Department of Climate Change and Energy Efficiency – Appliance Energy Efficiency Branch: Submission to the Australian Energy Market Commission on the issues paper:

"Energy Market Arrangements for Electric and Natural Gas Vehicles"

On 18 January 2012, the AEMC published its Issues Paper in relation to the Ministerial Council on Energy (MCE) Request for Advice regarding Energy Market Arrangements for Electric and Natural Gas Vehicles. Submissions on the Issues Paper are due by 23 February 2012.

AEMC staff will be holding an industry workshop on metering arrangements for Electric Vehicles in early March. Details on the date and venue plus registration procedures will be circulated soon.

Energy Efficiency and Peak Load Reduction – the work of DCCEE and Equipment Energy Efficiency (E3) Program

This submission is made by the Appliance Energy Efficiency Branch of DCCEE. The Branch supports the Equipment Energy Efficiency (E3) committee of Commonwealth, State, Territory and New Zealand Officials, which oversees the trans-Tasman energy labelling and minimum energy performance standards (MEPS) program.

In August 2011 the Department made a submission to the AEMC on the Issues Paper *Power of choice – giving consumers options in the way they use electricity.*[1] That submission detailed the E3 Committee's work with Standards Australia to develop a set of demand response standards for electrical products (published as AS/NZS 4755). The present submission refers to the same standards, but for brevity does not repeat the detailed description, so it should be read in conjunction with the previous submission.

Relevance of AS/NZS 4755 to Electric Vehicle Charge/Discharge Controllers

AS/NZS 4755 describes the physical and functional requirements of a simple demand response interface which can be built into any large electrical product. Once an appliance with this interface is installed, whether it is connected to a communications system, and whether the owner/user chooses to enter into a demand response contract with a utility or other party, is up to the commercial arrangements between those parties.

AS/NZS 4755 provides a low-cost technical platform for a demand response services market to develop. As no communications are built into the appliance, an interface-equipped product can be sold anywhere and can be made to work with any communications system or demand response enabling device, including a smart meter meeting the Smart Meter Infrastructure Functionality Specification.

[1] The DCCEE submission is accessible on the AEMC website http://www.aemc.gov.au/Media/docs/Department%20of%20Climate%20Change%20and%20Energy%20Efficiency-6063cf28-84be-4c1b-84a6-b55f04e79d9e-0.pdf)

The sub-parts of AS/NZS 4755 have been developed in close consultation with the Electricity Networks Association, the Energy Retailers Association and appliance manufacturers. The first priorities were products that currently (or may in the future) contribute significantly to whole-network and local summer and winter peak demand:

1. air conditioners (for which AS4755.3.1 was published in 2008, and a revision is about to be published);
2. swimming pool pump controllers (part 4755.3.2 about to be published);
3. electric, heat pump and solar-electric water heaters (part 4755.3.3, under development);
4. **charge/discharge controllers for electric vehicles and other energy storage devices (part 4755.3.4, under development).**

A fifth part, for inverters controlling distributed generation, is under consideration. This could provide an additional means of addressing over-voltage problems from areas with high concentrations of PV systems.

The impacts, costs and benefits of fitting demand response interfaces to some or all new air conditioners, pool pumps and water heaters can be projected with a reasonable degree of confidence, because the E3 program has decades of high-quality data on product takeups, lifetimes and usage patterns. Activation rates will of course be subject to market conditions – what tariffs, incentives or other products utilities may offer to users, and how effectively they market them.

We note from the Issues Paper that there is a high degree of uncertainty with regard to electric vehicle numbers, usage patterns, preferred home charging technology (whether Level 1 or 2) and charging behaviour (whether unmanaged, TOU price-determined or controlled in some way). The wide range of additional network costs that may be imposed by different patterns of charging behaviour are well illustrated in Table 3.3.

We submit that this high level of uncertainty, and potential for high cost calls for an appropriate risk-management strategy. Every charging device should have a demand response interface built in, so that if EV charging proves to be a general (or local) problem, the utility or a demand response aggregator can approach the owners, in the knowledge that should they wish to participate in cost-limiting arrangements (as opposed to meeting the charges they impose on the network) and there will be a technically proven, low cost means to connect the charger to the AS/NZS 4755 demand response architecture which, we would expect, would be well developed by then.

The estimated cost (based on air conditioners, some models of have been supplied with interfaces for some years now) would add about $10 to the retail price of each unit. The Equipment Energy Efficiency (E3) Program is currently preparing a consultation Regulatory Impact Statement that assesses the costs of mandating compliance with AS/NZS 4755.

The technical details of AS/NZS 4755.3.4 are currently being developed within Standards Committee EL-054, in liaison with other Smart Grid and Electric Vehicle standardisation efforts, and with input from the EV and charger industry.