

# The barriers and potential enablers of electric vehicle uptake in Australia



## **CPRC**

The Consumer Policy Research Centre (CPRC) is an independent, non-profit, consumer think-tank. CPRC receives funding for our work from the Victorian Government.

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## **Acknowledgements**

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## **Statement of Recognition**

CPRC acknowledges the Traditional Custodians of the lands and waters throughout Australia. We pay our respect to Elders, past, present and emerging, acknowledging their continuing relationship to land and the ongoing living cultures of Aboriginal and Torres Strait Islander Peoples across Australia.

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# The barriers and potential enablers of electric vehicle (EV) uptake in Australia

EVs will play an important role in the transition to net zero, both by reducing emissions in the transport sector and by complementing other household activities, such as rooftop solar. They can also facilitate households to participate in demand response and other energy market responses that leverage residential level distributed energy resources.

CPRC undertook a nationally representative survey of 2,000 Australians. The purpose of this was to better understand the barriers and enablers for Australians to switch from internal combust engine (ICE) to electric vehicles (EVs).

## Barriers to EV uptake

There are several barriers to accelerating EV adoption, with 85% of Australians identifying one or more barriers to them purchasing an EV.

The following are the most significant barriers stopping consumers from purchasing an EV:

- Half (49%) sighted the upfront cost of an EV.
- 1 in 3 (34%) identified potential limitations in travel distance.
- Almost 1 in 3 (32%) said lack of access to charging infrastructure, both at home and on a trip.
- 1 in 4 identified charging time (27%) and running costs (25%).
- 1 in 5 (21%) identified journeys becoming more difficult to plan and/or stressful due to uncertainty around charging infrastructure on the trip.
- Almost 1 in 5 (19%) identified the performance and reliability of an EV and not knowing enough information to make a purchase.

CPRC identified four types of barriers that consumers face that prevent them from purchasing an EV. These are performance, cost, market issues and specific concerns related to charging. These barriers reflect current consumer perceptions, not necessarily the reality of the technology or the current market. For example, 34% of people are worried about how far an electric car can travel on a single charge – this barrier could be reduced with further education, promotion about the current capabilities of EVs and the expansion of the national charging network.

Our survey found that 34% of Australians are concerned about the range of EVs. Some respondents (15%) were concerned about the safety of EVs and the uncertainty about ongoing costs such as insurance of EVs.

### Performance related barriers to EV adoption

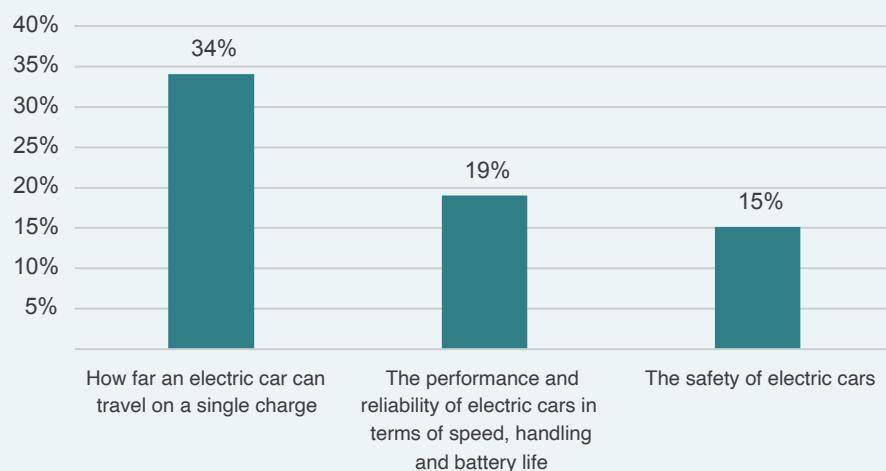


Figure 1: Barriers to the adoption of EVs related to performance of EVs<sup>3</sup>

<sup>3</sup> Respondents were asked 'What factors make it hard for you to switch to an electric car'. For the purposes of the survey, we only asked about electric vehicles and not hybrid or plug-in hybrid cars.

Half of Australians identified the upfront costs of EVs as a barrier. One in four (25%) said that the running costs of an EV was a barrier. Additionally, 15% said that uncertainty about insurance costs of EV was a barrier.

### Cost related barriers to EV adoption

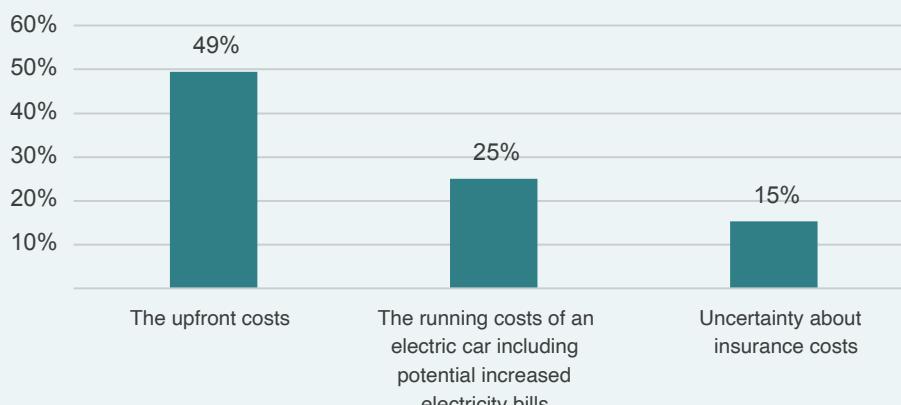


Figure 2: Barriers to the adoption of EVs related to cost

The nascent new and second-hand EV market (19%) in Australia, lack of diversity in models and brands of cars and concern over lack of skilled mechanics or repairers (17%) were also identified as barriers.

### Market related barriers to EV adoption

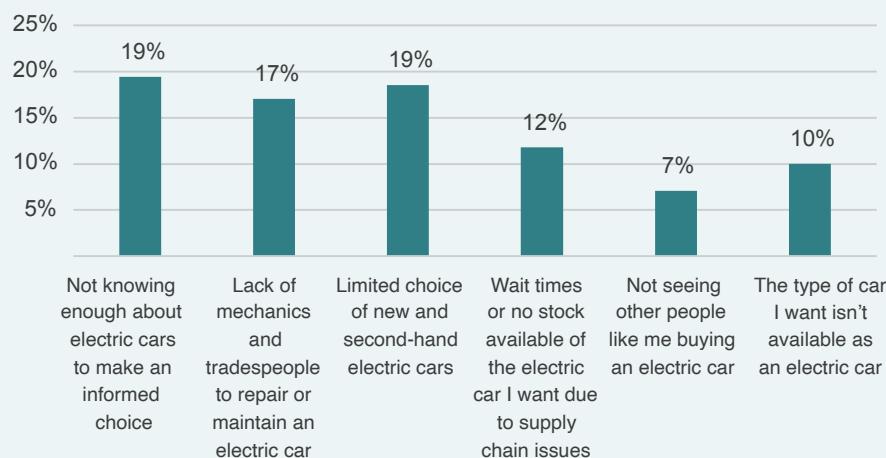


Figure 3: Barriers to the adoption of EVs related to the EV market

In addition to identifying lack of charging infrastructure at home or near them, there are other structural barriers such as renting (13%) and apartment living (10%), limiting access to charging infrastructure for some Australians.

When it came to considering the social norming factor such as lack of peers driving or purchasing an EV, this is a lower order of concern for Australians, with only 7% of respondents selecting this as an issue.

### Charging related barriers to EV adoption

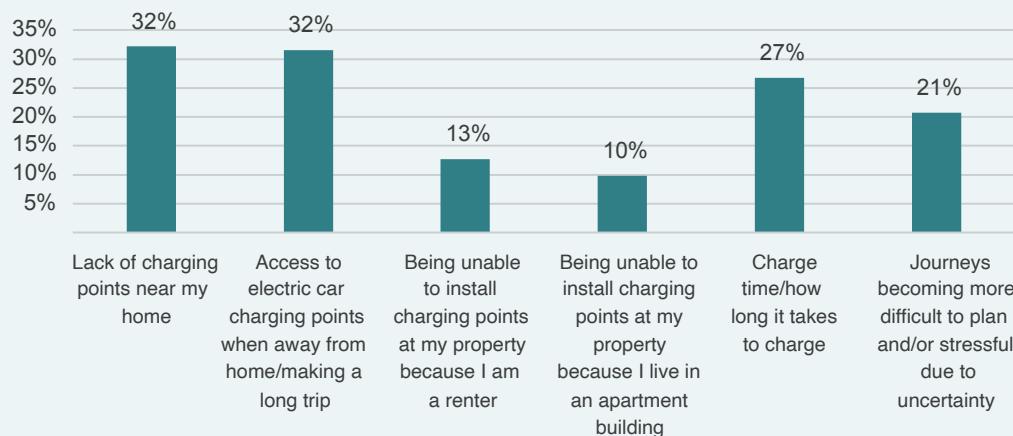


Figure 4: Barriers to EV adoption related to charging infrastructure

## Barriers for older Australians

Older Australians are more concerned with how far an EV can travel on a single charge. Thirty three percent of Australians aged 45-54 are concerned with range, those identifying this as a barrier increases to 46% of Australians aged 75 and above. The percentage concerned consumers reduces when compared with younger Australians. Those aged 18-24 (28%) and 25 and 44 (28%) are less concerned with how far an EV can travel on a single charge.

Older consumers report upfront costs as a barrier, with 65% of people between 65 and 74 years and half of those over 45 years and older indicating the upfront costs were a barrier for them.

We also heard from some older Australians in survey comments that their expectation is their current car will be their last car.

***“Have just bought a new petrol car in the last 2 years and it will be my last car I will own as I am 67 years old”*** – CPRC survey respondent

This could be reflective of the higher response amongst older Australians that they did not think there was anything that would make it easier to purchase an EV. Approximately one in seven (14%) Australians aged between 55 and 56 indicated there wasn't anything that would make it easier, and this figure rose to 22% for those over 75 years old.

## Barriers for regional and rural Australians

Distance matters in regional Australia. We found 42% of people living in regional areas and 41% of people living in rural areas were concerned about EV range. This is significantly higher than the number of people worried about range who live in urban areas (26%) or suburban (34%) areas of Australia.

Regional and rural Australians were also more concerned about not having enough charging infrastructure near their home (regional 37%, rural 39%) or having access to charging infrastructure when away from home or making a long trip (regional 40%, rural 38%). Over one in four for regional (27%) and rural (28%) Australians were concerned with journeys becoming more difficult to plan or more stressful due to the uncertainty of charging while away on a trip.

***“Travelling in remote outback areas is not yet possible for an electric vehicle”***  
– CPRC survey respondent

Australians who live in regional (23%) or rural (26%) areas were also more concerned with lack of mechanics or tradespeople to repair or maintain an electric vehicle than those who live in urban (13%) or suburban (16%) areas. While half of all Australians were concerned with upfront costs for an EV, this rose to 61% for regional Australians.

## Barriers for younger Australians

The key barriers for younger Australians are upfront costs and access to charging infrastructure.

Upfront costs are a barrier to buying an EV.

- 18-24 years - 39%
- 25-34 years – 41%
- 35-44 years – 37%

While younger people are less likely to nominate access to charging infrastructure near their home as a barrier compared with older Australians, it is still an issue identified by this demographic. A quarter (26%) of people aged 18-24 and one-third (31%) of those aged 25-34 raised this as a barrier to EV uptake for them.

## Barriers for people who rent

Being unable to install charging infrastructure because of tenure is a clear barrier for many. Renters in the private market (31%) and renters in public or community housing (21%)<sup>4</sup> reported this barrier compared to an average of 4.5% of people who outright own or are paying off a mortgage on their property.

## Income as a barrier

There were no clear trends across household incomes as most income brackets indicated that upfront and ongoing costs were a barrier. However, those on the lowest incomes (24% who reported no income and 30% of those who reported earning under \$10,000 per year)<sup>5</sup> were less likely to indicate this as a barrier. This is likely to reflecting that this is low on the list of priorities for them rather than this not being a barrier for them as their responses were lower when asked if financial support to make the up-front costs of buying or leasing an EV would help them. A car is a significant purchase and often the second largest purchase for many households. Even with the introduction of subsidies to purchase an EV or lower registration fees for an EV, there are some for who purchasing a new car will still be prohibitive. However, a car can be necessary for many people to access work, school, community, and groceries. Any move to limit the sale of ICE vehicles must consider how to support those who can least afford the transition so as to not further intrench inequality in society.

## Gender

Overall, there is no difference between men and women with regards to costs and access to charging infrastructure. There are some differences, with 26% of women identifying not knowing enough about electric cars to make an informed choice compared with 13% of men. Men (13%) were more likely to indicate the type of car they want is not available as an EV was a barrier compared with 7% of women.

## Not wanting to own a car

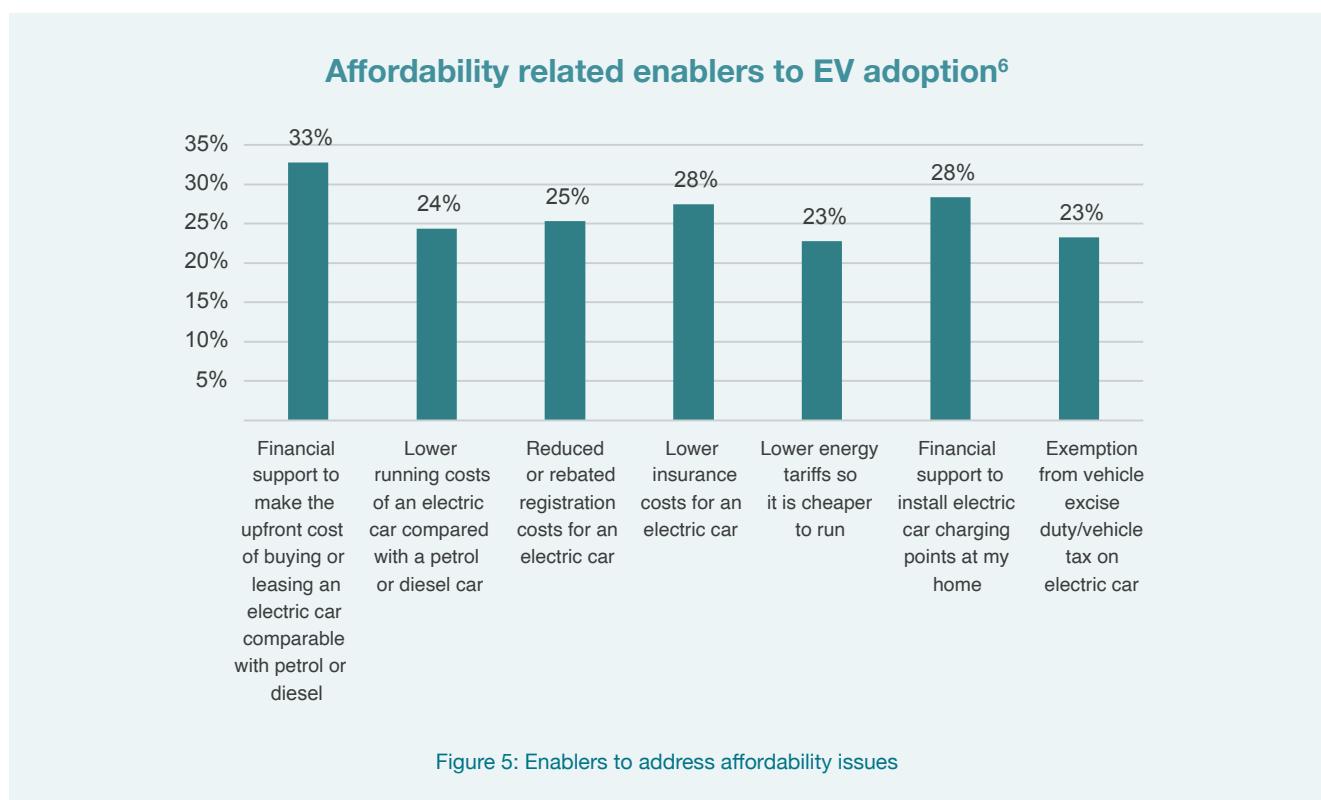
Reducing reliance on cars should be an important part of Australia's green transition. There is already a number of Australians (6%) who do not want to own a car. Any national EV strategy must consider the broader transport needs of Australians. Public transport and active transport modes must be part of the transition.

## Enablers to EV uptake

While it is important to identify the barriers to EV uptake amongst Australians, it is also important to explore the potential enablers that will support people who want to make the shift to an EV.

There is latent demand for EVs in Australia and governments should in part focus on those who want to make the change before investing heavily in convincing people who, at this stage, are not interested or sceptical of EVs. However, the solution will not be a one size fits all approach. Our research indicates that a mix of policy and market responses are needed to help Australians make the shift.

One in three (33%) Australians said that financial support to make purchasing or leasing an EV cheaper and 28% said financial support to install charging infrastructure would make it easier for them to switch. In addition, 28% indicated lower insurance costs would remove barriers for them to switching to an EV. Almost 1 in 4 (24%) said that lower running costs compared to an ICE vehicle would make it easier for them to switch to an EV. One in four (25%) said that rebated or reduced registration costs for an EV was an enabler for them. One in five (23%) said exemption from vehicle excise duty would remove barriers for them to make the switch.



<sup>6</sup> Respondents were asked - What would make it easier for you to purchase an electric vehicle?

Just over one in four (28%) people said that access to charging infrastructure when on a journey and close to or at home and being able to travel further on a charge would be an enabler while 19% said access to local or shared charging infrastructure would help. One in five (21%) said that up-to-date maps and information about charging infrastructure was an enabler for them. One in five (23%) said that universally compatible charging infrastructure would help them make the switch.

### Charging related enablers to EV adoption

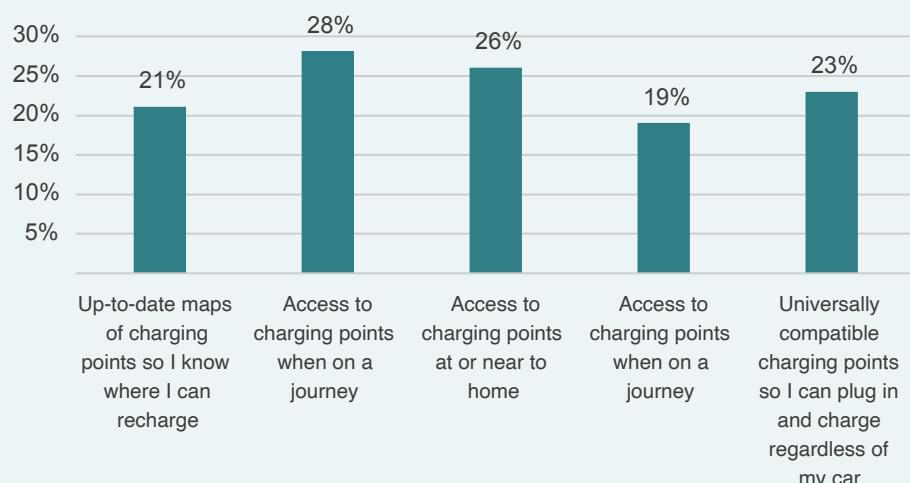


Figure 6: Enablers to address charging infrastructure issues

In addition, 1 in 5 (20%) said that greater range of car brands and models would help them to switch to an EV. Only 11% said shorter wait times to receive an EV would help them to be able to purchase an EV. However, 16% said that the ability to test or trial an EV would help them to purchase an EV.

However, 9% of Australians didn't think anything would help them to switch to an EV.

### Market related enablers to EV adoption

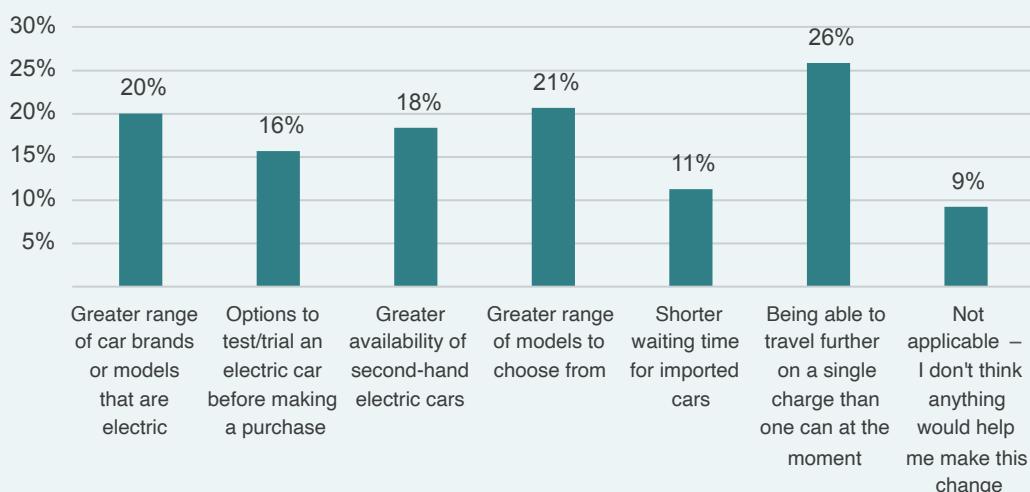


Figure 7: Enablers to address market issues

## Making EVs more affordable

Our survey found that financial support to make the upfront cost of buying or leasing an EV more affordable would make it easier for 33% of Australians to purchase an EV. While 37% of people who live in regional Australia suggested this would make purchasing an EV easier.

***“Would love one but just too expensive at this time”***

– CPRC survey respondent

Financial support should extend to charging infrastructure with 28% of rural Australians and 31% of regional Australians saying that financial support to install EV charging infrastructure at home would make it easier for them to purchase an EV.

## Access to charging infrastructure

For those who live in rural Australia and regional Australia noted that the key issues that would make it easier for them to purchase an EV was greater access to charging infrastructure when on a journey (rural 27%, regional 31%).

Access to local or shared charging infrastructure would make it easier for 27% of those who live in multi-unit apartments (high-rise), this is compared to 17% of all respondents. Whereas only 16% of rural respondents said having access to local or shared street charging would help them to purchase an EV.

## Range

The performance and range of EVs has improved, however, range was identified as a barrier to adopting EVs for Australians. A reliable network of charging infrastructure across the country with equitable access for those who live in regional and rural areas is critical to achieving widespread adoption.

***“Installation of charging facilities in remote outback areas”***

– CPRC survey respondent

Respondents said being able to travel further on a single charge was an enabler of adoption. This was highest amongst people over 55 years, with 29% identifying this as an enabler (this dropped slightly to 27% for those who are over 75 years of age). Those who live in regional (32%) and rural (31%) Australia said increased range would make it easier for them to purchase an EV.

This may be an area where an education or information campaign would be complementary to other measures such as demonstration and test vehicles to provide consumers more confidence in the performance and range of EVs.

For some consumers these issues are seen as risks that they are unable to take, especially for those living on lower incomes and are juggling other costs

***“I live in the bush and long distances are a constant for us. Until the technology catches up with reality AND the purchase price AND the long-term lifespan of the vehicles and their batteries catch up I simply can't afford to take this risk. The catch 22 of a Pensioner paying a mortgage I'm afraid”***

– CPRC survey respondent

## Batteries

Qualitative data captured in our survey highlights the perception that the battery on an EV does not have a long-life span. There were also concerns about warranties, costs of replacement and recyclability of the batteries.

***“Upfront cost of ownership information, especially in relation to cost of replacement batteries” – CPRC survey respondent***

***“More information about recycling of battery, conditions of mining and exploitation and how long the car lasts as well as cost of a new battery and it may not be affordable” – CPRC survey respondent***

Better information on the full lifecycle of an EV could help alleviate concerns about additional costs that might come from owning an EV or concerns about the environmental impact of the batteries.

***“Most electric cars have battery warranties of up to 8 years, what happens after the 8 years? Will this require a battery replacement, will the battery be recycled, or new replacement required. A lot of the information is around the start up and running information, however very little information is found on end-of-life cycle.”***

– CPRC survey respondent

## Policy and market response – EV Strategy

As demonstrated by the research CPRC undertook, the barriers and enablers to greater adoption of EVs are complex and varied for consumers. It is important that governments at all levels consider a range of support measures that includes targeted and specific support for those in rural and regional areas, renters, people who live in apartments and people on low incomes. This strategy must be coordinated and be complementary to individual state and territory strategies that in some cases, such as the ACT, are more advanced.

Australians, regardless of where they live should be brought along on the transition to net zero and be supported in doing so. This will require subsidies, and rebates on registration especially for those on lower incomes. Additional work and research will be needed to better understand how to address other structural barriers, including for renters to be able to both purchase an EV and access charging infrastructure.

The Commonwealth Government's commitment in the 2022-23 Budget to introduce a Fringe Benefit Tax exemption and remove customs duties for EVs is a welcome first step towards improving the affordability of EVs. However, more is required and the solution to this will require both a policy and a market response. Setting the right policy levers to support the development of the EV market is critical. The availability of EVs is too low to both satisfy current demand but also to help push down the cost of EVs and incentivise car manufacturers and dealers to offer more affordable options.

### **Proactive consumer protections are required to deliver fair and equitable outcomes**

Consumer protections must be considered and not as an afterthought. This is particularly important in encouraging a second-hand EV market. The current second-hand car market is not serving consumers.

In 2020, 30% of calls made to Consumer Action Law Centre legal helpline are related to consumer guarantees for defective cars.<sup>7</sup> These issues are even more pronounced in regional areas, particularly with those areas with high Aboriginal and Torres Strait Islander populations. CHOICE recently reported on the issues of lemon cars and lack of redress in Far North Queensland, where public transport is often unavailable and long distances mean a car is an essential household item.<sup>8</sup>

In addition, for people who purchase their own charging infrastructure, support when something goes wrong and protections from aggressive sales practices that come with emerging markets are required. Lessons from the rollout of rooftop solar is a good case study, both for the policies that helped people access solar and the protections that were required to address poor practices from retailers and suppliers. As the rooftop solar market developed, there was substantial harm caused to consumers from poor practices of suppliers selling faulty or poor-quality solar panels, door-to-door sales that targeted people who may have been more susceptible to pressure or trick tactics, or consumers who were sold poor financial products to finance solar panels.<sup>9</sup>

## We cannot assume that the market will deliver infrastructure for all Australians

Another useful case study could be the rollout of smart metering, which demonstrates the limits of leaving infrastructure changes to markets alone. The rollout of smart meters in all National Electricity Market states except Victoria, has been left to retailers to implement through a competitive market and it has been slow to progress with many households without smart meters.<sup>10</sup> There have been a number of issues that have dampeden the consumer experience, most notably consumers not being informed of tariff changes after a smart meter was installed.<sup>11</sup> Improving access to and understanding about smart meters offers both a lesson for the roll out of charging infrastructure and is necessary to extend the benefits of EVs to participating in demand response and other electricity market services.<sup>12</sup> This is particularly relevant given EVs may be used as household batteries to soak up excess solar energy and provide other market services as part of the distributed energy resources market.<sup>13</sup>

The rollout of infrastructure in communications sector both the NBN and cellular networks also offer an instructive perspective. Both have resulted in significant blackspots in infrastructure in regional and rural Australia that the governments are now spending sufficient funds to rectify, with the Federal Government committing \$380 million to the Mobile Black Spot Program as just one example.<sup>14</sup> The private market does not effectively deliver infrastructure in regional and rural Australia and the establishment of National Electric Vehicle Charging Network requires pre-emptive mechanisms and approaches to prevent the development of blackspots in EV charging infrastructure across the country. Initial work has been undertaken by ARENA to understand how to address blackspots that identified a range of lessons from a project run by Ampol; further work is required.<sup>15</sup>

Further consideration needs to be given to how infrastructure can be supplied alongside council parking spots. There is a need to balance private needs for charging and public land, as some residents without driveways call for the capacity to installing charging cables that run across the footpath.<sup>16</sup> There are equity issues that also need to be considered to ensure access to charging infrastructure and the potential energy market benefits consumers where EVs act as vehicle to grid batteries. The roll-out of charging infrastructure requires strong leadership and a concrete plan by the Federal Government.

## The Federal Government should proactively identify market gaps

A market study is required to take a holistic view to identifying gaps, appropriate strategies and the responsible parties to implement and fund the network of charging infrastructure. In addition, the market study should also examine issues of transferability of EV ownership in the rise of subscription-based services in cars.<sup>17</sup> It should also examine payment systems,<sup>18</sup> pricing information for charging at stations,<sup>19</sup> maintenance of charging infrastructure, and identify accessibility requirements that are needed to ensure charging infrastructure for those who use mobility aids or require additional support is accessible.

The European Parliament recently agreed to adopt a new directive that ‘sets out a framework of common measures for the deployment of such infrastructure in the EU. It requires Member States to set up national policy frameworks to establish markets for alternative fuels and ensure that an appropriate number of publicly accessible recharging and refuelling points is put in place’.<sup>20</sup> The Commonwealth Government should review how international regulations are changing to ensure fair and equitable access to charging infrastructure and adopt similar changes in Australia.

Information alone will not be enough to ensure consumers are able to or willing to purchase an EV. Regulations and consumer protections are needed to ensure existing inequalities and harms are not exacerbated during the potential rapid increase in the EV market in Australia.

## Endnotes

<sup>1</sup> ESB, 2022, *Energy Security Board. Electric vehicle smart charging*. Issues Paper. For consultation.

<https://www.datocms-assets.com/32572/1658376992-esb-electric-vehicle-smart-charging-issues-paper-final-for-publication.pdf>

<sup>2</sup> Between 28 September to 04 October 2022 CPRC asked two questions – ‘What factors make it hard for you to switch to an electric car?’ and ‘What would make it easier for you to purchase an electric vehicle?’ We presented a range of options for participants to select those most relevant to them, including whether they already had an EV or did not want to own a car at all. This working paper outlines the key results from this survey.

<sup>3</sup> Respondents were asked ‘What factors make it hard for you to switch to an electric car’. For the purposes of the survey, we only asked about electric vehicles and not hybrid or plug-in hybrid cars.

<sup>4</sup> The sample size for private rental market respondents was 550 and the sample size for community or social housing renters is 133.

<sup>5</sup> The sample size for these respondents was 33 for no income and 33 for under \$10,000 per annum.

<sup>6</sup> Respondents were asked - What would make it easier for you to purchase an electric vehicle?

<sup>7</sup> CALC, 2021, *Victorian Pre-Budget submission 2022-23*.

<https://consumeraction.org.au/victorian-pre-budget-submission-2022-23/>

<sup>8</sup> Blakkarly J., 2022, *Remote Indigenous communities left with broken cars and no redress: Part one*.

<https://www.choice.com.au/transport/cars/used/articles/indigenous-cars-part-one>

<sup>9</sup> Solar Victoria, 2021, *Door-to-door solar sales banned from today*.

Media Release Door-To-Door Solar Sales Banned From Today | Solar Victoria

<sup>10</sup> AEMC, 2021, *Review of the regulatory framework for metering services*, 16 September 2021

<sup>11</sup> AEMC, 2021, *Review of the regulatory framework for metering services*, 16 September 2021

<sup>12</sup> AEMC, 2021, *Review of the regulatory framework for metering services*, 16 September 2021

<sup>13</sup> ESB, 2022, *Energy Security Board. Electric vehicle smart charging*. Issues Paper. For consultation.

<https://www.datocms-assets.com/32572/1658376992-esb-electric-vehicle-smart-charging-issues-paper-final-for-publication.pdf>

<sup>14</sup> Department of Infrastructure, Transport, Regional Development, Communications and the Arts, n.d., *Mobile Black Spot Program*,  
<https://www.infrastructure.gov.au/media-technology-communications/phone/mobile-services-coverage/mobile-black-spot-program>

<sup>15</sup> Bisset A., 2022, *Addressing Black Spots Fast Charging Program – Qld, NSW, VIC & WA*. Lessons Learnt Report prepared for ARENA <https://arena.gov.au/knowledge-base/addressing-black-spots-fast-charging-program-lessons-learnt/>

<sup>16</sup> Dexter R., 2022, *All charged up: Councils push for kerbside car charging*,  
<https://www.theage.com.au/national/victoria/all-charged-up-councils-push-for-kerbside-car-charging-20220802-p5b6i1.html>

<sup>17</sup> Hawkins A. J., 2022, *The future of cars is a subscription nightmare*  
<https://www.theverge.com/2022/7/13/23206999/car-subscription-nightmare-heated-seats-remote-start>

<sup>18</sup> WHICH? UK found that 61% of respondents to their survey of WHICH? Members had experienced an issue making payments and 84% who currently use public chargers what to be able to use contactless bank card to pay rather than needing multiple apps

<https://press.which.co.uk/whichpressreleases/which-calls-for-improvements-to-electric-vehicle-charging-networks-as-research-reveals-significant-flaws-affecting-drivers/>

<sup>19</sup> BEUC, 2022, *European Parliament rightly calls for easy car charging*  
<https://www.beuc.eu/press-releases/european-parliament-rightly-calls-easy-car-charging>

<sup>20</sup> BEUC, 2022, *European Parliament rightly calls for easy car charging*  
<https://www.beuc.eu/press-releases/european-parliament-rightly-calls-easy-car-charging>

