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Your Ref EMO0022 Our Ref 2012/20304

Tasmania

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Dear Commissioners

Ref: Energy Market Arrangements for Electric and Natural Gas Vehicles

Please find attached a submission in relation to the *Energy Market Arrangements for Electric and Natural Gas Vehicles Issues Paper* dated 18 January 2012. Note that the comments in this submission are reflective of the views of the Office of Energy Planning and Conservation within the Department of Infrastructure, Energy and Resources and do not necessarily reflect the position of the Tasmanian Government.

Yours sincerely

Tony van de Vusse

Tony van de Vusse
Director
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28 February 2012

SUBMISSION TO THE AUSTRALIAN ENERGY MARKET COMMISSION
ENERGY MARKET ARRANGEMENTS FOR ELECTRIC AND NATURAL GAS VEHICLES ISSUES PAPER

The comments in this submission are reflective of the views of the Office of Energy Planning and Conservation (OEPC) within the Department of Infrastructure, Energy and Resources and do not necessarily reflect the position of the Tasmanian Government. Comments in this submission are focussed on EVs and have not considered energy market arrangements for Natural Gas Vehicles (NGVs).

The OEPC is supportive of the AEMCs investigation into energy market arrangements for EVs, and considers that an appropriate regulatory framework should be established, to the best extent possible, at the earliest opportunity. The OEPC is in agreement with the AEMC's assessment criteria detailed in the Issues Paper, and makes the following additional comments.

1. Proposed approach to reviewing / amending electricity market regulatory arrangements for EVs.

a. Appropriate "introductory" arrangements should be adopted as soon as possible to ensure there is competitive equity.

It is important that appropriate regulatory arrangements for EVs are put in place prior to any significant uptake of EVs for a number of reasons, including to ensure there is competitive equity for early movers if regulatory arrangements are changed at a later stage. However:

b. A principle of minimal change should be adopted.

Only necessary minimal regulatory changes should be made, recognising that EV technologies, and associated consumer / market responses, are rapidly developing and changing.

c. Consideration of V2H and V2G is not currently warranted.

All major car manufacturers have released, or are planning to release in the near future, EVs (either BEVs or PHEVs) that are capable of being recharged from the electricity grid. In contrast, to the best of our knowledge no manufacturers have released, or are planning to release in the near future, EVs that are capable of feeding back into the home or grid (i.e. V2H or V2G). There are considerable non-regulatory obstacles for V2H and V2G charging including safety concerns, concerns from vehicles owners about controlling how their battery is drained and metering issues.

"Introductory" regulatory arrangements need only consider EV charging, and not V2H or V2G, given the current state of commercially available EV technology, the uncertainty of possible V2H and V2G arrangements, and the additional regulatory complexity the use of such devices would introduce.

d. A regular review process should be established.

Regular reviews of regulatory arrangements should be carried out, with adjustments made as necessary, to keep pace with EV technology changes, consumer behaviours and market / network impacts. An emphasis should be placed on minimising consumer burden arising from legacy technologies. These reviews would include an assessment of the status of the commercial availability of EVs with V2H and V2G capabilities, with appropriate regulatory arrangements developed as needed.

2. EVs should be considered as another form of DSP.

The OEPC strongly agrees with the AEMCs approach of considering energy market arrangements for EVs together with the AEMCs "Power of Choice – Stage 3 DSP Review".

3. EV loads should not be treated differently to other loads.

When EVs are acting as a load, from a market regulatory arrangement perspective they should not be considered separately or differently to any other loads. Separate treatment of EV loads would add unnecessary complexity to an already complex electricity market. While it is recognised that EVs have the potential to add significantly to load growth, and in particular peak demand, it is important that all loads at a site are considered in determining network and market impacts and appropriate responses.

It would seem unreasonable to have different market regulatory arrangements applying to EVs as compared to other loads.

4. Regulatory arrangements must ensure cost reflective price signals are passed through to consumers in such a way that encourages efficient uptake of DSP responses. These arrangements need to be applicable to all loads, not just EV loads.

Most electricity consumers pay a flat tariff and do not see, and are therefore not able to respond to, price signals that are reflective of the actual costs of generating and delivering the electricity they consume. This is a fundamental barrier to the efficient uptake of DSP responses and activities, including EVs. Amendment of regulatory arrangements is required such that retailers are more strongly encouraged to pass cost reflective price signals through to their customers, in such a way that leads to sensible DSP responses with overall economic benefits.

This is a broader issue that applies to DSP in general, and not just EVs, and should be dealt with through the AEMC's Stage 3 DSP Review, rather than separately just in relation to EVs as a part of this work.

An important point is made in the AEMC Issues Paper where it notes that network and wholesale price peaks do not necessarily coincide. This is particularly the case in Tasmania, where the wholesale market price is not reliably linked with load, and therefore does not provide a good signal for peak demand. Network price peaks are a more reliable indicator of peak demand in Tasmania, and these could play a stronger role in sending a cost reflective price signal to end users.

5. Retail issues: what constitutes a sale of electricity, retailer and NSP exemptions / licensing, and embedded networks.

A number of important retail related issues are raised in the AEMC Issues Paper in relation to what constitutes a sale of electricity, retailer and NSP exemptions / licensing, and embedded networks. These are fundamental issues that require further detailed consideration. Important principles to keep in mind are:

- Customer protections should be the same regardless of where a customer chooses to recharge their EV.
- All commercial EV charging service providers should be subject to the same set of electricity market regulations (e.g. such as those that may relate to passing through cost reflective price signals to end customers), noting that:
- Licensing requirements should be reflective of the nature of the services provided. For example, it may be appropriate for a retailer offering commercial EV charging services only to be subject to less stringent licensing requirements than a retailer offering commercial EV charging services in addition to "traditional" retail services. A specific EV charging service provider license may be required, although issues of inequity between retailers due to differing licensing compliance costs need to be considered.

This is a body of work we believe needs a modestly high level of priority and prompt implementation. Many of the issues raised in the Issues Paper are not dissimilar to the issues raised during the NECF work program and thus the staff involved in that work may be able to take up this work once NECF work is complete.

6. Regulatory arrangements should not restrict innovation and diversity in the range of EV charging service provider products that are available to consumers.

Regulatory arrangements should be sufficiently flexible such that EV charging service providers are able to develop a range of flexible, diverse and innovative products, whilst ensuring they meet appropriate common requirements (such as the pass through of cost reflective price signals to end users).

Consumers should have the ability to choose the retail product that best meets their needs (and have the flexibility to move to a more appropriate product as their circumstances change without prohibitive financial penalties). This could include the ability to choose from a range of retail products at the same premises. For example, a consumer may choose a particular retail package for EV charging and a different retail package (potentially from a different retailer) for other loads (assuming differing retail packages are offered and appropriate enabling technology is in place – i.e. separate metering for EVs and other loads).

7. EV metering

Many existing meters are accumulation meters which can only be used in association with flat non-cost reflective tariffs. An interval or smart meter is required as an enabling technology before cost reflective retail tariffs can be adopted. The process of moving from accumulation to interval or smart meters needs to be carefully considered.

Actual metering arrangements will be dependent on the type and mix of retail packages that an end user chooses. Again, innovation and diversity should be encouraged. For example, a customer may choose a retail package that bundles EV charging use together with other loads, in which case only one meter is required (i.e. no separate metering). Alternatively, a customer may choose separate retail packages for EV loads and other loads, in which case separate metering will be required.

The introduction of roaming NMIs is seen as problematic as it would introduce a number of complexities (as outlined in the AEMC Issues Paper) without providing any clear benefits. The use of "fixed" metering at the charge point location is considered the preferable approach, with allocation of usage charges via contractual arrangements.

8. Link the rollout of enabling technologies, cost reflective tariffs with charging of EVs at a premises.

Premises should be obliged to adopt cost reflective tariff/s (for all loads at the premises) before EVs are able to be charged at the premises. Associated with this would be any necessary metering upgrade. This provides a mechanism for the transition away from flat tariffs to cost reflective tariffs. [This is based on the understanding that even trickle recharge technology is going to be based on 15A connections requiring an electrician to come to a house to install a new powerpoint before an EV can recharge. If this is the case the electrician could be required to inform the DNSP of such work and the DNSP could then upgrade the metering as required to allow for cost reflective tariff/s.]

For further consideration as part of the AEMC's Stage 3 DSP Review:

Extending the above approach further, premises could be obliged to adopt cost reflective tariff/s before they are able to install other appliances which have the potential to contribute significantly to peak load (i.e. electrical heating / cooling appliances).

Cost reflective tariffs should be designed such that they provide an incentive to adopt them in place of flat tariffs, where consumers are willing and able to change their behaviour in response to the tariff price signals. Given the potential for cost savings, voluntary uptake of cost reflective tariffs is likely to be significant.

9. Network specific issues

a. Connections

Existing connection services regulatory arrangements will soon be amended with the new NER Chapter 5A, due to come into effect from 1 July 2012. Additional regulatory changes to connections are unlikely to be warranted at this stage. The effectiveness of the new NER Chapter 5A arrangements in relation to EVs should be monitored during the proposed regular reviews of regulatory arrangements.

b. Augmentations

The primary emphasis should be on ensuring pass through of price signals to end users. This would help minimise network reinforcements associated with EV charging requirements, although such reinforcements may still be required.

There are two relevant categories of shared augmentations:

i. Shared augmentations caused by new connections or connection alterations. This category of shared augmentation is covered under the new NER Chapter 5A, which stipulates a shared network augmentation threshold to apply to retail customers. If new connections are below the threshold (likely to be equivalent to a 100A 3 phase supply, although this threshold is yet to be finalised as part of the AER's Connection Charge Guidelines), they will not be liable to pay a shared network augmentation charge.

   The demand of a level 1 EV charger (16A) or a level 2 EV charger (32A) would not in themselves trigger the shared augmentation threshold. It is likely the majority of new household connections with a level 1 or 2 EV charger would not trigger the shared augmentation threshold and therefore not contribute directly to shared augmentation costs. Rather, any shared augmentation costs are recovered through postage stamped NUoS costs.

   The shared augmentation threshold does not apply to commercial premises, therefore a new commercial EV charging premises would contribute directly to any shared augmentation costs their connection requires.

   Existing arrangements for this category of shared augmentations are considered appropriate.

ii. Shared augmentations caused by incremental load growth of existing connections. These costs are recovered solely through postage stamped NUoS charges. The installation of EV charging facilities in existing premises (up to the level where a connection alteration is required) has the potential to add significantly to shared network augmentation costs, which would be paid for by all users. There may be a case for re-examining the appropriateness of these arrangements. For example, installation of any appliance which has the potential to add significantly to peak load (i.e. EV charging facilities but potentially other appliances as well) could trigger a contribution to shared augmentation costs if a particular threshold is exceeded.

c. Identification of spare network capacity in DNSP Annual Planning Reports

As a means of signalling to the market where spare capacity exists, it is suggested that DNSPs are obliged to identify in their Annual Planning Reports the extent of network utilisation across their network. This may assist in identifying where installation of commercial EV charging facilities may result in better network utilisation and less need for network augmentation, and lower connection costs.

10. Electricity market regulatory arrangements for EVs should have regard for concurrent work in the development of Australian EV standards.

It is noted that the AEMC will be taking into account lessons learned from related trials and programs currently underway, such as the Victorian governments EV Trial and the CSIROs Electric Driveway Project.

It would be appropriate for the AEMC to also take into account, and actively collaborate with, current work being carried out in the development of Australian EV Standards. While it is recognised that this standards work is focussed on more technical and safety aspects, it is important that market regulatory arrangements are both consistent with these standards and not unnecessarily inhibited by them.

11. EV take up scenarios modelling

While there is a scenario in the AEMC Issues Paper which considers a "high uptake" of EVs, it may be worthwhile considering an additional scenario which considers "very rapid" uptake of EVs. While this scenario is unlikely it is still plausible that there may be a dramatic shift to EVs once a "tipping point" is reached where a significant number of consumers consider that the benefits of purchasing an EV are greater than the benefits of purchasing an ICE vehicle. Variables to consider include declining battery costs (and therefore EV capital costs); improved EV driving range; improved EV battery charge capacities; increasing petroleum costs; the location, accessibility and costs of charging facilities; and the level of consumer acceptance of EVs as a mainstream transport option.

It is also plausible that the majority of EVs under a very rapid uptake scenario would be BEVs rather than PHEVs, particularly by 2030. The advantage of a PHEV over a BEV is a greater driving range and an existing extensive network of refuelling locations. If the driving range of BEVs extends to that of a typical ICE vehicle, and an extensive network of recharging facilities develops, then BEVs may become preferred over PHEVs. This will also be dependent on the relative cost of additional battery capacity in a BEV compared with the additional cost of an ICE in a PHEV. The "high uptake" scenario only considers BEVs making up a 15.4% share of new vehicle sales by 2030, compared with 38% for PHEVs.

The Report mentions that "ultra fast charging" rates of 250-500kW may be possible in the future. Dependant on the cost, this could be very attractive to consumers as it would allow for recharging in a similar timeframe as compared to refuelling an ICE vehicle. The impacts such high charge rates would have on distribution networks could be significant.

Given these possibilities, to ensure any regulatory changes could manage the entire range of possible uptakes of EVs it is recommended that a "very rapid uptake" scenario be modelled. This scenario would have a large majority (>75%) of new vehicle sales as EVs (with the majority of these being BEVs with the capacity for "ultra fast charging". This would in a sense reflect the "worst case scenario" in terms of impact on electricity networks and market arrangements and would be an effective stress test for any proposals.

AECOM predicted that EV uptake would be greatest in NSW, Victoria and Queensland, although there are a number of factors that may result in EV uptake being more favourable in Tasmania, including:

- A shift in energy source from petroleum to electricity will significantly reduce transport emissions intensity in Tasmania, to a much greater extent than in other jurisdictions, due to the low emissions intensity of electricity generation in Tasmania.
- Tasmania's relatively small physical size and extensive electricity grid coverage, which will allow establishment of a charging network (with charge points within BEV vehicle range distances) which could service all of Tasmania utilising the existing electricity network. This will not be the case in other jurisdictions (with the exception perhaps of Victoria) where distances between regional centres can be high (beyond BEV vehicle range distances) and establishment of charging points beyond the existing electricity grid would be expensive.
- Unlike other jurisdictions, Tasmania does not have a capacity constrained electricity generation system. Consequently increases in peak demand associated with EVs would be unlikely to result in generation shortfalls. Localised network constraints, and the availability of sufficient energy, would be the limiting factors.
- Installing additional wind generation capacity could meet the additional energy requirements associated with EVs, taking advantage of some of the best wind resources in Australia.

It is for these reasons that Tasmania is keen to see this work continue with a reasonable degree of priority.