



Submission by

**Alternative Technology Association**

on

**Energy Market Arrangements for Electric and Natural  
Gas Vehicles – Draft Advice**

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**19<sup>th</sup> October 2012**

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## 1.0 Introduction

Founded over 30 years ago, the ATA is a National, not-for-profit organisation whose 5,500 members are predominantly residential energy consumers with an interest in sustainable energy and resource use.

Through the application of our in-house expertise and experience in the energy market to our continuing advocacy and research, and close collaboration with fellow members of the National Energy Consumer Roundtable, the ATA is an important voice for energy consumers Australia wide and in each of the NEM jurisdictions.

ATA presents a uniquely two-fold perspective in the DSP policy debate: as well as directly representing all Australian energy consumers through our support of improving energy affordability through improvements to the energy market that have net benefits to all consumers, we speak with authority on behalf of the growing portion of the consumer base who have an active interest in DSP, and in particular EVs.

As a leading consumer organisation in the energy policy space, ATA plays an equally important advocacy role working with energy market participants and institutions, other energy businesses and state and Commonwealth governments to ensure that new opportunities for DSP are introduced in such a way that, by achieving the aspirations of the National Electricity Objective, DSP becomes part of the solution to the problem of increasing energy prices caused by unrealised potential efficiencies in the NEM.

ATA congratulate the AEMC on their work on the Draft Advice on Energy Market Arrangements for Electric and Natural Gas Vehicles.

We feel that the Draft Advice generally reflects recognition of the key issues and opportunities that EV's present, and the proposed changes, along with the draft recommendations of the Power of Choice Review, will go a long way facilitate the safe introduction of EVs and other forms of DSP by addressing barriers and implementing supportive measures to realise the many potential benefits to consumers.

ATA thanks the AEMC and would welcome the opportunity to discuss our views directly with the Commission if that would assist in their development of the Final Advice.

## 2.0 Technology Neutrality v. Efficient Market Design

The one aspect of the Draft Advice where our views may significantly diverge from those of the commission relates to the need for differential treatment of EVs in the energy market.

The Draft Advice says *“In general, we consider that energy market arrangements should be technology-neutral in that they should apply across all types of consumer appliances and not specifically to EVs. This means that while our analysis was prompted by considering the impact of these vehicles on the energy market, our proposed changes to the energy market arrangements apply broadly across all forms of demand side participation (DSP). Our view is that an EV is another form of DSP. (piii)”*

ATA generally support the view that energy market arrangements should be technology-neutral, but note that EVs present a unique suite of issues and opportunities when compared with other forms of DSP, and like any disruptive technology should be treated accordingly.

By way of comparison, we note this is no different to the need for technology-specific treatment of different types of loads, such as electric hot water or air conditioners.

As an opportunity, if managed properly, controlled EV charging (and potentially export) offers many potential benefits of improved efficiencies throughout the energy market supply chain:

- With similar benefits off peak hot water as an off peak load that, where by utilising networks and generation during times of low demand it improves the load factor
- As an interruptible load, EVs can be switched off during times of high demand, helping to defer or avoid the need for network augmentation and placing downward pressure on spot market prices
- As a peaking generator, with the advent of V2G and V2H technology, EVs will have the ability to export energy, and/or disconnect loads from grid and ‘island’, further avoiding the need for network augmentation and keeping spot market prices low.

In ATA’s view, for these potential benefits to be realised without impacting the amenity of EV owners or requiring cross subsidy, EV-specific pricing, control and other market arrangements are required.

On the other hand, if EVs are to proliferate en masse and their charging is unmanaged, they have the potential to seriously compound issues of peak demand and worsen the efficiency of the NEM (just as air conditioners do now).

ATA feels therefore that the adoption of a managed EV charging regime should be encouraged by appropriately incentivising EV owners to realise a share of the benefits they bring to the NEM though appropriate, and if needed, EV specific measures.

### 3.0 Response to Specific Questions

#### **Q1: 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?**

ATA believes that cost reflective network pricing signals such as peak time rebates and time of use pricing (including critical peak pricing) are an appropriate way to incentivise EVs. Measures that respond to wholesale market signals or retail costs are also appropriate.

Further, ATA considers the following to be of relevance in the context of pricing signals:

- Given the unique nature of the of the issues and opportunities of EVs, it is appropriate for distributors and retailers to offer EV-specific tariffs, especially where the EV load is externally controlled by any party;
- Given the potential volume of energy that EVs may consume from the network, it is appropriate that ToU tariffs for EVs include:
  - Lower charge for off peak energy use, and
  - Higher charger for peak energy use;than ToU tariffs for non-EV customers;
- Nodal or location pricing may be appropriate and effective, accounting for:
  - Different network losses in different parts of the network;
  - Opportunities to address current or forecast network constraints through the deferral or avoidance of planned network upgrades;
- Distribution business should be required to retain more knowledge of the consumers with major loads than they currently have in order to provide appropriate incentives to consumers and manage the network efficiently<sup>1</sup>;

#### **Load Factor as an Economic Benefit**

The Draft Advice notes that *“Pricing signals may also be used capture the benefits that EVs can bring to the electricity system. The AECOM report identified how an EV load can potentially be used to improve the load factor of networks through charging EVs at off-peak times.”*

In line with the above, ATA questions the AEMC’s view (footnoted) that *“Improved load factor is not a new economic benefit but a financial transfer to non-EV electricity consumers. ”*

ATA notes that improved load factor has benefits throughout the energy supply chain, not only at a network level but also at a wholesale and retail level, and these benefits ultimately filter through to other consumers.

As controlled EV charging may bring this benefit about, we are not sure of the relevance that *“improved load factor is not a new economic benefit.”*

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<sup>1</sup> It is reasonable to expect that any customer with an EV charger or other load that is: hard wired or above a certain current threshold for consumption should be required to inform the DNSP.

ATA support pricing signals that result in all material benefits, including those relating to improved load factor, being shared between EV owners and other consumers.

## Pricing Signals & Consumer Behaviour

ATA feel that the view that *“We acknowledge, however, that there are limitations to the extent that pricing signals are able to encourage efficient behaviour (p17)”* misses a key point of cost reflective pricing.

ATA agrees that price signals alone are at times insufficient to bring about a change in behaviour, particularly where they are weak signals or unaccompanied by consumer engagement.

Consumer engagement and information provisions are key to maximising the benefits of price signals and avoiding consumer impacts. However, we encourage the Commission consider in this context the importance of cost reflectivity, of which consumer response to price signals is only one aspect.

Cost reflective pricing is not just about price signals. Consumers do not need to change behaviour for there to be a benefit if prices are designed to fairly allocate costs and benefits and avoid cross subsidies between (in this case) EV and non-EV consumers:

- If a consumer wants to be able to charge an EV during peak times, they should be allowed to, and the price they pay should reflect the impact of this decision.
- If they are willing and able to charge their vehicle during the off-peak times, they should be rewarded accordingly with lower tariffs that reflect the impact of this decision.

In the absence of price signals, a consumer has no reason to change their behaviour, so while price signals are not always effective, cost reflective pricing is still necessary to avoid cross subsidy.

Nonetheless, consumer engagement and information provisions are key to maximising the benefits of price signals and avoiding consumer impacts.

## Consumer Interest in Time Variant Pricing

Referring to the real world example of specific tariffs for EVs in the US (p16, 17) the Draft Advice includes the following statement:

*“With respect to energy prices, mass market consumers (which include EV consumers) may not want to be exposed to such volatile prices” (p17)*

ATA contends that this is a serious overgeneralisation of consumer motivations and interests.

ATA agree there are many consumers who do not want to face time variant prices, however noting our comments above, we consider that there are also many consumers who wish to stop cross-subsidising other consumers, and actually want cost reflective prices to enable this.

Further, we argue, placing the desire for non-volatile pricing of any proponent of disruptive technology (in this case EVs) above the impacts on other consumers brought about by their action would be grossly unfair.

By way of comparison, it is well known that air conditioners (ACs) and uncontrolled pool pumps in the NEM states typically require a cross subsidy typically greater than \$5,000 per unit from non AC owners, due to the impact of networks and market prices.

This also results, in our view, in a regressive cross subsidy, as non-AC owners are on average more likely to be on lower incomes than consumers purchasing new air conditioners.

As noted previously, unmanaged EV charging, as would happen in the absence of cost reflective price signals, would have similar impact on other consumers to that of installing new AC without suitably cost reflective prices. ATA argue this outcome would be still more regressive in the case of EVs given they are likely to be owned by those on higher incomes for the foreseeable future.

Finally, ATA notes that the prices in the example that the AEMC's statement refers to are not particularly volatile in the scheme of cost reflective pricing.

For reasons cited above, ATA feels that is in keeping with the NEO, and the long term interests of consumers, to have more cost reflective pricing for EVs than for other consumers.

We note also that many EV proponents with whom we discuss pricing are also strongly supportive of this view, once they realise it is the key to them accessing cheaper energy during off-peak periods and avoiding impacts on other consumers.

## Network Pricing Signals

The Draft Advice expresses concern that *“With respect to network pricing signals, it may be difficult to define or measure the marginal cost of distribution services by time of use and by location at a sufficient level of granularity (p17)”*

Clearly it's never possible to measure temporal and location price impacts with 100% accuracy, but in ATA's view the existing tools for doing this are as perfect as they need to be to allow for equivalent pricing.

Firstly, wherever network upgrades are planned, a RIT-D or RIT-T is undertaken that places a value on network based solutions, and accordingly a value can be ascribed to deferring or avoiding network upgrades in the well defined region that is served by the constrained part of the network<sup>2</sup>.

Ostensibly, considering potential demand side solutions to the constraint is one chief purpose of the RIT, and ATA would be very concerned if the AEMC did not feel this could be adequately achieved.

Also, network losses are already considered on a location specific basis and are typically applied down to a postcode level.

Secondly, ATA do not understand why the Commission feels that the difficulties of time-based costs are significant, given that this would appear to require be no change to methods already used in determining time of use networks tariffs in Australia (and most recently in Victoria).

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<sup>2</sup> Understandably, in areas of the network not slated for investment, the measurable locational benefit will typically be much less.

## Effective Pricing Signals

The Draft Advice casts doubt on the potential for price signals to be effective:

*“We recognise that while pricing incentives are necessary to encourage efficient behaviour, it may not always be sufficient to achieve intended outcomes.”*

Noting the previous points, if price signals are sensibly designed and in some way cost reflective, one of two outcomes will result in each case:

- Greater efficiency, where the proponent changes their behaviour, and is rewarded through lower prices, or
- Equitable cost allocation, where the proponent does not change their behaviour, and pays for the impact.

In summary: while behaviour change is often a desired outcome of price signals, it is not needed for price signals to be effective. Cost reflective pricing can improve equity and efficiency, thereby achieving the NEO, in the absence of behavioural response to price signals.

**Q2. 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 part of the Power of Choice Review and related processes, the AEMC has identified a number of improvements necessary to remove barriers to effective DSP. These welcome changes will go some way to removing barriers to the realisation of non-firm benefits, and so assisting the market to naturally capture some of this value where currently it can't.

These improvements include:

- creating a level playing field between DSP service providers and existing market participants through the creation of the new DSP market participant that can participate in all markets of the NEM. This assists monetisation of these benefits, with new MPs able to take responsibility for the firmness of response;
- allowing third parties such as load aggregators (i.e. those businesses that commercially contract loads to respond to specific wholesale market prices and network conditions) to provide energy services directly to consumers. This participant could also take responsibility for the firmness of EV's, for example, for demand response across their portfolio of aggregated DR;
- Unbundling services at the connection point and so allowing more than one party to provide services to, or facilitate provision of services from, the market by a customer.

'Non 100% firm' benefits at the wholesale market, distribution, transmission and retail level gain firmness through diversity of response, which is also a natural product of the increased uptake of DSP.

ATA suggest that, if adopted, the above draft recommendations of the AEMC in the Power of Choice Review will be effective in assisting both allowing the value of non-firm benefits and improving the negotiation processes among parties, and we strongly encourage the AEMC to preserve these recommendations in their final recommendations for the Power of Choice Review for this reason.



**Q3. 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?**

ATA will respond in more detail to this question as part of our submission to the Power of Choice draft recommendations in the next week, but in brief:

- We feel that changes considered above (including those noted in our response to Q2 above) will benefit V2G uptake if and when that technology is offered.
- Specifically we feel that interval meters should have bidirectional capability. We note that:
  - the additional cost of a bidirectional meter compared to a unidirectional meter is minimal, to our knowledge under \$50;
  - all Victorian AMI meters are bidirectional enabled;
  - importantly, as per the National Minimum Functional Specification for Smart Meter Infrastructure, twin element meters must be also capable of monitoring not only energy flows and power for each element, but also the totalised flows, representing the import and export across both elements.

**Q4.1. Should any loads above a threshold (eg. 15 amps) be identified to the DNSP?**

Yes, and this should be a blanket rule applying not only to EVs but also to air conditioners, pool pumps etc. ATA are of the view that:

- 15A and above (as distinct from above 15A) is an appropriate threshold for single phase loads for households;
- 10A and above (as distinct from above 10A) is an appropriate threshold three phase loads for households;
- Above 15A is an appropriate threshold for single phase loads for non-residential small customers;
- Above 10A is an appropriate threshold for single phase for non-residential small customers.

Included in the information provided to the DNSP should be whether or not the load is, for example, capable of load control in accordance with AS 4755.

To make this data of use, DNSPs should also required to:

- maintain this information; and
- make this information available in de-identified format to TNSPs and other parties.

ATA are of the view that networks should be required to consider the value of implementing programs to control some reported loads as aggregated demand response to defer network based capex to deal with constraints (for example through RIT-Ds and RIT-Ts).

Customer privacy issues will need to be considered, particularly where this data is to be released to third parties, but ATA see these obstacles as surmountable and ultimately that the potential benefits would outweigh the costs.

**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?**

ATA have no strong views on this, but agree that modifying the wiring rules would seem to be an appropriate and nationally consistent way to implement this change with minimal extra burden on electrical contractors.

**Q4.2. If there are no requirements to identify particular appliances, should there be a total load threshold above which identification to a DNSP is required?**

ATA feel that that while it is preferable to identify large loads as noted above in the interest of opportunities for DSP and more efficient investment, an alternative would be to identify the maximum customer demand in kVA or kW of the customer premises in the same way that demand charges are currently determined for some customers.

ATA are of the view that, while potentially useful from a network management and cost allocation perspective, this second measure may not assist greatly in identifying opportunities for DR.

**Q5. 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.**

ATA strongly support the AEMC's intention to remove the need for customers to establish a second connection point and make associated changes in terminology or definition.

We suggest however that a different term to 'Supply point' needs to be used, in line with the following:

- The intention as we see it is to establish a new point of metering, not a new point of supply.
- As the AEMC notes (p27, footnote), 'Point of supply' already has a different meaning in the NER. Having these two similar terms with differing means risks creating unnecessary confusion for consumers and industry alike.

For these reasons ATA recommends using a term such as 'Metering point' or 'Meter point', instead, provided these terms do not already have another meaning.

**Q6. Do you agree that our proposals address existing issues with parent/child metering arrangements?**

Yes, the proposals address any issues of which the ATA are currently aware.

**If so, how should these arrangements be specified in the NER? Please provide reasons.**

ATA have no strong views on this at this time but would be very happy to consider these issues further with the commission if further input is of value for the commission.

**Q7. Do you agree that having one Responsible Person for multi-element meters is the efficient solution?**

Yes, ATA support the AEMC's draft recommendations on this issue.

**Are there any other issues with multi-element meters that we should address?**

A metering installation may include non-metrology functions such as:

- A wireless Home Area Network (HAN) interface;
- Contactors or DREDs for Direct Load Control;
- Other non-metrology functions.

While having no specific concerns views on the issue, the ATA notes for the Commissions benefit that notes that arrangements in relation to these functions will need to have regard to where non-metrology functions relate to services provided by parties other than the RP.

As noted previously, as per the National Minimum Functional Specification for Smart Meter Infrastructure, twin element meters must be capable of monitoring not only energy flows and power for each element, but also the totalised flows, representing the import and export across both elements.

**Q8. Do you agree that our recommendations address existing uncertainties with respect to metering in embedded networks? Please provide reasons.**

The ATA strongly supports the AEMC's draft recommendations with respect to embedded networks.

ATA agree with the reasoning of the AEMC that:

*"... clarifying the NEM metering arrangements for embedded networks would improve certainty for consumers and owners of embedded networks. Further, we consider that these arrangements should be flexible to increase competition for the provision of services to consumers, and hence lead to more efficient prices. We are also concerned that the arrangements provide robust arrangements that preserve the integrity of the metering data."*

**Q9.1. Do you agree that our recommendations will enable two or more FRMPs to operate effectively at a connection point? Please provide reasons**

ATA strongly support the AEMC's recommendations. These changes are key to:

- improving market efficiency by creating a level playing field between potential DSP service providers and existing market participants;
- allowing consumers to choose with whom they contract various energy services; and
- circumventing the barriers inherent to the vested interests of energy retailers which otherwise prevent the above goals being achieved.

We ask the AEMC to consider, as part of this Advice and/or as part of the Power of Choice Review, what measures may be required to prevent consumers from being disadvantaged by retailers refusing to offer some market offers to consumers with more than one FRMP.

ATA are of the view that all offers by retailers should be made available for all residential consumers, including those with more than one FRMP, except where the retailer is unable to offer that product for reasons beyond their control (for example, where customer metering arrangements preclude market settlement of that retail product).

In relation to the AEMC's recommendations regarding multiple FRMPs at the connection point, we seek to have the following points clarified or addressed by the Commission in their final advice.

Firstly, Where the draft advice says: "Where there is only one point of disconnection and a FRMP wants to disconnect the consumer, this FRMP can disconnect the total load at the connection point, including the load of other FRMPs (p38)", ATA request that the word 'wants' is replaced with the word 'needs'.

Secondly, and importantly, regarding the footnote "*In the case of a multi-element meter the consumer may wish to engage separate FRMPs for each meter element. (p39)*" ATA notes that:

- a customer may also seek to engage one FRMP for the combined export or import of both elements, and another for the consumption or generation of an individual element. Therefore, one element may effectively have more than one FRMP.
- The National Minimum Functional Specification for Smart Meter Infrastructure allows for this at a technical level as twin element meters must be capable of monitoring not only energy flows and power for each element, but also the totalised flows, representing the import and export across both elements.

Finally, regarding the apportioning of costs between FRMPs (p41), we ask the AEMC to clarify in their Final Advice that, where more than one FRMP exists at a connection point, embedded generators would not be required to pay any portion of DUoS charges that they would not normally be charged in any case if where there was only one FRMP.

**Q9.2. 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?**

Noting the below considerations, ATA agree that it is necessary for one FRMP to have the power to disconnect a customer's total load where there are two FRMPs and only one disconnection point. We note below that this may be an avoidable measure in some cases.

While ATA are generally concerned about wrongful disconnection and the unsafe disconnection of customers who are at risk of resultant harm, we do not foresee either case as a specific issue for consumers in relation to the AEMC's proposals for multiple FRMPs at the connection point. We suggest that if for some reason the issue emerges in future then solutions will be available.

ATA are of the view that the most likely reason for disconnection - other than for a move-out which would not appear to be an issue in this case, or for the temporary disconnection of supply associated with a new installation which would presumably be with a customer's full knowledge and explicit informed consent anyway – is for non-payment.

As we would expect a load aggregator or generator aggregator would pay the customer, rather than the other way around, ATA doubt that a load aggregator or generator will have a need to disconnect a customer supply in event of non-payment.

If a retailer needs to disconnect a customer for non-payment, a load aggregator's service becomes irrelevant as there is no load, presumably either:

- automatically entitling the customer any anticipated payment for load curtailment; or
- automatically disqualifying them if, for example, a baseline for DR can not be established due to lack of consumption.

It follows that if a customer is contracted with:

- more than one retailer; or
- a retailer and a generator;

it may be in a customer's interests to arrange to have additional disconnection points for each FRMP.

One solution may be for the customer and FRMP to agree to installing a remotely operated contactor on the circuit provided for either or each FRMP, which in some cases will presumably be required by that FRMP for the DSP or DR anyway.

ATA are of the view that, in any case where the consumer's installation allows for full disconnection by either FRMP:

- The consumer must have provided explicit informed consent to each FRMP prior to the installation for the new meter or connection or commencement of the new service.
- The consumer must be given the option to have installed, at a reasonable cost agreed with the relevant FRMP/s, a separate disconnection point for each or either FRMP.
- In event of disconnection, the FRMP initiating the disconnection must inform the customer's other FRMP.

## **NEM arrangements to facilitate consumer choice**

The ATA are concerned that the draft advice states *“We recognise that in specifying energy market arrangements there is a potential tension between increasing certainty for market participants and increasing the cost of compliance and potentially muting innovation”*

ATA questions why *‘increasing certainty for market participants’* is apparently presumed to be an aspiration in the context of facilitating consumer choice. We ask that:

- If by ‘increasing’ the commission simply means ‘providing’ please amend this accordingly in the Final Advice.
- If the Commission’s view is that increasing certainty for existing market participants above the current levels is somehow in the long term interests of consumers, we see a need for the reasons for this elaborated in the Final Advice.

It is ATA’s view that, given that the current lack of opportunity for consumers to engage with DSP stems in part from a lack of effective competition between demand and supply side businesses, that improved outcomes for consumers can only be realised with improved competition, and a measure of success and effectiveness of this competition will be lower, not higher, certainty for the small number of market participants that now dominate the market.

## **Treatment of EV charging as the sale of electricity**

ATA support the commission’s views on the treatment of the sale of electricity for EV charging, noting that;

- We understand that one model of EV ownership involves effectively selling ‘distance travelled’ to customers, so the consumer is charged by the service provider by the kilometre rather than by the kilowatt-hour. ATA support this model as it may be easier to engage with and lower risk for consumers. We see no issues created for this model by the AEMC’s proposed approach for the treatment of EV charging.
- We ask that the AEMC also advise on the proposed treatment of energy exported to the grid under future V2G arrangements. In ATA’s view, this should be treated similarly to other forms of demand side generation that is exported to the network.

**Q10. 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?**

The ATA support this approach. Noting our comment above, we are of the view that these guidelines should consider also the treatment of energy sent out to the grid by V2G systems.

**Q11. 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.**

The ATA support this approach, noting it is likely to remove unnecessary barriers to realising the benefits of EV's in commercial applications.

ATA again thanks the AEMC for the opportunity to provide comment to this process. Please do not hesitate to contact Craig Memery ([Craig.Memery@ata.org.au](mailto:Craig.Memery@ata.org.au) or 0412 223 203) or Damien Moyse ([Damien.Moyse@ata.org.au](mailto:Damien.Moyse@ata.org.au) or (03) 9631 5417) with any queries.