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Battery Storage and  
Grid Integration  
Program

*An initiative of The Australian National University*

# Submission in response to the Retail Energy Competition Review: Electric Vehicles Issues Paper

Battery Storage and Grid Integration Program

Research School of Electrical, Energy and Materials Engineering, ANU College of  
Engineering and Computer Science

Research School of Chemistry, ANU College of Science

Bjorn Sturmberg ([bjorn.sturmberg@anu.edu.au](mailto:bjorn.sturmberg@anu.edu.au))

Hedda Ransan-Cooper ([hedda.ransan-cooper@anu.edu.au](mailto:hedda.ransan-cooper@anu.edu.au))

Hugo Temby ([hugo.temby@anu.edu.au](mailto:hugo.temby@anu.edu.au))

The Australian National University

Canberra ACT 2601 Australia

[www.anu.edu.au](http://www.anu.edu.au)

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## Introduction

We thank the Australian Energy Market Commission (AEMC) for the opportunity to respond to the Retail Energy Competition Review: Electric Vehicles Issues Paper (henceforth The Paper). Electric Vehicles (EVs) present a major shift in the volume and qualities of electricity consumed by small scale consumers. It is therefore important to examine the consequences of this shift on retail arrangements, and we commend the AEMC for getting ahead of the Australian adoption curve to mitigate negative outcomes and to pave the way for accelerated and uptake.

## Consultation Questions

### Question 2: Role of retailer

*What challenges and opportunities, given the current role of retailers in the NEM, are EVs likely to provide retailers?*

#### New value propositions

The mass uptake of EVs opens significant opportunities for retailers. These benefits are likely to outweigh the accompanying challenges, which will mostly arise from reshaping retailer's relationships with, and value propositions for, customers.

The addition of large amounts of EV driven electricity demand is undoubtedly beneficial for electricity retailers. However, we believe that it is not the quantum of electricity transacted that represents the essential opportunity, but that this rather lies in the unique qualities of EVs as an energy asset. These qualities include:

- the premium value placed on guaranteed state of charge to meet mobility needs
- the flexibility of charging profiles (while meeting the former requirement)
- the highly controllable, high speed, dynamic, and potentially two-way nature of the power flows, and
- the spatial diversity of where EVs connect to the power grid.

The value of these qualities will grow as the mass deployment of EVs places pressure on electricity networks and energy supplies (as described in The Paper). It will also be spurred on by the emerging dominance of renewable energy generators that have near-zero marginal costs of generation but require complementary energy storage to manage weather variability. These physical power system considerations will inevitably - through mechanisms yet to be settled - be reflected in electricity markets. These markets will be well suited to rewarding optimised charging (and discharging) of EVs.

#### New relationships with the customer

Realising new values associated with EVs will likely require a transformation in the type of relationship between retailers and customers. Shaping this transformation to ensure it supports innovation and protects consumers is both an opportunity and a challenge for retailers, as well as for customer advocates.

An EV will often be the first flexible electricity asset that a customer has owned. Furthermore, it will have been purchased for the primary purpose of providing mobility - which is a service that has not, hitherto been associated with electricity and billing. In

Australia, cars also hold strong symbolic values for many people for whom it is more than just about 'getting from A to B', but also about status, group-identity and autonomy and control of life options. thereby open the door for retailers to engage in new conversations about algorithmically optimised energy use, ancillary services and mobility. Building these relationships will require considerable engagement, experimentation, and agility. Many of the fundamental questions about, and potential framings of, EV customer's perspectives on EV charging management are yet to be pursued. This is particularly critical to the framing of who has what rights to control EV charging.

### Opportunities for new entrants

The opportunities to create fresh customer value propositions and utilise a novel set of technical characteristics should draw new entrants into the retail market. These new players are likely to deploy innovative offers and business models targeting the core new value streams, such as controlled charging, capacity and constraint management, ancillary service delivery, integration with variable renewable energy generation, and integration with en route and destination charging networks. On the buy side, new entrants may place less emphasis than traditional retailers on financial hedging and greater emphasis on leveraging the controllability and flexibility of EVs to provide physical hedges. They will benefit from new entry points with customers, such as at the point of sale of EVs or charging equipment, and will be less hampered by business models built upon per kWh revenue streams.

We strongly believe that there are great opportunities for new retail models to accelerate the uptake of EVs and smoothen their integration into the power system. Vice versa, the uptake of EVs will accelerate retailer innovation. Seizing these opportunities requires customer research, technical and value proposition innovation, and ongoing, two-way conversations with customers. These should all be encouraged, and will flourish with the entry of new players and increased competition.

### **Question 3: Regulatory environment**

*a. Do you consider that regulatory changes, like multiple trading relationships, that improve a consumer's ability to engage with multiple FRMPs at a household would enable innovative services and products to develop for EV consumers?*

We agree that regulatory changes could unlock significant innovation in retail offerings for EVs. In particular we support unlocking multiple trading relationships (MTRs) as a keystone to a regulatory framework that fosters more competition and innovation.

As outlined above, the technical and behavioural aspects of EVs are distinctly different from typical household and business loads. We believe that these warrant the availability of tailored retailer relationships that address the needs and opportunities of EVs in a targeted manner. MTRs are key to this, and in turn depend on commercially viable alternative metering configurations that leverage the digital and connected nature of EV charging stations.

One trend that illustrates potential future scenarios is the move towards unified charging networks and the integration of these with vehicle OEMs. Tesla has long provided an integrated vehicle and charging network offering, and Ford has announced a FordPass offering that provides drivers with access to numerous charging networks. This integration may be extended to include charging at home, as well as at work and other destination

chargers. This would unlock greater flexibility for charge management as a retailer could optimise charging across the day at multiple locations.

*b. Do you have any views on an appropriate method (e.g. through a change to the SGA framework or an alternative metering configuration), and relevant costs, to facilitate this?*

We do not have strong views on the best method to employ, but do note the availability of high quality, cloud connected, digital power meters that may be well suited to monitoring subcircuits such as the EV charger circuit.

## **Question 6: EV value streams**

*a. Are you currently developing products and services to harness EV value streams?*

We are about to launch an ARENA funded project entitled “Realising Electric Vehicle-to-grid Services” (REVS), in which the consortium partners will be developing advanced metering and control systems to enable V2G services as well as customer value propositions for bringing V2G services to the Australian market. This project is focused on realising a particular service for fleet customers, but the ANU will be complementing this with research on the broader suite of V2G services for all customer segments. We are happy to discuss this project further with the AEMC.

*b. Are there retail regulatory barriers for retailers or new energy service providers accessing these value streams?*

Metering regulation and the regulation of ancillary services are both barriers to the delivery of V2G services. We will be publishing an in depth review of these as part of the REVS project in late 2020.

We also note the AEMC is separately undertaking a broader review of the ongoing appropriateness of the energy consumer protection framework for new energy products and services. We welcome this work program. New energy products and services such as EV aggregation present opportunities to empower households and improve financial and environmental outcomes. However, it is critical that energy consumer protection frameworks evolve with these technologies to minimise risk to consumers and maximise the potential take up—and so the benefit—of these technologies.

The ANU, with funding support from the Victorian Energy and Water Ombudsman and the Victorian Department of Environment, Land Water and Planning, has recently commenced a new qualitative research project investigating people’s experiences with new energy technologies, including EVs. We would be happy to discuss this research further with the AEMC.