

Contact: Andrew Knowles
Phone no: (03) 6270 3695
Our Ref: NW30344531
Your Ref: EMO0022



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Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Dear Sir

DRAFT ADVICE: ENERGY MARKET ARRANGEMENTS FOR ELECTRIC AND NATURAL GAS VEHICLES

Thank you for the opportunity to provide input to the Draft Advice, *Energy market arrangements for electric and natural gas vehicles*, released on 29 August 2012.

Aurora Energy Pty Ltd, ABN 85 082 464 622 (Aurora) is an incorporated, State Government owned fully integrated energy and network business, with complementary activities in telecommunications and energy-related technologies. Aurora provides electricity generation, retail and distribution services to more than 270,000 customers in the Tasmanian jurisdiction. In this document, reference to Aurora should be taken as reference to Aurora in its capacity as the provider of distribution services licensed by the Regulator under the Electricity Supply Industry Act 1995.

Aurora is keenly aware of the effect of rising electricity prices on its customers. To this end, Aurora has implemented a business-wide strategy to ensure that it provides its services to its customers at the lowest sustainable price. Further, Aurora supports the “causer pays” principle in allocating costs associated with new and altered connections, recognising that the costs borne by individual customers incurring the infrastructure investment are not subsequently borne by the general customer base, thereby decreasing the rate of network-related price increase.

Aurora notes that the costs associated with the proposed changes to metering infrastructure to accommodate and provide appropriate pricing signals to customers with electric vehicles are relatively easily apportioned appropriately. On the other hand, the costs of the market-compliant IT systems to accommodate the changed metering infrastructure and market arrangements recommended in the Draft Advice, whereby a single customer may have multiple meters and multiple retailers in respect of a single premises, are not so readily directed to those customers with electric vehicles.

Aurora also notes that while the proposed model of multiple retailers for a single customer at a single premises provides the economically desirable choice to consumers, Aurora is unconvinced that the complexity and cost of the arrangements will foster widespread utilisation of the services provided.

The attachment to this letter provides Aurora's answers to the questions posed in the Draft Advice, and also contains discussion on other aspects of the Draft Advice that were not the subject of direct questions by the AEMC but which Aurora considers to be relevant to the overall review.

If you have any questions, please address them to the contact noted above.

Yours faithfully



Anton Voss

General Manager Commercial, Regulatory and Strategy
Distribution Business
Aurora Energy

ATTACHMENT TO AURORA SUBMISSION TO EMO0022

This attachment to Aurora's response to consultation EMO0022 provides Aurora's answers to the questions posed by the Australian Energy Market Commission (AEMC) in their Draft Advice, *Energy market arrangements for electric and natural gas vehicles*, released on 29 August 2012 (the Draft Advice). This attachment also contains discussion on other aspects of the Draft Advice that were not the subject of direct questions by the AEMC but which Aurora considers to be relevant to the overall review.

The National Energy Customer Framework was commenced in Tasmania on 1 July 2012. Aurora's responses are structured considering the effect of this legislation upon the interactions between the three parties (customer, distributor and retailer).

In this document, reference to Aurora should be taken as reference to Aurora Energy Pty Ltd, ABN 85 082 464 622 in its capacity as the provider of distribution network services on mainland Tasmania, licensed by the Regulator under the Electricity Supply Industry Act 1995.

Terms used in this attachment are contained within the appendix to this attachment.

For ease of identification, the questions posed by the AEMC are presented in boxed text.

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?

Distribution network service providers are obliged under rule 6.1.3 of the NER to provide access to its network to any party that seeks connection, subject to certain terms and conditions. Similar obligations are placed on the DNSP by the NERL¹. Neither instrument requires the DNSP to consider the end use of the electricity by the connected party, except insofar as such end-use may create issues on the distribution network or for other parties connected to the distribution network. A consequence of this is that there is no fundamental difference in consideration by a DNSP of a load that resulting from the charging

¹ Clause 66.

of an electric vehicle and a load of similar characteristics that is a result of some other end use.²

This observation alters the question to a more general consideration of whether incentive for efficient network use should be created through network pricing signals. The alternative to an incentive-based approach is, presumably, to enforce efficient network use through regulatory or legislative means. In the event that an incentive-based approach is recognised as the appropriate approach, Aurora considers that the “causer pays” principle noted in the Draft Advice³ is the most effective way of limiting cross-subsidisation of infrastructure provision.

The Draft Advice makes three recommendations in relation to the introduction of pricing signals:

- no mandated specific price structures for residential consumers with electric vehicle;
- locational pricing signals in DUOS charges; and
- interval meters to capture the necessary information to permit more effective price signalling.

Aurora supports the recommendation not to mandate price structures. Aurora considers that the businesses in the industry are capable of setting appropriate prices structures provided that the framework within which they are required to work is flexible enough to permit such.

Aurora agrees with the concept of locational signals from a pure economic theory point of view, but has several reservations about the practical application of locational pricing.

- Pricing signals created by locational signals in DUOS charges are diluted to the extent that locational signals are not contained within TUOS charges and passed through to customers by retailers.
- Assuming that there is a high degree of locational pricing contained within TUOS charges, the locational pricing of DUOS charges should be based upon the distance of the connection under consideration from the transmission injection point(s) supplying the parts of the distribution network that serve that connection. This in itself will create issues.
 - When the relevant transmission and distribution systems have pure radial, non-interconnected configuration, the calculation of locational price components is relatively straight-forward. As the degree of inter-

² This is recognised in the Draft Recommendation in Box 2.1 of the Draft Advice.

³ Draft Advice, page 7

connection between and within the transmission and distribution systems increases the equitable apportionment of location-based costs becomes increasingly more challenging.

- The result of a properly implemented locational pricing signal is that those consumers more distant from generation and transmission injection points will pay a higher price. This may result in unexpected outcomes, such as customers in urban areas facing higher costs due to their relative distance from energy production.

Aurora supports the introduction of interval metering. Aurora considers that the introduction of remotely read interval metering with extra abilities would provide significant opportunities for market participants and network service providers to offer innovative solutions to consumers. To fully realise these opportunities, however, the market and regulatory framework must be appropriately supportive. Further, the cost to the consumer of implementation must be less than the cost to the consumer of the problem that is to be solved by the introduction of the new meters and related solutions.

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?

Improve method of valuing non-firm benefits

The Draft Advice observes that, in relation to DSP,

...this contract between a consumer and retailer may make it difficult for other parties (such as a distribution network) to realise its share of the benefits of controlled charging. This situation arises because the additional (or residual) DSP benefits that could be offered to, in this example, the distribution network, are difficult to value because of the 'non-firm' nature of the additional (or residual) DSP benefits. This is similar to time varying pricing too.⁴

Aurora is uncertain of the nature of the benefits to the DNSP to which reference is made. Conceptually, since DNSP revenue is recovered only for past capex and current opex, and there should be no incremental DNSP revenue for money not

⁴ Draft Advice, page 20

spent, there is no direct financial benefit to the DNSP.⁵ Rather, the benefit falls to the end-user of the DNSP's services in the form of reduced prices through reduced or deferred expenditure.

Improve negotiations among multiple parties.

The Draft Advice observes that commercial arrangements in the form of contracts will be required to effect the realisation of the benefits of controlled charging.⁶ Aurora notes that the relationships envisaged include third parties acting on behalf of customers either directly in the market or in negotiations with customers' retailers. Given that the customer-retailer interaction is already governed by the NECF, Aurora considers that the regulation of these relationships properly falls within the scope of that framework and should be considered in that context. Since the relationship necessarily involves some form of negotiation, the negotiation process should also be considered in the context of the NECF. In consequence, following the NECF model as implemented in the NERL and NERR, relationships should be regulated according to the perceived ability of the interacting parties to protect their interests.

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?

Amendment of clause 7.3.1(a)(7)

The Draft Advice observes that clause 7.3.1(a)(7) of the NER

...implies that all EV meters should have bi-directional capability, which may not be appropriate at this stage given that V2G is itself at an early stage of development. It may therefore be necessary to amend this clause to allow some flexibility in the instance an EV metering installation does not have bi-directional capability.⁷

5 The fact that DNSPs can receive incremental revenue for money not spent is a failing in the regulatory process that the current AER-initiated pricing rule change is designed to address.

6 Draft Advice, page 19

7 Draft Advice, page 23

Aurora is unsure why the age of a generation technology should preclude the application of the rules to that technology, and does not support the amendment of clause 7.3.1(a)(7) of the NER on these grounds.

Bi-directional interval metering

The Draft Advice states,

...there may be benefit in considering whether this clause should be amended to require that metering installations have bi-directional interval metering capability to capture the differing value of exported generation through the course of the day.

Aurora considers there is no reason to amend clause 7.3.1(a)(7) of the NER to require that metering installations have bi-directional interval metering capability to capture the differing value of exported generation through the course of the day. The bi-directional issue is already covered by the clause as it exists.

The differing value of energy exported is a contractual issue between the generators and the party purchasing the power, and should not be addressed in this clause 7.3.1(a)(7), although it may be appropriate to specify an appropriate meter capability elsewhere in the rules.

Question 4. Identifying a large load (including an EV)

1. Should any loads above a threshold (eg. 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?

Notification of “large loads”

Aurora suggests that the requirement to identify a load as a charging for an electric vehicle more properly belongs with the NECF, being a connection point characteristic with bearing upon network planning, rather than belonging in the Wiring Rules which deal more with the physical characteristics of an electrical installation.

Load threshold

Aurora further suggests that the load threshold above which notification is required by a DNSP should be specified by the DNSP to reflect the characteristics of their network. This can also be dealt with in the National Energy Customer Framework.

Discussion

The identification of large loads is important so that the distribution network can be planned and operated in a satisfactory and efficient manner. This is recognised in chapter 5 of the NER and the drafting of the NECF package.

Under the National Energy Customer Framework, which was implemented in Tasmania on 1 July 2012, all parties connected to Aurora's distribution network at that date were became subject to the deemed standard connection contract⁸, unless there was an existing negotiated contract, by virtue of Part 5 of the National Energy Retail Law Act 2012 (Tas). Aurora's existing negotiated contracts already contain a requirement for the customer to notify Aurora of any expected change in demand, and the NECF deemed standard connection contract requires the customer to,

inform either your retailer or us of any permanent material change to the energy load or pattern of usage at the premises.⁹

Aurora considers that a change required to be notified thus falls within the "connection alteration" as defined in rule 5A.A.1 of the NER. In consequence, the chapter 5A connection process applies to the customer, during which process the reason for the changed demand can be ascertained, and connection charges levied as appropriate.

Question 5. Changed 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.

⁸ As per clause 67 of the NERL.

⁹ Clause 6.2(d)

Aurora understands that the recommendation in the Draft Advice is to:

- replace the term “connection point: in chapter 7 and rule 3.15 of the NER with the term “supply point”, which is to be the “point where part, or all, of the consumer's load would be metered”;¹⁰ and
- continue to use the term “connection point”, as currently defined in the NER, in the remainder of the NER,¹¹

so that a customer can establish new metering at a premises and not need to establish another connection point.

Aurora agrees that a distinction between the point of physical connection to the network and the metering configuration on the customer’s side of the physical connection to the network will support the customer supply model presented in the Draft Advice. Aurora wishes to make the following observations about the proposed changes.

- The existing definition of “connection point” used in the NER and NERL is appropriate.
- It is not clear how the proposed term “supply point” differs from the existing defined term “metering point” and, if there is a difference, how the two terms will interact.
- It is not clear how the proposed change will interact with the currently defined term “metering installation”. See, for example, rule 7.3.1A(a).

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.

The Draft Advice contains a recommendation to permit the creation of a “parent/child” metering arrangement for a single connection point serving a single customer.¹²

Aurora is unclear as to why there is a need for such an arrangement; the creation of a parent/child installation increases market-related complexity without solving any meter provision issues. Further, Aurora considers that the

¹⁰ Draft Advice, page 26

¹¹ Draft Advice, page 26

¹² Draft Advice, page 28

cost of a meter and associated installation should be similar for either a “parent/child” arrangement or the more traditional parallel metering of several circuits within an installation. It is possible that the cost of the parent/child configuration may be in excess of alternatives, as the parent meter must be of a specification suitable for the entire energy flow through the connection point (supply point), whereas the parallel configuration may not require such a “high-spec” meter.

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 Draft Advice contains a recommendation that,

where a single metering installation has multiple measurement elements and assigned multiple NMIs (that is, a multi-element metering installation), there must only be a single Responsible Person for:

- all the components of the metering installation; and
- all the NMIs associated with each metering element.¹³

A further recommendation is to allow,

individual measurement elements within a single device to be regarded as separate metering installations. This would allow individual measurement elements to be:

- assigned to different FRMPs by the associated consumer(s); and
- assigned different NMIs by the Responsible Person.¹⁴

Aurora understands that the rationale behind the desire to treat individual elements within a multi-element meter as though they were individual meters is to enable the potential for multiple retailers for multiple loads within a single premises as envisaged in the Power of Choice review. To effect this desire the AEMC suggests that a single party acting as a “body corporate” for a multi-element meter is an efficient solution.

Aurora is unconvinced that the proposed solution is an “efficient solution” because the costs of the proposed solution and any alternative solutions have not been clearly articulated.

¹³ Draft Advice, page 32

¹⁴ Draft Advice, page 32

Aurora notes that there is no suggested mechanism for choosing which of the market participants with an interest in the meter should be the Responsible Person. Further, given that a single Responsible Person would be undertaking tasks on behalf of the other market participants with an interest in the meter, there would be an expectation by the Responsible Person of some consideration from the other parties. Accordingly, Aurora expects that there should be some form of contractual service level agreement between the market participants with an interest in the meter and the proposed single Responsible Person, which contractual relationship may need a degree of regulatory oversight.

Aurora also observes that the appointment of a single Responsible Person to act on behalf of multiple retailers means that the appointed Responsible Person is acting as an agent for the other retailers. Aurora suggests that this implies that the provision of “Responsible Person services” should properly be contestable to ensure that the most efficient cost is obtained by those parties requiring such services.

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.

The Draft Advice contains the following recommendations,

that the arrangements for metering within an embedded network be included in the NER. In particular, embedded networks should be brought into the metering and settlements frameworks in Chapter 7 and rule 3.15 of the NER by:

- defining connection points between the embedded network and the associated downstream consumers as connection points (and supply points) under the NER; and
- allowing these connection points (and supply points) to be settled in the NEM.¹⁵

Aurora agrees that the recommendations conceptually address the market settlement issues surrounding metering in embedded networks.

Aurora notes that by permitting such arrangements, the application of NECF contractual relationships and customer protection to these customers must be revisited.

¹⁵ Draft Advice, page 34

Amended definition of connection point

The Draft Advice contains a revised definition for the term “connection point”:

The agreed point of supply established between ~~Network Service Provider(s)~~ a network, which is connected to part of the National Grid, and another Registered Participant's network, ~~a person~~ network exempt by the AER or by the Rules ~~who~~ that would otherwise be required to be a Registered Participant registered with AEMO, the circuits of a Non-Registered Customer or franchise customer.¹⁶

The intention behind this change is to bring the metering and settlements arrangements for embedded networks into the existing frameworks in chapter 7 and rule 3.15 of the NER.

Aurora notes that a recommendation in section 3.1 of the Draft Advice is that

...the term 'connection point' in Chapter 7 and Rule 3.15 of the NER be replaced with 'supply point'. The supply point would be the point where part, or all, of the consumer's load would be metered.

In the remainder of the NER, the term 'connection point' would continue to refer to the point of physical connection between the network assets and the assets of the network user (consumer or generator).

Aurora suggests that the definition of “connection point” remain unchanged, and that the definition of “supply point” (or “metering point”, as appropriate) be altered to effect the intention of the Draft Advice.

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?

Aurora has no comment to make on this issue.

16 Draft Advice, page 36

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?

Aurora considers that the principles of transparency require that the AER should 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. This would provide certainty to bundled service providers around the status of their operations in the market.

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.

Aurora has no comment to make on this issue.

Question 12. Western Australia

What are your views with respect to our recommendations to facilitate the efficient uptake of EVs in Western Australia?

Aurora has no comment to make on this issue.

Question 13. NGVs

Do you agree that no significant changes need to be made to the energy market arrangements to facilitate the efficient uptake of NGVs? Please provide reasons.

Aurora has no comment to make on this issue.

Other Issues

This section addresses issues in the Draft Advice that are not the subject of explicit questions.

The cost of metering

The Draft Advice states:

Most existing meters in the NEM have a single metering element and, hence, are only capable of measuring the energy flows to a single load. This means that separate or parent/child metering installations would be required when part of a consumer's load is separately measured. Therefore, the costs of metering at a residential premise may be sufficiently high to make it uneconomic for many consumers to separately measure the load in a part of their load.¹⁷

Metering configurations

By way of background, Aurora notes that the type of metering required for a given connection/supply point is dictated by the NER and metrology procedures and the electrical characteristics of the point being metered. In particular, the transfer capacity of the connection point and the number of phases used for supply are major considerations. Briefly,

- low voltage supplies with a transfer capacity in excess of around 100 A per phase require current transformers in the metering installation, which requirement necessitates both more space and a more complex, hence expensive, metering arrangement;
- low voltage multi-phase supplies require a single-element meter per phase; and
- low voltage single-phase supplies may be metered using multi-element meters.

The cost of standard metering

To provide an estimate of the cost of standard metering¹⁸, Aurora is able to source a dual-element interval capable meter for around \$200, and a single-element interval capable meter for around half of the cost of a dual-element meter. Remote reading capability can be added to the meter at a capex cost

¹⁷ Draft Advice, page 33

¹⁸ That is, metering for a premises with a single-phase service with transfer capacity not exceeding 100 A.

commensurate with the cost of the meter; on-going communications costs are market driven.

The cost to Aurora to install one of these meters is also commensurate with the cost of the meter. The cost to a customer to have one of these meters installed will vary with the amount of work that must be done to the customer's installation to meet the requirements of the Wiring Rules.

In recovering costs from customers for these interval-capable meters with communications capability not enabled, Aurora's regulated tariff rate has approved by the AER as 6.961 cents per day "per register",¹⁹ which cost includes the recovery of metering hardware, the installation cost, operational and maintenance expenditure, and a return on investment.

The majority of connections (around 95%) to Aurora's distribution network are for residential premises. The majority of these residential premises have two accumulation meters (one for general use and one for space heating), and many have a third accumulation meter for controlled energy devices, such as off-peak heaters. These metering arrangements have been in place for many years in Tasmania. Given the large uptake of this metering configuration, it is evident that the costs of metering at individual premises is not sufficiently high to make such a proposition uneconomic.

It should be noted that the charges presented are regulated. Aurora is not able to comment on the prices that would be charged by unregulated metering providers in a fully contestable meter provision market.

The cost of parent/child metering

Aurora considers that the cost of a meter and associated installation should be similar for either a "parent/child" arrangement or the more traditional parallel metering of several circuits within an installation. It is possible that the cost of the parent/child configuration may be in excess of alternatives, as the parent meter must be of a specification suitable for the entire energy flow through the connection point (supply point), whereas the parallel configuration may not require such a "high-spec" meter.

¹⁹ see Aurora Energy Pricing Proposal, 1 July 2012 – 30 June 2013, published in May 2012, as approved by the AER, section 7.2.

Appendix: Terms Used in This Document

Term	Meaning
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
Wiring Rules	AS/NZS 3000:2007 Electrical installations (known as the Australian/New Zealand Wiring Rules) published by Standards Australia
DNSP	Distribution network service provider
Draft Advice	Energy market arrangements for electric and natural gas vehicles, released by the AEMC on 29 August 2012.
DSP	Demand-side participation
DUOS	Distribution use of system [charges]
EV	Electric vehicle
FRMP	Financially responsible market participant
NECF	National Energy Customer Framework
NEM	National Electricity Market
NER	National Electricity Rules
NERL	National Energy Customer Law
NERR	National Energy Retail Rules
NGV	Natural Gas Vehicles
TUOS	Transmission use of system [charges]
V2G	Vehicle to grid [generation]