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To: Energy White Paper Taskforce
Department of Industry
GPO Box 1564
CANBERRA ACT 2601

Re: Submission to the Department of Industry Issues Paper, Energy White Paper.

On behalf of the National Executive of the Australian Electric Vehicle Association (incorporated) please accept the following submission to the Australian Government's Energy White Paper (EWP), released for comment in December 2013.

The AEVA is a not-for-profit, membership-based association dedicated to educating, advocating and promoting the use of electricity to power private and public transport. Established in 1973, the AEVA has provided a friendly forum for anyone interested in electric vehicle technology to learn about, build or purchase electric vehicles (EVs). We assist in the formation and dissemination of informed policy concerning the uptake, supporting infrastructure and safety standards of EVs.

Members of the AEVA share a common goal – to see the eventual replacement of liquid fossil fuel powered vehicles with electric drive.

The AEVA believes it can provide comment on several of the issues identified on pages 8 and 9 of the EWP.

Security of Energy Supplies

On page 11 of the EWP, diversifying our energy sources is listed as sound insurance against threats to energy supply despite the curious admission that increasing the diversity of energy sources might not always be feasible or 'in line with government policy goals'. The AEVA strongly believes that an opportunity exists to switch much of our transport energy needs from liquid fossil fuels to electricity, and that this switch would decrease Australia's reliance on imported petroleum products – a significant number as illustrated by the figure on page 4 (BREE, 2013 Energy in Australia). Australian petrol prices are influenced considerably by exchange rates and global market fluctuations. Running our private and public transport fleets on locally produced electricity is considerably cheaper, cleaner and less prone to price fluctuations than our current reliance on imported fuels.

Household electricity prices have increased in recent years, but the rise has been modest when considering other household expenditure over the same period. Upgrades to the distribution networks to deal with peak loads represent the bulk of the price rise. This is a significant over-capitalisation, given the few days of the year where such peak loads are experienced. The AEVA suggests that electric vehicles can play a major role addressing

peak loads not only because their daily load profile is very predictable, but because the recharging load can be managed in real time. Moreover, electric vehicles present a major electricity storage option for the grid, as vehicle-to-grid energy flow would allow more intermittent sources of electricity such as that from solar and wind, to be utilised as the need arises. We believe that further investment into the development of “smart” electricity distribution networks is essential, and would deliver considerable efficiencies if executed properly. A high price should be offered to households who re-supply electricity from fully charged EVs, as this represents a premium reserve which can be accessed rapidly.

The AEVA considers further expansion of indigenous liquid fossil fuel production to be unnecessary nor is it desirable. Australia’s own reserves of renewable energy are well placed to service the transport sector through EVs.

Regulatory Reform and Role of Government

The AEVA naturally supports efforts to reduce unnecessary regulation in the energy markets, provided measures designed to keep the market fair are maintained. We support a fair and diverse electricity market, particularly one where consumers may choose to purchase power generated by renewable sources. Measures which make it easier for new energy providers to enter the market are strongly welcomed.

The AEVA considers the Renewable Energy Target to have been instrumental in the rapid uptake of household rooftop solar installations. Indeed, many of our members who drive EVs are able to charge their car using electricity generated on their roof thanks to these initiatives, which made photovoltaic installations more affordable. Further use of “smart metering” will allow EV owners to recharge their vehicles when prices are low, and export their power when the market returns are high. EV drivers tend to already be very conscious of energy prices.

Growth and Investment

Page 19 of the EWP notes that the costs of developing offshore liquid petroleum and gas reserves are increasing. This is unsurprising, as fossil fuel resources become increasingly harder to access and more technically challenging to extract. At some point the cost of extracting these low grade reserves will equal the costs of renewable and other low-emission energy sources. While it is inevitable that some level of offshore oil and gas will be needed in the medium term, the AEVA believes more investment into non-fossil fuel sources of energy and associated technologies should occur, particularly given the environmental sensitivities of the ecosystems which include these petroleum reserves. The long term economic and environmental benefits to removing our domestic reliance on fossil fuels will be immense.

Trade and International Relations

Australia’s abundant coal has provided an attractive export market for many years, however the global appetite for thermal coal is clearly waning. This is due largely to a slowing of the Asian economies, and China’s substantial efforts to clean up its own energy sector. In this climate, the AEVA sees the desire to sell more coal products, including Victorian brown coal in an international market as foolhardy, particularly given the technical challenges involved with converting it to a liquid fuel. While brown coal is perhaps the least desirable source of electricity for EVs, it does still represent a more efficient conversion of energy into motion than lignite reformation process could offer.

The AEVA also believes that the Australian manufacturing sector should build electric cars and motorcycles here in Australia. The departure of Mitsubishi, Holden and Ford, owing to their uncompetitive business models, presents Australia with a unique chance to foster its own auto-manufacturing capacity. Whether it is foreign investment from a large automaker or a locally conceived EV, Australia is well placed to design, build and market EVs to the world. The AEVA strongly supports any effort to redirect funds away from petrol-burning carmakers, and towards producers of plug-in hybrids and pure EVs here in Australia.

Workforce Productivity

The AEVA recognises a massive skills shortage in the development and roll-out of “smart” electricity grids, vehicle-to-grid infrastructure, and the impact this will have on the EV fleet. We support any efforts to train more Australians in these areas, including more trade and TAFE positions, university scholarships, re-skilling and mature-age entry opportunities as well as innovation awards and prizes. We see a massive opportunity to further develop these technologies in Australia, provided the appropriately skilled workforce can be built around them.

The AEVA also believes the renewable energy sector, which has countless synergies with electric vehicle technologies, is currently experiencing significant shortfalls in trained staff. Like the innovations destined for our electricity grids, renewable energy too needs a well trained workforce. This will ensure greater productivity from both sectors, and a decreased reliance on skilled workers from outside of Australia. The creation of a one to two-year course offering a nationally recognised qualification to allow those already in the energy sector to re-skill would ensure a more rapid deployment of these technologies and related projects.

Driving Energy Productivity

Increasing energy efficiency measures into all aspects of the generation, transmission and consumption chain is essential for reducing costs, conserving finite energy reserves and doing right by our environment. Demand side management has proven to be one of the most effective, market-based approaches to reducing peak loads during hot days. However the rising number of EVs on the roads presents another opportunity for electricity to be utilised more efficiently. Electric vehicle drivers may plug in of an evening to recharge their vehicle at home. Current capacity in the grid is able to accommodate a large number of EVs recharging at the same time, however time of use metering means the vehicle can automatically delay charging until after midnight when both grid-wide demand has fallen and electricity tariffs are cheaper. Many of our members are already doing this, however a more integrated system would allow for greater efficiencies.

Likewise, peak solar electricity production typically occurs while most people are at their workplaces. If an incentive to install a PV array at businesses and workplaces was in place, electric vehicle charging would place no additional demand on the grid. The AEVA believes electric vehicles offer an excellent opportunity to take advantage of peak electricity production and demand, and any initiatives to support rooftop solar and public recharging infrastructure is most welcome.

Public transport and good town planning offers massive energy efficiency gains in the transport sector. Efforts to support local and state government planners to ensure transit-

oriented design principles are embedded into all new developments are welcomed by the AEVA. Support for all forms of passenger rail services should also be extended.

Similarly, the AEVA believes a shift away from road freight by trucks and onto rail is essential for any serious efforts to improve energy efficiency in the bulk transport sector. The freight-ton-kilometre efficiency of rail freight is far superior to road-going trucks, and is even better if the goods are moved by overhead electric power. While it is a massive long-term infrastructure project, AEVA believes the harmonisation and complete interconnection of an eastern seaboard electric rail freight network would deliver massive improvements to the transport sector, particularly in regards to energy efficiency.

Alternative and Emerging Energy Sources and Technology

The AEVA believes the share of renewable and low-emission electricity generated should be allowed to increase, and measures to foster this increase are encouraged. An EV charged from polluting generators such as coal fired plants defeats many (but not all) of the environmental gains, especially where lignite is the energy source. Australian electricity grids already have considerable capacity built into them, mainly for dealing with peak load days. Reduced demand for electricity overall has generators on the brink of a downward spiral, where the energy they produce has a smaller market, is of lower value, and the cost of production is not recovered. However as electricity grids become more integrated with battery storage, such as EVs on charge, the value of stored electricity will rise considerably. The synergy between rooftop solar, excess wind capacity and EV battery storage presents great opportunities for more efficient, rapid-dispatch electricity trading. The AEVA believes the emergence of these technologies should be embraced and factored into any future restructuring of the electricity market.

The AEVA does not have a formal position on nuclear electricity generation, however any new generation investment should be assessed on its environmental and economic feasibility, regardless of its source. Currently, with decreasing demand for electricity and excess capacity in the grid, in addition to the lengthy approvals process for safety and environmental compliances, construction, commissioning, and eventual decommissioning, nuclear energy does not present a sound economic case in Australia. Given that the levelised cost of renewable electricity generation is comparable with that of nuclear, and the technology is equally mature, expanding the share of solar and wind electricity is a better option.

In the final paragraph of the EWP, the government seeks comment on how it can promote and increase the uptake of alternative fuel vehicles, including battery electric vehicles. The AEVA believes that the government can do several things to expand the EV fleet in Australia.

Direct subsidies for new EV purchase will almost certainly result in a very rapid uptake in the technology. This has been proven in much of Europe and Scandinavia. Just as the rooftop solar rebates saw one in every ten homes install a PV array within a few years, a similar strategy would ensure the EV fleet grew quickly. However the AEVA also recognises that direct subsidies do not always offer value for money, and may result in significant market price distortions. A low-income household is not likely to take advantage of the rebate as the initial cost of an EV is still quite high, yet their tax contribution would be helping other wealthier households to buy one. An alternative could be a tax rebate which means there will still be an incentive to buy a new EV, but the

benefits are not realised until the owner submits their tax return, and the effective rebate will depend on the amount of tax already paid. Government departments should also consider buying EVs as part of their motor vehicle fleet, and then selling them at auction after two or three years. This option would result in the least distortion of vehicle prices in both the new and used car markets while providing a market for affordable used EVs.

The AEVA also considers the roll-out of DC fast charging infrastructure as an essential and very cost effective means to decrease our dependence on liquid fossil fuels while encouraging the rapid uptake of EVs. A common barrier to EV uptake is range restriction; 80-120 km per charge prevents an EV from leaving town, necessitating a second, petrol vehicle. If government-supported fast recharging infrastructure was available along popular highways, households may own just one electric vehicle while not burdening households who don't choose to buy an EV. The recharging infrastructure will need to be built anyway, particularly as EVs begin to displace petrol powered vehicles. Only a small seed network of a few hundred chargers is needed Australia wide to get the ball rolling, with further private charging stations expected to appear organically as more EVs hit our roads.

In summary, the AEVA has several suggestions for reforming the energy sector in Australia, particularly the electricity network with respect to EVs. We believe electric vehicles are a perfect match with renewable electricity generation, and vehicle-to-grid technology will allow further efficiencies to be introduced into the Australian electricity market. Renewable electricity and EVs also represent a significant boost to transport energy security. A local (or foreign) electric car and motorcycle manufacturing industry should be fostered in Australia, and we believe support from the federal government would be a wise investment. Finally, financial incentives would increase the uptake of EVs in Australia, however these would need to be carefully crafted such that they do not distort the new and used vehicle market. Investing in the electric vehicle recharging networks of the future will see more households become petrol free, and more likely to downsize to owning just one vehicle.

Thank you for the opportunity to provide comment on the EWP.

Sincerely,

Dr Chris Jones
Vice President, Australian Electric Vehicle Association
Chairman, AEVA Perth branch