially viable and safe.

Recommendation 13

The Committee recommends that the ACT Government table in the Assembly, by the last sitting week of 2023, the 2022 GHD/ACIL ALLEN modelling on the impact to the electricity grid of the transition from gas and the uptake of EVs.

Recommendation 14

The Committee recommends that the ACT Government table in the Assembly, the updated modelling currently being undertaken on the impact to the electricity grid of the transition from gas and the uptake of EVs.

Recommendation 15

The Committee recommends that the ACT Government continue to work with Evoenergy to ensure network readiness and minimise network constraints as EV ownership grows.

Recommendation 16

The Committee recommends that the ACT Government acknowledge the inequities which exist in the current government policies and programs supporting the transition to EVs and adapt these policies and programs to better respond to those inequities.

Recommendation 17

The Committee recommends that the ACT Government review current government policies and programs supporting the transition to electric vehicles to gain a greater understanding of the types of inequalities in or exacerbated by this program, how these could have been better

responded to and what learnings from this experience can be applied to future areas of transition such as the transition from gas to electricity.

Recommendation 18

The Committee recommends that, to support a just transition to a zero-emissions city, the ACT Government include non-car electric vehicles such as electric motorcycles, e-bicycles, e-tricycles and electric scooters in the Sustainable Household Scheme.

Recommendation 19

The Committee recommends that the ACT Government continue to support all forms of transport with priority being on modes of transport that provide public access or minimise congestion, such as active travel or public transport.

Recommendation 20

The Committee recommends that the ACT Government undertake further consideration of and report back to the Assembly on how the transition to electric vehicles as currently outlined will or will not support a reduction in individual car dependency.

Recommendation 21

The Committee recommends that the ACT Government, as a matter of good practice when developing and implementing policy for future transitions, undertake a risk assessment of the inequalities possible or exacerbated from transitioning, including disability and just transition, and use this to address the issues identified as any future program is developed and implemented.

Recommendation 22

The Committee recommends that the ACT Government, as a matter of best practice, publish a statement on how the inequalities identified in the risk assessment for any future transitions are being addressed in the policy and programs.

Recommendation 23

The Committee recommends that the ACT Government, when considering road-user charges, does not disincentivise the purchase of low emissions vehicles.

Recommendation 24

The Committee recommends that the ACT Government consider the costs and benefits of shortening the lease period on its fleet of electric vehicles in order to increase the local supply of used electric vehicles.

Recommendation 25

The Committee recommends that the ACT Government explore more opportunities to assist the freight industry, such as curfew exemptions and financial incentives, as soon as practicable and ahead of the current 2030 timeframe.

Recommendation 26

The Committee recommends that the ACT Government provide additional funding and support to ACT Fire and Rescue for specialised training to deal with EV related fires.

Recommendation 27

The Committee recommends that the ACT Government support the development and publication of educational materials for owners corporations and the general public on EV charging facilities and how to manage associated risks.

Recommendation 28

The Committee recommends that the ACT Government ensure that legislation is in place as soon as possible to support and promote the environmentally sound reuse and recycling of EV batteries, whether this occurs within the ACT or in partnership with surrounding jurisdictions.

Recommendation 29

The Committee recommends that the ACT Government ensure public charging facilities are disability accessible.

Recommendation 30

The Committee recommends that the ACT Government consider updating driver education and testing standards to allow drivers to learn and be assessed in electric vehicles.

1. Conduct of the inquiry

1.1. The Committee received 73 submissions to the inquiry. These are listed in **Appendix A**.

1.2. The Committee held the first public hearing on Wednesday, 1 March 2023. Witnesses who appeared at the hearing are listed in **Appendix B**.

1.3. The Committee held additional public hearings on Thursday, 18 May 2023 and Thursday, 15 June 2023. Witnesses who appeared at these hearings are also listed in **Appendix B**.

1.4. The Committee had two Questions Taken on Notice from the public hearings. These are listed in **Appendix C**.

2. Background

Transition to net zero emissions

2.1. The Australian Capital Territory (ACT) has set a target of achieving net zero greenhouse gas emissions by 2045, at the latest. This target is legislated in the *Climate Change and Greenhouse Gas Reduction Act 2010.*[1]

2.2. Interim targets specified in the *ACT Climate Change Strategy 2019–2025*[2] are:

- 40 percent less than 1990 emissions by 30 June 2020;[3]
- 50–60 percent less than 1990 emissions by 30 June 2025;
- 65–75 percent less than 1990 emissions by 30 June 2030;
- 90–95 percent less than 1990 emissions by 30 June 2040;
- 100 percent less than 1990 emissions by 30 June 2045.[4]

2.3. The ACT Government's goals for climate action in the ACT is also driven by the Parliamentary and Governing Agreement for the 10th Legislative Assembly (the Agreement). The Agreement stipulates that:

> The parties agree that the world is facing a climate change emergency, and commit to undertaking rapid, science-based action to mitigate and adapt to climate change, and transition the ACT to net zero emissions. The parties also commit to working closely with the community, ensuring a just transition for those impacted by the shift to net zero emissions, and growing sustainable industries and jobs.[5]

2.4. The ACT was the first Australian jurisdiction to shift to 100 percent renewable electricity from 1 January 2020.[6]

2.5. After moving to 100 percent renewable electricity, transport is now the ACT's largest source of tracked greenhouse gas emissions and is the priority for emissions reduction action.[7] According to the *ACT Greenhouse Gas Emissions Inventory Report 2020-21*, transport accounts for 63.5 percent of total emissions, making it the single largest contributor to tracked emissions in the ACT.[8]

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[1] *Climate Change and Greenhouse Gas Reduction Act 2010*, s 7.
[2] ACT Government, *ACT Climate Change Strategy 2019-25*, p 4.
[3] Note: In 2020, the ACT met the emissions reduction target of 40 percent below 1990s levels – Mr Andrew Barr MLA, Chief Minister, Mr Shane Rattenbury MLA, Minister for Water, Energy and Emissions Reduction, 'ACT meets nation-leading 40% emissions reduction', *Joint Media Release*, 4 December 2020.
[4] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022-30*, p 6.
[5] Brett Mason, 'The ACT is now running on 100 renewable electricity', SBS News, 1 January 2020.
[6] Mr Andrew Barr MLA, Chief Minister, Mr Shane Rattenbury MLA, Minister for Water, Energy and Emissions Reduction, 'ACT the first jurisdiction outside of EU to achieve 100% renewable electricity', *Joint Media Release*, 18 September 2021.
[7] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022-30*, p 7.
[8] ACT Government, *ACT Greenhouse Gas Emissions Inventory Report 2020-21*, p 4.

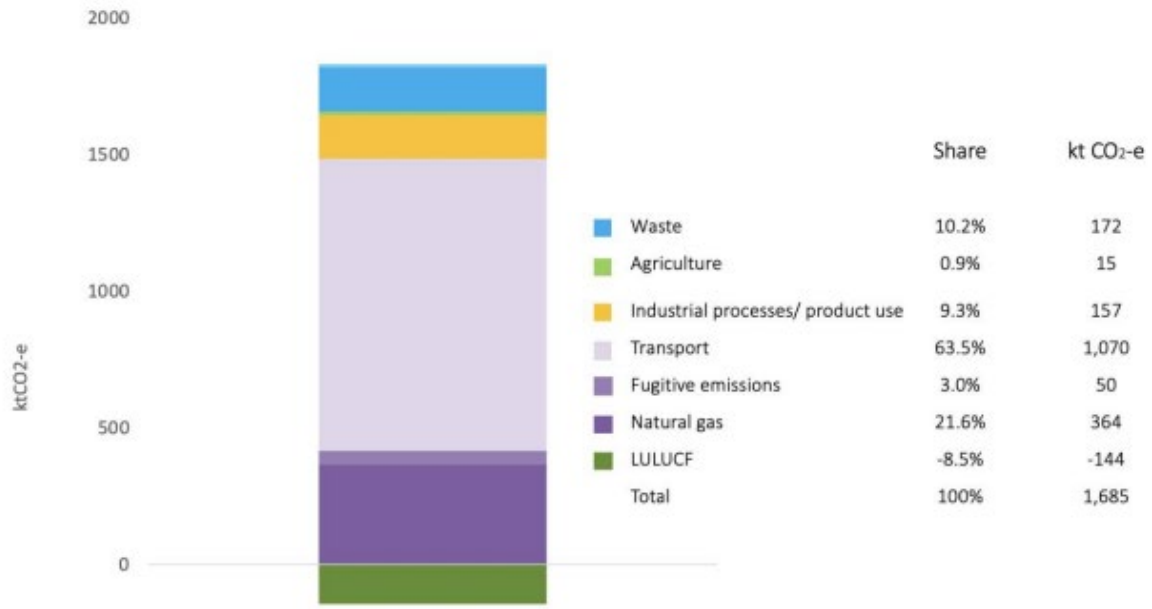

Figure 1: ACT Government, *ACT Greenhouse Gas Inventory for 2020-21*, p 4. [Note: numbers may not sum due to rounding]

2.6. Most transport emissions are caused by private vehicles (69 percent), followed by freight (20 percent), and public transport such as buses (3 percent).[9]

2.7. The electrification of Canberra's private and public transport fleets, as well as the promotion of electric vehicles (EVs), would see a significant reduction in the ACT's carbon footprint and reduce greenhouse gas emissions from the transport sector.

Zero emissions vehicle strategy

2.8. EVs are cars or other vehicles with motors that are powered by electricity rather than liquid fuels.[10]

2.9. There are currently four main types of EVs:

- Battery electric vehicles (BEVs) are fully electric, meaning they are solely powered by electricity and do not have a petrol, diesel or liquefied petroleum gas (LPG) engine, fuel tank or exhaust pipe. BEVs are also known as 'plug-in' EVs as they use an external electrical charging outlet to charge the battery;[11]
- Plug-in hybrid electric vehicles (PHEVs) powered by a combination of liquid fuel and electricity. They can be charged with electricity using a plug but also contain an internal combustion engine that uses liquid fuel;[12]
- Fuel cell electric vehicles (FCEVs) use a fuel cell instead of a battery, or in combination with a battery or supercapacitor, to power their electric motors. FCEVs

[9] ACT Government, *ACT Transport Strategy 2020*, p 9.
[10] Australian Renewable Energy Agency, *What are electric vehicles?*, 6 June 2023.
[11] Australian Renewable Energy Agency, *What are electric vehicles?*, 6 June 2023.
[12] Australian Renewable Energy Agency, *What are electric vehicles?*, 6 June 2023.

are typically fuelled by hydrogen and usually provide greater range than BEVs;[13] and

- Non-plug-in hybrid electric vehicles (HEVs): instead of using an external plug to charge the vehicle, the electricity generated by the HEV's braking system is used to recharge the battery. This is called 'regenerative braking' and is also used in BEVs, PHEVs, and FCEVs.[14]

2.10. The ACT Government has implemented the *ACT Zero Emissions Vehicle Strategy 2022-30* (the ZEV Strategy), which outlines a range of actions that will make owning a zero emissions vehicle (ZEV) a 'more affordable and accessible option for all Canberrans in the years to come.'[15]

2.11. The ZEV Strategy includes measures to:

- Reduce the cost of owning an EV;
- Increase the availability of EVs and EV chargers;
- Make Canberra an attractive market for ZEV businesses and investment; and
- Phase out new light internal combustion engine (ICE) vehicles from 2035.[16]

2.12. The ZEV Strategy builds on the ACT Government's *Transition to Zero Emissions Vehicles Action Plan 2018-21* (the Action Plan). The Action Plan included commitments to shifting to a zero emissions government passenger vehicle fleet and introducing incentives for ZEV uptake.[17]

2.13. The shift has seen the government working to electrify its fleet. For example, the ACT Government has acquired 96 electric buses for the Transport Canberra fleet as part of its *Zero Emissions Transition Plan for Transport Canberra,*[18] with 12 leased buses in the fleet as of 31 May 2023.[19] This will be increased to at least 16 by 30 June 2024, with the remaining 90 to be progressively delivered through to 2026.[20] Powered by lithium-ion phosphate batteries, these buses can operate up to 16 hours a day on a single charge.[21]

2.14. The government also acquired the world's first right-hand drive, plug-in hybrid electric pumper (fire truck) for ACT Fire and Rescue in June 2023.[22] More recently in July 2023, the

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[13] Australian Renewable Energy Agency, *What are electric vehicles?*, 6 June 2023.
[14] Australian Renewable Energy Agency, *What are electric vehicles?*, 6 June 2023.
[15] ACT Government, *The Future of ZEVs*, p 1.
[16] ACT Government, *The Future of ZEVs*, p 1.
[17] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022-30*, p 10.
[18] ACT Government, *Zero-Emissions Transition Plan for Transport Canberra*, September 2020.
[19] Mr Chris Steel MLA, *Answer to QTON 27: Battery electric buses*, Select Committee on Estimates 2023-2024, 25 July 2023, p 1.
[20] See, for example: ACT Government, *More electric buses for Canberra*, 31 May 2023; Mr Chris Steel MLA, *Answer to QTON 27: Battery electric buses*, Select Committee on Estimates 2023-2024, 25 July 2023, p 1; Mr Chris Steel MLA, *Answer to QTON 26: Cost of the purchase for 96 electric buses*, Select Committee on Estimates 2023-2024, 25 July 2023, p 1.
[21] ACT Government, *More electric buses for Canberra*, 31 May 2023.
[22] See, for example, Claire Fenwicke, ''The future of all transport is electric': ACT takes the lead with the country's first hybrid plug-in pumper', *RiotACT*, 12 June 2023; ACT Audit Office, *Audit-General's Performance Audit Report – Procurement of a Hybrid Electric Fire Truck: Report No. 4/2023*, June 2023, p 1.

City Renewal Authority has introduced an electric street sweeper to its fleet, following a trial in May 2022 which involved several electric mowing and street-sweeping vehicles.[23]

2.15. Further, to encourage the purchase of ZEVs, the ACT Government has announced two years' free registration for new or used ZEVs registered in the ACT between 24 May 2021 and 30 June 2024.[24]

2.16. In addition to free registration, interest-free loans of up to $15,000 are available to households to assist with the upfront cost of buying EVs and for installing EV charging infrastructure in homes.[25]

2.17. Notable additional ACT Government commitments include:

- adopting a sales target of 80–90 percent for ZEVs by 2030;
- constructing at least 180 new publicly accessible EV charging stations, including 50 during 2022–23; and
- establishing a fleet advisory service to support Canberra businesses and community organisations wanting to transition their fleets to ZEVs.[26]

[23] James Coleman, 'Meet 'Sweeping Beauty', Canberra's new fully electric street sweeper', *RiotACT*, 13 July 2023.
[24] ACT Government, *Submission 58*, pp 8–9.
[25] ACT Government, *Submission 58*, p 2.
[26] ACT Government, *Submission 58*, pp 2–3.

3. Matters considered by the Committee

3.1. This Chapter will summarise the evidence received by the Committee through submissions and the three public hearings. It will detail both support for EV adoption in the ACT as well as concerns, along with the Committee's views and recommendations.

Market size

3.2. The ZEV market is still emerging and as such, there are not a lot of vehicle and service options available in Australia, when compared to the fuel vehicle industry.

3.3. In its submission, Hyundai Motor Company Australia (HMCA) stated that 'in a small market like Australia, it can be difficult for manufacturers to justify introducing new models where potential sale volumes are limited.'[27]

3.4. According to the Electric Vehicle Council's *State of Electric Vehicles* report, in October 2022, there were 45 EV models available in Australia, including 95 variants, compared to approximately 180 variants available in the United Kingdom.[28]

3.5. While this is an increase of 11 new BEV and PHEV models available in Australia since March 2022,[29] the ZEV market in Australia is still considered to be emerging and does not yet provide the same range of vehicle options or servicing availability as the fuel vehicle industry.[30]

3.6. Many submitters noted that lack of availability of EVs, or of suitable EVs, was a barrier to its uptake.[31]

3.7. In their submission, Aidan O'Leary noted that even when potential purchasers are prepared to wait for a vehicle to become available, they may have to pay a deposit on the vehicle before they can test drive it.[32]

3.8. Likewise, Stephen McElhinney found no electric cars available 'for love or money' when he needed to replace a vehicle, and therefore had to buy an ICE vehicle instead.[33]

3.9. Similarly, John Smith noted that 'the biggest problem at the moment is not lack of demand but lack of supply.'[34]

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[27] Hyundai Motor Company Australia, *Submission 30*, p 5.
[28] Electric Vehicle Council, *State of EVs October 2022*, p 12.
[29] Electric Vehicle Council, *State of EVs October 2022*, p 12.
[30] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022-30*, p 13.
[31] See, for example: Aidan O'Leary, *Submission 3*, p 1; Simon Byrne, *Submission 4*, p 1; Alex Satrapa, *Submission 6*, p 1; Paul Matterson, *Submission 7*, p 1; Stephen McElhinney, *Submission 14*, p 1; John Smith, *Submission 36*, pp 9–10; Woolworths Group, *Submission 62*, p 3; Conservation Council ACT Region, *Submission 64*, p 3.
[32] Aidan O'Leary, *Submission 3*, p 1.
[33] Stephen McElhinney, *Submission 14*, p 1.
[34] John Smith, *Submission 36*, p 9.

3.10. In their submission, Simon Byrne lamented that the EVs currently available were restricted to 'city runabouts or super expensive luxury SUVs',[35] while others found that few of the available EVs were suitable for towing trailers or boats.[36]

3.11. The HMCA noted in its submission that the market for new EVs in Australia had risen by 200 percent from 2020 to 2021. However, EVs still represented only five percent of total new vehicle sales in the ACT, and two percent of new vehicle sales in Australia as a whole.[37]

3.12. In its submission, the Motor Traders' Association New South Wales (NSW) noted that the current global availability of EVs is low, and added that right-hand drive vehicles make up only 10 percent of new cars produced worldwide. This means that conversion of manufacturing processes to produce EVs will begin with the larger left-hand drive market and right-hand drive vehicles are likely to be delivered to the market later.[38]

3.13. Motor Traders' Association (NSW) suggested that allowing accelerated depreciation for zero and low emissions vehicles (ZLEV) fleet purchases would encourage more rapid uptake of ZLEVs by large purchasers and support the Australian Government's 2030 EV uptake projection.[39]

3.14. In its submission, Woolworths Group expressed the view that the greatest barriers to EV uptake are a lack of availability of commercial vehicle classes and access to charging infrastructure:[40]

> Local supply should provide increased vehicle options and greater competition, leading to more suitable vehicles at lower vehicle prices. ... Currently there are only a handful of suppliers of electric LCVs and in most instances these are not yet at scale.[41]

3.15. In its submission, the Federal Chamber of Automotive Industries (FCAI) remarked that, while ownership rates of vehicles in Australia are among the highest in the world, the Australian vehicle market is 'extremely small' on an international scale.[42]

3.16. FCAI expressed concern that supply of lower-cost EVs would not increase to match demand within the target period, saying 'it is unlikely that BEVs will be available to the majority of consumers by 2030 at a price point that is acceptable.'[43]

3.17. FCAI further noted that, while light commercial vehicles (LCVs) comprise 25 percent of the new vehicle market in Australia, the availability of BEVs in this vehicle class is expected to remain very low until at least the mid-2030s.[44]

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[35] Simon Byrne, *Submission 4*, p 1.
[36] See, for example: Aidan O'Leary, *Submission 3*, p 1; Paul Matterson, *Submission 7*, p 1; Alex Elliott, *Submission 12*, p 1.
[37] Hyundai Motor Company Australia, *Submission 30*, p 2.
[38] Motor Traders' Association NSW, *Submission 73*, p 5.
[39] Motor Traders' Association NSW, *Submission 73*, pp 12–13.
[40] Woolworths Group, *Submission 62*, p 3.
[41] Woolworths Group, *Submission 62*, p 5.
[42] Federal Chamber of Automotive Industries, *Submission 56*, p 5.
[43] Federal Chamber of Automotive Industries, *Submission 56*, p 9.
[44] Federal Chamber of Automotive Industries, *Submission 56*, p 9.

3.18. FCAI attributed the projected continuing low availability of 'volume' brands of passenger and light ZEVs by 2033 to global constraints on engineering and production capability. Despite continued research and engineering development, they believed that 'the target of 80–90 percent for new light vehicle sales by 2030 is at risk'. They further noted that EV uptake rates elsewhere in the world were supported by incentive schemes 'substantially higher than those offered in Australia.'[45]

Fuel efficiency standards

3.19. Several submitters argued in favour of implementing fuel efficiency standards as an incentive for EV manufacturers to increase supply to Australia and improve the range of vehicles available.[46]

3.20. Fuel efficiency standards set an emissions target averaged across new vehicles sold for vehicle manufacturers or local distributors. Emissions are measured in grams of carbon dioxide (CO_2) released per kilometre travelled.[47] As the targets apply to manufacturers' average emissions, they do not exclude any individual vehicles from the market.[48]

3.21. In their submission, Steven Hoy said that such standards could move the EV market towards price parity with ICE vehicles, increase the percentage of EV sales, and encourage the sale of more efficient ICE and hybrid vehicles.[49]

3.22. Peter LeCornu's submission asserted that a 'key reason' for current delays in EV delivery was a lack of national fuel efficiency standards, as manufacturers prioritise supplying markets with these standards. He said that 'Australia will continue to be a dumping ground for less efficient vehicles whilst no such standards exist.'[50]

3.23. John Smith's submission echoed the 'dumping ground' sentiment, saying:

> This [lack of mandatory fuel efficiency standards] results in Australia being a dumping ground for dirty inefficient vehicles, as manufacturers suffer penalties in other markets if they do not meet the standards, whereas they get a free pass to dump these dirty vehicles in Australia. Having to meet the standards means the manufacturers deliver more EVs and more models of EVs to our market.[51]

3.24. In its submission, the Australian Electric Vehicle Association ACT Branch (AEVA-ACT) supported the introduction of a fuel efficiency standard as 'the best way to address supply

[45] Federal Chamber of Automotive Industries, *Submission 56*, pp 12–13.
[46] See, for example: Steven Hoy, *Submission 20*, pp 2–3; Peter LeCornu, *Submission 21*, pp 2–3; Paul Wayper, *Submission 25*, p 3; John Smith, *Submission 36*, p 7; Australian Electric Vehicle Association (ACT), *Submission 49*, pp 14–15; Federal Chamber of Automotive Industries, *Submission 56*, pp 3, 6–7, 10; Conservation Council ACT Region, *Submission 64*, pp 3, 8.
[47] Australian Government, *National Electric Vehicle Strategy: Consultation Paper*, p 15.
[48] Australian Government, *National Electric Vehicle Strategy: Consultation Paper*, p 10.
[49] Steven Hoy, *Submission 20*, pp 2–3.
[50] Peter LeCornu, *Submission 21*, pp 2–3.
[51] John Smith, *Submission 36*, p 7.

problems'. AEVA-ACT indicated that manufacturers could receive up to $18,000 per vehicle in incentives when selling cars into other markets which do have such standards.[52]

3.25. However, AEVA-ACT cautioned that a fuel efficiency standard must be set at an appropriate level, saying that that Australia should have 'a sufficiently ambitious, steadily contracting fuel efficiency standard, ideally matching that of Europe and implemented promptly'.[53]

3.26. In its submission, FCAI noted that it had introduced a voluntary standard in 2020, which is currently under review.[54] FCAI supports a national CO_2 fuel emissions target as part of a clear and consistent national approach to emissions reduction:[55]

> [I]t sends a strong signal to OEMs and Distributors that Australia is committed to supporting technologies that will achieve zero emissions.
>
> This is a key point. As described earlier, Australia is a relatively small automotive market in global terms. As a result, OEMs and Distributors will prioritise ZLEV supply into markets where there is strong demand and incentive to do so. An emissions target set by a national government will force the supply of ZLEVs to meet these targets.[56]

3.27. During the public hearing on 1 March 2023, FCAI told the Committee that European fuel efficiency standards would be a 'dramatic shift' for the Australian market, and that the Australian vehicle market was 'very different' to the European market. Half of new vehicles sold every year are light commercial vehicles, or utes, and 'those vehicles are currently not in volume production in right-hand drive in the world at a price point that is acceptable to the Australian market'.[57]

3.28. FCAI said that fuel emissions standards in Australia should be:

> …challenging, achievable and take into account the full range of technologies that are in place, first and foremost to encourage the increased take-up of electric vehicles in Australia but also to allow Australians to drive lower emission vehicles at a price they can afford.[58]

3.29. Woolworths Group noted in its submission that they voluntarily adhere to European fuel efficiency and emissions standards, and support mandatory standards. They noted that an additional benefit of adhering to such standards was 'prompting a newer fleet with better safety performance'.[59]

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[52] Australian Electric Vehicle Association (ACT), *Submission 49*, p 14.
[53] Australian Electric Vehicle Association (ACT), *Submission 49*, p 15.
[54] Federal Chamber of Automotive Industries, *Submission 56*, pp 3, 7.
[55] Federal Chamber of Automotive Industries, *Submission 56*, p 7.
[56] Federal Chamber of Automotive Industries, *Submission 56*, p 7.
[57] Mr Peter Griffin, Director, State and Territory Advocacy and Communications, Federal Chamber of Automotive Industries, *Committee Hansard*, 1 March 2023, p 22.
[58] Mr Peter Griffin, Director, State and Territory Advocacy and Communications, Federal Chamber of Automotive Industries, *Committee Hansard*, 1 March 2023, p 22.
[59] Woolworths Group, *Submission 62*, p 5.

3.30. The ACT Government's submission noted that the Australian market is a low priority for global vehicle manufacturers 'due to both relatively low emissions standards and a lack of policy support for EVs, such as vehicle sales targets'.[60]

> This regulatory environment means that Australia is a comparatively less advantageous environment for manufacturers to supply EVs to in comparison to fossil fuelled vehicles. Major manufacturers like Volvo and Ford Europe are planning to offer only electric cars from 2030, General Motors has committed to only offering electric vehicles from 2035 and Volkswagen is aiming to have 70% of European sales be electric vehicles by 2030. While these companies are ramping up production of zero emission vehicles, they must make choices about which markets to service around the world and nations without regulation such as Australia will receive lower priority.[61]

3.31. The ACT Government also noted that the lack of a national commitment to phase out ICE vehicle sales contributed to Australia's low priority position with global suppliers, saying 'the ACT would welcome an Australian Government commitment which would help provide certainty to vehicle suppliers on the nation's future direction.'[62]

3.32. During the public hearing on 1 March 2023, Mr Chris Steel MLA, Minister for Transport Canberra and City Services (Minister Steel) told the Committee:

> We need strong fuel efficiency standards if we are to see the market share, the number of vehicles available on the Australian market, grow. Until we have those standards in place, we will continue to be a dumping ground for less efficient vehicles that end up costing Australian motorists more.
>
> It is critical, particularly, to make sure that we have affordable models on the market. That is one of the key barriers at the moment—the cost of these vehicles. There are far more different models available in overseas markets that have fuel efficiency standards in place. It is one of the reasons why that is the most critical piece of the puzzle, out of everything, including incentives. The regulation is absolutely critical.[63]

3.33. Minister Steel noted that the ACT Government has been involved in early discussions with the Australian Government as part of the development of a national EV strategy, and that there would be further discussions as new standards were developed.[64]

3.34. In April 2023, a letter endorsed by 120 local government officials from across Australia, including the ACT's Chief Minister, Mr Andrew Barr MLA, and Minister for Water, Energy and Emissions Reduction, Mr Shane Rattenbury MLA, called on the Commonwealth Government to introduce mandatory fuel emissions standards which would deliver 'at least

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[60] ACT Government, *Submission 58*, p 11.
[61] ACT Government, *Submission 58*, p 12.
[62] ACT Government, *Submission 58*, pp 12–13.
[63] Mr Chris Steel MLA, Minister for Transport and City Services and Minister for Skills, *Committee Hansard*, 1 March 2023, p 88.
[64] Mr Chris Steel MLA, Minister for Transport and City Services and Minister for Skills, *Committee Hansard*, 1 March 2023, p 88.

equivalent settings to those in other markets' and be reviewed and updated approximately every five years.[65]

Committee comment:

3.35. The Committee is of the view that a national EV emissions standard is a critical step in improving the market share, the range and the affordability of EVs available for purchase to consumers not just in the ACT, but across Australia. As such, the ACT Government should continue to engage with and encourage the Commonwealth Government to do more on this issue.

> **Recommendation 1**
>
> The Committee recommends that the ACT Government work closely with the Commonwealth Government and advocate for national fuel emissions standards that are consistent with those set in Europe.

Long distance travel and 'range anxiety'

3.36. Many submissions mentioned concerns about long distance travel and the availability of charging infrastructure within a vehicle's drive range.[66]

3.37. In their submission, Aidan O'Leary noted that EV range is diminished by using a vehicle's heating, lights, or windscreen wipers, and can be halved if the vehicle is used for towing.[67]

3.38. Limited access to charging infrastructure in remote areas was a concern for some submitters, with Brendon Mulloy commenting in their submission that:

> I regularly tow and spend time in relatively remote places, like properties around Mitta Mitta, Grenfell, Canowindra, Coonabarabran, etc. many of these places are scant on recharging infrastructure and you can't just grab a jerry can of electrons.[68]

3.39. Some submitters found that charging infrastructure on regional routes was inadequate, with chargers too far apart, unavailable, or not well maintained.[69] Robbie Matthews described the NSW fast charger network as 'usable but very sparse'[70] and Karen Maher

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[65] Cities Power Partnership, *Statement from 120 Australian Mayors and Councillors: Affordable electric vehicles for Australian communities unlikely without Fuel Efficiency Standards*, p 1.

[66] See, for example: Aidan O'Leary, *Submission 3*, p 1; Simon Byrne, *Submission 4*, p 1; Paul Matterson, *Submission 7*, p 1; Graeme Kirkham, *Submission 8*, p 1; Brendon Mulloy, *Submission 9*, p 1; Alex Elliott, *Submission 12*, p 1; Thomas McCready, *Submission 15*, p 1; Scott Lang, *Submission 17*, p 4; Peter LeCornu, *Submission 21*, pp 1–2; David Liversidge, *Submission 31*, p 1; ACT Commissioner for Sustainability and the Environment, *Submission 32*, p 2; Jenni McInnes, *Submission 41*, pp 1–3; Robbie Matthews, *Submission 43*, p 1; Karen Maher, *Submission 47*, p 3; Australian Electric Vehicle Association (ACT), *Submission 49*, p 10; Woolworths Group, *Submission 62*, p 6.

[67] Aidan O'Leary, *Submission 3*, p 1.

[68] Brendon Mulloy, *Submission 9*, p 1.

[69] See, for example: Aidan O'Leary, *Submission 3*, p 1; Peter LeCornu, *Submission 21*, pp 1–2; David Liversidge, *Submission 31*, p 1; Robbie Matthews, *Submission 43*, p 1; Karen Maher, *Submission 47*, p 3.

[70] Robbie Matthews, *Submission 43*, p 1.

remarked upon the 'poor, and sometimes broken charging infrastructure on the Hume Highway.'[71]

3.40. Where chargers are available, the length of time taken to restore a vehicle battery to adequate charge, and the potential time spent waiting for a charger to become available, is another source of concern for many.[72]

3.41. In their submission, Scott Lang remarked:

> If the reality is that you wait 3-4 hours for your turn to charge your EV behind a bunch of other enthusiasts, then their appeal falls off a cliff. Even worse is the fact that the rest of the motoring public can see that this situation unfolding in real time, and likely shake their heads and mutter "thank goodness I still have an ICE that takes under 5 minutes to fill up".[73]

3.42. AEVA-ACT's submission noted that 'A common media comment is that "charging anxiety" (finding a queue or an out-of-order charger) is replacing "range anxiety".'[74]

3.43. The popular route between Canberra and the NSW south coast was noted in several submissions as a particular cause for concern, due to higher battery consumption on the steep climb on the return trip:[75]

> We cannot drive to Batemans Bay. We might make it down the Clyde but getting up the mountain and then to Canberra would be touch and go. A station in Braidwood would help and another in Nellingen [sic] would make it a comfortable and workable trip.[76]

3.44. AEVA-ACT noted in its submission that EV chargers installed in Braidwood would help shorter-range EVs to complete the round-trip, but could also ease congestion at chargers in Batemans Bay by providing a choice for vehicles with longer ranges.[77] They suggested that preference for regional charging facilities should be given to proposals for 'charging at a variety of speeds such as 350kW direct current (DC) charger(s), 75kW DC charger(s) and alternating current (AC) charging at 7 to 22kW'. This would allow motorists to choose an appropriate charging rate for their planned length of stay and facilitate more efficient use of charging resources.[78]

3.45. The Commissioner for Sustainability and the Environment stated that the ACT will need to work with other jurisdictions to establish charging infrastructure along major routes to and from Canberra:

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[71] Karen Maher, *Submission 47*, p 3.
[72] See, for example: Paul Matterson, *Submission 7*, p 1; Alex Elliott, *Submission 12*, p 1; Scott Lang, *Submission 17*, p 4; Jenni McInnes, *Submission 41*, p 2; Australian Electric Vehicle Association (ACT), *Submission 49*, p 8.
[73] Scott Lang, *Submission 17*, p 4.
[74] Australian Electric Vehicle Association (ACT), *Submission 49*, p 8.
[75] See, for example: John Smith, *Submission 36*, p 5; Jenni McInnes, *Submission 41*, p 3; Robbie Matthews, *Submission 43*, p 2; Australian Electric Vehicle Association (ACT), *Submission 49*, pp 8, 10; Conservation Council ACT Region, *Submission 64*, p 5.
[76] Jenni McInnes, *Submission 41*, p 3.
[77] Australian Electric Vehicle Association (ACT), *Submission 49*, p 10.
[78] Australian Electric Vehicle Association (ACT), *Submission 49*, p 8.

> Working with surrounding jurisdictions is crucial to ensuring ACT residents feel confident purchasing EVs without concerns about charging availability for regional and interstate travel.[79]

3.46. During the public hearing on 1 March 2023, Mr Robbie Matthews told the Committee that he was unable to drive his EV to Batemans Bay because calculations showed his car would run out of charge on the return trip.[80] Mr Matthews noted the commercial benefits to small towns of having a charger:

> …there are a lot of people pulling off and queuing to use the charger there. They are going to the local eatery and generally doing touristy things while charging up and waiting. I would never have pulled off the road at Jugiong before, but there is a charger there, so we went there.[81]

3.47. Mr Alan Vogt, noting the difficulty for the ACT Government in encouraging the installation of charging infrastructure outside of its jurisdiction, suggested to the Committee:

> Maybe ACT government can do a mobile fast-charging roadshow on a semi. Pull it into Braidwood, up against some parking, and show the town what it could do. How do you introduce it? It is a bit hard.[82]

3.48. In late January 2023, the National Roads and Motorists Association (NRMA) announced that two roadside assistance vans had been equipped with battery packs able to provide up to five kilometres of driving range with ten minutes of charging. This would allow a vehicle to get to a nearby charging station. NRMA Roadside Assistance patrol members are now trained to attend to EVs as well as ICE vehicles.[83]

3.49. The ACT Government noted in its submission that the NSW Government plans to fund ultra-fast charging stations at 100-kilometre intervals across the state. The ACT Government intends to continue to engage with other jurisdictions to increase the availability of EV chargers on common interstate long distance routes. At present, the government considers that there are chargers at 'appropriate intervals on major routes connecting the ACT with NSW', but that numbers of chargers at each location are often low.[84]

Committee comment:

3.50. The Committee is of the view that, given the ACT's geographical location, it is important that the location, number, and quality of EV chargers is improved along common interstate routes between the ACT and the NSW coast, and between the ACT and Melbourne, particularly as EV ownership increases over time across the ACT.

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[79] Commissioner for Sustainability and the Environment, *Submission 32*, p 2.
[80] Mr Robbie Matthews, *Committee Hansard*, 1 March 2023, p 44.
[81] Mr Robbie Matthews, *Committee Hansard*, 1 March 2023, p 46.
[82] Mr Alan Vogt, *Committee Hansard*, 1 March 2023, p 46.
[83] 'Mobile chargers to the rescue for EV flat batteries', *Canberra City News*, 31 January 2023.
[84] ACT Government, *Submission 58*, p 7.

Recommendation 2

The Committee recommends that the ACT Government work with other jurisdictions to plan and implement charging infrastructure along major routes to and from Canberra, to ensure that ACT residents can have confidence in travelling long distances using an EV.

Charging infrastructure

Public charging

3.51. The Committee heard from several submitters that concerns about the availability of public charging infrastructure impacted their decision on whether to purchase an EV, or may impact others' decision to purchase an EV:[85]

> With EV numbers in Australia starting to rise rapidly, the availability and reliability of chargers is emerging as a problem for EV owners and a disincentive for prospective buyers of EVs.[86]

3.52. Under the ZEV Strategy, the ACT Government has committed to providing more than 70 publicly accessible EV charging stations in Canberra by the end of 2023, and to expand the public EV charging network to at least 180 charging stations by 2025.[87]

3.53. The ZEV Strategy also provides for the government to streamline the application process for installation of EV chargers on government-owned land.[88]

Availability and useability

3.54. The availability, charging speed, maintenance, and security of public charging facilities was of concern to several submitters.[89]

3.55. There was widespread support amongst submitters for public EV charging stations to be installed at shopping centres, park and ride facilities, tourist attractions, and sports

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[85] See, for example: Simon Byrne, *Submission 4*, p 1; Alex Satrapa, *Submission 6*, p 2; Charles Vesely, *Submission 16*, pp 1–2; David Liversidge, *Submission 31*, p 1; John Smith, *Submission 36*, p 4; Robbie Matthews, *Submission 43*, p 2; Karen Maher, *Submission 47*, p 4; Bill Gresham, *Submission 35*, p 1.

[86] Bill Gresham, *Submission 35*, p 1.

[87] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022–30*, p 23.

[88] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022–30*, p 25.

[89] See, for example: Simon Byrne, *Submission 4*, p 1; Alex Satrapa, *Submission 6*, p 2; Charles Vesely, *Submission 16*, pp 1–2; Hyundai Motor Company Australia, *Submission 30*, pp 2, 4; David Liversidge, *Submission 31*, p 1; ACT Commissioner for Sustainability and the Environment, *Submission 32*, pp 2–3; John Smith, *Submission 36*, p 4; Robbie Matthews, *Submission 43*, p 2; Karen Maher, *Submission 47*, p 4; Australian Electric Vehicle Association (ACT), *Submission 49*, pp 6, 8–9; Bede Doherty, *Submission 54*, pp 1–2; Federal Chamber of Automotive Industries, *Submission 56*, p 11; Woolworths Group, *Submission 62*, p 6; Conservation Council ACT Region, *Submission 64*, p 5; Name withheld, *Submission 65*, p 1; Evoenergy, *Submission 66*, p 3; Weston Creek Community Council, *Submission 70*, pp 5–6; Adele Craven, *Submission 72*, pp 1–2.

facilities,[90] with Weston Creek Community Council arguing that the installation of such utilities should be mandated in government policy.[91]

3.56. A number of proponents preferred that multiple charging points should be installed in each location,[92] and several others suggested that a range of charging speeds and standards, including for motorcycle charging, should be available:[93]

> The key concept here is to pick appropriate charger types and numbers for different locations. In some places, a few fast DC chargers are appropriate; in other places a larger number of relatively slow AC charging outlets are appropriate. Another key concept is that EV drivers usually just want a useful partial top up and rarely need to do an 'empty to full' charge.[94]

3.57. Some submitters were concerned about personal safety while charging, given that charging an EV takes much longer than refuelling an ICE vehicle.[95]

3.58. In their submission, Bede Doherty suggested that chargers should be located near 'appropriate activities/services, related to the length of stay likely for that power of charger or the rules governing that charger location',[96] for example, where there is a maximum stay mandated for a charger.

3.59. In their submission, Adele Craven noted that signage for charging points is often inadequate, saying that 'drivers as the sole occupants of cars need accurate and accessible information without having to rely on a passenger or repeated reference to an app.'[97]

3.60. Safety of personal information was also raised in Bede Doherty's submission, which recommended that charging operators should be required to accept debit or credit cards 'and not insist on network-membership which requires the sharing of personal data.'[98]

Committee comment:

3.61. The Committee is of the view that as the rate of EV ownership increases across the ACT, so too will the need for EV chargers at common and convenient locations such as shopping centres, tourism locations, and sporting facilities. The need for a wider and more equitable geographic spread of chargers across the ACT will also rise as ownership increases.

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[90] See, for example: Alex Satrapa, *Submission 6*, p 2; John Smith, *Submission 36*, p 4; Karen Maher, *Submission 47*, p 4; Australian Electric Vehicle Association (ACT), *Submission 49*, p 8; Weston Creek Community Council, *Submission 70*, p 5.

[91] Weston Creek Community Council, *Submission 70*, p 5.

[92] See, for example: David Liversidge, *Submission 31*, p 1; Karen Maher, *Submission 47*, p 4; Australian Electric Vehicle Association (ACT), *Submission 49*, p 6; Bill Gresham, *Submission 35*, pp 1–2.

[93] See, for example: Alex Satrapa, *Submission 6*, p 2; Charles Vesely, *Submission 16*, pp 1–2; John Smith, *Submission 36*, p 4; Robbie Matthews, *Submission 43*, p 2; Karen Maher, *Submission 47*, p 4.

[94] Australian Electric Vehicle Association (ACT), *Submission 49*, p 6.

[95] Alex Elliot, *Submission 14*, p 1; Ian Petersons, *Submission 37*, p 3; Greg Redfern, *Submission 51*, p 1; Bede Doherty, *Submission 54*, p 2; Adele Craven, *Submission 72*, pp 1–2.

[96] Bede Doherty, Submission 54, p 2.

[97] Adele Craven, *Submission 72*, pp 1–2.

[98] Bede Doherty, *Submission 54*, p 2.

Recommendation 3

The Committee recommends that the ACT Government review the proposed rollout of charging infrastructure to ensure an equitable spatial distribution of chargers occurs and report the findings to the Assembly.

Superchargers

3.62. Compatibility of charging stations was raised as a factor to be considered during installation, with Karen Maher noting in her submission that Tesla chargers, for example, are not universally compatible and that duplication of charging infrastructure may be required at some sites to provide charging to a wider range of consumers.[99]

3.63. In its submission, AEVA-ACT noted that Tesla has said it intends to open its 'supercharger' network to non-Tesla vehicles, starting with pilot programs in specified districts and countries.[100] Australia is included in the list of countries.[101]

Committee comment:

3.64. The Committee considers that the Tesla supercharger pilot program would provide a good opportunity to expand the ACT's network of fast chargers.

Recommendation 4

The Committee recommends that the ACT Government consider encouraging Tesla to include a charging location within the ACT in its pilot program extending the 'supercharger' network to non-Tesla vehicles.

Service level standards

3.65. Useability of charging infrastructure was also a common concern, with maintenance of equipment, enforcement of appropriate use, and personal safety mentioned as some of the issues.[102]

3.66. In their submission, Charles Vesely noted that reliability and service delivery have improved since the Evie national charging network partnered with the ActewAGL local network.[103]

3.67. Meanwhile, Karen Maher noted that 'ultrafast' chargers 'readily break down',[104] claiming that the Plugshare app regularly shows a number of broken chargers along the Hume Highway and in Sydney.[105]

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[99] Karen Maher, *Submission 47*, p 4.
[100] Australian Electric Vehicle Association (ACT), *Submission 49*, p 10.
[101] Tesla, *Non-Tesla Supercharger Pilot*, Non-Tesla Supercharger Pilot | Tesla Support Australia, (accessed 6 February 2023).
[102] See, for example: Simon Byrne, *Submission 4*, p 1; Charles Vesely, *Submission 16*, p 1; Bill Gresham, *Submission 35*, p 2.
[103] Charles Vesely, *Submission 16*, p 1.
[104] Karen Maher, *Submission 47*, p 4.
[105] Karen Maher, *Submission 47*, p 4.

3.68. AEVA-ACT noted that out-of-service chargers are 'a cause of considerable frustration among EV drivers and could erode public confidence in EVs'[106] and recommended that the ACT Government require a reliability guarantee when providing support for infrastructure installation.[107] The Conservation Council ACT Region supported this recommendation.[108]

3.69. In their submission, Adele Craven suggested that there should be established standards of operation required for public chargers, including service guarantees 'for reliability and prompt service and repair.'[109]

3.70. Bill Gresham, an EV owner for the past 9 years, similarly advocated for better quality and warranties of charging equipment, assured availability of parts, effective maintenance regimes and performance guarantees required of site operators, as well as 'fail-safe payment options including the requirement that all chargers can be operated with a credit/debit card and default to working if payment equipment fails.'[110]

Committee comment:

3.71. The Committee considers ensuring the reliability of chargers as extremely important in minimising the frustration held by EV owners and ensuring public confidence in EV technology.

Recommendation 5

The Committee recommends that the ACT Government, when providing support for charging infrastructure installation, require service guarantees for reliability and develop a maintenance policy for public electric chargers including service level standards to ensure chargers are properly maintained and reliably available.

'ICEing'

3.72. AEVA-ACT recommended in their submission that there should be enforceable measures to discourage parking when not charging.[111]

3.73. Other submitters were also strongly in favour of discouraging 'ICEing' of charger spaces (parking an ICE vehicle in a charging bay, thereby preventing it from being used for charging) and overstaying by fully-charged EVs:[112]

> Nothing is more frustrating than getting a vehicle, parking in a charging spot and not charging, when you are desperate for a charge yourself.[113]

[106] Australian Electric Vehicle Association (ACT), *Submission 49*, p 8.
[107] Australian Electric Vehicle Association (ACT), *Submission 49*, p 9.
[108] Conservation Council ACT Region, *Submission 64*, p 5.
[109] Adele Craven, *Submission 72*, p 1.
[110] Bill Gresham, *Submission 35*, p 2.
[111] Australian Electric Vehicle Association (ACT), *Submission 49*, p 9.
[112] See, for example: Karen Maher, *Submission 47*, p 4; Bede Doherty, *Submission 54*, pp 1–2; Weston Creek Community Council, *Submission 70*, p 5; Adele Craven, *Submission 72*, p 2.
[113] Karen Maher, *Submission 47*, p 4.

Kerbside charging

3.74. Where off-street parking is not allocated for each residence in a subdivision, AEVA-ACT suggested in its submission that kerbside charging could be implemented:

> Lamp posts in places such as Wright, Coombs and Denman Prospect could be retro-fitted to support residents of unit complexes that lack allocated parking. Similarly, lamp posts around shopping, café and other commercial precincts that depend on street parking could be retro-fitted.[114]

3.75. Another form of kerbside charging is currently under trial in Victoria, with charging cables and plugs embedded in nature strips and footpaths in parts of Melbourne. In this system, a powerline runs from the house underground out to the kerb, where a charge point is installed.[115]

Committee comment:

3.76. The Committee considers that all residents in Canberra, regardless of what type of housing they are in, should have access to EV chargers at their residence.

Recommendation 6

The Committee recommends that the ACT Government investigate the feasibility of installing kerbside chargers for EVs in areas where off-street parking is not allocated for each residence, to supplement both public and private charging infrastructure.

Hydrogen refuelling

3.77. FCEVs do not require charging but do need refuelling with hydrogen, which combines with oxygen from an air intake to produce electricity and water vapour in its fuel cell. The electricity powers the motor, with excess electricity being stored in a battery for later use. FCEVs take about as long to refuel as ICE vehicles.[116]

3.78. The Victorian and NSW Governments have a joint initiative to deliver the Hume Hydrogen Highway between Melbourne and Sydney, supporting the development of at least four hydrogen fuel stations along the Hume Highway and approximately 25 hydrogen-powered long-haul heavy freight vehicles.[117] The refuelling corridor is to be operational by 30 June 2025.[118]

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[114] Australian Electric Vehicle Association (ACT), *Submission 49*, p 9.

[115] Rachel Dexter, 'All charged up: Councils push for kerbside car charging', *The Age*, 2 August 2022, Melbourne councils push for kerbside electric vehicle charging (theage.com.au) (accessed 6 February 2023).

[116] EV central, *FCEV: Fuel cell hydrogen electric vehicle*, 10 January 2021, The pros and cons of hydrogen electric fuel cell vehicles - EV Central (accessed 8 February 2023).

[117] Government of Victoria, Department of Energy, Environment and Climate Action, *Hume Hydrogen Highway*, 11 May 2023, Hume Hydrogen Highway (energy.vic.gov.au) (accessed 8 February 2023).

[118] Government of Victoria, Department of Energy, Environment and Climate Action, *Hume Hydrogen Highway common questions*, 29 September 2022, Hume Hydrogen Highway common questions (energy.vic.gov.au) (accessed 8 February 2023).

3.79. In March 2022, Victoria, NSW and Queensland also signed Memorandums of Understanding agreeing to collaborate on the development of an extended hydrogen network along the east coast of Australia, including the Hume Highway, Pacific Highway and Newell Highway, by 2026.[119]

3.80. The ACT Government has a fleet of 20 hydrogen FCEVs and has supported the installation of 'Australia's first publicly available hydrogen refuelling station.'[120] The government considers this to be a trial of the technology involved and will use knowledge gained in expanding the fleet of ZEVs in the ACT.[121]

3.81. In its submission, the Australian Trucking Association (ATA) stated that zero emission freight will require more than one technology solution, including both BEVs and FCEVs. The ATA suggested that hydrogen FCEVs 'will likely be better suited to transport tasks over longer distances and with heavier payloads.'[122]

3.82. During the public hearing on 1 March 2023, Mr Sam Marks of the ATA told the Committee that hydrogen-fuelled vehicles had advantages over EVs for freight, as refuelling was much quicker than recharging a BEV:

> Hydrogen has benefits around how a business operates, and has similarities to how they operate already, with that sort of flexibility that is so ingrained to trucking. The biggest challenge with hydrogen is really the cost factor. Some of the projections, overseas at least, around when hydrogen meets cost parity with diesel are even behind the electric projections. We need access to affordable, renewable hydrogen to make that work.[123]

3.83. Woolworths Group concurred, noting in their submission the east coast hydrogen highway projects were generating strong interest in the technology across industry. Woolworths Group expected long haul freight to make 'considerable use of hydrogen' in future, and considered that it would be beneficial for the ACT to be involved in the initiative.[124]

3.84. HMCA noted in its submission that they expect demand for FCEVs to increase, and called for the ACT Government to support the installation of additional hydrogen fuelling stations. HMCA suggested that three 'higher capacity' hydrogen stations would be sufficient within the ACT.[125]

3.85. Mr Scott Nargar of HMCA told the Committee during the public hearing on 1 March 2023 that:

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[119] See, for example: Government of New South Wales, Department of Planning and Environment, Hydrogen highways to link Australia's East Coast | NSW Environment and Heritage (accessed 8 February 2023); Roads and Infrastructure Australia, *Australian-first renewable hydrogen highway to link eastern states*, 25 March 2022, https://roadsonline.com.au/australian-first-renewable-hydrogen-highway-to-link-eastern-states/ (accessed 29 June 2023).

[120] ACT Government, *Submission 58*, p 31.

[121] ACT Government, *Submission 58*, p 31.

[122] Australian Trucking Association, *Submission 18*, p 3.

[123] Mr Sam Marks, Sustainability and Future Transport Manager, Australian Trucking Association, *Committee Hansard*, 1 March 2023, p 73.

[124] Woolworths Group, *Submission 62*, p 6.

[125] Hyundai Motor Company Australia, *Submission 30*, p 2.

> …the ACT, for Hyundai, has been a leader in the adoption of EVs, and especially hydrogen fuel cell vehicles. One of the biggest fleets deployed in the world was here in the ACT, two years ago, with the Nexo fuel cell vehicle. Unfortunately, we maxed out the station capacity the day we opened the station.[126]

3.86. In their submission, Bede Doherty raised a concern that hydrogen available for sale in the ACT should be 100 percent renewably produced. They also suggested that subsidies for hydrogen refuelling should be deferred until a suitable selection of hydrogen FCEVs is available in Australia and costs are similar to ICE vehicles.[127]

3.87. Dr Peter Campbell's submission argued that FCEVs are unsuitable as light vehicles, saying that their disadvantages in this category outweigh the benefit of quicker refuelling than charging other EVs. They suggested that hydrogen was likely to be only necessary for heavy and long-range vehicles.[128]

Committee comment:

3.88. The Committee is of the view that the government should consider whether more hydrogen refuelling stations are necessary in the ACT and its surrounding regions.

Recommendation 7

The Committee recommends that the ACT Government consider whether more hydrogen refuelling is required in the ACT or surrounding regions and take steps to ensure that this is adequately provided if hydrogen refuelling is a barrier to greater EV uptake in private and freight vehicles.

Private charging

Installation costs for multi-unit residences

3.89. The ACT Government's *Zero Emissions Vehicles Strategy 2022–30* includes the introduction in 2023 of $2,000 incentives for installation of EV charging infrastructure in common areas of multi-unit dwellings.[129]

3.90. The owners corporations of Parc Apartments, Wilara Apartments, and Trilogy Apartments noted that when it comes to deciding to purchase EVs and EV charging infrastructure, there are different obstacles faced by residents of strata title properties, especially large strata developments, compared to those in detached, semi-detached dwellings, or even small strata buildings:[130]

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[126] Mr Scott Nargar, Senior Manager of Future Mobility and Government Relations, Hyundai Motor Company Australia, *Committee Hansard*, 1 March 2023, p 30.
[127] Bede Doherty, *Submission 54*, p 4.
[128] Dr Peter Campbell, *Submission 50*, p 6.
[129] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022-30*, p 24.
[130] See, for example: Parc Apartments, *Submission 42*, p 1; Wilara Apartments, *Submission 46*, p 1; Trilogy Apartments, *Submission 55*, p 3; Viridian Apartments, *Submission 61*, p 3.

> Householders are supported in this decision by subsidies at the time of expenditure (the decision to purchase an electric vehicle) and through reductions in registration cost. Apartment blocks must make a very large expenditure upfront before the majority of lot owners have decided to purchase.[131]

3.91. A particular concern held by the owners corporations of several multi-tenanted complexes, such as Parc Apartments, Urambi Village, Manhattan Apartments, Wilara Apartments, Trilogy Apartments, and Viridian Apartments, is the lack of appropriate space or existing infrastructure to install and support EV charging equipment, often meaning expensive upgrades or retrofitting is required.[132]

3.92. Lakefront Apartments, for example, suggested that significantly expensive building upgrades would be required to facilitate installation of new charging infrastructure:

> Our initial investigations show the cost of installation in our strata block will be very expensive. Like many buildings, we have limited ability to draw in additional power without major works to power infrastructure. Our building requires very expensive works to ascertain current draw down capacity, to upgrade to the system to allow for charging and even then, will be very limited in the percentage of cars that can be charged at any one time.[133]

3.93. For Aspire Apartments, the lack of access to charging infrastructure for their residents compared to those in standalone dwellings, means that its residents are unable to take advantage of government assistance schemes, such as the zero-interest loans.[134]

3.94. In its submission, Lakefront Apartments Owners Corporation noted that older buildings may not have common areas suitable for the installation of EV charging infrastructure:

> … that option is not available to us or many buildings of our vintage. As the building code did not require visitor parking spaces, there is no space. All parking spaces are allocated to unit title.[135]

3.95. The Strata Community Association (ACT) similarly stated that older strata schemes 'which represent a significant proportion of the total schemes in the ACT' were not built with the capacity to support the infrastructure necessary for the installation of EV chargers, and are especially affected by the potential costs of installing charging infrastructure.[136]

3.96. The Strata Community Association (ACT) also noted the large expense of likely building upgrades required to support grid capacity for EV chargers for every resident of a given existing multi-unit scheme:

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[131] Wilara Apartments, *Submission 46*, p 1.
[132] See, for example: Urambi Village, *Submission 34*, p 1; Parc Apartments, *Submission 42*, p 1; Manhattan Apartments, *Submission 45*, p 1; Wilara Apartments, *Submission 46*, p 1; Trilogy Apartments, *Submission 55*, p 3; Viridian Apartments, *Submission 61*, p 3.
[133] Lakefront Apartments, *Submission 29*, p 3.
[134] Aspire Apartments, *Submission 68*, p 1.
[135] Lakefront Apartments, *Submission 29*, p 3.
[136] Strata Community Association (ACT), *Submission 33*, p 5.

> Based on the size of the scheme, the cost of implementing that infrastructure could reach several millions of dollars and would almost certainly be prohibitively expensive to an average strata resident.[137]

3.97. The expense of fitting out apartment complexes with charging infrastructure was similarly acknowledged by individual submitters.[138] Ian Jackson was of the view that 'the only very gradual uptake of EVs means that demand for such charging will grow exponentially from a low base. The implication is a serious challenge for owners corporations to find an affordable solution that is scalable for the increasing demand.'[139]

3.98. Trilogy Apartments highlighted in its submission that existing government assistance schemes currently do not recognise the obstacles faced by those living in strata complexes:

> Currently, most schemes, advice and subsidies assume recipients are acting as individuals, whereas lot owners need to act as a collective. Subsidies to vehicle purchasers do not take into account many of the additional obstacles and costs incurred by the need for large-scale installation and this collective decision-making.[140]

3.99. Further, the Strata Community Association (ACT) added that there are currently no incentives for owner corporation members to contribute to charging infrastructure upgrades:

> …the OC members who currently do not own (or plan to own) an EV are not necessarily incentivised to take part in paying for the necessary infrastructure upgrades and may be unwilling to pay for upgrades of those who have purchased EVs.[141]

3.100. Chris Emery was of the view that, due to the high cost of installing charging infrastructure, owners corporations avoid making decisions on installation until they know what government assistance is available.[142]

3.101. Parc Apartments also noted that owners corporations in general are facing increased financial pressures, including maintenance and repairs costs and fees. This would mean it would be unlikely for owners corporations to support 'any large increase in expenditure that is unlikely to benefit a majority of owners in the short term.'[143]

3.102. Similar concerns were held by the executive committees or owners corporations of other apartment complexes,[144] including Manhattan Apartments, which was of the view that:

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[137] Strata Community Association (ACT), *Submission 33*, p 5.
[138] See, for example: Chris Emery, *Submission 24*, p 1; Ian Jackson, *Submission 38*, p 1.
[139] Ian Jackson, *Submission 38*, p 1.
[140] Trilogy Apartments, *Submission 55*, p 4.
[141] Strata Community Association (ACT), *Submission 33*, p 5.
[142] Chris Emery, *Submission 24*, p 1.
[143] Parc Apartments, *Submission 42*, p 2.
[144] See, for example: Wilara Apartments, *Submission 46*, p 1; Trilogy Apartments, *Submission 55*, p 3; Viridian Apartments, *Submission 61*, p 3; Aspire Apartments, *Submission 68*, p 1.

> [T]he ACT Government has earned significant income from strata buildings over recent years through significant rate rises as well as the ACT Government's Land Tax. Both these income streams end up being passed onto tenants. We consider it an unfair situation that the Owners of a strata building should bear the whole cost of providing EV infrastructure to assist governments obtain green credentials.[145]

3.103. Altitude Apartments argued that, for buildings where installation of charging infrastructure is possible in common spaces – therefore meeting the eligibility criteria for the $2,000 government incentive – the figure was 'an insignificant amount', as a shared charger installation to an apartment building would cost approximately $20,000 in most cases, and that the installation of an EV charging 'backbone' could range into the hundreds of thousands of dollars for some buildings.[146]

3.104. In its submission, AEVA-ACT noted that if the $2,000 government incentive were to be applied to each charger, rather than to each owners' corporation, 'that would be very helpful in getting over the financial hump of installing a "spine".'[147]

3.105. Ian Jackson was of the view that a further incentive that should be considered to promote installation of charging infrastructure and EV uptake is low-interest loans from the government to owners corporations that would be repaid over time as demand for charging grows.[148]

3.106. Several owners corporations similarly advocated in their submissions for government incentives across various aspects associated with the installation of EV charging infrastructure, such as financial assistance with design and planning, assessment of capacity of existing infrastructure, and financial assistance for upgrades and installation.[149]

3.107. In their submission, Charles Vesely noted that, due to a lack of charging facilities in apartment buildings, many residents were reliant on public charging infrastructure.[150]

3.108. This view was echoed by Trilogy Apartments which noted that while many unit owners are capable of purchasing an EV, they are dissuaded from doing so as 'charging facilities are not within a reasonable distance to their home.'[151]

3.109. A couple of owners corporations were supportive of the provision of public charging stations adjacent to large apartment complexes.[152]

Committee comment:

3.110. The Committee considers that installation and retrofitting of charging facilities at apartment and multi-unit dwellings will be essential in ensuring that there is appropriate

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[145] Manhattan Apartments, *Submission 45*, p 3.
[146] Altitude Apartments, *Submission 28*, p 2.
[147] Australian Electric Vehicle Association (ACT), *Submission 49*, p 7.
[148] Ian Jackson, *Submission 38*, p 1.
[149] See, for example: Parc Apartments, *Submission 42*, pp 2–3; Manhattan Apartments, *Submission 45*, p 3; Wilara Apartments, *Submission 46*, p 2; Viridian Apartments, *Submission 61*, p 4; Gordon Hearn, *Submission 53*, p 1.
[150] Charles Vesely, *Submission 16*, p 1.
[151] Trilogy Apartments, *Submission 55*, p 2.
[152] See, for example: Trilogy Apartments, *Submission 55*, p 4; Viridian Apartments, *Submission 61*, p 4.

residential infrastructure to support a greater uptake of EVs. As such, it is important that any financial barriers to installation are overcome through the use of incentives.

Recommendation 8

The Committee recommends that the ACT Government provide one-off grants to body corporates of existing multi-dwelling units to assess whether their building can be retrofitted to accommodate charging infrastructure and the most practicable way the building can be retrofitted.

Cost-benefit analysis

3.111. Potential disadvantages for renters were a concern for some submitters.

3.112. Thomas McCready noted that installing charging infrastructure, including upgrading the power supply, was 'not very easy in a rental.'[153]

3.113. Lakefront Apartments added that a rental agreement may only be for 12 months, and so someone moving between rental accommodations could potentially face infrastructure installation costs on an annual basis.[154]

3.114. According to data from the *Australasian Strata Insights 2020 Report*, strata is a sector that attracts a large amount of private investment, with more apartment households renting (50 percent) than those that are owner-occupied (26–37 percent) in the ACT. The remainder are unoccupied or unclassified.[155]

3.115. The Strata Community Association (ACT) was of the view that private investors who are not owner-occupiers may be against the introduction of EV charging infrastructure and the costs it will bring, as they will not be utilising the facilities directly.[156]

3.116. Manhattan Apartments had similar concerns, given the installation of EV charging equipment would likely require an increase in strata levies. These costs would likely be passed on to tenants in the form of increased rent by non-resident investors seeking to maximise investment returns:

> We can see a situation where a Unit Plan resident owners may be outnumbered by investors that as a block could effectively stop EV infrastructure upgrades thus impacting government's policy of EV uptake.[157]

Committee comment:

3.117. The Committee is of the view that renters who own EVs should not be restricted in their ability to access appropriate charging infrastructure, and that landlords should be incentivised to install charging infrastructure for their tenants.

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[153] Thomas McCready, *Submission 15*, p 1.
[154] Lakefront Apartments, *Submission 29*, p 3.
[155] UNSW City Futures Research Centre, *Australasian Strata Insights 2020: Report and Infographics*, June 2020, p 18.
[156] Strata Community Association (ACT), *Submission 33*, p 5.
[157] Manhattan Apartments, *Submission 45*, p 3.

Recommendation 9

The Committee recommends that the ACT Government engage in a cost-benefit analysis that demonstrates to property owners the increase in the value of a property relative to the initial cost of implementing EV charging infrastructure.

Guidelines and advice

3.118. The Committee noted that several submissions called for clearer guidelines or advice on installing charging infrastructure, including management and administration of shared chargers, as well as insurance and legal implications, and for assistance with building assessments to determine what upgrades may be required in individual buildings.[158]

3.119. Some of these shared concerns included:

- the need for a consistent approach and 'best practice' solutions;
- how to go about installing shared and/or metered infrastructure;
- repurposing of common property for charger installation;
- fair management of shared charging spaces;
- the uncertainty around costs associated with damage to EV chargers;
- problems caused during the private installation of EV chargers on common property;
- damage caused during individual electrical connections; and
- additional insurance costs or imposts resulting from the installation of EV chargers, especially when the installations are done privately in communal spaces.

3.120. The Owners Corporation Network ACT identified a need to provide education specifically to strata property owners and managers, along with executive committees 'who have the responsibility for making decisions on the acquisition, installation, and operation of EVSE.'[159]

3.121. Several submissions echoed this, noting that the voluntary nature of executive committees and/or the inherent lack of knowledge and expertise of their members when it comes to assessing, planning, installing, and managing electric vehicle chargers, means that dealing with these issues is an additional burden.[160]

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[158] See, for example: Andrew Medlin, *Submission 23*, p 1; City Plaza Apartments, *Submission 27*, p 1; Altitude Apartments, *Submission 28*, p 1; Lakefront Apartments, *Submission 29*, p 4; John Smith, *Submission 36*, p 3; Manhattan Apartments, *Submission 45*, p 3; Wilara Apartments, *Submission 46*, p 2; Trilogy Apartments, *Submission 55*, p 4; Viridian Apartments, *Submission 61*, p 4; Christine Coghlan, *Submission 48*, p 1.

[159] Owners Corporation Network (ACT), *Submission 44*, p 4.

[160] See, for example: Christine Coghlan, *Submission 48*, 1; Wilara Apartments, *Submission 46*, p 1; Trilogy Apartments, *Submission 55*, p 4; Viridian Apartments, *Submission 61*, p 3.

3.122. Owners Corporation Network ACT also was of the view that education for owners corporations was essential in combating any reluctancy to acquire and install EV charging infrastructure:

> There is a risk that OCs will be reluctant to acquire EVSE [Electric Vehicle Supply Equipment] because they do not have an adequate understanding of what is required and how to manage the acquisition. This would hinder the uptake of EVs. The only way to keep up with the increasing demand for electric vehicles and support their wider adoption is with the rapid expansion of EV charging infrastructure. The OCN suggests that the ACT Government investigates how it can assist in improving the knowledge and understanding of EVSE by strata property owners and managers. This could be achieved by providing explanatory material aimed at the non-technical OC member to assist them in understanding EVs and EVSE.[161]

3.123. This was echoed by Saint Germain Apartments, which – while acknowledging that the ACT Government's EV Ready information for industry contains advice on retrofitting existing multi-storey apartment complexes – noted that 'It would be helpful however if there were a more detailed ACT Government online resource for strata executive committees.'[162]

3.124. Parc Apartments similarly advocated for 'advice and seminars' relating to the installation of EV charging infrastructure for executive committees and owners corporations.[163]

3.125. The ACT Government currently provides a four-page information document, *Making your strata building EV ready*, which covers changes to the *Unit Titles (Management) Act 2011*, technical considerations, steps to guide retrofitting charging infrastructure, and benefits to property owners.[164]

3.126. Recently, the *Unit Titles (Management) Regulation 2011* was amended to expand and clarify provisions added in 2020 aimed at 'ensuring unit owners and occupiers are able to install and access sustainability infrastructure', by providing that permission to install sustainability infrastructure must not be unreasonably withheld:[165]

> The Bill clarifies the circumstances where consent for the installation of sustainability infrastructure may be withheld by an owners corporation, to add two further examples: financial considerations, and equity of access to common property, easements, utility services, or facilities. This will facilitate additional scrutiny to the consent process, to ensure the rights of all unit owners and occupants are supported and protected.[166]

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[161] Owners Corporation Network (ACT), *Submission 44*, p 4.
[162] Saint Germain Apartments, *Submission 59*, p 3.
[163] Parc Apartments, *Submission 42*, p 3.
[164] Access Canberra, *2022 Making your strata building EV ready*, accessed 14 February 2023.
[165] ACT Government, *Unit Titles Legislation Amendment Bill 2023 Explanatory Statement and Human Rights Compatibility Statement*, p 5.
[166] ACT Government, *Unit Titles Legislation Amendment Bill 2023 Explanatory Statement and Human Rights Compatibility Statement*, p 5.

> It will help address circumstances where the installation by one owner of sustainability infrastructure may impede another unit owner's equal access to similar sustainability infrastructure in the future, or impose a large cost on unit owners.
>
> For example, the installation of an electric vehicle (EV) charging point for a unit owner may result in a significant impact on the electrical loading for existing electrical conduits, and prevent another unit owner from installing an EV charger as it may overload the electrical system. It may also require a major upgrade to the existing electrical network within a units plan, which could be prohibitively expensive.
>
> Decisions to install sustainability infrastructure on common property have the potential to impact on an owners access to the shared spaces, and may result in additional levies paid by owners to cover installation and maintenance costs. The new provisions will help make the owners corporation aware that these types of issues should be considered before any decisions are made.[167]

Committee comment:

3.127. The Committee is of the view that clearer and more comprehensive guidelines and advice will assist owners corporations and property owners in installing and managing the installation of charging infrastructure as the ACT transitions towards greater EV ownership.

Recommendation 10

The Committee recommends that the ACT Government better promote its existing advisory service and write to all body corporates in the ACT to ensure that all multi-unit buildings are aware they can receive targeted advice about how to offer EV charging services.

3.128. The Committee considers that, to assist body corporates manage infrastructure changes associated with the electrification transition, the *Unit Titles (Management) Act 2011* should be reviewed with respect to EV related matters.

Recommendation 11

The Committee recommends that the ACT Government review the *Unit Titles (Management) Act 2011* to ensure the provisions of the Act are adequate for body corporates to manage EV related matters for example the installation of charging infrastructure.

[167] ACT Government, *Unit Titles Legislation Amendment Bill 2023 Explanatory Statement and Human Rights Compatibility Statement*, p 5.

Vehicle to Grid technology

3.129. The potential to use an EV as a backup power supply for the home or to the local electricity grid via vehicle-to-house (V2H) or vehicle-to-grid (V2G) charging was strongly attractive to several submitters.[168]

3.130. In their submission, Alan Vogt commented:

> Unlike ICE vehicles, EVs are more than transport – they could be a fundamental part of Canberra's energy grid. An EV could increase our household's storage capacity by a factor of two or three and allow better utilisation of our investment in solar generation and our reliance on grid power at peak times.[169]

3.131. AEVA-ACT noted that V2H technology is simpler than V2G, and 'is likely to provide homes with backup power or the option to disconnect from the grid at times of high prices, such as the evening peak.'[170] They considered that there is a 'huge potential for V2H to change the value equation' for consumers considering an EV purchase. Acknowledging that there are technical connection and power management issues to be considered, AEVA-ACT remarked that once those issues are resolved, 'people will obtain much more than just a car.'[171]

3.132. In its submission, Evoenergy commented that they are currently part of a trial of V2G-enabled fleets, but cautioned that the technology is 'not yet a viable option for most consumers' due to prohibitive costs involved in bi-directional charging and 'significant' regulatory and accreditation hurdles.[172]

3.133. Evoenergy considered that commercialisation of V2G technology could still be a number of years away.[173]

Committee comment:

3.134. The Committee considers that V2G technology, whilst still in its infancy, could be a potentially integral part of the ACT's zero-emissions strategy in the future and is worth monitoring.

Recommendation 12

The Committee recommends that the ACT Government closely monitor the progress of Vehicle-to-Grid technologies to align uptake with available technology that is commercially viable and safe.

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[168] See, for example: Alan Vogt, *Submission 19*, pp 1–2; David Liversidge, *Submission 31*, p 2; John Smith, *Submission 36*, p 6; Australian Electric Vehicle Association (ACT), *Submission 49*, pp 12–13; Conservation Council ACT Region, *Submission 64*, p 6; Adele Craven, *Submission 72*, p 2.
[169] Alan Vogt, *Submission 19*, p 1.
[170] Australian Electric Vehicle Association (ACT), *Submission 49*, p 12.
[171] Australian Electric Vehicle Association (ACT), *Submission 49*, p 13.
[172] Evoenergy, *Submission 66*, p 4.
[173] Evoenergy, *Submission 66*, p 4.

Impact on electricity supply network

Electricity grid

3.135. Many submitters put forward their concerns that widespread uptake of EVs would lead to unsustainable pressure on the electricity supply network.[174]

3.136. In its submission, Evoenergy said that it expected EV charging to have 'a material impact on the ACT electricity network in the upcoming years', and said it was actively planning for increasing network peak demand.[175]

3.137. Notwithstanding Evoenergy's assessment, the ACT Government was of the view that EV charging has had a smaller impact on the grid than expected:

> In 2022, the ACT government engaged a specialist consultant, GHD Advisory and ACIL Allen, to model the impacts of both gas transition and electric vehicle adoption in the ACT. That modelling looked at a range of scenarios. Basically, the modelling found only a relatively small impact on the grid from the increased rate of EV adoption across a range of scenarios. Under the base case, which is what Ms Wright describes as convenience charging, where people do whatever they want, they basically found the total contribution of EVs to the ACT's peak load varies, from 3.3 per cent in 2030 to 9.5 per cent in 2045. This signifies the limit impact of EVs on the grid at that stated forecast. Adding a sensitivity to reflect more convenience charging increases the peak load by about 1.12 per cent to 4.42 per cent in 2030.[176]

3.138. However, the ACT Government did confirm that it is in the process of having the modelling re-done due to EV uptake being higher than expected.[177]

3.139. At the second public hearing, Mr Peter Billing, General Manager of Evoenergy, forecasted future growth of the network:

> What we meant by that is that we have looked at what we think the likely impacts of EV charging and the gas transition are on our network, and we believe that between now and 2025 we could see in the order of two to 2¼ times growth in the network. If you think about the network having been developed over 100 years, it could double in the next 20-odd years. That will come down to the way in which people charge and when they charge.[178]

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[174] See, for example: Andrew Pyke, *Submission 26*, p 3; City Plaza Apartments, *Submission 27*, p 1; John Smith, *Submission 36*, p 5; Rod Pitcher, *Submission 39*, pp 2–3, 5; Owners' Corporation Network, *Submission 44*, pp 6, 8; Australian Electric Vehicle Association (ACT), *Submission 49*, pp 6–7, 11–12; Bede Doherty, *Submission 54*, p 2; ACT Government, *Submission 58*, pp 7–8; Forrest Apartments, *Submission 60*, p 1; Conservation Council ACT Region, *Submission 64*, p 6; Evoenergy, *Submission 66*, pp 3–4.

[175] See, for example, Evoenergy, *Submission 66*, p 3; Mr Peter Billing, General Manager, Evoenergy, *Committee Hansard*, 18 May 2023, p 103.

[176] Mr Shane Rattenbury MLA, Minister for Water, Energy and Emissions Reduction, *Committee Hansard*, 15 June 2023, p 117.

[177] Mr Shane Rattenbury MLA, Minister for Water, Energy and Emissions Reduction, *Committee Hansard*, 15 June 2023, p 117.

[178] Mr Peter Billing, General Manager, Evoenergy, *Committee Hansard*, 18 May 2023, p 104.

3.140. Evoenergy noted that this expected growth in the size of the network will depend on the level of peak demand:

> As to what creates the size of the network, it is developed on the basis of peak demand. If you think of it from a road perspective, if your electricity slowed down every time you were in peak-hour traffic, then you would not be very happy with your network. Our network has to be able to cover those peaks. The opportunity to reduce the amount we might need to grow the network is to try and flatten that additional load. But the reality is that EV charging is quite a substantial load, relative to a dishwasher, a refrigerator or any of those sorts of items.[179]

3.141. Long-term modelling by Evoenergy indicates that winter peak demand in 2045 will reach almost 1000 megawatts (MW) above the 2021 peak (see Figure 2 below), representing more than a 100 percent increase:[180]

> The key driver of augmentation investment in our network is peak demand. In the future, Evoenergy expects that peak demand on our network will occur during winter, following consecutive days of cloudy and cold weather. Under these conditions, there is likely to be limited output from solar PV panels or battery support, and high demand due to increased need for heating. Together, this will mean high levels of electricity required from the network.[181]

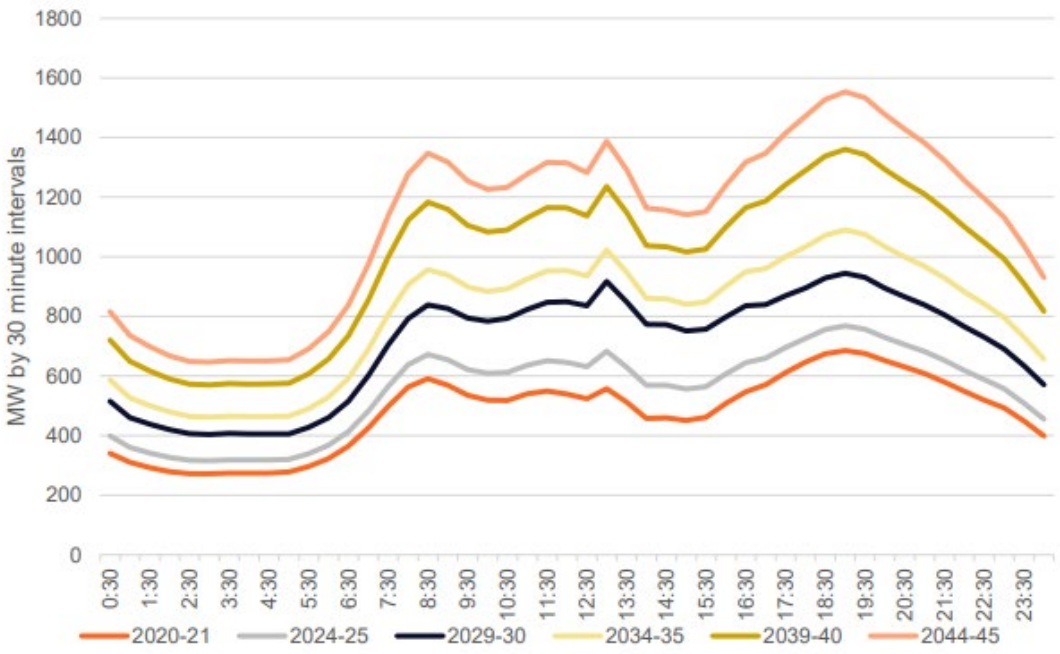

Figure 1: Evoenergy Forecast – winter peak demand growth to 2044/45 [Source: Evoenergy, *Regulatory proposal*, *Evoenergy (ActewAGL) – Determination 2024-29*, p 24]

[179] Mr Peter Billing, General Manager, Evoenergy, *Committee Hansard*, 18 May 2023, p 104.

[180] Evoenergy, *Appendix D – Addressing capital expenditure uncertainty*, Evoenergy (ActewAGL) – Determination 2024-29, p 6.

[181] Evoenergy, *Appendix D – Addressing capital expenditure uncertainty*, Evoenergy (ActewAGL) – Determination 2024-29, p 8.

Committee comment:

3.142. The Committee is of the view that, for transparency purposes, the ACT Government should publish both the existing and the updated modelling showing the expected impact on the electricity network from the transition from gas and the uptake of EVs.

Recommendation 13

The Committee recommends that the ACT Government table in the Assembly, by the last sitting week of 2023, the 2022 GHD/ACIL ALLEN modelling on the impact to the electricity grid of the transition from gas and the uptake of EVs.

Recommendation 14

The Committee recommends that the ACT Government table in the Assembly, the updated modelling currently being undertaken on the impact to the electricity grid of the transition from gas and the uptake of EVs.

Network readiness

3.143. In anticipation of the increased load on the network, Evoenergy is proposing network augmentations of approximately $182 million[182] as part of its $521 million in total capital expenditure that it is seeking the Australian Energy Regulator to approve for the 2024-2029 period.[183]

3.144. Of this figure, approximately $76 million ($87 million if $11 million in escalation factors and revised inflation forecast is added) is dedicated to 'net zero' initiative projects,[184] with $44 million dedicated to high volt (HV) feeders and low volt (LV) reticulation, and $32 million allocated to zone substations and 132kV underground (UG) cables.[185]

3.145. As part of localised network studies, Evoenergy have identified emerging network constraints:

> The Assessment of emerging constraints indicate that additional zone substation capacity will be required to support emerging constraints. Specifically, the proposed Mitchell Zone Substation would be designated to support load growth in Gungahlin and Inner North. Furthermore, proposed Curtin Zone Substation would relieve the load growth in South Canberra, Kingston, and Woden. The assessment of localised constraints determined that new feeders are required

[182] Evoenergy, *Appendix D – Addressing capital expenditure uncertainty*, Evoenergy (ActewAGL) – Determination 2024-29, p 12.

[183] See, for example: Evoenergy, *Attachment 1 – Capital Expenditure*, Evoenergy (ActewAGL) – Determination 2024-29, p 41; Evoenergy, *Appendix D – Addressing capital expenditure uncertainty*, Evoenergy (ActewAGL) – Determination 2024-29, p 7.

[184] Evoenergy, *Appendix D – Addressing capital expenditure uncertainty*, Evoenergy (ActewAGL) – Determination 2024-29, p 11.

[185] Mr Peter Billing, General Manager, Evoenergy, *Committee Hansard*, 18 May 2023, pp 104, 106.

Civic, Campbell, Hackett, Gungahlin, Garran, and Phillip to service various residential and commercial sites.[186]

3.146. Evoenergy noted that its proposed augmentations are based on the government's 'optimistic' EV uptake scenario of 40,000 passenger EVs plus around 10,000 other EVs by 2030 (see Table 1 below).[187]

No. of EVs	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Low uptake ('conservative' scenario)	851	1,450	2,341	3,613	5,369	7,711	10,747	14,565	19,255	24,911
Medium uptake ('optimistic' scenario)	851	2,063	3,759	6,134	9,287	13,205	17,991	23,964	31,681	41,944
High uptake ('high' scenario)	1,000	15,926	33,135	40,773	62,440	92,027	115,674	133,027	151,206	170,107

Table 1: Forecast number of EVs registered in the ACT [Source: Evoenergy, *Appendix 1.17 - Augmentation to Achieve Net Zero 2045*, Evoenergy (ActewAGL) – Determination 2024-29, p 30]

3.147. However, Evoenergy also pointed out that 'This does not achieve the legislated zero emission target by 2045.'[188] Instead, Evoenergy's analysis estimates that EV numbers would need to be approximately 170,000 by 2030 in order to achieve the ACT Government's net zero target by 2045.[189]

3.148. As a result, Evoenergy anticipates that the ACT Government may adjust policies to accelerate the pace of emissions reductions.[190] In light of this, as well as the uncertainty around the potential uptake of EVs and electrification of gas appliances, and the price responsiveness of consumers to tariffs, Evoenergy have proposed the ability to submit a further proposal to vary capital expenditure of up to $150 million[191] during the regulatory period.[192]

[186] Evoenergy, *Appendix 1.17 – Augmentation to achieve Net Zero 2045*, Evoenergy (ActewAGL) – Determination 2024-29, pp 15–16.

[187] See, for example: Evoenergy, *Appendix D – Addressing capital expenditure uncertainty*, Evoenergy (ActewAGL) – Determination 2024-29, p 11; Evoenergy, *Appendix 1.17 – Augmentation to achieve Net Zero 2045*, Evoenergy (ActewAGL) – Determination 2024-29, p 6.

[188] Evoenergy, *Appendix 1.17 – Augmentation to achieve Net Zero 2045*, Evoenergy (ActewAGL) – Determination 2024-29, p 6.

[189] See, for example: Evoenergy, *Appendix D – Addressing capital expenditure uncertainty*, Evoenergy (ActewAGL) – Determination 2024-29, p 9; Evoenergy, *Appendix 1.17 – Augmentation to achieve Net Zero 2045*, Evoenergy (ActewAGL) – Determination 2024-29, p 22.

[190] Evoenergy, *Appendix 1.17 – Augmentation to achieve Net Zero 2045*, Evoenergy (ActewAGL) – Determination 2024-29, p 7.

[191] See for example: Evoenergy, *Appendix D – Addressing capital expenditure uncertainty*, Evoenergy (ActewAGL) – Determination 2024-29, p 12; Evoenergy, *Attachment 1 – Capital Expenditure*, Evoenergy (ActewAGL) – Determination 2024-29, p 44.

[192] See, for example: Evoenergy, *Attachment 1 – Capital Expenditure*, Evoenergy (ActewAGL) – Determination 2024-29, p 44; Evoenergy, *Appendix D – Addressing capital expenditure uncertainty*, Evoenergy (ActewAGL) – Determination 2024-29, p 9.

3.149. This contingency project would be triggered 'where evidence emerges that the speed of the energy transition, and in particular the uptake of EVs and electrification, is greater than assumed in the CapEx forecasts put forward in this regulatory proposal.'[193]

3.150. Mr Shane Rattenbury MLA, Minister for Water, Energy and Emissions Reduction (Minister Rattenbury), similarly acknowledged that the impact on the electricity network is still a degree uncertain, and would be dependent on a number of factors:

> Those include the times at which drivers charge their cars, the concentration of EVs in a particular geographical area, the rate of uptake of electric vehicles, and also any government or distributor interventions that influence charging behaviour, whether that is regulatory, software based or even pricing signals. So there are a significant number of variables.[194]

3.151. This was also reiterated by the Environment, Planning and Sustainable Development Directorate (EPSDD), which noted that the way people charge their EVs will determine the infrastructure required to be built, and its associated impact on electricity bills:

> If all the electricity is being used at the same time and we are increasing the peak—for example, in Canberra, a cold winter's evening is when peak electricity usage is seen—if everyone decides to plug their EVs in at the same time, which is what we term "convenience charging", then we will need to build bigger infrastructure because we need to cope with that increased peak. However, if we have tariffs in place, if we have regulation in place that smooths out the electricity, then we will see what you have proposed, which is that, over an entire day, more electricity is used and that will average out to be a lower cost overall.[195]

3.152. In response to concerns from the Committee about whether the grid would be able to supply the extra electricity needed to be generated in order to charge EVs, Minister Rattenbury noted that there is work being done to increase the supply of electricity, including both generation and transmission.[196]

3.153. The government is also considering decentralisation and energy efficiency in order to mitigate the size of upgrades to the electricity grid:

> In terms of the national grid, that is obviously something energy ministers are focused on as part of the national work, where all the energy ministers, particularly the NEM ministers, are working together. What I can say is that there is a lot of work being done to increase supply. There is a lot of new generation coming into the system. There is also significant work on improving transmission

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[193] Evoenergy, *Appendix D – Assessing capital expenditure uncertainty*, Evoenergy (ActewAGL) – Determination 2024-29, p 5.

[194] Mr Shane Rattenbury MLA, Minister for Energy, Water and Emissions Reduction, *Committee Hansard*, 15 June 2023, p 116.

[195] Ms Fiona Wright, Executive Group Manager, Climate Change and Energy, EPSDD, *Committee Hansard*, 15 June 2023, p 116.

[196] Mr Shane Rattenbury MLA, Minister for Energy, Water and Emissions Reduction, *Committee Hansard*, 15 June 2023, p 118.

> so the energy can be shifted around the national electricity grid. And, finally, there is a lot of consideration of the decentralisation agendas, so that we do not have to keep building bigger infrastructure. The infrastructure has to meet peak demand, so, if we can smooth out peak demand, we do not need to spend as much on infrastructure. That peak demand can be managed through a range of things, whether it is about the time people use energy or the energy efficiency. There are things like our Energy Efficiency Improvement Scheme in the ACT, where people do not need as much power for particular devices or to run their homes. There is a series of mitigating strategies which we believe will mean that we do not have to make such significant upgrades to the grid.[197]

3.154. Minister Rattenbury acknowledged that, with the uptake in solar panels, batteries, and two-way EVs, the nature of the power grid has changed:

> Historically, our grids were designed to have large, centralised power stations pushing power in one direction. Now we have literally thousands of small power stations across the city. There is work to be done to make sure that operates effectively.[198]

3.155. This has implications on how peak demand on the grid could be managed:

> It is the issue of peak demand. That is what costs a lot of money, in terms of needing to upgrade the system, and the capability to smooth that load across the day ... We are seeing circumstances now in other jurisdictions where there is so much solar coming into the system in the middle of the day that there is excess and solar systems are being turned off by the central agency or the energy companies because there is too much electricity in the system.
>
> If we can get all the electric vehicles lined up and charged in the middle of the day when all that solar is pouring into the system, people will not go home and do convenience charging from 5 pm to 8 pm, which is our peak demand time. In fact, those cars—which have sizeable batteries in them, compared to a home battery—under the grid scenarios, could put energy back into the system, and so you could significantly reduce the peak of the early evening slot, which is currently the main challenge for the ACT, particularly in winter.[199]

3.156. The EPSDD also noted that due to Evoenergy working in five-year regulatory periods, it was important that the government be able to provide Evoenergy with clear direction to allow 'the smoothing of the infrastructure build as well as the smoothing of the transition.'[200]

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[197] Mr Shane Rattenbury MLA, Minister for Energy, Water and Emissions Reduction, *Committee Hansard*, 15 June 2023, p 118.

[198] Mr Shane Rattenbury MLA, Minister for Energy, Water and Emissions Reduction, *Committee Hansard*, 15 June 2023, p 119.

[199] Mr Shane Rattenbury MLA, Minister for Energy, Water and Emissions Reduction, *Committee Hansard*, 15 June 2023, pp 119–120.

[200] Ms Fiona Wright, Executive Group Manager, Climate Change and Energy, EPSDD, *Committee Hansard*, 15 June 2023, p 120.

Committee comment:

3.157. The Committee considers that it is critical for the ACT's electricity network to be capable of handling peak demand from the charging of EVs, both from residential chargers and commercial charging points.

Recommendation 15

The Committee recommends that the ACT Government continue to work with Evoenergy to ensure network readiness and minimise network constraints as EV ownership grows.

Financial inaccessibility and incentives

3.158. The Committee heard from several submissions about the financial barriers to purchasing ZEVs, with many noting upfront cost as a barrier:[201]

> The main barrier to EV ownership for me is upfront cost. EVs are so expensive to buy![202]
>
> I would really like to buy an electric vehicle, but I can't afford one yet. If there were more subsidies or the price dropped (perhaps from increased availability) I would definitely purchase one. I have rooftop solar and it just makes sense to switch to EV.[203]
>
> I'm a reasonably affluent Canberra resident - I MIGHT consider a hybrid option for a "town" car - but this limits it to metro use until charging stations are more available - overall I wouldn't be switching to an EV vehicle in the foreseeable future as all one unless one of our current Internal Combustion Engine (ICE) vehicles suddenly fails terminally as all our ICE cars are relatively new &/or have been restored and the exorbitant cost of EV vehicles is beyond most household budgets: this would pretty much limit that car to metroploitian [sic] running as well which doesn't suit our household transport requirements.[204]
>
> The upfront cost of EVs is challenging even to those on moderate income levels; however, prices will reduce as the market shifts. As this happens, more second-hand vehicles will enter the market, allowing a greater uptake by those on lower incomes. Currently, most used EVs cost more than $20,000 to purchase, meaning that people on low incomes will struggle to justify this upfront expense.[205]

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[201] See for example: Simon Byrne, *Submission 4*, p 1; Graeme Kirkham, *Submission 8*, p 1; Andrew Wess, *Submission 10*, p 1; Alex Elliot, *Submission 12*, p 1; Gillian King, *Submission 63*, p 1; Conservation Council ACT Region, *Submission 64*, p 3; Weston Creek Community Council, *Submission 70*, p 8; Graham Morris, *Submission 5*, p 1.

[202] Martin Budden, *Submission 1*, p 1.

[203] Sarah Adams, *Submission 2*, p 1.

[204] Paul Matterson, *Submission 7*, p 1.

[205] Conservation Council ACT Region, *Submission 64*, p 7.

3.159. One submission estimated the upfront cost of EVs in Australia as between $50,000 and $60,000,[206] whereas another estimated the cost of a 'good electric vehicle' as around $100,000.[207] Another submitter stated they paid $72,000 for their EV.[208]

3.160. The price difference between electric and non-electric vehicles was also apparent with the ACT Government's procurement of its single hybrid electric fire truck which, at a cost of $1,524,387, was almost double the cost of a single diesel fire truck ($813,155).[209]

3.161. The Australian Electric Motor Company expressed the hardships it faced when trying to sell electric motorcycles:

> In Australia and the ACT, no such incentive exists. There is a discount on the price of Stamp Duty for some EVs - but electric motorcycles are not included in the ACT because they are not included in the Green Vehicle Guide despite having a lower carbon footprint than nearly all of the vehicles on that list (most electric motorcycles have a lower watts per kilometer [sic] usage figure than electric cars because they are lighter). State to State, the cost of Stamp Duty differs for electric motorcycles. But there are no Federal or State level grants which actively reward consumers for purchasing an electric motorcycle/scooter over a petrol one, like the Plug-in Vehicle grant does in the UK.
>
> This means, premium electric motorcycles like the Energica Ego+ have an Australian RRP around 20% more expensive than USA. The after grant price in the UK is also significantly less than Australia. There is very little incentive for electric motorcycle/scooter manufacturers to prioritise the Australian market. There aren't enough incentives for Australian riders to choose an electric motorcycle/scooter over a petrol one.[210]

3.162. The Australian Electric Motor Company also raised the issue of import costs, and how it is another factor which can make prospective buyers decide not to make the switch:

> Obviously many of these costs are beyond the control of the Australian or ACT government like shipping costs, maritime insurance, port fees, fumigation, etc. However, tariffs like the 5% customs duty on electric motorcycles/scooters, 10% GST and extensive compliance costs from an over-complicated road approval process are all contributing to driving up the price of electric motorcycles coming from outside of Australia. These are all disincentives to manufacturers and distributors to increase the supply of available EVs to Australia and the ACT. This means only the most dedicated, financially comfortable motorcycle riders can afford to and are willing to transition from a petrol motorcycle to a premium

[206] Matthew Boorman, *Submission 13*, p 1.
[207] Alex Elliot, *Submission 12*, p 1.
[208] Alex Satrapa, *Submission 6*, p 2.
[209] See, for example, Claire Fenwicke, ''The future of all transport is electric': ACT takes the lead with the country's first hybrid plug-in pumper', *RiotACT*, 12 June 2023; ACT Audit Office, *Audit-General's Performance Audit Report – Procurement of a Hybrid Electric Fire Truck: Report No. 4/2023*, June 2023 p 1.
[210] Australian Electric Motor Company, *Submission 40*, p 3.

> electric motorcycle. Despite many other riders being keen to do so, but just not having the financial means to.[211]

3.163. To reduce the upfront cost as a disincentive, the ACT Government currently has several financial incentives in place to encourage the purchasing of EVs, such as:

- Interest-free loans of up to $15,000 under the Sustainable Household Scheme – only battery EVs under the luxury car tax threshold for fuel efficient vehicles are eligible for the scheme;[212]
- Two years free registration to newly registered battery electric and hydrogen vehicles (both new and second-hand), registered between 24 May 2021 and 30 June 2024; and
- Zero stamp duty for both new and second-hand EVs.[213]

3.164. On 1 February 2023, the ACT Government announced further incentives through changes in vehicle registration that will take effect from 1 July 2024. Under this new scheme, registration fees will transition from a weight-based calculation, which currently penalises EVs because of the greater weight required for their drivetrains, to an emissions-based calculation.[214]

3.165. ZEVs that finish the free registration period will shift to the lowest weight-based registration fee from 25 May 2023, and transition to the new emissions-based registration fees from 1 July 2024. Eligible EVs will also receive 12-month registration discounts from 1 July 2023.[215]

Impact of current incentives

3.166. In its submission, Conservation Council ACT Region asserted that the goal of vehicle taxes and charges should be to 'change consumer behaviour, and put in place incentives to switch to zero emission vehicles and disincentives to retain ICE vehicles.' They suggested that incentives supporting EV uptake should be time-bound to drive early adoption, and:

> …should avoid offering overly generous public money subsidies once EVs are within reach of the majority of the population, and should be means-tested to ensure public funds are not being directed to high income households.[216]

[211] Australian Electric Motor Company, *Submission 40*, p 3.
[212] ACT Government, *Driving into the future – a guide to electric vehicles*, Electric vehicles - Climate Choices (act.gov.au) (accessed 24 March 2023).
[213] ACT Government, *Submission 58*, p 2.
[214] Access Canberra, *Motor vehicle registration and renewal*, Motor vehicle registration and renewal (act.gov.au) (accessed 1 February 2023).
[215] Access Canberra, *Motor vehicle registration and renewal*, Motor vehicle registration and renewal (act.gov.au) (accessed 1 February 2023).
[216] Conservation Council ACT Region, *Submission 64*, p 5.

Support for existing incentives

3.167. Several submissions expressed support for a continuation of the existing incentives,[217] with the waiving of stamp duty and two years free registration specifically pinpointed by a couple of submitters as key incentivising factors behind their EV purchase.[218]

3.168. This was supported by the AEVA-ACT, which noted in its submission that the exemption of EVs from stamp duty and registration charges was 'seen as a considerable benefit' by purchasers, and welcomed the extension of exemptions for used and imported EVs.[219]

Need for more equitable incentives

3.169. Some submissions however took the view that the existing incentives did not go far enough in reducing or eliminating the cost barrier, and pointed to issues around inequity.

3.170. While ACT Council of Social Service (ACTCOSS) welcomed the extension of stamp duty exemption to include second-hand EVs, it noted that ZEVs were out of reach for people on low incomes even with this incentive.[220]

3.171. ACTCOSS additionally argued that the existing incentives primarily benefit those on higher incomes, who do not necessarily need rebates. They pointed to research in the United States which showed that of the households that had received US$18 billion in rebates and tax credits for installing solar panels and buying ZEVs and other clean energy technologies, the top income quintile received 90 percent of rebates and the remaining 10 percent was received by the bottom three quintiles.[221]

3.172. ACTCOSS called for incentives and support for ZLEV uptake to be targeted toward low-income households, 'as these are also the families who are most impacted by rising costs of fuel and the least able to make the transition without assistance.'[222]

3.173. The Motor Traders' Association (NSW) also wrote in its submission that 'while private residential strata units grapple with enhancing the internal infrastructure to install charging ports within common areas, governments need to ensure that social and community housing stock is not left out of the equation':[223]

> Transitioning to EVs must include all sectors of society and if the aim of the rollout of electric vehicles is to reduce the carbon footprint then all sectors of society need to be brought along on the journey.

[217] See, for example: Australian Electric Vehicle Association (ACT), *Submission 49*, p 13; Greg Redfern, *Submission 51*, p 1; Federal Chamber of Automotive Industries, *Submission 56*, p 13; Conservation Council ACT Region, *Submission 64*, pp 5–6; ACTCOSS, *Submission 67*, p 1; Hyundai Motor Company Australia, *Submission 30*, p 2.
[218] See, for example: John Smith, *Submission 36*, p 6; Peter LeCornu, *Submission 21*, p 3.
[219] Australian Electric Vehicle Association (ACT), *Submission 49*, p 13.
[220] ACTCOSS, *Submission 67*, p 2.
[221] ACTCOSS, *Submission 67*, p 2.
[222] ACTCOSS, *Submission 67*, p 2.
[223] Motor Traders' Association of New South Wales, *Submission 73*, p 10.

> Planning now for how lower socio-economic communities can have access to EV charging that is affordable will be crucial to the ACT Government's plan to reach its targeted EV uptake and reduce the Territory's carbon emissions.
>
> Not having the planning instruments or the policy levers in place now will only marginlise [sic] those who cannot afford the upfront costs of either new EVs or used EVs, which for a period of time still be more expensive than used ICE vehicles.[224]

3.174. Ian and Ute Diversi of Canberra.bike were also sceptical of the general impact of incentives arguing 'The more possible measures of stamp duty exemption, $15,000 zero interest loans, and free registration have only a marginal effect'.[225] They were also of the view that the Sustainable Household Scheme has had limited impact in encouraging EV uptake, referencing data that only 49 EVs were purchased in 2021-22 under the Sustainable Household Scheme.[226]

3.175. These statements support earlier claims from the Smart Energy Council in 2022, which concluded in its submission to the Standing Committee on Environment, Climate Change and Biodiversity's *Inquiry into renewable energy innovation in the ACT* that the existing policy settings are insufficient to reduce the primary obstacle – financial inaccessibility – for widespread uptake of EVs.[227]

Committee comment:

3.176. The Committee is of the view that the current range of economic incentives favours those in higher-income brackets, and adaptions should be made to the current programs and policies to better respond to these inequalities and inequities.

3.177. The Committee believes that, in order for the ACT to achieve its net zero emissions targets, the government should support everyone in the community, especially those of low socio-economic backgrounds.

Recommendation 16

The Committee recommends that the ACT Government acknowledge the inequities which exist in the current government policies and programs supporting the transition to EVs and adapt these policies and programs to better respond to those inequities.

Recommendation 17

The Committee recommends that the ACT Government review current government policies and programs supporting the transition to electric vehicles to gain a greater

[224] Motor Traders' Association of New South Wales, *Submission 73*, p 10.
[225] Canberra.bike, *Submission 22*, p 35.
[226] Canberra.bike, *Submission 22*, p 33.
[227] Standing Committee on Environment, Climate Change and Biodiversity, *Inquiry into renewable energy innovation in the ACT*, June 2022, p 66.

understanding of the types of inequalities in or exacerbated by this program, how these could have been better responded to and what learnings from this experience can be applied to future areas of transition such as the transition from gas to electricity.

Car-focused incentives

3.178. Some submissions were of the view that too much focus was being placed on electric cars over other forms of sustainable transport.

3.179. Noting that electric cars were presently 'really unaffordable for the majority of people', Conservation Council ACT Region told the Committee that subsidies for smaller forms of electric transport such as motorcycles, bicycles, and scooters would help with equity of access to lower emission transport.[228]

3.180. Dr Gemma Killen, Interim Chief Executive Officer of ACTCOSS, advised the Committee that there could be a market in lower income groups for electric bikes and scooters as a main form of transport, as an alternative to owning a car.[229]

3.181. Describing a target of zero net emissions by 2045 as 'an overwhelming imperative', Dr Warwick Cathro, Convenor of the Transport Working Group at Conservation Council ACT Region said that, while 'EV uptake is going to make probably the biggest contribution to achieving that target', it was only part of the transport picture:

> …public transport, electrification of privately owned vehicles, promotion of active travel, and improved active travel infrastructure all have to be melded together into a sensible and coherent framework.[230]

3.182. Dr Cathro added that for short journeys of less than 10 km, electric bikes as well as cycling and walking could play an important role in people using more sustainable forms of transport.[231]

3.183. This was echoed by Ian and Ute Diversi of Canberra.bike, who argued that the prioritising of electric cars by the government in its net zero incentives over other forms of sustainable transport was continuing inequality:

> The role of government is to prioritise that which is required by future Canberrans. We cannot build our way out of congestion. Car culture cements inequality and disadvantages those who cannot afford to or want to own a motor vehicle. Children cannot drive. The old and impaired need other ways to move around. Government should not favour private car ownership which it knows is environmentally and economically unsustainable.

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[228] Ms Elle Lawless, Executive Director, Conservation Council ACT Region, *Committee Hansard*, 1 March 2023, p 60.
[229] Dr Gemma Killen, Interim Chief Executive Officer, ACTCOSS, *Committee Hansard*, 1 March 2023, p 56.
[230] Dr Warwick Cathro, Convenor, Transport Working Group, Conservation Council ACT Region, *Committee Hansard*, 1 March 2023, pp 62–63.
[231] Dr Warwick Cathro, Convenor, Transport Working Group, Conservation Council ACT Region, *Committee Hansard*, 1 March 2023, p 63.

> We have alternatives and government policies should favour those. Putting the "money where the mouth is" and "walking the talk" is the first step – that means funding in the ACT Budget. Staffing and management at TCCS need reflect the new priorities. The PTCS Committee should be investigate how we can promote the uptake of those transport modes that matter: people walking, riding and travelling with public transport.[232]

3.184. When questioned by the Committee whether the ACT Government was doing enough to incentivise non-car electric transport and whether other electric transport modes could be included in incentive schemes such as loans or grants, Minister Steel said that the purpose of the Sustainable Household Scheme was to help people to meet the high up-front cost of purchasing an EV:[233]

> The same high up-front cost does not necessarily apply to smaller items like bikes, for example, including electric bikes. I think that is one of the reasons why it has not been included in the scheme.[234]

3.185. Minister Steel also added that his focus as Minister for Transport and City Services is encouraging Canberrans to use public transport, together with transitioning public transport to zero emissions buses so that Canberrans can choose a sustainable form of transport.[235]

3.186. Responding to a similar question from the Committee, Minister Rattenbury suggested that these other electric transport modes could potentially be captured as part of the Sustainable Household Scheme:

> I think adding those types of vehicles to the scheme could be useful. It depends—you want to think about the price point for them. E motorbikes, I think, generally cost about $15,000, so could fit neatly into the scheme. Once you are down to an e-bike, you are looking at, I think, depending on your model, $1,500 to $3,000 or $4,000. So, yes, they could be eligible as well.[236]

Committee comment:

3.187. The Committee is of the view that the current financial incentives for electric vehicles are heavily weighted towards electric cars, and that more support should be given to other, more accessible modes of low-emissions transports, including expanding the range of zero emissions vehicles subject to the Sustainable Household Scheme.

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[232] Canberra.bike, *Submission 22*, p 5.
[233] Mr Chris Steel MLA, Minister for Transport and City Services, *Committee Hansard*, 1 March 2023, p 83.
[234] Mr Chris Steel MLA, Minister for Transport and City Services, *Committee Hansard*, 1 March 2023, p 83.
[235] Mr Chris Steel MLA, Minister for Transport and City Services, *Committee Hansard*, 1 March 2023, p 83.
[236] Mr Shane Rattenbury MLA, Minister for Water, Energy and Emissions Reduction, *Committee Hansard*, 1 March 2023, p 94.

Recommendation 18

The Committee recommends that, to support a just transition to a zero-emissions city, the ACT Government include non-car electric vehicles such as electric motorcycles, e-bicycles, e-tricycles and electric scooters in the Sustainable Household Scheme.

Recommendation 19

The Committee recommends that the ACT Government continue to support all forms of transport with priority being on modes of transport that provide public access or minimise congestion, such as active travel or public transport.

Recommendation 20

The Committee recommends that the ACT Government undertake further consideration of and report back to the Assembly on how the transition to electric vehicles as currently outlined will or will not support a reduction in individual car dependency.

3.188. Further, the Committee is of the view that for the development of incentives or new policies for encouraging future transitions, more weight and analysis needs to be given by Directorates to the potential or expected inequalities arising from the transition, such as impacts on those with a disability, financial inequity, and access.

3.189. Steps to address or mitigate any potential or expected inequities should be outlined by the ACT Government, and published as a matter of best practice.

Recommendation 21

The Committee recommends that the ACT Government, as a matter of good practice when developing and implementing policy for future transitions, undertake a risk assessment of the inequalities possible or exacerbated from transitioning, including disability and just transition, and use this to address the issues identified as any future program is developed and implemented.

Recommendation 22

The Committee recommends that the ACT Government, as a matter of best practice, publish a statement on how the inequalities identified in the risk assessment for any future transitions are being addressed in the policy and programs.

Road-user charges

3.190. In discussing the issue of taxes and rebates around electric vehicles, several submissions argued against the introduction of a ‘road-user charge’.

3.191. In arguing against a road-user charge, one submission specifically referenced the example of Victoria,[237] which has had a road-user charge on zero and low emission vehicles since July 2021:

> The ACT Government should not introduce a per kilometre electric vehicle tax as introduced by Victoria in the foreseeable future. This can only discourage people from taking up electric vehicles.[238]

3.192. Currently, the Victorian Government collects between 2 and 2.5 cents per kilometre travelled in an EV, with registered drivers required to declare the distance driven when they renew the vehicle's registration each year.[239] The Victorian Government stated that this 'EV tax' is a way of ensuring EV drivers are making a contribution towards foregone Commonwealth fuel excise revenue.[240]

3.193. Similarly, new and used EVs in NSW will have a road-user charge of 2c per km (for plug-in hybrids) or 2.5c per km (for electric and hydrogen vehicles), indexed to CPI, applied to them from July 2027 or when EVs reach 30 percent of new vehicles sales (whichever is first).[241]

3.194. However, it is important to note that a High Court challenge has been launched against the Victorian road-user charge, with lawyers for two EV owners arguing the state 'does not have the constitutional power to levy the charge.'[242]

3.195. Paul Wayper outlined his arguments against a road-user charge:

> The one policy I am absolutely against is putting a 'road usage charge' on electric vehicles. The logic offered is that EVs should pay for the maintenance of the roads, and the normal mechanism to do this is via the fuel excise which EVs do not pay. There are two main reasons that this is fundamentally flawed: * Firstly, since the mid 1990s the fuel excise has gone into general revenue. So there is no link between fuel tax and road repairs. And my experience of driving through some parts of regional NSW, where the local council is heavily in debt, is that no road repairs get done there despite the desperate need and the number of people buying fuel in that region. * Secondly, EVs make only a trivial contribution to road wear. The bulk of this comes from semi-trailers and then large commercial trucks

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[237] VicRoads, *ZLEV road-user charge*, https://www.vicroads.vic.gov.au/online-services/help-centre/business-help-centre/zlev-road-user-charge, (accessed 5 June 2023).

[238] Peter LeCornu, *Submission 21*, p 3.

[239] Jasper Lindell, 'Electric vehicle distance charges 'inevitable' in ACT in years to come', *The Canberra Times*, 7 December 2021.

[240] Lisa Cox, 'Victoria's electric vehicle tax faces high court challenge', *The Guardian*, 16 September 2021.

[241] See, for example: NSW Government, *NSW Government's Electric Vehicle Strategy*, (accessed 23 August 2023); NSW Government, *A fair and sustainable road user charge*, (accessed 23 August 2023); Peter Holcombe Henley, Clayton Utz, *NSW Passes Australia's second distanced-based EV road user charge legislation*, 21 October 2021, (accessed 23 August 2023).

[242] See, for example: Lisa Cox, 'Victoria's electric vehicle tax faces high court challenge', *The Guardian*, 16 September 2021; Elizabeth Byrne, 'High Court to hear challenge against Victoria's electric vehicle tax, determine if levy is unconstitutional - ABC News', *ABC News*, 14 February 2023.

> delivering freight and concrete. And yet these vehicles actually enjoy a diesel subsidy from being in the transport industry.[243]

3.196. In its submission to the inquiry, the HMCA similarly advocated against the introduction of a road-user charge on the basis it would discourage EV ownership:

> We do not support the introduction of a road-user charge. A tax placed on EV owners at this critical point in the technology's acceptance will reverse the ACT's excellent progress to date and negatively impact upon its ability to reach its 2035 EV target.[244]

3.197. Woolworths also cautioned on the introduction of a road-user charge:

> Woolworths supports EVs contributing to road funding, but notes that road-user charges could act as a disincentive to EV uptake if imposed at the wrong stage of the technology's development.[245]

Committee comment:

3.198. The Committee is of the view that in considering the introduction of a road-user charge specifically for EVs, the ACT Government should be cautious that such a charge does not inadvertently disincentivise Canberrans to purchase EVs.

Recommendation 23

The Committee recommends that the ACT Government, when considering road-user charges, does not disincentivise the purchase of low emissions vehicles.

Second-hand market

3.199. The Committee heard from several submitters that there is very little availability of EVs on the second-hand market, and those that are available are still highly priced.[246]

3.200. Delays in delivery of new cars meant that, in 2022, immediately-available used EVs were selling for up to $10,000 more than new ones.[247] While this issue has gradually subsided, demand for second-hand EVs is still higher than supply across Australia.[248]

3.201. The Australian Electric Motor Company stated that 'well-maintained EVs are capable of lasting longer than petrol/diesel vehicles' and described EVs as an 'ideal used vehicle purchase . However, there are not enough used EVs in circulation in the ACT:

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[243] Paul Wayper, *Submission 25*, p 3.
[244] Hyundai Motor Company Australia, *Submission 30*, p 5.
[245] Woolworths Group, *Submission 62*, p 4.
[246] See, for example: *Submission 8*, p 1; *Submission 40*, p 4; *Submission 64*, p 8; ACTCOSS, *Submission 67*, pp 1–3; Commissioner for Sustainability and the Environment, *Submission 32*, p 2.
[247] Jennifer Dudley-Nicholson, '*When Aussies can expect EV prices to finally drop*', *Australian Associated Press,* 26 February 2023.
[248] Jennifer Dudley-Nicholson, '*When Aussies can expect EV prices to finally drop*', *Australian Associated Press,* 26 February 2023.

> If you search for a used electric motorcycle or scooter in the ACT on Bikesales.com.au (as of the 04/08/2022) there are 0 vehicles available. There is such a short supply of electric motorcycles/scooters in the ACT and Australia in general - it is almost impossible to purchase a used one. This is excluding a large portion of consumers that are willing to transition to an EV if they could find a suitable used one to purchase. This is understandable as many want to thoroughly test an EV before committing to the purchase price of a new EV.[249]

3.202. The Australian Electric Motor Company put forward the recommendation for ACT Police and the Australian Federal Police to purchase specialist police electric motorcycles instead of petrol motorcycles:

> In the UK and Italy - the national police force are using electric motorcycles such as the Zero SR/S and Energica EsseEsse9+ RS instead of the typical BMW or Honda petrol police motorcycles. They are leading by example but also benefiting from lower maintenance costs on those vehicles, higher performance (acceleration and torque) and lower fuel costs while also emitting less emissions while performing their duties. Once those police motorcycles have finished their term of service - the police modifications can be removed and the vehicles can be sold to the public - increasing the supply of used EV inventory available in that market. It would make sense for the ACT Police to run a pilot testing these electric alternatives against their current police motorcycle fleet to see if they can match or beat the current vehicles. If they are capable of meeting the requirements - the ACT Police and government should lead by example in adopting electric vehicles where they can suitably replace petrol ones and also aid the supply of EVs into the ACT.[250]

3.203. AEVA-ACT stated that policies to promote EV fleet and private purchases would see more EVs entering the used car market, enabling people on lower incomes to purchase EVs, and suggested that deliberate shortening of government fleet lease periods for EVs could be a way to locally increase the supply of second-hand vehicles.[251]

3.204. Conservation Council ACT Region agreed, suggesting that due to the high proportion of the Commonwealth Government car fleet registered in the ACT, the ACT Government 'could ask the Commonwealth to maximise the acquisition of EVs for its ACT-based fleet.'[252]

3.205. In its submission, Motor Traders' Association (NSW) suggested that an allowance for accelerated depreciation on ZLEV fleet purchases could also support more rapid uptake of such vehicles.[253]

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[249] Australian Electric Motor Company, *Submission 40*, p 4.
[250] Australian Electric Motor Company, *Submission 40*, p 6.
[251] Australian Electric Vehicle Association (ACT), *Submission 49*, p 15.
[252] Conservation Council ACT Region, *Submission 64*, p 8.
[253] Motor Traders' Association of New South Wales, *Submission 73*, pp 12–13.

3.206. In their submission, Bede Doherty described creation of a 'vibrant' second-hand EV market as 'essential', saying that people were more likely to consider a recent model EV if it were similar in cost to a new ICE vehicle.[254]

3.207. During the public hearing on 1 March 2023, FCAI told the Committee that 'Fleet acquisitions of EVs and then creating a second-hand market are absolutely critical. We totally support that.'[255]

Committee comment:

3.208. The Committee is of the view that, ongoing incentivisation for EV adoption in the ACT will increase the supply of second-hand electric vehicles in the long-term; however, the ACT Government can also assist in the short-term by reviewing the lease period on its fleet of EVs in order to increase the local supply of used EVs.

Recommendation 24

The Committee recommends that the ACT Government consider the costs and benefits of shortening the lease period on its fleet of electric vehicles in order to increase the local supply of used electric vehicles.

Commercial and heavy vehicles

3.209. The ZEV Strategy has limited focus on commercial and heavy vehicles, owing to its deliberate initial focus on light vehicles.

3.210. While light commercial vehicles are covered by many of the ZEV Strategy's actions pertaining to light vehicles, heavy vehicles – including those for transport and logistics – are to only receive greater focus as 'the markets and technologies for these vehicles mature and the transition in the private vehicle market gathers pace.'[256]

3.211. The ZEV Strategy highlights that 'Compared to light ZEVs, current zero emission heavy vehicle technology experiences a smaller market due to constraints such as weight, range and capacity.'[257]

3.212. With respect to commercial vehicles, the ZEV Strategy outlines measures aimed to assist businesses and community organisations to accelerate the transition of light commercial vehicles, such as the Business Fleet Advisory Service and delivery of a demonstration project for zero emissions commercial vehicles.[258]

3.213. The ZEV Strategy however only provides limited actions specifically targeted at heavy vehicles, most being ACT Government-specific measures. These include the replacement of government commercial and heavy vehicles with ZEVs as more models become available,

[254] Bede Doherty, *Submission 54*, p 4.
[255] Mr Peter Griffin, Director, State and Territory Advocacy and Communications, Federal Chamber of Automotive Industries, *Committee Hansard*, 1 March 2023, p 24.
[256] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022-30*, p 5.
[257] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022-30*, p 30.
[258] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022-30*, pp 26, 27.

and the implementation of a pathway towards a transition to zero emissions waste trucks by the mid-2030s.[259]

3.214. The ZEV Strategy also contains more general commitments by the government in this area, including:

- exploring opportunities to strengthen supporting infrastructure such as charging and refuelling networks across the country for both private and public heavy vehicle fleets;
- exploring opportunities to improve heavy vehicle safety at the same time as supporting the transition to a zero emissions heavy vehicle fleet; and
- taking a 'leadership role in supporting innovations in technology to ensure it progresses and becomes more widely available', including through implementation in ACT Government fleets and participation in trials.[260]

3.215. In its submission, Woolworths Group described light commercial vehicles as 'a strong opportunity to rapidly accelerate EV uptake for a growing segment of operators that perform Last Mile deliveries', noting that such deliveries had experienced substantial growth due to the COVID-19 pandemic and widespread uptake of online shopping.[261]

3.216. Woolworths noted that the increased weight of EVs compared to ICE vehicles, due to battery weight, could affect licensing requirements, and said that in the United Kingdom, EVs are given an extra 750 kg allowance to reflect the additional battery weight while meeting existing operating parameters. They noted that EV trucks were also, in general, slightly wider than ICE equivalents.[262]

3.217. Woolworths further noted that flexibility in retail delivery times could act as an incentive for industry adoption of quieter vehicles such as EVs.[263]

3.218. In its submission, the ATA noted that Australia's truck fleet comprises approximately 500,000 rigid trucks, for which around two-thirds of the freight task is in urban settings, and approximately 100,000 articulated trucks, for which around two-thirds of the freight task is in non-urban regions. The ATA shared that:

> Rigid trucks are smaller, carry less freight, and have a higher utilisation in urban areas, providing an immediate investable opportunity for electrification.[264]

3.219. The ATA's submission also echoed Woolworths Groups' observations on truck width and mass, and called for regulatory changes to accommodate these.[265]

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[259] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022-30*, p 17.
[260] ACT Government, *ACT's Zero Emissions Vehicles Strategy 2022-30*, p 28.
[261] Woolworths Group, *Submission 62*, p 3.
[262] Woolworths Group, *Submission 62*, p 4.
[263] Woolworths Group, *Submission 62*, p 7.
[264] Australian Trucking Association, *Submission 18*, p 1.
[265] Australian Trucking Association, *Submission 18*, p 2.

3.220. When asked by the Committee whether government assistance was needed to assist with freight transition to EVs earlier than the 2030s, Mr Sam Marks of the ATA replied, 'yes—to answer shortly and briefly'.[266]

3.221. Mr Marks added that some segments of the industry were ready to transition 'today', noting that Team Global Express had placed a large order for electric trucks to be used in Western Sydney,[267] and that Volvo were planning to manufacture electric trucks in south-east Queensland.[268]

3.222. Mr Marks observed that electric trucks suitable for urban use were likely to be available at reasonable cost in the near future, while long-distance vehicles would be available 'a few years after that.' Noting that freight is a diverse industry, Mr Marks said that 'there is no reason for the challenges in long distance to hold back electrifying what we can, especially in a city like Canberra, where it is a predominantly urban fleet.'[269]

3.223. The ATA and Electric Vehicle Council noted in their joint submission that 'Financial incentives will play a significant role in reducing the cost burden of an electric truck and incentivising freight transition.'[270]

3.224. Their joint submission pointed out that the upfront cost of electric trucks was a major barrier for trucking operators, with some electric truck models costing twice the amount of a diesel equivalent, representing up to $200,000 more in price.[271] Electric trucks can also come with higher associated costs, such as insurance and charging costs.[272]

3.225. The ATA and Electric Vehicle Council called for electric and zero emission trucks to be included in the zero stamp duty concession, noting:[273]

> Stamp duty currently discourages trucking operators from investing in new heavy vehicles, because it adds an additional cost burden on the operator at the time of purchase. To encourage the purchase of electric and zero emission trucks, a stamp duty exemption should be provided.[274]

3.226. Their joint submission also called for an incentive payment to reduce the upfront cost between zero emissions trucks and ICE trucks:

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[266] Mr Sam Marks, Sustainability and Future Transport Manager, Australian Trucking Association, *Committee Hansard*, 1 March 2023, p 72.

[267] See, for example: Mr Sam Marks, Sustainability and Future Transport Manager, Australian Trucking Association, *Committee Hansard*, 1 March 2023, p 72; Volvo Trucks, *Press Release: Largest order of Volvo FL Electric taken for Team Global Express Australia*, 7 December 2022, Largest order of Volvo FL Electric taken for Team Global Express Australia | Volvo Trucks (accessed 23 March 2023).

[268] See, for example: Mr Sam Marks, Sustainability and Future Transport Manager, Australian Trucking Association, *Committee Hansard*, 1 March 2023, p 72; Daniel Bleakley, *Volvo to start making electric trucks at Australia's biggest vehicle factory in 2027,* 14 February 2023, Volvo to start making electric trucks at Australia's biggest vehicle factory in 2027 (thedriven.io) (accessed 23 March 2023).

[269] Mr Sam Marks, Sustainability and Future Transport Manager, Australian Trucking Association, *Committee Hansard*, 1 March 2023, p 72.

[270] Australian Trucking Association and Electric Vehicle Council, *Submission 18.1*, p 16.

[271] Australian Trucking Association and Electric Vehicle Council, *Submission 18.1*, p 16

[272] Australian Trucking Association and Electric Vehicle Council, *Submission 18.1*, p 16

[273] Australian Trucking Association and Electric Vehicle Council, *Submission 18.1*, p 13.

[274] Australian Trucking Association and Electric Vehicle Council, *Submission 18.1*, p 17.

> The introduction of a purchase price incentive is critical to accelerating the transition to electric and zero emission trucks. Increased scale, sales, and model availability is needed to bring down costs to make electric trucks a commercial choice for Australian businesses. A purchase price incentive signals to truck manufacturers that there is demand in the market.[275]

3.227. Their joint submission pointed to the Californian Hybrid and Zero Emission Truck and Bus Voucher Incentive Project. This program provides incentives of US$120,000 to purchase clean medium and heavy-duty trucks and contributes to point of sale price reductions.[276]

3.228. The ATA and Electric Vehicle Council also identified the accessibility and affordability of charging infrastructure as an important matter in the freight industry making the transition to zero emissions vehicles.[277]

3.229. Mr Marks told the Committee that addressing infrastructure barriers, alongside regulator and financial barriers, was important in ensuring transitions in the freight industry:

> …if we address some of the regulatory barriers, and address the financial barriers and infrastructure charging barriers, then we can bring forward that point where industry can make the transition. If we bring forward that point, the cumulative emissions from trucking between now and 2045 will be lower.[278]

3.230. The ATA and Electric Vehicle Council posit that the ACT Government should support fleet operators through funding for the installation of charging infrastructure at depots, as well as public charging infrastructure.[279] Such investment would '…provide confidence to operators that they can fulfil their daily operations.'[280]

Committee comment:

3.231. The Committee is of the view that early assistance should be provided to the freight industry to facilitate rapid transition to EVs, to ensure that the industry can have confidence in transitioning to zero emissions commercial and heavy vehicles.

Recommendation 25

The Committee recommends that the ACT Government explore more opportunities to assist the freight industry, such as curfew exemptions and financial incentives, as soon as practicable and ahead of the current 2030 timeframe.

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[275] Australian Trucking Association and Electric Vehicle Council, *Submission 18.1*, pp 13, 16.
[276] Australian Trucking Association and Electric Vehicle Council, *Submission 18.1*, p 17.
[277] Australian Trucking Association and Electric Vehicle Council, *Submission 18.1*, p 15.
[278] Mr Sam Marks, Sustainability and Future Transport Manager, Australian Trucking Association, *Committee Hansard*, 1 March 2023, p 75.
[279] Australian Trucking Association and Electric Vehicle Council, *Submission 18.1*, p 15.
[280] Australian Trucking Association and Electric Vehicle Council, *Submission 18.1*, p 15.

Fire risks

3.232. Several submissions expressed concern over fires arising from lithium-ion batteries.[281]

3.233. The United Firefighters Union ACT branch (UFU ACT) noted in their submission that there have been two 'notable incidents' of EV fires in Canberra to date, both at battery storage facilities.[282]

3.234. The Committee heard from the UFU ACT at the public hearing that, while fires in EVs are no more common than fires in ICE vehicles, EV fires are much more intense, with directional flame concentrating the heat of combustion in a single direction and greater toxicity of chemicals released posing a hazard to firefighters, the general public, and the environment.[283]

3.235. In its submission, UFU ACT noted that EV fires require a large volume of water to suppress, and have a risk of re-ignition.[284] In demonstrating the risks of re-ignition, one Canberra-based example they point to in their submission occurred in Fyshwick in 2021, with the fire reigniting twice on 1 June and 14 July after initially igniting on 30 May 2021 when batteries were charging.[285]

3.236. The UFU ACT points out in its submission that when a lithium-ion battery is damaged, a chain reaction known as 'thermal runaway' can occur, where heat builds up faster than it can be dissipated, which, in turn, causes further heat build-up. Thermal runaway fires 'can reach temperatures of 1600°C, and a jet of flame can be intense and concentrated.'[286]

3.237. A thermal runaway fire cannot be suppressed with firefighting foam,[287] and typically requires large amounts of water to cool the affected battery. The battery must then be isolated from other objects and tested for reignition risk after 45 minutes.[288]

3.238. Thermal runaway is also a risk in battery energy storage systems, with large systems such as battery storage facilities, battery recharging stations, and large light rail vehicle batteries posing especial challenges in fire suppression.[289]

3.239. Incorrect charger use or installation may also increase fire risk, especially where fast charging is in use. Mr David Bridgford, Acting Secretary of UFU ACT, told the Committee that, while charging in line with manufacturer's instructions and using the manufacturer's chargers is 'very safe', there is 'definitely an increased fire risk if you are using the inappropriate charger for the battery.'[290]

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[281] See, for example: Scott Lang, *Submission 17*, p 6; Andrew Pyke, *Submission 26*, p 3; City Plaza Apartments, *Submission 27*, p 2; Strata Community Association ACT, *Submission 33*, p 4.
[282] United Firefighters Union, *Submission 71*, p 5.
[283] Mr David Bridgford, Acting Secretary, United Firefighters Union (ACT branch), *Committee Hansard*, 1 March 2023, p 76.
[284] United Firefighters Union (ACT branch), *Submission 71*, p 5.
[285] United Firefighters Union (ACT Branch), *Submission 71*, p 5.
[286] United Firefighters Union (ACT branch), *Submission 71*, p 7.
[287] United Firefighters Union (ACT branch), *Submission 71*, p 7.
[288] United Firefighters Union (ACT branch), *Submission 71*, p 8.
[289] United Firefighters Union (ACT branch), *Submission 71*, pp 4–7.
[290] Mr David Bridgford, Acting Secretary, United Firefighters Union (ACT branch), *Committee Hansard*, 1 March 2023, p 77.

3.240. The UFU ACT submission noted that the standards applicable to charging infrastructure in Australia are general standards pertaining to all electrical equipment, with only one of the relevant standards (AS/NS 3000:2018) setting some minimum requirements for installation of charging infrastructure.[291] The UFU ACT support the development of more comprehensive standards, citing the United States National Fire Protection Association's 'Standard for the Installation of Stationary Energy Storage Systems'.

3.241. In its submission, the City Plaza Apartments also expressed concern about increased fire risks during charging or due to battery faults, calling for manufacturing standards relating to safety.[292]

3.242. The Strata Community Association also noted in its submission that when it comes to insurance implications arising from a fire from charging infrastructure, 'the onus is ultimately on the owners corporation to ensure that the chargers are installed correctly, even those that are for personal use only (the issue of insurance permeates regardless of whether or not [it] is a personal or communal installation).' The Strata Community Association suggests that the government engage with insurers who specialise in strata insurance around the issue of installation of EV charging infrastructure in strata schemes.[293]

3.243. The Strata Community Association warned that a correlation between EV charging and the increased risk of EV fires are likely to increase insurance:

> It is important to make the distinction between EV charging and EVs in relation to fire and the resultant insurance implications, and whether or not there is an enhanced risk of combustion that is directly related to charging. If there does exist a relationship between increased risk of EV fires as a result of charging, there is a significantly increased insurance burden as opposed to if there is no correlation.[294]

3.244. The Strata Community Association suggested that the ACT Government consult with ACT Fire and Rescue and other fire safety experts to determine the relationship between EV charging and EV fires to ensure appropriate safety considerations have been made and risk mitigation undertaken.[295]

3.245. Weston Creek Community Council similarly stressed that with the increased risk of EV-related accidents such as lithium burns from the growing number of EVs, there is a need for ensuring that medical and emergency personnel are trained to respond appropriately, including dealing with the disposal of damaged vehicles and batteries.[296] This need was similarly acknowledged by the ACT Government in their submission.[297]

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[291] United Firefighters Union (ACT branch), *Submission 71*, p 4.
[292] City Plaza Apartments, *Submission 27*, p 2.
[293] Strata Community Association (ACT), *Submission 33*, p 3.
[294] Strata Community Association ACT, *Submission 33*, p 4.
[295] Strata Community Association ACT, *Submission 33*, p 5.
[296] Weston Creek Community Council, *Submission 70*, p 2.
[297] ACT Government, *Submission 58*, p 3.

3.246. The Committee also received evidence from a limited number of submissions around the need for education around charging facilities in multi-tenant buildings and residential flats to combat myths around the likelihood of EV charging fires.[298]

Committee comment:

3.247. When fires do occur, the Committee considers that ACT Fire and Rescue should be fully trained in appropriate response measures, and that it is important that other first responders and the public should be cognizant of the hazards involved and best practice for those on the scene.

Recommendation 26

The Committee recommends that the ACT Government provide additional funding and support to ACT Fire and Rescue for specialised training to deal with EV related fires.

3.248. The Committee is of the view that, given the safety and insurance implications arising from potential EV battery and charging fires, there is a need to ensure that owners corporations and the general public are aware of the fire risks associated with EV batteries and charging facilities.

Recommendation 27

The Committee recommends that the ACT Government support the development and publication of educational materials for owners corporations and the general public on EV charging facilities and how to manage associated risks.

Batteries

Whole-of-life considerations

3.249. The Commissioner for Sustainability and the Environment stated that discussions around the sustainability of EVs needed to incorporate whole-of-life considerations:

> Batteries are a key component of these vehicles – as such, how they are made, what materials they are made from, and whether they can be recycled significantly affects the sustainability of EVs as a whole. It is important that circular economy principles are built into batteries from the start if the potential of EVs as an environmentally sustainable product is to be maximised.[299]

[298] See, for example: John Smith, *Submission 36*, p 3; Adele Craven, *Submission 72*, p 2.
[299] Commissioner for Sustainability and the Environment, *Submission 32*, p 2.

3.250. A large-scale transition to EVs will necessitate higher battery production. This has implications for natural resource exploitation, with higher demand for extracted materials like lithium which is highly water-intensive to mine.[300]

3.251. These concerns around natural resource exploitation were echoed by Andrew Pyke, who noted the elements used to produce a typical battery included large amounts of lithium, cobalt, copper, graphite, steel aluminium, and plastic, and that supplying these materials requires extracting and processing large amounts of ores.[301]

3.252. Another submitter, Craig Holman, put forward what they perceived to be the general wastefulness of consumers in replacing 'perfectly good items in order to have the "latest and greatest"' and that they would not be buying an EV, arguing that 'Rather than encouraging and financially incentivising consumers to replace perfectly good cars, we should be encouraging people to stop the waste and own and use cars for their full service life.'[302]

3.253. The higher volume of batteries expected from the transition to electrification will also have considerations as devices reach end-of-life, with several submissions expressing concern over the environmental implications around EV battery disposal.[303]

3.254. The Commissioner for Sustainability and the Environment highlights that at end-of-life, improper battery disposal can also have significant environmental impacts, with lithium-ion batteries containing corrosive materials which can leach into surrounding soils and lead to the pollution of waterways.[304]

3.255. Although EV batteries are typically recyclable, the Commissioner for Sustainability and the Environment noted that there are issues achieving this in practice. One reason is that their construction is not standardised, with different manufacturers using a variety of assembly methods and material compositions, meaning batteries can differ widely depending on the manufacturer. Further, many e-waste recyclers do not have the technology to deconstruct and effectively recycle these complex batteries, so they often end up in landfill.[305]

3.256. One submission supported the idea of repurposing these batteries:

> In relation to battery disposal, I would expect an EV to last 10 years with the battery to become a commodity at the end of the car's usable life (e.g. 2032). If a commercial solution to EV/battery disposal was not available, I would value assistance to re-purpose the battery as a home storage option or perhaps sell it to be used for a similar static battery purpose.[306]

3.257. This was also echoed by AEVA-ACT:

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[300] Commissioner for Sustainability and the Environment, *Submission 32*, p 2.
[301] Andrew Pyke, *Submission 26*, pp 2–3.
[302] Craig Holman, *Submission 11*, p 1.
[303] See, for example: Alex Elliot, *Submission 12*, p 1; Commissioner for Sustainability and the Environment, *Submission 32*, p 2; John Smith, *Submission 36*, p 5; Graham Morris, *Submission 5*, p 1.
[304] Commissioner for Sustainability and the Environment, *Submission 32*, p 2.
[305] Commissioner for Sustainability and the Environment, *Submission 32*, p 2.
[306] Stephen McElhinney, *Submission 14*, p 2.

> We note first up that 'disposal' should only happen after 'reuse'. A battery that may no longer perform sufficiently in a vehicle can remain sufficient for stationary applications... Even a 24kWh Leaf battery with 40% loss of capacity is more capable than most home batteries. Assistance for the addition of home batteries could be expanded to include repurposed vehicle batteries if a suitable business can be found to reconfigure and install.[307]

3.258. The ACT Government in its submission similarly noted the opportunities for battery re-use:

> For EV batteries, it is expected that there will be substantial opportunities for reuse in other applications, particularly as home batteries. Batteries reaching end-of-life for use in EVs still retain 70-80% of initial capacity, and so may have significant contributions to make outside of vehicles, particularly in stationary storage applications.[308]

3.259. Minister Rattenbury provided additional insight on the matter during the third public hearing:

> Clearly, we are going to need to see a significant growth in battery recycling capability. It is a somewhat infant industry in Australia. What is interesting is that there is high potential for the batteries that come out of cars to have a second life. The nature of an electric vehicle is that it needs a particularly large and high-performance battery. When those batteries are no longer necessarily up to powering a vehicle, they still have a perfectly good life to potentially be used in domestic or rural environments as a battery back-up. There is a re-use element before there is even a recycling element for these batteries. Again, there is a significant discussion going on across governments about how we will develop that capability in coming years.[309]

3.260. The ACT Government however was of the view in its submission that due to economies of scale, the most effective way to conduct end-of-life recycling would be through the establishment of a national scheme and regional schemes instead of a standalone scheme in the ACT.[310]

3.261. AEVA-ACT was also of the view that battery disposal issues would only develop slowly, owing to the longevity of modern EV batteries with cooling, larger capacities, and improved chemistry, as opposed to older models:

> With good management, a modern lithium battery should be good for several thousand charge cycles. A modern EV with a range of (say) 400km, will have travelled around 400,000km after 1000 cycles. Even if such an EV were to eventually lose a third of its range, it would still have a range of 267km and it would remain a useful car for many people's needs. Consequently, we don't think

[307] Australian Electric Vehicle Association (ACT), *Submission 49*, p 11.
[308] ACT Government, *Submission 58*, p 7.
[309] Mr Shane Rattenbury MLA, Minister for Water, Energy and Emissions Reduction, *Committee Hansard*, 15 June 2023, p 121.
[310] ACT Government, *Submission 58*, pp 6–7.

> there will be large numbers of EV batteries needing repurposing or recycling nearly as quickly as some suppose.[311]

Committee comment:

3.262. The Committee is of the view that given the potential environmental implications, battery end-of-life and disposal must be considered in preparation for the large-scale transition to EVs.

Recommendation 28

The Committee recommends that the ACT Government ensure that legislation is in place as soon as possible to support and promote the environmentally sound reuse and recycling of EV batteries, whether this occurs within the ACT or in partnership with surrounding jurisdictions.

Skills development and training

Automotive industry

3.263. In planning for an uptake in ZEVs, several submissions noted the need for ensuring mechanics and automotive engineers are equipped to deal with installation, mechanical faults, and repairs associated with ZEVs and its associated infrastructure.

3.264. In its submission, Conservation Council ACT Region noted this investment was important in ensuring that access to mechanical support did not become a barrier to further EV uptake:

> The ACT Government should ensure that there are no barriers to the uptake of qualifications for EV training, and that there are enough options available for trades people to upgrade or reskill as required. Incentives for training could be provided in the early years of the transition, to ensure that a lack of mechanical support does not become a barrier for consumer uptake.[312]

3.265. This was echoed by John Smith:

> It is clear to me that there is a great need for an expansion of the number of trained technicians able to service and repair EVs. Servicing EVs with their high voltage lithium batteries requires specialist skills. I understand that TAFE is working with industry and others to provide courses that will assist to accredit those wishing to work with EVs, and this is to be welcomed.[313]

3.266. The Owners Corporation Network ACT similarly identified this need in its submission:

> Therefore, there will be an increasing demand for skilled technical personnel, including engineers and technicians, who have the necessary knowledge and

[311] Australian Electric Vehicle Association (ACT), *Submission 49*, p 11.
[312] Conservation Council ACT Region, *Submission 64*, p 3.
[313] John Smith, *Submission 36*, p 2.

> expertise to design, install and support EVSE. The OCN suggests that the ACT Government consults with the EVSE industry and education institutions to determine the skills required and to deliver education and training to develop these skills in the workforce. Consideration should also be given to appropriate certification of workers performing EVSE work. For example, there might be a requirement for EVSE education modules for qualified electricians leading to a specialist certification, which would be shown as a 'class' of certification on the relevant Access Canberra licensing webpage.[314]

3.267. Training and workforce development was also acknowledged by the ACT Government in its submission:

> Electric vehicle skills training and workforce development is necessary to support EV uptake in the ACT and to ensure that the ACT has the skills to seize the growing market opportunities.
>
> Ensuring a positive customer experience throughout the life-cycle of an EV supports the accelerated uptake of EVs. This could include EV sales and retail, maintenance, repairs and servicing and EV charger installation and maintenance.
>
> Training and workforce development is needed in the automotive and electrical trades to respond to a growing EV market. Further training in de-energising and handling EVs is required by emergency first responders, tow truck operators and auto body repair workshops.[315]

3.268. A limited number of submissions also expressed concerns with existing training.[316]

3.269. For example, AEVA-ACT expressed concern that the requirement at the Canberra Institute for Technology (CIT) for an EV apprentice mechanic to complete their four-year apprenticeship with a mechanic who is already EV qualified could become a barrier to enabling appropriate work experience:

> There are few mechanics at the moment that are interested in EVs and those that have the qualification probably work for car dealerships. As EVs require less maintenance and dealers aren't really interested in servicing old EVs we are concerned that insufficient work experience is available through the conventional routes. Instead, we suggest this deficiency could be filled, at least in the short-term, by recognition of prior work and knowledge. Companies that already do work on EVs could have their knowledge and skills assessed and be authorised to complete any gap training required to finish the qualification process. This would allow shorter training periods to get people qualified for a demand that is already here for older.[317]

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[314] Owners Corporation Network (ACT), *Submission 44*, p 4.
[315] ACT Government, *Submission 58*, p 3.
[316] See, for example: Australian Electric Vehicle Association (ACT), *Submission 49*, p 4; John Smith, *Submission 36*, p 2; Hyundai Motor Company Australia, *Submission 30*, p 3.
[317] Australian Electric Vehicle Association (ACT), *Submission 49*, p 4.

3.270. The HMCA expressed concern around training in relation to hydrogen re-fuelling infrastructure:

> In regard to hydrogen refuelling infrastructure, the ACT has insufficient skills in the design, construction and maintenance of this equipment. This is consistent across all Australian jurisdictions with several states looking at developing tailored training packages to address these.
>
> We recommend the ACT Government do similar with a focus on upskilling engineers and trades as well as equipping approval authorities and first responders with hydrogen expertise.[318]

3.271. The Motor Traders' Association (NSW) was of the view that upskilling the existing workforce needs to be a focus:

> EV batteries can have a voltage range upwards of 60V and can typically operate between 400 and 800V DC, far higher than the standard voltages in standard vehicles. This makes working EVs more dangerous due to the risk of electrocution.
>
> It is imperative that the current workforce in the ACT has access to safety training in depowering and re-energizing EV batteries so that workers in the automotive industry can safely repair, service, and dismantle EVs. This training should not be isolated to this section of the supply chain but include, as the Government notes, other sections of the industry including tow truck drivers.[319]

3.272. John Smith identified a need to improve the general awareness and skills of those working in the automotive industry more generally with respect to ZEVs:

> It appeared to me that the staff at the Motor Registry were not very au fait with EVs, so a general increase in skills development of the auto-industry across the board with respect to EVs would stand the industry in good stead as the shift to EVs ramps up.[320]

3.273. However, Paul Wayper was of the view that the ACT Government did not need to intervene in this space, as dealers and mechanics are, on their own initiative, already learning about EVs:

> I think the dealers and other motor trade mechanics will already be progressing in learning how to repair and maintain electric vehicles. I don't think the ACT government needs to specifically step in to help this.[321]

3.274. The ACT Government emphasised the need for proactive planning on training in order to ensure the number of skilled personnel keeps pace with demand to keep EVs on the road. The government stated that CIT has commenced delivery of EV skills and awareness training through the launch of an EV training lab, which includes training for first

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[318] Hyundai Motor Company Australia, *Submission 30*, p 3.
[319] Motor Traders' Association NSW, *Submission 73*, p 9.
[320] John Smith, *Submission 36*, p 2.
[321] Paul Wayper, *Submission 25*, p 1.

responders.[322] As of June 2022, more than 30 Transport Canberra staff had completed the General Electric Vehicle Training at CIT.[323]

3.275. The government submission also noted that further work is underway at CIT to develop course materials for the EV Certificate III in Light Vehicle Mechanical Technology.[324]

3.276. Weston Creek Community Council shared information contained in the ZEV Strategy around the role of CIT in training mechanics in EVs:[325]

> On the training front, the Canberra Institute of Technology is collaborating with Tesla to design tailored training for ZEVs auto mechanics. This will ensure that as the number of ZEVs on Canberra's roads increases, the auto service industry is skilled up to meet the demand.[326]

3.277. Weston Creek Community Council however thought that CIT should be collaborating with all EV manufacturers, and questioned what the timeframe is for on-site training and adjustments to the curriculum for mechanics.[327]

3.278. Weston Creek Community Council also agreed with the importance of training as stated on page 13 of the ZEV Strategy, however it questioned what consideration had been given to attraction and recruitment for EV-related trades:

> Consideration needs to be given to the mentoring of new trainees and the opportunities that may or may not be available to them in the transition stages of the uptake of skills. A focus group or forum to share expertise would be valuable.[328]

Accessibility

3.279. John Smith advised that many chargers are inaccessible to wheelchair users, being too high to reach and often on concrete plinths or surrounded by bollards.[329]

3.280. Mr Smith observed that a system designed to account for disabilities is a system designed for everybody, including the elderly and parents with young children, but that currently 'I have to have somebody with me in the car to charge the car if I am on a trip.'[330]

3.281. During the public hearing on 1 March 2023, Mr Smith identified having kerb cuttings and circulation space for wheelchairs around a parking space and the weight and length of charging cables as additional concerns for accessibility.[331]

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[322] ACT Government, *Submission 58*, p 3.
[323] ACT Government, *Submission 58*, p 4.
[324] ACT Government, *Submission 58*, p 3.
[325] Weston Creek Community Council, *Submission 70*, p 3.
[326] ACT Government, *ACT's Zero Emissions Vehicle Strategy: 2022-30*, p 29.
[327] Weston Creek Community Council, *Submission 70*, p 3.
[328] Weston Creek Community Council, *Submission 70*, p 3
[329] John Smith, *Submission 36*, p 4.
[330] Mr John Smith, *Committee Hansard*, 1 March 2023, p 48.
[331] Mr John Smith, *Committee Hansard*, 1 March 2023, pp 49–50.

Committee comment:

3.282. The Committee is of the view that it is essential for infrastructure, including charging infrastructure for EVs, to be accessible for everyone.

3.283. The Committee notes that chargers that are wheelchair-accessible are also accessible for those with different needs, including those who cannot lift heavy items or those who need more space to manoeuvre.

3.284. The Committee considers that it is therefore essential that every charging location should include accessible charging options.

Recommendation 29

The Committee recommends that the ACT Government ensure public charging facilities are disability accessible.

Education

Driver training

3.285. In their submission, Thomas McCready raised that EVs do not meet the requirement for driver assessment in the ACT,[332] as a vehicle used for a driving assessment must be 'fitted with a centre mounted park brake (electric or manual lever-style)',[333] while EVs have driver-controlled electronic braking only.[334]

3.286. Likewise, ACT driving assessment standards do not currently include EV-specific skills such as driving with regenerative braking.[335]

3.287. Mr John Smith also thought there was a need for driver trainers to be familiar with EVs:

> There will also be a need in the future to have driver trainers who are familiar with EVs and especially trainers able to train drivers with a disability. When I learnt to drive, I was taught by a trainer with a disability who was himself in a wheelchair, and his car was fitted with hand controls so that I could learn, not only how to drive with regard to the road rules, but how to manage a car with hand controls and the specific things that go with that. My EV presented a whole new challenge with its regenerative braking, and I had to significantly adjust my driving techniques to suit the much more complex (in some respects) aspects of driving an EV with hand controls.[336]

[332] Thomas McCready, *Submission 15*, p 1.
[333] Access Canberra, *ACT driver licence information*, ACT driver licence information, (accessed 7 March 2023).
[334] Thomas McCready, *Submission 15*, p 1.
[335] Thomas McCready, *Submission 15*, p 1.
[336] John Smith, *Submission 36*, pp 3–4.

Committee comment:

3.288. The Committee considers that it is important that people learn to drive in the type of vehicle they will most often drive. Just as driving assessments accommodate both manual and automatic vehicles at present, the different skills needed to operate an EV safely and efficiently should be taught and tested in the ACT.

> **Recommendation 30**
>
> The Committee recommends that the ACT Government consider updating driver education and testing standards to allow drivers to learn and be assessed in electric vehicles.

Community education and training

3.289. A number of submitters and witnesses noted a need for community education about EVs, including risks and benefits, driving differences, and etiquette.[337]

3.290. In their submission, Sarah Adams noted a lack of advice on estimating petrol savings and loan repayments to calculate likely overall savings.[338]

3.291. Mrs Adele Craven told the Committee that public events provided an opportunity to promote 'different themes that are associated with electric vehicles—like the clean air; the health impacts of having cleaner air; active transport, which needs help in terms of the smaller electric vehicles; mode active travel; independence; longevity of use, because there is the electric assistance to the transport component of the vehicle.'[339]

3.292. Some witnesses and submitters were concerned about misinformation and misunderstanding in the community about EVs, in particular power grid burden, battery longevity, vehicle suitability, fire risks, and battery recycling.[340]

3.293. In its submission, the AEVA-ACT noted that most EVs have settings to allow for automatic off-peak charging, and that wider education on this capability would be beneficial.[341]

3.294. AEVA-ACT further suggested that, to boost public confidence in EV ownership and operation, schools and community groups could be supported to offer events, seminars, or short courses on topics such as:

- EV purchasing;
- EV ownership;
- options for charging at home, during trips and at destinations;

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[337] See, for example: Sarah Adams, *Submission 2*, p 1; John Smith, *Submission 36*, p 3; Karen Maher, *Submission 47*, p 4, Australian Electric Vehicle Association (ACT), *Submission 49*, pp 6–7; Bede Doherty, *Submission 54*, p 3; Adele Craven, *Submission 72*, pp 2–3.

[338] Sarah Adams, *Submission 2*, p 1.

[339] Mrs Adele Craven, *Committee Hansard*, 1 March 2023, p 34.

[340] See for example: Mrs Adele Craven, *Committee Hansard*, 1 March 2023, p 39; John Smith, *Submission 36*, p 5; Bede Doherty, *Submission 54*, p 3.

[341] Australian Electric Vehicle Association (ACT), *Submission 49*, pp 6–7.

- charging etiquette;
- using charging apps;
- the benefits of avoiding charging at peak times;
- efficient driving including the use of regenerative braking;
- maximising battery life;
- options for vehicle to grid/home/load; and
- how to plan a long road trip.[342]

3.295. In their submission, Graham Thompson noted that electric vehicles registered in Norway are identified by an 'E' or 'EV' prefix on their number plates. They suggested that a similar initiative in the ACT could increase the visibility of – and hence public familiarity – with EVs, potentially paving the way for greater uptake. Differentiated number plates could also facilitate enforcement of any concessions for EVs such as parking.[343]

3.296. Currently, the ACT requires that EVs have a label affixed to front and rear number plates, to identify electric or hybrid vehicles to first responders in case of an accident. The label is a blue triangle with sides of 30mm containing white capital letters 'EV' at least 8mm high.[344]

Figure 3: Example of EV label attached to a numberplate [Source: Access Canberra, *Labelling for Electric and Hybrid powered vehicles*, p 2]

3.297. During the public hearing on 1 March 2023, Mr David Bridgford, Acting Secretary of UFU ACT, told the Committee that firefighters may not know that a fire they are attending involves an EV:

> You talked about the numberplate identification. That would be a technology which I think would be fantastic, however we certainly do not have access to that information on our database. I am not sure what kind of things would need to be navigated to give us access but that would be phenomenal, to be able to turn up to an incident knowing in advance that it is an EV.[345]

[342] Australian Electric Vehicle Association (ACT), *Submission 49*, p 4.
[343] Graham Thompson, *Submission 69*, p 1.
[344] Access Canberra, *Labelling for Electric and Hybrid powered vehicles*, pp 1–2.
[345] Mr David Bridgford, Acting Secretary, United Firefighters Union (ACT branch), *Committee Hansard*, 1 March 2023, p 78.

3.298. In its submission, UFU ACT noted that in cases of vehicle collisions and entrapments, 'knowing the car and its design will be more important. Labelling of number plates on vehicles should be mandated.'[346]

[346] United Firefighters Union (ACT branch), *Submission 71*, p 11.

4. Conclusion

4.1. The Committee acknowledges that the electric vehicle market and environment in Australia is changing and developing rapidly. Much progress towards encouraging uptake of EVs in the ACT and across Australia has occurred during the course of this inquiry.

4.2. The Committee has made 30 recommendations in this report with the aim of facilitating and encouraging the continued and swift uptake of EVs and reduction of transport emissions.

4.3. The Committee wishes to extend its appreciation to all inquiry participants for their engagement throughout the inquiry process and for the valuable contributions they made in assisting and informing the Committee's deliberations.

Ms Jo Clay MLA

Chair

7 September 2023

Appendix A: Submissions

No.	Submission by	Received	Published
1	Martin Budden	04/06/22	20/06/22
2	Sarah Adams	04/06/22	20/06/22
3	Aidan O'Leary	04/06/22	20/06/22
4	Simon Byrne	04/06/22	20/06/22
5	Graham Morris	04/06/22	20/06/22
6	Alex Satrapa	05/06/22	20/06/22
7	Paul Matterson	06/06/22	20/06/22
8	Graeme Kirkham	07/06/22	20/06/22
9	Brendon Mulloy	07/06/22	20/06/22
10	Andrew Wess	07/06/22	20/06/22
11	Craig Homann	07/06/22	20/06/22
12	Alex Elliott	08/06/22	20/06/22
13	Matthew Boorman	20/06/22	27/06/22
14	Stephen McElhinney	20/06/22	27/06/22
15	Thomas McCready	04/06/22	27/06/22
16	Charles Vesely	04/06/22	27/06/22
17	Scott Lang	26/06/22	26/07/22
18	Australian Trucking Association	29/06/22	26/07/22
19	Alan Vogt	30/06/22	26/07/22
20	Steven Hoy	19/07/22	26/07/22
21	Peter LeCornu	19/07/22	26/07/22
22	canberra.bike	22/07/22	29/07/22
23	Andrew Medlin	22/07/22	29/07/22
24	Chris Emery	25/07/22	29/07/22
25	Paul Wayper	26/07/22	29/07/22
26	Andrew Pyke	01/08/22	16/08/22
27	City Plaza Apartments	02/08/22	16/08/22
28	Altitude Apartments	03/08/22	16/08/22
29	Lakefront Apartments	04/08/22	16/08/22
30	Hyundai Motor Company Australia	05/08/22	16/08/22
31	David Liversidge	05/08/22	16/08/22

32	ACT Commissioner for Sustainability and the Environment	05/08/22	16/08/22
33	Strata Community Association (ACT)	05/08/22	16/08/22
34	Urambi Village	07/08/22	16/08/22
35	Bill Gresham	08/08/22	16/08/22
36	John Smith	12/08/22	13/09/22
37	Ian Petersons	12/08/22	13/09/22
38	Ian Jackson	14/08/22	13/09/22
39	Rod Pitcher	16/08/22	13/09/22
40	Australian Electric Motor Co.	18/08/22	13/09/22
41	Jenni McInnes	18/08/22	13/09/22
42	PARC Apartments	21/02/22	13/09/22
43	Robbie Matthews	22/08/22	13/09/22
44	Owners Corporation Network (ACT)	23/08/22	13/09/22
45	Manhattan Apartments	23/08/22	13/09/22
46	Wilara Apartments	23/08/22	13/09/22
47	Karen Maher	24/08/22	13/09/22
48	Christine Coghlan	24/08/22	13/09/22
49	Australian Electric Vehicle Association (ACT)	24/08/22	13/09/22
50	Peter Campbell	24/08/22	13/09/22
51	Greg Redfern	24/08/22	13/09/22
52	The Parade Apartments	25/08/22	13/09/22
53	Gordon Hearn	25/08/22	13/09/22
54	Bede Doherty	25/08/22	13/09/22
55	Trilogy Apartments	25/08/22	13/09/22
56	Federal Chamber of Automotive Industries	26/08/22	13/09/22
57	Siena Apartments	26/08/22	13/09/22
58	ACT Government	26/08/22	13/09/22
59	Saint Germain Apartments	26/08/22	13/09/22
60	Estate Apartments	26/08/22	13/09/22
61	Viridian Apartments	26/08/22	13/09/22
62	Woolworths Group	26/08/22	13/09/22
63	Gillian King	26/08/22	13/09/22
64	Conservation Council ACT Region	26/08/22	13/09/22
65	Name withheld	26/08/22	13/09/22

66	Evoenergy	26/08/22	13/09/22
67	ACT Council of Social Service	26/08/22	13/09/22
68	Aspire Apartments	26/08/22	13/09/22
69	Graham Thompson	26/08/22	13/09/22
70	Weston Creek Community Council	29/08/22	13/09/22
71	United Firefighters Union of Australia (ACT)	05/09/22	13/09/22
72	Adele Craven	23/09/22	06/10/22
73	Motor Traders Association of New South Wales	06/02/23	16/02/23

Appendix B: Witnesses

Wednesday, 16 February 2023

- **Dr David Keightley,** Executive Committee Representative, Urambi Village Owners Corporation
- **Mr Neale Guthrie,** Member, Executive Committee, St Germain Apartments
- **Mr Mathew Kenna,** Chair, Executive Committee, Trilogy Apartments
- **Mr Robin Eckermann AM,** Chair, Executive Committee, The Parade Apartments
- **Ms Moira Daw,** Treasurer, Executive Committee, The Parade Apartments
- **Mr Denton Bocking,** Committee Member, Owners Corporation Network ACT
- **Ms Shelley Mulherin,** President, Strata Community Association ACT
- **Mr Scott Nargar,** Senior Manager of Future Mobility and Government Relations, Hyundai Motor Company Australia
- **Mr Tobin Page,** Managing Director, Australian Electric Motor Company
- **Mr Peter Griffin,** Director State and Territory Advocacy and Communication, Federal Chamber of Automotive Industries
- **Mr Collin Jennings,** Head of Government Relations and Advocacy, Motor Traders' Association of NSW
- **Mr Peter LeCornu**
- **Mrs Adele Craven**
- **Mr Alan Vogt**
- **Mr Robbie Matthews**
- **Mr John Smith**

ACTCOSS

- **Dr Gemma Killen,** Interim Chief Executive Officer
- **Miss Lyndsay Bassett,** Senior Policy Advisor

Conservation Council ACT Region

- **Ms Elle Lawless,** Executive Director
- **Dr Warwick Cathro,** Convenor, Transport Working Group

Australian Electric Vehicle Association (ACT)

- **Mr Richard Czumak,** Branch Chair
- **Dr Peter Campbell,** Committee Member

Australian Trucking Association

- **Mr Sam Marks,** Sustainability and Future Transport Manager

United Firefighters Union ACT Branch

- **Mr David Bridgford,** Acting Secretary

Minister for Skills and Minister for Transport and City Services

- **Mr Chris Steel MLA,** Minister for Skills and Minister for Transport and City Services
- **Mr Geoffrey Davidson,** Executive Branch Manager, Development Coordination, City Services, Transport Canberra and City Services
- **Ms Josephine Anderson,** A/g Executive Director, Education and Training Services, Canberra Institute of Technology

Minister for Water, Energy and Emissions Reduction

- **Mr Shane Rattenbury MLA,** Minister for Water, Energy and Emissions Reduction
- **Ms Fiona Wright,** Executive Group Manager, Climate Change and Energy, Environment, Planning and Sustainable Development Directorate
- **Ms Ros Malouf,** Senior Director, Climate Change and Energy, Environment, Planning and Sustainable Development Directorate

Thursday, 18 May 2023

Evoenergy

- **Mr Peter Billing,** General Manager, Evoenergy
- **Mr Leylann Hinch,** Group Manager Strategy and Operations, Evoenergy

Thursday, 15 June 2023

Minister for Water, Energy and Emissions Reduction

- **Mr Shane Rattenbury MLA**, Minister for Water, Energy and Emissions Reduction
- **Ms Fiona Wright**, Executive Group Manager, Climate Change and Energy, Environment, Planning and Sustainable Development Directorate
- **Mr Chris Thomas**, Director, Climate Change and Energy, Environment, Planning and Sustainable Development Directorate

Appendix C: Questions Taken on Notice

No.	Date	Asked of	Subject	Response received
1	01/03/23	Mr Chris Steel MLA	Product Stewardship Scheme for battery recycling	09/03/23
2	15/06/23	Mr Shane Rattenbury MLA	Modelling of increases to consumer electricity bills	28/06/23