AUSTRALIAN ENERGY COUNCIL

21 March 2024

The Committee Secretary
Standing Committee on Climate Change, Energy, Environment and Water
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Canberra ACT 2600

Submitted online: CCEEW@aph.gov.au

Dear Secretariat,

**Australian Energy Council – Inquiry into the transition to electric vehicles**

The Australian Energy Council (AEC) welcomes the opportunity to respond to the Inquiry into the transition to electric vehicles.

The Australian Energy Council (AEC) is the peak industry body for electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. Our members collectively generate the overwhelming majority of electricity in Australia, sell gas and electricity to millions of homes and businesses, and are major investors in renewable energy generation. The AEC supports reaching net-zero by 2050 as well as a 55 percent emissions reduction target by 2035 and is part of the Australian Climate Roundtable promoting climate ambition.

**Overview**

The Australian Energy Council's members have long recognised the need to decarbonise the economy and respond to the environmental impacts of climate change. In response to these imperatives, the electricity sector has been at the forefront of Australia's emissions reduction efforts for over two decades.

The House of Representatives Standing Committee on Climate Change, Energy, Environment and Water is inquiring into and report on the transition to electric vehicles (EVs). This is largely a matter for the transport sector, but the AEC has always emphasised both the energy industry's leading role in decarbonising to date, and its intention to 'lean in' and support other sectors of the economy which are yet to begin their necessary emissions reductions. For transport, electrification is the obvious solution to assist this sector begin to decarbonise. This AEC submission to the inquiry will focus on those issues related to the supply and sale of electricity for the purposes of EV's.

**The establishment of resources, systems and infrastructure required to support transition to EVs.**

The energy transition is not just about reducing emissions by changing technologies in large-scale generation, it is also about a trend towards more localised, or distributed energy resources (DER) and customer owned energy resources (CER). The most obvious example of the latter is the millions of solar PV systems on customers' roofs around Australia, and these are expected to be increasingly joined by batteries and electric vehicles as we move towards net zero.

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The electrification of transport will add to the stock of battery capacity owned by consumers, although there is an important question as to their appetite to use vehicles as ancillary storage, in what is called “vehicle to grid” (V2G) technology. If customers are prepared to use vehicles as ancillary storage, then orchestration of this storage is required. Orchestration is the direct management of CER by another party to induce a “firm” response when requested.

At its simplest, orchestration has been used by distribution networks for decades, primarily via timed electric hot water systems. More recently, it has been extended to direct load control of air conditioners. However, Distribution Network Service Providers do not need to be the orchestrators, and importantly with more complex services able to be provided by the two way energy flows from EV batteries such as voltage and frequency, or energy, they should not be the orchestrator in order that we avoid the vertical integration of the regulated business into the merchant markets. Technological advances mean that others (retailers or aggregators) can set up similar controls and sell these as network support services, providing a much better long term solution to orchestration requirements.

Aggregation and orchestration can be facilitated by adopting consistent protocols and standards across DNSPs as far as possible, and this is especially important given that many aggregators will want to operate their V2G portfolio across multiple networks. And finally of course, customer sovereignty over their resources (EVs) must remain a key principle. Customers should have the ultimate right to choose which (if any service provider) they would like to manage their resources and on what terms.

**The opportunities for fuel savings, such as by combining EVs with other consumer energy technologies and savings for outer suburban and regional motorists.**

A successful transition to a high CER future offers potential economic benefits for both CER owners and all electricity consumers’ and could accelerate the pace of the transition to net zero. Project EDGE[1] (Electricity Demand Generation Exchange), a field trial using real customers and CER assets and a theorized hybrid framework for two-sided electricity marketplace that can better integrate CER into local distribution networks was undertaken over 333 days in an off-market environment to test how price-responsive DER can be efficiently integrated into existing market arrangements.

In combining EV’s with other consumer energy technologies there is potentially high future benefit. Project EDGEs conclusion cites that the coordination of active CER storage estimated at 31GW, including 7GW of vehicle-to-grid (V2G) means (EVs) could be a significant portion of the consumer storage that may represent almost half of total dispatchable capacity 2050. This storage is the energy sectors “batteries on wheels” hypothesis.

But EDGE also confirmed that customers are cautious about aggregators or others using their assets and they are in the main lukewarm about joining an EDGE style program. The report notes that they don’t currently see the value behind these schemes and that CER owners are quite reasonably motivated primarily by the desire to reduce electricity bills and be energy self-reliant. This latter point identifies one of the key problems with future opportunities to combine EV’s with other consumer technologies; that is the difference between what is possible and what is likely. These two are not always well aligned. EDGE also found that easy to understand financial benefits, whilst not alone, were key in success in acquiring customers to participate. To date easy to understand financial benefits, or consideration of “what it’s worth to customers to participate”, has provided price signals that seem to be below that of a compelling consumer proposition. It may well turn out that alternative resources of CER to V2G could be less expensive, less variable and less complex to give practical effect to V2G.

**The impact on electricity consumption and demand**

The most recent State of Electric Vehicles report showed that by June 2023, Australia had seen the sale of 46,624 electric vehicles (EVs), representing a 269 per cent surge compared to the

[1] https://aemo.com.au/-/media/files/initiatives/der/2023/project-edge-final-report.pdf?la=en

same period in 2022. The total sales figure now indicates that EVs account for 8.4 per cent of all new car sales in Australia, representing a substantial 120.5 per cent increase when compared to the full 2022 year.

Encouraging innovation in service provision, and in recognition that new service offerings will be required to unlock participation, there are already a number of electric vehicle (EV) tariffs[2] (energy plans) and storage (home battery) plans offered by retailers that are widely available to consumers in most states. Energy retailer innovation and investment in this important sector will continue to grow with the increasing deployment of EV's.

Given that electric power is already cheaper than combusting hydrocarbons for small vehicles, the main barrier to EV uptake is the up-front costs of changing vehicles, given that the investment will be cost-effective over its lifetime. We expect that these conversion costs, along with broader cost of living pressures, will likely create deferred conversion and as a result put some braking effect on increases in electricity consumption and demand, potentially making the transition to EV's more manageable.

That said, the uncertainties about the impact of electrification of transport on the electricity system centres around the characteristics of demand for EV charging (how fast, when, and where) have already been studied, and research by the University of Queensland has provided practical insight into each of these parameters and can be found here: https://aibe.uq.edu.au/files/9487/UQ_teslascope_project_report.pdf Broadly the University of Queensland study found that in Australia, the majority of charging events occur during daytime and night, they occur outside of peak hours, and that charging patterns are mostly similar during weekdays and weekends. The report finds that most vehicles are parked during the daytime, although more vehicles are being driven during the daytime on weekends. The report noted that these trends look positive in terms of demand management and smart charging possibilities. Our view is that this sort of evidence based assessment should help remove some of the anxiety around (and pressure for) overstated future electricity network spending as a function of private EV charging infrastructure.

Finally, given the evidence available, the AEC's view is that in the near term the focus should remain on "least regrets" next steps that will help manage the electricity network and permit more evidence based decision making as opposed to "build it and they will come" approaches to technologies and forecasts. This approach leaves flexibility for moving to more permanent and fit for purpose solutions when the evidence is more compelling and the cost/ benefits are at least well understood, and potentially more favourable.

Please contact the undersigned at David.Markham@energycouncil.com.au should you wish to discuss.

Yours sincerely,

**David Markham**
Australian Energy Council

[2] Appendix A, AEC summary sample of examples of available CER and EV plans