Synopsis of the Electric Vehicles metering workshop

The AEMC held a electric vehicles (EV) metering workshop on 29 February 2012 at the Sydney Marriott Hotel. The purpose of the workshop was to:

- inform stakeholders on the issues arising with EV and metering arrangements.
- discuss the merits of the various metering arrangements possible in the NEM and to hear views from all stakeholders in an interactive manner.
- focus the discussion only on metering arrangements. Settlement and confidentiality of data was not covered directly at this workshop.

The outcomes of this workshop will feed directly into our preparation of the Draft Advice to the Standing Council on Energy and Resources (SCER) (due end of June 2012)

Review of Energy Market Arrangements for Electric and Natural Gas Vehicles

On 28 July 2011, we received a Request for Advice from the Ministerial Council on Energy (now the SCER) in relation to identifying the energy market regulatory arrangements, which would facilitate the economically efficient uptake of EVs and Natural Gas Vehicles (NGVs).

When undertaking the review we are required to consider how the National Electricity Objective would be promoted. This requires us to identify the costs and high level benefits on the energy market frameworks brought about by the efficient uptake of EVs, i.e. plug-in hybrid electric vehicles and battery electric vehicles.

Key principles for the review

- Promoting consumer choice with respect to these technologies.
- Appropriately allocate costs to the party that causes these costs insofar as is feasible.
- Ensure that the security, safety and reliability of the electricity system is maintained.
- Minimise the costs and risks of regulation to service providers and electricity users.

Why is metering a key issue for this review?

- Metering arrangements should enable consumer choice with respect to EVs to be promoted.
- Metering arrangements should support a range of business models for EV service providers. This is expected to promote competition and consumer choice by facilitating innovation.
- Metering arrangements can enable incentives to manage the potentially adverse impacts of EV on peak demand and network loading.
- Metering arrangements can play an important role in ensuring that the costs to the electricity market are allocated to the appropriate party.

Our objective is not to pick a ‘best’ metering solution but instead to facilitate a range of metering arrangements consistent with consumer preferences and efficient cost.

Synopsis of the EV first metering workshop

Key metering concepts

Some Key metering concepts were introduced, including:

- The National Measurement Act
- National Metering Identifiers (NMIs)
- Responsible person (for a metering installation)
- Metering installations
- Role of the Metering Data Provider (MDP)
- Current framework for metering in the National Electricity Rules
- Smart meters (in an Australian context)

Separate metering

Technical Issues

- Installation of a second meter dedicated to the EV. This means two NMIs and potentially two separate responsible persons, if a separate connection is established.
- Separate metering could be achieved with multi element meters.

Policy Issues

- Separate metering of the EV charging load may be required under some of the proposed businesses models.
- Costs are reportedly in the range of $1,000 to $8,000. Some participants considered this range to be inflated.
- Rules 7.2.4(b) does not permit two people being responsible for the same metering installation. How separate service providers could utilise multi-element meters may need further discussion.

Parent/child (or subtractive) metering

Technical Issues

- An upstream, or parent, metering installation must already exist or be installed. This must be the same type as the child (i.e., an interval meter).
- The child meter is embedded in the premises and must be able to enable time of use pricing. As an embedded network, the premises would be required to obtain an exemption from being registered as a network service provider.
- The parent and child meters each forms two NMIs with the child meter for the EV load and the parent meter for the remainder of the load at the premises. This allows the separate loads to be settled by different entities.

Policy Issues

- May be more cost effective than installing a separate meter, thus potentially enabling greater flexibility and consumer choice.
- It is not clear to all stakeholders who the responsible person for the child meter would or should be.
- The existing arrangements for embedded networks are not specified in the Rules but are supported by an AEMO guideline. A review of these arrangements may be required.

Synopsis of the EV first metering workshop

Roaming NMI

Technical Issues

- Equivalent to a parent/child arrangement except that the child meter is installed in the EV and may be associated with a range of parent metering installations.
- Not possible at present as a metering installation must have a fixed location and the parent and child must have the same transmission connection point.
- It would be challenging to correctly associate the child meter with the correct parent meter.
- Implementing roaming NMIs in the NEM would be complex and hence potentially expensive.

Policy Issues

- The benefits of a roaming NMI can be captured by other arrangements without the implementation costs.
- There was no support for roaming NMIs from participants at the workshop.

No dedicated EV metering

Technical Issues

- Existing meter is used to measure total load, including the EV.
- The existing meter would need to be replaced with an interval meter if the EV is used to feed energy into the network (i.e. vehicle to grid).

Policy Issues

- Without an interval meter it would not be possible to provide incentives to charge EVs at off-peak times.

Synopsis of the EV first metering workshop

Off market sub-meters

Some stakeholders suggested that all the benefits of separate metering (and, indeed, parent/child metering) could be achieved with a separate off market meter dedicated to the EV.

Technical Issues

- The total load at the premises is metered and settled in a conventional manner.
- A revenue grade meter (accurate to National Measurement Act standards) is used to measure the EV load (and potentially fed in).
- Contractual arrangements would exist between the incumbent retailer, the EV services provider and the consumer.

Policy Issues

- Would there be sufficient incentives on the incumbent retailer to enter into an off-market sub-metering arrangement with another service provider?
- Would such arrangements capture all the competitive and efficiency benefits potentially available from separate or parent/child metering?
- Some retailers raised concerns about the lack of consumer protections under the NECF if the EV service provider is not classified as a retailer.
- Sub-metering arrangements were not supported by all stakeholders at the workshop.

Stakeholder presentations

Better place, Chargepoint and Origin Energy made presentations at the workshop.

Further considerations and way forward

We recognise that EV recharging can occur at multiple locations (e.g. residential, commercial car park, dedicated charging station) and the required metering & settlement arrangements could differ across locations.

That the key issue is how to efficiently facilitate a consumer's ability to segment its total load between different service providers (market participants) if it chooses to do so. This issue is not solely linked to EVs and could also apply to other appliances and embedded generation. Hence the issue is relevant to the wider review into consumer demand side participation.

We intend to:

- analyse the metering issues for EV as part of the wider work on metering for the Power of Choice Review (see Chapter 6 of the AEMC Power of Choice Directions Paper)
- prepare draft recommendations in the form of a set of principles and an associated road map for their implementation
- hold another metering workshop on 16 May in Melbourne.