



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON PLANNING, TRANSPORT, AND CITY SERVICES
Ms Jo Clay MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Mark Parton MLA

Submission Cover Sheet

Inquiry into electric vehicle (EV) Adoption in the ACT

Submission Number: 26

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From: [Andrew Pyke](#)
To: [LA Committee - PTCS](#)
Subject: Submission to Standing Committee on Planning, Transport and City Services into barriers to EV uptake and solutions and incentives to encourage uptake in the Territory.
Date: Monday, 1 August 2022 11:13:43 AM

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This submission is made by myself as a private citizen.

I thank the Committee for considering these brief comments, which had to be prepared in limited time to meet the submission deadline. I trust that they may assist the Committee in informing a practical policy towards uptake of EVs.

In summary, I urge the Committee to take account of the uncertain premises of the policy, and the potential harms of the policy, and hence to test and re-test the premises over time. I urge that restrictions on citizens be minimised, especially relative to other jurisdictions, that the transition be subject to a thorough business case and that cutover to the restrictions be made conditional.

The Terms of Reference presume that “uptake in EVs” is, without qualification, a positive thing, and that “barriers” are a negative thing. I submit that this is highly conditional, with EVs having great potential to cause environmental, social and economic harm, and that some “barriers” by Commonwealth and Territory Governments are highly appropriate and should be retained and accepted. For example:

1. **Reduced Choice and Competition:** Governments “picking winners” and prohibiting products, such that the freedom of citizens to make choices to suit their personal and household circumstances, and such that market competition is reduced, is a grave act that should be undertaken reluctantly.
2. **ACT Citizens not be Disadvantaged:** ACT Citizens should not be restricted to less choice than citizens of other jurisdictions.
3. **Trade in the Federation:** Trade internal to the Federation should not be restricted.
4. **Business Cases:** Prohibition of alternatives to EVs and restriction of free choice by citizens should not be enacted unless a compelling business case exists, and continues to exist. The business case to prohibit and restrict should consider both benefits AND disbenefits, and costs, in environmental, social and economic terms.
5. **Test Claims of Renewable Electricity:** The environmental benefits presumed in the policy, to prohibit non-EV vehicles, is premised on the ACT’s EV fleet being rechargeable from renewable sources. This premise is contestable and must be tested and re-tested as a condition for the policy, at each stage.

6. **Actual ACT Electricity Mix:** The ACT draws its electricity from the NSW region of the National Electricity Market (including the ACT's local solar production - about 5% of the ACT's consumption). Actual electricity dispatched to that region comes from an annual fuel mix of 82% coal, 9% wind, 5% solar, 3% hydro and 1% gas. (Source: <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/data-nem/data-dashboard-nem>). These facts are not altered by off-market direct contracts with generators, to buy their Large-Scale Generation Certificates (LGCs), in turn voluntarily surrendered by the ACT to the Australian Energy Regulator.
7. **Migration from Gas:** Additionally, the ACT Government has foreshadowed the migration of energy loads from gas, to electricity. Around 10PJ pa are bought in the form of electricity and about 8.2PJ pa in the form of gas, (54% as electricity). Any shortfall in meeting this with renewables will have to be met with fossil fuel generation, further detracting from the expected benefits of EVs. So, >83% of the ACT's electricity is currently made from fossil fuels, which is how the EV fleet is powered, likely to be further challenged by the migration of gas loads to electricity.
8. **Claims of 100% Renewables:** The ACT Government uses offsets to make political claims of "100% renewable", but these are accounting tricks that deal in averages and veil variability in the mix - on average, the ACT draws <13% of its energy from renewable sources and is critically dependent of fossil fuel production at almost all times. The environmental benefits of EV uptake, must be done with technical and accounting integrity, taking account of actual consumption and supply, including peaks and troughs.
9. **Expansion of Purchase and Surrender of LGCs:** Presently, Evo Energy reports the costs of LGC and other schemes as being about \$100m per annum. If the ACT Government is to maintain its policy of offsetting the ACT's non-renewable electricity consumption, with LGC schemes, then this will have to be significantly expanded. These costs will be significant for consumers and must be accounted for in any business case.
10. **Production and Disposal Emissions:** While some EVs do have zero "tailpipe" emissions in their operational phase, they are absolutely not zero-emission products over their product life cycles. EVs are worse than non-EV cars in production and disposal phases, with some estimates suggest an "emissions breakeven" of 150,000km, and these emissions must be taken into account in any environmental case:
 1. **Production:** "A typical lithium car battery weighing about 450 kilograms contains about 11 kilograms of lithium, nearly 14 kilograms of cobalt, 27 kilograms of nickel, more than 40 kilograms of copper, and 50 kilograms of graphite—as well as about 181 kilograms of steel, aluminum, and plastics. Supplying these materials for a single vehicle requires processing about 40 tons of ores, and given the low concentration of many elements in their ores it

necessitates extracting and processing about 225 tons of raw materials.” (Source: How the World Really Works: A Scientist’s Guide to Our Past, Present and Future by Vaclav Smil)

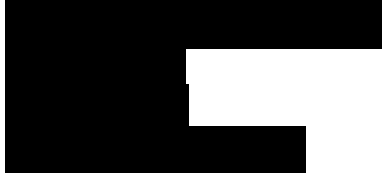
2. **Disposal:** Recycling of the obsoleted fleet has significant environmental costs: The “steel is readily recycled by melting it in an electric arc furnace (EAF)—a massive cylindrical heat-resistant container made of heavy steel plates (lined with magnesium bricks), with a removable dome-like water-cooled lid through which three massive carbon electrodes are inserted. After loading the steel scrap, the electrodes are lowered into it, and electric current passing through them forms an arc whose high temperature (1,800°C) easily melts the charged metal.⁶⁸ However, their electricity demand is enormous: even a highly efficient modern EAF needs as much electricity every day as an American city of about 150,000 people. Vehicle recycling is preceded by draining all fluids, ripping out upholstery, and removing batteries, servomotors, tires, radios, and working engines, as well as plastic, rubber, glass, and aluminum components. Car crushers then flatten the stripped bodies preparatory to shredding.” (Source: How the World Really Works: A Scientist’s Guide to Our Past, Present and Future by Vaclav Smil)
11. **Not “Renewables”:** Similarly, while energy scavenged from intermittent solar and wind sources are described as “renewable”, the machines to scavenge, store, firm and backup the energy are most certainly not renewable. Wind turbines, for example, are accumulations of steel, cement, and plastics and thus embodiments of fossil fuels. Their foundations are reinforced concrete, their towers, nacelles, and rotors are steel (altogether nearly 200 tons of it for every megawatt of installed generating capacity), and their massive blades are energy-intensive—and difficult to recycle—plastic resins (about 15 tons of them for a midsize turbine). (Source: How the World Really Works: A Scientist’s Guide to Our Past, Present and Future by Vaclav Smil). Similar comments can be made about PV solar. Moving vast loads, in the form of an EV fleet, onto these sources, will precipitate a huge demand for materials and spike in GHG emissions, with associated environmental costs. Simply offboarding the point of combustion of fossil fuels does not make the EVs “zero-emissions”. This should be taken into account in any environmental case.
12. **Charging Peak Capacity:** Any policy to prohibit alternatives, must be preceded by provision of adequate electrical charging capacity and services. These must take account of real-world Use Cases and peak demand.
13. **Prove Before Scaling:** Scaling should be preceded by successful proofs-of-concept, and not proceeded with on the basis of wishful thinking.
14. **Fire Risks:** Fire risks from EV batteries, under certain charge conditions, necessitate building and fire regulations. For example, high-powered charging of EVs in the basement car parks of apartment buildings, is unlikely to be permissible. This will rule-out tens of thousands of ACT

citizens. This should be considered in any business case.

In summary, I urge Committee to look at the reality of the policy, and to make the transition conditional on testing and re-testing the premises, at each stage.

Your's faithfully

Andrew Pyke

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Andrew Pyke