

Bang-for-buck: Australian evidence on the impact of zero emission vehicle purchase incentives

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There is significant policy discourse and debate on how governments can support business and households in meeting Australia's climate targets and moving towards Net-Zero emissions. Private car emissions will need to form a significant component of any policy given the fact that households contribute almost half (42 per cent) of Australia's greenhouse gas emissions and that transport fuels account for almost 30% of annual emissions.¹

As such, all states and territories currently have policies and incentives aimed at improving the affordability and expediting the transition to Zero Emission Vehicles (ZEVs). For example, NSW, Victoria and South Australia all currently provide significant upfront subsidies for the purchase of an electric vehicle. These incentives can represent significant up-front and ongoing costs to the public and, despite their growing prevalence, little is understood about the impact of these policies have on individual uptake and their value for money.

This research contributes to the policy and academic literature by assessing the marginal responsiveness of households to several existing and proposed financial and non-financial incentives for the purchase of a ZEV. Currently there is no existing literature available which provides quantified comparisons of the impact of ZEV incentives. Existing literature focusses heavily on qualitative impacts assessed on Likert or similar scales.

The financial policy options considered include upfront subsidies, charger installation rebates, annual vehicle charges rebates and household electricity cost rebates (used for charging ZEVs). Non-financial incentives, focussing on convenience and preferential access for ZEVs, are also assessed.

The analysis uses a bespoke survey of Australian residents to gather self-reported responsiveness to these financial and non-financial incentives. The survey asks participants to indicate their probabilistic expectations (0 per cent – 100 per cent) that they will purchase a ZEV, each time prompted by different policy information and monetary incentive values. The research uses a logistic regression model to convert these individual responses and data points into two key policy evaluation metrics:

- the estimated likelihood: the probability that the average respondent would purchase an electric vehicle under this policy scenario
- average marginal effect: the average change in likelihood resulting from a one unit increase in policy value

These metrics allow each policy to be assessed and contrasted against other policy options both in terms of the overall expected change in ZEV uptake as well as the return on each dollar invested.

Using this approach, this research finds that, of the policies considered, upfront subsidies are the most expensive but also generate the highest level of uptake. Charge subsidies are found to be more cost effective but have a lower overall impact on uptake. The results also enable analysis of how different incentives affect different socio-economic groups, such as those on low income.

These results provide the first real-world evidence on the relative impact of different incentives for the uptake of ZEVs in Australia and can be used to inform policy decisions around the most suitable approach to incentives. An example of how the results can be used in cost-benefit analysis to guide incentive investment is provided.

¹ Saul Griffith, Josh Ellison, Sam Calisch and Dan Cass (2021), "Castles and Cars: Savings in the suburbs through electrifying everything", Rewiring Australia

Key Words

Energy markets

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