



Vehicles Advice Financial

Infrastructure Victoria

Key Findings – August 2018

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Background, objectives and scope

Background

The purpose of this project was to undertake financial modelling to enable Infrastructure Victoria (IV) and the Special Minister of State to better **understand the likely financial implications of automated vehicles (AVs) and zero emissions vehicles (ZEVs) in Victoria.**

The financial modelling was focused on the projected impact on **Government** and **consumers** under different adoption scenarios.

Scope

The scope of this engagement was to provide insights regarding the financial implications of the rollout of AVs/ZEVs throughout Victoria. This includes the financial impact the rollout has on:



Government revenue



Government expenditure



Consumer lifecycle ownership costs (i.e. purchase, maintenance, operating and supporting infrastructure costs)



Government transitioning its vehicle fleet to AVs and ZEVs



Up to four potential government interventions



Business case / cost-benefit analysis decisions for major infrastructure projects and government service agreements

Financial Impact Assessment – Government revenue and expenditure

For the 2046 scenarios, the projections ranged from a **net negative financial impact of \$8.10 billion to \$12.65 billion**.

The table below provides a summary of the estimated net financial impact on key affected government revenue and expenditure categories by Scenario.

	Scenario 1 – Electric Avenue	Scenario 2 – Private Drive	Scenario 3 – Fleet Street	Scenario 4 – Hydrogen Highway	Scenario 5 – Slow Lane	Scenario 6 – High Speed
Net financial impact	-\$8,100m	-\$12,650m	-\$12,750m	-\$12,620m	-\$5,110m	-\$8,070m

The table below provides high-level observations of the primary drivers underpinning these results:

Revenue	
	Driver License Fees
	Fuel Excise Tax - Vic
	Parking Revenue
 	Public Transport Farebox Revenue
	TAC Revenue
	Traffic Infringements
	Vehicle Registration
	Vehicle Stamp Duty

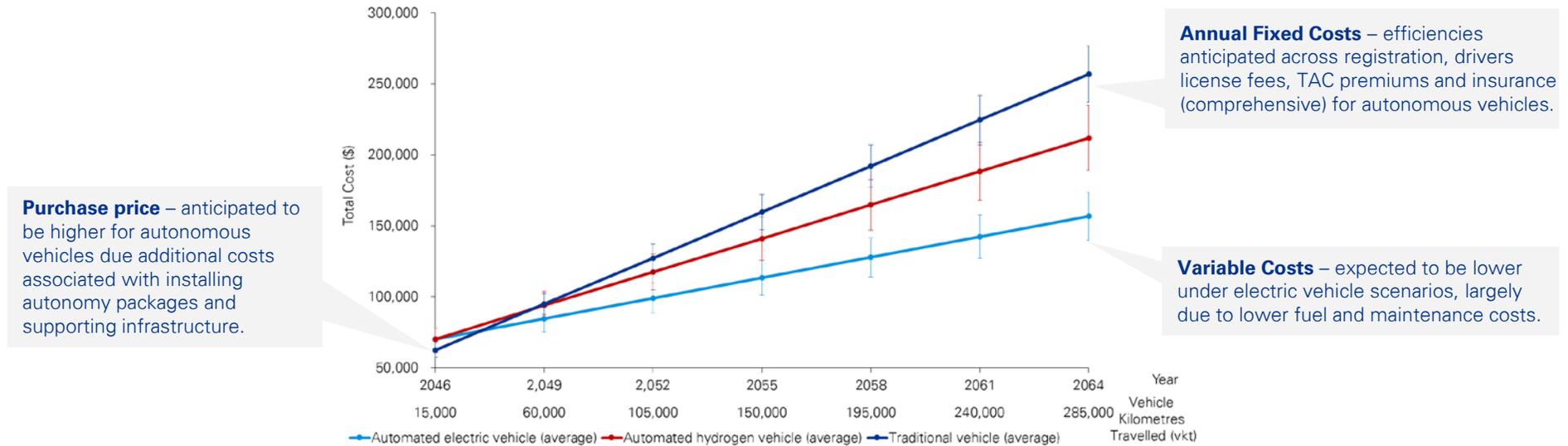
Expenditure	
	Road Safety Enforcement Expenditure
	Road Maintenance Expenditure
	TAC Expenditure

Consumer lifecycle ownership costs - different fuel sources

KPMG modelled the total cost of ownership over time for a motorist who purchases a traditional, automated electric or automated hydrogen vehicle. As detailed in the table below, it is projected that in 2046, **autonomous electric vehicles will be the lowest cost fuel source option for the average Victorian** who travels 15,000km per annum.

NPC (\$) / VKT	Lower bound	Upper bound	Average
Traditional vehicle	0.52	0.60	0.56
Automated electric vehicle	0.35	0.43	0.39
Automated hydrogen vehicle	0.44	0.54	0.49

Despite initially having a lower purchase price, the estimated lifetime cost of a traditional vehicle quickly exceeds both automated electric and hydrogen vehicles (illustrated below).

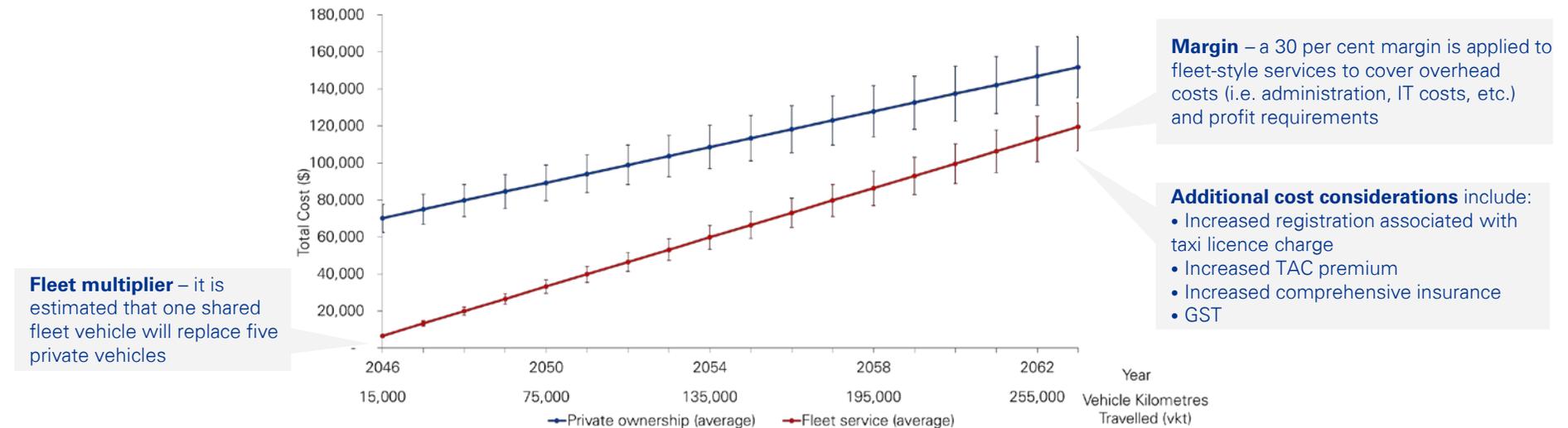


Consumer lifecycle ownership costs - private versus fleet vehicles

KPMG developed high-level estimates of the relative costs of private ownership of an autonomous electric vehicle as compared to utilising an automated electric fleet style service. As shown in the below table, it is projected that in 2046, it will be approximately **40 per cent cheaper for the average Victorian who travels 15,000km per annum to use a fleet style service** than to own their own vehicle.

NPC (\$) / VKT	Lower bound	Upper bound	Average
Automated electric vehicle (private ownership)	0.35	0.43	0.39
Automated electric vehicle (fleet-style service)	0.21	0.26	0.24

It is estimated that for the average Victorian, even the upper bound usage cost estimate for an autonomous fleet-style electric vehicle is lower than the lower bound estimate for a privately owned vehicle.



Implications for transport infrastructure business cases

The new technologies and scenarios described in this report have **significant implications for transport infrastructure business cases**.

The key takeaway for the implications of the development of business cases under potential AV / ZEV adoption scenarios is that there will be greater uncertainty around the potential transport and economic impacts of transport infrastructure projects during the period when the new technologies are in the process of being widely adopted.

KPMG identified the following impacts which should be considered in future transport infrastructure business cases:

1. Business cases will need to **recognise the additional uncertainty** that comes with the introduction of AV technology

2. The adoption of autonomous vehicles has the potential to **profoundly change travel patterns**, and consequently land use, service delivery and social interactions

3. New technologies could impact how economic, social and environmental **benefits** are assessed

4. Changes in financial and economic **costs** due to the adoption of new technologies should be incorporated into cost estimates



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