570 George Street
Sydney NSW 2000
All mail to GPO Box 4009
Sydney NSW 2001
T +61 2 131 525
F +61 2 9269 2830
www.ausgrid.com.au

2 October 2012

Mr John Pierce
Chairman
Australian Energy Market Commission
Level 5, 201 Elizabeth Street
SYDNEY NSW 2000

Dear Mr Pierce,

AEMC Draft advice – Energy Market Arrangements for Electric and Natural Gas Vehicles

Ausgrid welcomes the opportunity to provide comments on the AEMC's draft advice on *Energy Market Arrangements for Electric and Natural Gas Vehicles* (EVs and NGVs). As an electricity distribution network service provider (DNSP), Ausgrid's comments focus more specifically on electricity market regulatory arrangements rather than gas market arrangements, however it is anticipated that the principles would equally apply to both markets.

Ausgrid agrees with the AEMC that any recommendations for amendments to energy market arrangements should aim to be technology neutral, to the extent possible. In this regard, any regulatory arrangements established for EVs and NGVs should seek to apply the same principles as those that apply to the connection of other load (or generator) connections. The introduction of any EV (or NGV) specific arrangements needs to be carefully tested against the national electricity objective, including by assessing the costs and benefits to the market and consumers.

In considering the market arrangements necessary to facilitate the economically efficient uptake of EVs and NGVs, the AEMC has concluded that many of the issues apply more broadly to the NEM as a whole, including issues such as facilitating consumer choice, allocating costs, promoting efficient investment in networks and fostering competition and innovation in the provision of services supporting evolving technologies. The AEMC notes that a number of these issues are currently being considered as part of another review being undertaken by the AEMC; the Power of Choice Review. We agree that it is appropriate to consider these issues as part of the Power of Choice Review.

The AEMC draft advice outlines some changes required to achieve the appropriate electricity market or natural gas market regulatory arrangements for EVs and NGVs and proposes some recommendations. Specifically, these fall into two categories:

1. NEM arrangements to facilitate efficient behaviour and consumer choice, and
2. Metering arrangements to facilitate consumer choice.

While welcoming the AEMC's attempt to address some of the metering and settlement issues associated with "embedded networks" that have existed since establishment of the NEM (including parent/child metering arrangements), Ausgrid is not convinced that the changes proposed sufficiently address the identified problems and is concerned that they would have some undesirable consequences and would result in significant costs to the NEM.

Attached to this letter are Ausgrid's responses to the individual questions posed by the AEMC in its Draft Advice as well as some limited commentary on the AEMC's basis for the recommendations. In our response, we have sought to only provide comments additional to those already provided by Ausgrid to the AEMC throughout the review process.

If you have any queries or wish to discuss this matter in further detail please contact Catherine King on (02) 9269 2881.

Yours sincerely,

Peter Birk
Executive General Manager System Planning and Regulation

ATTACHMENT: Ausgrid's responses to the AEMC's questions

Introduction

The following comments are Ausgrid's response to the specific questions posed by the AEMC in its Draft Advice. In this response, we have sought to only provide comments additional to those already provided by Ausgrid to the AEMC throughout the review process.

This submission utilises the commonly used abbreviations for the various market participant roles (e.g. Distribution Network Service Provider (DNSP), Financially Responsible Market Participant (FRMP), and Responsible Person (RP)).

NEM Arrangements to facilitate efficient behaviour (Chapter 2)

Question 1: EVs and pricing

Do you agree that efficient EV charging behaviour should be incentivised through network pricing signals? If so, what arrangements are necessary to implement these pricing signals?

- Cost reflective prices can enable more efficient behaviour. We agree with the AEMC that the principles and objectives of cost reflective price signals apply equally to EVs as they do to other forms of load. We also agree the scope of this review does not need to consider how the market can move to more cost reflective pricing as this is part of the AEMC's Power of Choice – Stage 3 DSP Review (Power of Choice (DSP3) review). For this reason, Ausgrid does not consider any specific arrangements need to be considered as part of the EV review.
- It is not clear how the AEMC's view "...there may be merit in having some form of geographical variation in the DUoS charges to better focus the network costs onto the....consumer" would work in practice. Further development of this concept would need to be undertaken before Ausgrid could provide commentary on the feasibility of 'geographical' pricing. In its Draft Advice, the AEMC does note some of the limitations of locational based pricing. It is also worth noting that the capital contributions regime for new (or modified) connections, requires connection applicants to contribute up-front to the direct costs of connecting to the distribution network. Under the current network pricing determination, *large load* and rural customers may also be required to fund network augmentation costs. This provides some (albeit limited) price signal to the connection applicant on locational costs.
- Appropriate meter capability is a pre-requisite for DNSPs and FRMPs to provide more cost reflective pricing. However the effectiveness of the price signals largely depends on cost reflective network tariffs being passed through to the customer by the retailer. We agree that interval meters are a technology enabler in providing more cost reflective prices.

Question 2 Controlled charging

Do you have any suggestions on how to improve the method for valuing non-firm benefits and improving the negotiation process among multiple parties so that the diverse benefits of controlled charging are captured?

As noted by the AEMC, the Power of Choice (DSP3) review is exploring how energy market arrangements should support contracts between consumers and DNSPs, retailers and aggregators. We will provide any comments we may have in relation to this aspect of DSP in the AEMC's Power of Choice review.

In the Draft Advice, the AEMC also provided some commentary regarding connection arrangements and charges. Ausgrid does not consider any unique connection arrangements

need to be established for EVs. The existing principles and arrangements for payment of upfront connection charges are appropriate and Ausgrid would caution again creating technology specific connection charging arrangements. If it was considered that the threshold for payment of augmentation costs needed to be reconsidered, this would need to be considered as part of a broader review of capital contributions policy in a manner that balances the considerations of equity, economic efficiency and simplicity across all connection types.

Question 3 Vehicle to Grid

Should clause 7.3.1(a)(7) of the NER be amended to reflect the current early status of V2G? Should interval meters be required to have bi-directional capability?

Any NMI that has the capability to supply energy into a distribution network is required to have metering capability to measure bi-directional energy flows. If there is no potential for generation at a connection point, then a bi-directional meter is not required. Ausgrid does not consider that any additional changes to the Rules are required in this regard. Our view is that the approach to metering should be consistent across all connection types and it is not appropriate for there to be different metering requirements for a particular form of generation.

Question 4 Identifying a large load (including an EV)

1. **Should any loads above a threshold (e.g. 15 amps) be identified to the DNSP? Could the Wiring Rules (AS/NZS 3000:2007) provide the basis for determining the maximum demand at a premise and provide the means by which an electrical contractor can notify a DNSP of a new or altered installation affecting maximum demand at that premise?**
2. **If there are no requirements to identify particular appliances, should there be a total load threshold above which identification to a DNSP is required?**

Jurisdictional safety and network management regulation and the connection policy of a distribution business specify the requirements for notification in relation to modifications at an electrical installation. These are typically implemented through the DNSP's connection contract with the customer and arrangements with electrical contractors and Authorised Service Providers (ASPs) that perform the electrical works on behalf of the customer. Existing NSW safety and network management regulations and Ausgrid's connection policy require the DSNP to be notified if there is a proposed increase in the electrical demand for the premises, alterations to the customer's switchboard or circuit protection arrangements.

For these reasons, Ausgrid does not support a requirement for this obligation to be also included in any NEM arrangements.

NEM Metering arrangements for EVs (Chapter 3)

Question 5 Changing the definition of connection point and supply point

Do you agree that changing the definition of connection point and supply point in the NER should facilitate separate metering of loads (or generation)? Does the creation of this new definition produce any unintended consequences? Please provide reasons.

Ausgrid considers that changing definitions in the NER for *connection point* has undesirable consequences and the intended outcome can be achieved by alternative means. For this reason, we would caution against making the definitional changes proposed by the AEMC.

Our reasons are explained in more detail below.

Existing definition of connection point

Connection point is already defined and used inconsistently in various regulatory instruments. For this reason, Ausgrid would caution against making any further modifications to the existing definitions of connection point.

For example, *Connection point* is defined in Chapter 10 and utilised throughout the National Electricity Rules (the Rules). In the National Energy Retail Rules, and specifically in the deemed standard connection contract, *connection point* is used as the basis upon which obligations and responsibilities of DNSPs are distinguished from those of customers. The new Chapter 5A, implemented as part of the National Energy Customer Framework, requires DNSPs to identify the *connection point* in their connection offers.

In NSW, a review of NSW Service and Installation Rules, Electricity Supply (Safety and Network Management) Regulation and the development of regulation supporting the implementation of the NECF is taking place to obtain clarity around the meaning of *connection point* and related definitions (including point of supply).

Because existing arrangements depend critically on a clear and consistent definition of *connection point*, we consider the proposed change is likely to result in greater inconsistency and therefore in less clarity, not more. Rather than the definitional change proposed by the AEMC, we question whether existing mechanisms could be assessed to see if they could address the scenarios the AEMC is intending to cover. We provide suggestions for how this might be possible in the following section.

Need for the change

The AEMC seems to be proposing the change to definitions to "facilitat[e] separate metering of loads" and also to provide the ability for multiple NMI's to be assigned at the one premise (to facilitate customer choice). It is not clear how the AEMC reached the conclusion that the market benefits associated with providing this capability justify the modification of market arrangements for EVs. Will similar arrangements be available for other types of load (e.g. air conditioners, pool pumps etc) and if so what are the practical implications?

It appears that market changes are being proposed to support a particular EV business model(s) despite the AEMC seeking to treat EVs like any other load. We provide more comments on this in response to Question 9.

Putting aside the reason for seeking the change, AEMO's National Metering Identifier Procedure (NMI Procedure) already allows;

1. multiple meters on one NMI/connection point, and
2. multiple NMI's at the one connection point to the DNSPs network.

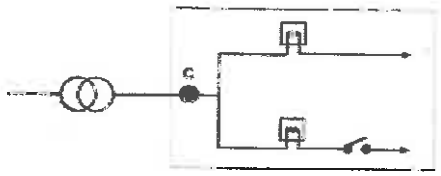
By way of example, section 13.3 (below) of the NMI Procedure considers multiple meters and multiple data streams at the one connection point; one for the hot water load and one for the remaining electricity supply to the premise. There are also examples that consider multiple customer connection points at the one network connection point such as in section 13.12 replicated below.

We question whether the AEMC has considered whether existing market procedures (or slight modifications to them) could provide the same outcome without the complications that may arise from changes in the definition of *connection point*.

Although we do not support the AEMC's proposed definitional changes, we do agree with the AEMC that responsibilities and roles within embedded networks need to be addressed in the Rules. We comment in more detail on this issue in response to Question 6.

13.3 Contestable Customer, previously two tariff metering, eg general supply + off-peak on low voltage side of transformer

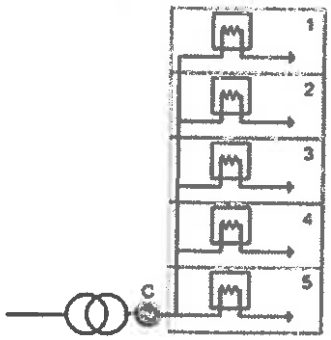
- One connection point
- One customer
- Two meters / measurement elements
- One meter with a load control device
- One NMI



There are also examples that consider multiple customer connection points at the one network connection point such as in 13.12 replicated below.

13.12 Multiple Contestable Customers, High rise building

- **Multiple connection points, with all customer connection points reference the same point.**
- **Five individually metered customers**
- **One meter / measurement element per connection point**
- **Five NMIs**



Question 6 Parent/child metering arrangements

Do you agree that our proposals address existing issues with parent/child metering arrangements? If so, how should these arrangements be specified in the NER? Please provide reasons.

Parent/child metering arrangements

In the Draft Advice, the AEMC outlines the reasons why parent/child arrangements should be specified in the NER. For some time Ausgrid has sought for obligations relating to embedded networks to be specified in the Rules. This is because roles and responsibilities assigned to registered participants impose obligations and costs and the market as a whole would benefit from clarity on those requirements.

There are numerous existing examples of embedded networks. Larger embedded networks include large shopping centres and airports. Examples of smaller embedded networks include caravan parks and retirement villages and potentially domestic EV charging points. Any

modifications to the Rules should seek to cover all examples of embedded networks, not just one example such as EVs.

The obligations and responsibilities for DNSPs ends at the *connection point* (or points) between the distribution network and a customer and is referred to in contractual instruments between DNSPs and customers[1]. This is often referred to as the 'parent NMI' of an embedded network. In its Draft Advice, the AEMC seeks to clarify the NEM metering arrangements for embedded networks by changing the definition of *connection point* to, in effect, include embedded network connection points. As outlined above, we think this has some undesirable consequences and is not the most practical way of assigning metering obligations in relation to embedded networks.

The result of the change proposed by the AEMC is to automatically apply the metering and settlement arrangements contained in Chapter 7 of the NER to embedded networks. One of the implications of this is that clause 7.2.3 would apply and distribution businesses would become the responsible person for all Type 5 (interval meters without remote communication device) and Type 6 (accumulation meters) within embedded networks. It is not clear whether this is the intent of the AEMC as the supporting material does not state that the AEMC is seeking to achieve this outcome.

Whether the outcome was intended, Ausgrid, as it has outlined in previous submissions, considers that this is not an appropriate outcome for the NEM and poses numerous challenges in terms of implementation. In summary, these include;

- No contractual relationship or other arrangement in place between the distributor and the 'child' NMI to appropriately allocate and manage risk associated with the distributor assuming the additional obligations associated with the responsible person role. Issues such as safety, physical installation of meter boards, quality of supply, access requirements, disconnection, maintenance of the installation and liability have not been addressed.
- Access issues in order to read the meter, particularly in private dwellings such as a domestic car garage or a private retirement village.
- No direct cost recovery mechanisms for DNSPs (Network Use of System charges are not recoverable from child NMIs) meaning the costs are borne by other customers connected to the DNSP's network.

Although Ausgrid does not agree with the change proposed by the AEMC given the operational impacts, we do agree that if the energy within an embedded network is to be settled in the NEM, the metering needs to comply with the Rules. Ausgrid considers this could be best addressed by including specific arrangements in the Rules for embedded networks. This is not a new approach as embedded networks are in existence and being settled in the NEM today[2]. As acknowledged by the AEMC, the shortcoming is that the metering and market settlements for embedded networks are not adequately supported in the Rules.

Ausgrid's view is that the assignment of the role of the responsible person in an embedded network should be the same as that which applies for Type 1 to Type 4 metering. At a high level, that is;

- A *Market Participant* may elect to be the RP for a metering installation within an embedded network.

[1] It is also referred to in jurisdictional instruments (such as safety and network management regulation, Service and Installation Rules etc).

[2] For example, upon request blocks of NMIs are currently issued for "children" in embedded networks by DNSPs; embedded network codes are assigned and updated in Market Settlements and Transfer System.(MSATS); energy is settled in the NEM for embedded networks whereby energy consumption from "child" NMI's is netted off energy consumption of the "parent" NMI.

- A *Market Participant* is the RP for a metering installation in an embedded network if the *Market Participant* elects not to request an offer from, or does not accept the offer of a *Distribution Network Service Provider* for the provision of a *metering installation* and *metering data services*.
- A Distribution *Network Service Provider* is the *responsible person* for metering installation in an embedded network where the *Market Participant* has accepted the *Local Network Service Provider's* offer.

If assigning the role of RP in embedded networks to DNSPs is pursued, then 'grandfathering' or exemptions would need to be considered for existing embedded network metering installations.

We note that there does not appear to be a consideration of the impacts to market participants' systems and processes that will result from the requirement to accommodate dramatically more parent-child arrangements. Ausgrid considers that these impacts and costs (particularly for DNSPs and FRMPs of parent NMIs) could be substantial. These impacts should be considered as part of any further Rule changes made to support EVs and embedded networks more broadly.

Question 7 Multi-element meters

Do you agree that having one Responsible Person for multi-element meters is the efficient solution? Are there any other issues with multi-element meters that we should address?

The following commentary is provided to assist in providing context to the question posed by the AEMC.

Multi-element meters

A meter number is a unique (and key) identifier in Registered Participants metering, billing and customer databases. This means that one market participant can be assigned for each role (i.e. there can only be one RP, one FRMP, one LNSP) to the one metering installation. It is not currently possible to assign different market participants to each element/register of the same meter. By way of example, if a two-element meter had one element connected to a hot-water controlled load and the other element to the remaining electrical load of the installation there would be;

- one Meter Number;
- one market participant for each role in MSATS (e.g. one FRMP, one RP, one LNSP etc.); and
- two data streams (E1 and E2)

A change to allow multiple FRMPs against the same meter would change this fundamental relationship and result in a complete rebuild of Registered Participants' IT systems. This is expected to represent millions of dollars in IT costs for each market participant operating metering, billing and customer systems in the NEM.

Costs for single meter (dual-element) versus two meters

Better Place is proposing that the costs of establishing a separate metering installation at a "domestic installation" are between $1,000 and $8,000[3]. We do not consider that these costs are accurate and therefore are not an appropriate basis for developing new market arrangements. There is a negligible difference in costs between a dual element Type 5 meter and two Type 5 single element meters (the dual element meter is approximately $20

[3] Page 33, AEMC draft advice "Energy Market arrangements for Electrical and Natural Gas Vehicles" 29 Aug, 2012

cheaper).[4] The main costs for installing an additional meter relate to the physical limitations of the premises/meter board and the physical characteristics of the premises. For new premises, these considerations are generally not relevant because there is usually sufficient physical space available on switchboards for additional meters.

In answering the question posed by the AEMC, it is only possible to have one RP for a meter. More critically, this means it is only possible to have one FRMP for each meter and not as proposed by the AEMC ,...a meter with multiple metering elements, each potentially with a unique FRMP..."[5]. The corollary of this is that if a customer wishes to separately contract with different FRMPs for parts of its load, the customer would require separate meters and NMIs for each contract/load portion.

The proposed alternative to this unique identifier relationship (one meter, one Market Participant per role) would impose significant costs, which Ausgrid expects would not be offset by benefits accrued to the NEM and/or consumers.

Question 8 Metering in embedded networks

Do you agree that our recommendations address existing uncertainties with respect to metering in embedded networks? Please provide reasons.

While Ausgrid supports the AEMC's objective of addressing existing inadequacies and ambiguities with respect to metering in embedded networks, we do not support the AEMC's proposed change in its current form. Our response to this question is covered in our response to question 6.

NEM Arrangements to facilitate consumer choice (Chapter 4)

Question 9 Two (or more) FRMPs at a connection point

1. **Do you agree that our recommendations will enable two or more FRMPs to operate effectively at a connection point? Please provide reasons.**
2. **In the event that one FRMP wishes to disconnect a consumer, do you agree that a FRMP should have the power to disconnect the consumer's total load, which includes the load from the other FRMP? Or do you think that each part of the load should be able to be disconnected independent of the other FRMP?**

Ausgrid is not clear on how the proposals contained in Section 3.5 of the AEMC's Draft Advice would operate in practice, or whether the costs (versus benefits) to the NEM could be justified. We raise some concerns we have been able to identify based on the information contained in the draft advice;

- Existing market participants' systems cannot manage multiple FRMPs for one meter. This would require a fundamental and costly redesign of IT systems (covered in earlier comments).
- The AEMC does not appear to consider the implications of a DNSP being assigned the RP role (with no cost recovery mechanism). It is also unclear how the AEMC foresees the arrangements outlined in 3.5.2 of the Draft Advice operating in practice.
- DUOS charges are determined based on the metering data available at each connection point to the network. It is unclear if the AEMC are proposing that the distributor apportion

[4] There are currently no Type 6 dual element maters available for use in the Australian market. Dual element Type 5 meters currently available in the Australian market are all Type 5 capable, however this does not limit them being used as a type 6, but the capital outlay for the meter is the same.
[5] Page 33, AEMC draft advice "Energy Market arrangements for Electrical and Natural Gas Vehicles" 29 Aug, 2012

and separately bill for each NMI within an embedded network, the charges that are in fact applicable to the 'parent' NMI(s)? Is it intended that costs incurred by DNSPs for obligations in embedded networks be recovered from the broader customer base?

Ausgrid is perplexed by what appears to be a proposal for market changes to support a particular EV business model(s) despite the AEMC seeking to treat EVs like any other load. Modifying market arrangements to provide the ability to assign multiple FRMPs at the one connection point suggests that EV service providers do not want to make use of the available option to become a retailer/FRMP. Instead special metering arrangements are to be put in place to allow EV service providers to select a retailer(s), choose separate tariffs and separate metering. From a market cost-benefit perspective we question whether costs are being shifted from Electric Vehicle service providers or their customers on to other participants in the market resulting in those costs being borne by customers more broadly.

Question 10 Sale of electricity and the bundled service provider

Do you consider the AER should be required to specify how it will determine whether a bundled service provider is selling a good or service that constitutes a legal sale of electricity, for example, through a guideline?

Question 11 EVs and retail exemptions framework

Do you agree that the AER should review its retail exemptions framework to clarify the status of EV charging at commercial EV charging stations where onselling occurs? Please provide reasons.

We cannot provide any comments in response to the above questions. Ausgrid, as a DNSP, has not assessed the legal interpretation of the sale of electricity or formed a view on whether EV service providers need to obtain a retail authorisation or a retail exemption.