



Holden

GM Holden

Draft Regulation Impact Statement
Improving the efficiency of new light vehicles

Ministerial Forum on Vehicle Emissions

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Key Messages

- Holden fully supports the submission of the FCAI in response to the Draft RIS
- Holden considers that the matter of fuel quality and the high sulphur content in petrol should be dealt with first, which in turn would enable timing of Euro 6 introduction and CO₂ target levels to subsequently be determined
- Holden supports the FCAI position of a mandated fuel efficiency standard, which is developed unique to Australia, reflecting Australia's different motoring demographics and consumer preferences to other countries, particularly Europe
- Australia's car parc and model mix has evolved over many decades, with its differences to Europe influenced by factors such as consumer preference and needs (particularly agriculture, mining and trades industries), road types and conditions, fuel prices, taxation/registration charges, vehicle/transmission types and driver behaviour
- Australia is very different to Europe and copying a European target would significantly impact Australian consumer preferences and reduce the range of product choices currently available
- Australia's motoring demographic continues to create strong demand for larger, higher capacity engine vehicles. Agricultural, mining and trade industries rely heavily on these type vehicles
- An Australian standard could draw on structural aspects of a standard that is relevant to a similar vehicle market and driving demographic of Australia, such as the scheme structure and vehicle groupings of the US and Canada CO₂ scheme but with targets modelled specific to Australia
- If development of an Australian standard is to be compared to the US/Canada standard, the off-cycle credits which are incorporated in the US and Canada standards and their targets, must be acknowledged and incorporated
- Parameters of a mandated target could be set to starting no earlier than 2020 and continue to 2030, with a mid-term review. This would align with the Government's post-2020 national greenhouse gas reduction parameter, from 2020 to 2030. Any increase in emission reduction rates over current 'business as usual', for the 2020 to 2030 period, should not commence until after 2022 so as not to impact product plans which will already be in place and set into production schedules
- In addition to a mandated CO₂ standard for light vehicles, a variety of methods should be considered to formally contribute to achievement of vehicle emissions reduction, such as actively promoting improved driver behaviour and the rollout of infrastructure which will enable increased utilisation of vehicle to vehicle/infrastructure (V2X) connectivity, to realise the emissions reduction benefits achievable through cooperative intelligent transport systems (C-ITS) and more efficient mobility

Introduction

GM Holden (Holden) welcomes the opportunity to respond to the Australian Government's Improving the efficiency of new light vehicles Draft Regulation Impact Statement (RIS).

Holden was established in Adelaide as a saddlery in 1856 and merged with General Motors (GM) in 1931. In 1948 Holden was the first company to fully manufacture automobiles in Australia. Holden today sources its vehicle range from a production plant in Adelaide and other plants in Asia and Europe and sells its products through over 200 dealerships throughout Australia. Holden employs approximately 10,500 people.

By the end of 2017, Holden will cease its Australian manufacturing operations and thereafter source all of the vehicles which it sells in Australia from other global plants. Beyond 2017, Holden will continue to operate a world-class Proving Ground at Lang Lang, Victoria, to tune and calibrate future imported Holden products for Australian conditions and to conduct vehicle dynamics calibration, propulsion engineering and vehicle emissions work for Holden and GM.

GM will also continue to operate a full-scale global Design Centre in Australia beyond 2017. The Australian Design Centre is one of only two in GM that can fabricate a fully operational concept vehicle from sketch. GM Australia Design designs and fabricates pre-production, 'show car' and concept vehicles for all GM brands, including Holden, Chevrolet, Cadillac, Buick, Opel and GMC.

Holden will continue to have an engineering workforce in Australia beyond the cessation of its manufacturing operations in October 2017. Holden Engineering is a part of GM's global engineering group and has extensive expertise in vehicle emissions work. In the past decade the Holden Propulsion Engineering group has specialised in emissions development and powertrain calibration for GM vehicles sold in many markets including the USA, Europe and China.

The Emissions Laboratories at Holden's Lang Lang Proving Ground have recently undergone a \$9 million upgrade, to install additional test cell facilities which will enable the laboratories to undertake global calibration work for GM to levels of the full suite of Euro 6. Holden engineers and technicians have leading expertise and skill sets in this field in Australia.

Holden and FCAI Submission

Holden is a member of the Federal Chamber of Automotive Industries (FCAI). Holden engineers have been drawing on their global propulsion and emissions expertise to provide detailed advice and input to the FCAI's position on future vehicle emissions policy for Australia. Holden engineers have also provided advice directly to the Australian Government through the vehicle emissions policy development process.

The Holden engineering team which has been providing this input has been led by senior engineers with extensive global experience with GM. Senior engineers from GM's global propulsion engineering group have also been working closely with Holden engineers.

Holden's engineering team providing input to the FCAI and Holden submission is led by:

Simon Cassin – Director, Global Propulsion Systems

Ian Butler – Director, Global Vehicle Performance

Mike Hammer – Manager, Global Regulations & Certification/Validation

Jeremy Tassone – Manager, Vehicle Performance, Global Energy Analysis

Dermot Heron – Director, Global Regulatory Development

Holden fully supports the submission of the FCAI in response to the RIS. The FCAI's submission draws on detailed analysis, data and advice from many of its member companies and global independent consultants. The automotive industry has taken a united approach in formulating its submission to the Australian Government for what it considers to be a sensible and pragmatic position for the Government to take, to achieve significant emissions reductions with acknowledgement of Australian motoring demographics and consumer preferences.

Holden supports the FCAI position of a mandated fuel efficiency standard, which is developed unique to Australia, reflecting Australia's different motoring demographics and consumer preferences to other countries, particularly Europe.

Holden does not support a standard that reflects a 'fast catch-up' to CO₂ emission target levels similar to Europe. The Australian car parc and model mix has evolved over many decades, with its differences to Europe influenced by factors such as consumer preference and needs, road types and conditions, fuel prices, taxation/registration charges, vehicle/transmission types and driver behaviour.

Australia is very different to Europe and copying a European target would significantly impact Australian consumer preferences and reduce the range of product choices currently available.

Holden concurs with the FCAI that a whole of government approach to vehicle emissions reduction policy development is appropriate. Holden also agrees with the FCAI that the key elements of policy – CO₂ emissions reduction, timing of introduction of Euro 6 and the quality of Australian fuel (particularly with regard to sulphur content in petrol) are interrelated and should be considered as a single system to deliver the combined environmental and public health benefits. A particular issue that needs to be properly addressed is the high sulphur content in the most popular and affordable Australian petrol.

Holden considers that the matter of fuel quality should be dealt with first, which in turn would enable timing of Euro 6 introduction and CO₂ target levels to subsequently be determined.

Policy Implementation

Emissions reduction policy implementation should acknowledge and factor in the long lead time of vehicle production planning and the execution of new technologies into vehicles. Lead times can be as long as five years for the development and delivery to market of new vehicle models. Once released to market, those models can stay current in the market for four to six years for passenger cars and up to eight years for light commercial vehicles (LCVs).

Development and introduction of new vehicles is expensive and it can typically cost hundreds of millions of dollars to implement complete new vehicle programs. As automotive

manufacturers typically move to a development model of predominantly global vehicle platforms, these high development costs are amortised across global volumes.

For smaller markets such as Australia, when compared to larger global markets such as USA and Europe, bringing in mature technology that has first been established in larger volume markets as a development cost priority helps to ameliorate the high cost of bringing new vehicles to smaller volume markets.

Harmonisation of design rules and regulations with global markets similar to Australia is encouraged, to mitigate against unnecessary development and implementation cost burdens.

Emissions Reduction Options

In addition to a mandated CO₂ fuel efficiency standard for light vehicles, a variety of methods should be considered to formally contribute to achievement of vehicle emissions reduction, such as actively promoting improved driver behaviour and the rollout of infrastructure which will enable increased utilisation of vehicle to vehicle/infrastructure (V2X) connectivity, to realise the emissions reduction benefits achievable through cooperative intelligent transport systems (C-ITS) and more efficient mobility.

C-ITS

Holden believes equivalent emphasis should be placed on C-ITS infrastructure development, as it is to consideration of incentives and infrastructure for alternative propulsion such as electric and fuel cell vehicles. C-ITS enabling technologies and telematics systems are already being introduced to vehicles in the Australian market and there is potential for a rapid expansion of C-ITS vehicle features if infrastructure is implemented to complement and support the technologies that are already in vehicles or quickly becoming available.

Urban infrastructure innovation to build 'smarter' cities, decrease traffic congestion and decrease impact on the environment, should be developed in consultation with automotive manufacturers as well as infrastructure operators, to maximise the benefit of future vehicle technologies. For example, a technology enabler is the dedicated allocation of the 5.9GHz radio spectrum in Australia for the short range communications required for C-ITS and V2X utility.

Driver Behaviour

Advocacy of improved driver behaviour would be a simple way to encourage motorists to proactively reduce fuel consumption and vehicle emissions. Governments could consider information and advertising campaigns to promote fuel efficient motoring practices.

Driver behaviours that would help to reduce fuel consumption and emissions include:

- Avoiding heavy braking and unnecessary acceleration; high revs results in higher fuel consumption
- Regular servicing to ensure that engines are well tuned to operate efficiently and economically
- Avoiding carrying excess weight; removing unnecessary cargo can reduce the total weight of the vehicle and improve fuel efficiency

- Removing roof racks when not in use or any other unnecessary accessories that protrude beyond the silhouette of the vehicle; this can reduce the vehicle's overall drag and improve its aerodynamics and fuel efficiency
- Tyres should be inflated to the correct pressure to maintain safety, durability and fuel efficiency.

Consumer Information – Green Vehicle Guide

Holden believes the Green Vehicle Guide (GVG) has been a valuable resource for consumers and it should continue to be presented in a user friendly way, to facilitate easy use. The GVG has also been a popular and useful tool for fleets, particularly during the procurement process.

Alternative Propulsion

In addition to efficient petrol internal combustion engines (ICE) Holden has offered and extensively marketed a variety of alternative powertrain technology and fuel options within its vehicle range over the past decade. These include:

- Diesel
- LPG
- E85 ethanol
- Spark Ignition Direct Injection
- Turbo boost
- Supercharge boost
- Active Fuel Management cylinder de-activation
- Battery Electric Vehicle with range extender.

Even with a variety of alternative powertrains and fuels on offer, Holden's experience is that Australian consumers continue to have a strong preference for petrol fueled ICE's and purchasing choice seems to be predominantly driven by price and affordability. Lower prices for petrol have helped to sustain a strong demand for petrol ICEs, including boost variants.

Data in a February 2016 report by IHS Consulting commissioned by the FCAI and which has been presented to the Department of Infrastructure and Regional Development, suggests that the petrol ICE with boost and hybrid variants has a strong future outlook and will remain a very competitive powertrain for many years to come, as these types of ICE powertrains continue to improve with advancing technology and continually become more fuel efficient, whilst remaining predominantly the most affordable of all powertrain types in Australia.

It has also been Holden's experience that sales of alternative fueled vehicles can be impacted by external incentives, such as a previous government rebate for LPG vehicles and availability of supply and infrastructure (for example LPG and E85 availability) and removal of incentives has negatively influenced alternative propulsion vehicle sales.

Australian Motoring Demographic and Consumer Preferences

Australian consumers have traditionally had a strong preference for larger vehicles. This trend continues, with many consumers moving from medium and large sized passenger cars into medium and large sized Sport Utility Vehicles (SUV) and Light Commercial Vehicles (LCV).

SUV sales continue to grow year on year and according to FCAI VFACTs data, in February 2017 the sale of SUV's outpaced the sale of passenger cars for the first time. A typical Australian

family today often has at least two vehicles, such as a SUV/LCV/large car and a small car. Increasing urbanisation in Australia and environmental awareness amongst consumers is also driving a steady rise in small car and small SUV sales.

The Australian motoring demographic continues to create strong demand for larger, higher capacity engine vehicles. Agricultural and mining industries also rely on larger vehicles capable of operating under heavy and rough work conditions plus travelling comfortably and safely over long distances on roads of often poor condition. These same vehicles are often also required for towing heavy loads and having adequate power and utility for primary industry work tasks.

Small to medium sized business owners, particularly in trades, are increasingly buying dual cab LCV's to get the combined benefit of a work vehicle during the week and family recreation vehicle at weekends.

Many Australian drivers favour higher vehicle power for towing heavy loads (such as boats, caravans and horse floats), driving off-road and for overtaking. This all needs to be balanced with a need to reduce carbon dioxide and noxious emissions to decrease any impact on the environment and improve the quality of the air we breathe, particularly in urban areas.

Restricting powertrain options to achieve aggressive emissions reductions, will restrict Australian consumer choice for work and recreation activities to which they have long been accustomed.

Australian CO₂ Standard

Holden supports the FCAI position for a mandated CO₂ standard for Australia, with modelling to be conducted to develop corporate average fuel consumption targets suitable for the Australian motoring demographic and market conditions.

Holden supports the FCAI position that parameters of a mandated target could be set to starting no earlier than 2020 and continue to 2030, with a mid-term review. This would align with the Government's post-2020 national greenhouse gas reduction parameter, from 2020 to 2030. Any increase in emission reduction rates over current 'business as usual', for the 2020 to 2030 period, should not commence until after 2022 so as not to impact product plans which will already be in place and set into production schedules.

All global jurisdictions where CO₂ standards are applied are unique and Holden agrees with the FCAI recommendation not to directly copy another global jurisdiction. A CO₂ standard should be tailored for Australia. Analysis conducted by IHS Consulting for the FCAI demonstrated some of the significant differences that occur between various global CO₂ standards.

It must also be acknowledged the range of different factors which input various global standards. For example, if the development of an Australian standard were to be compared to the US/Canada standard, the off-cycle credits which are incorporated in the US and Canada standards and their targets, must be acknowledged and incorporated.

Holden suggests that development of an Australian standard could draw on structural aspects of a standard that is relevant to a similar vehicle market and driving demographic of Australia, such as the scheme structure and vehicle groupings of the US and Canada CO₂ scheme but with targets modelled specific to Australia.

Holden supports the FCAI position that if vehicle groupings within a scheme are to be made, Australia should follow a similar vehicle grouping structure to the US/Canada, which would aggregate vehicles into groupings which most similarly reflect Australian motoring demographics.

CO₂ target levels should then be developed that reflect the Australian market and which are realistic and possible for manufacturers to achieve.

Adoption of overly aggressive fleet average CO₂ targets not reflective of Australian motoring demographics, consumer preferences and the relatively low cost of fuel in Australia compared to higher fuel cost markets such as Europe, will impact the range of vehicles available in Australia and restrict Australian consumer choice.

Furthermore, the cost of adopting a fleet average standard for fuel efficiency should be kept minimal. High reporting related costs for both government and manufacturers should be avoided. Otherwise, it is always likely that the consumer will ultimately bear the cost.

As outlined in data provided by IHS Consulting to the FCAI, Australia more closely reflects the US vehicle model mix and demographic than it does to Europe. This is both current and historic. There are a variety of factors that have contributed to the differences between Australian and European vehicle fleets and consumer preferences.

There is a higher penetration of diesel and smaller capacity, manual powertrains in Europe, predominantly driven by historically higher petrol costs and vehicle registration fee brackets based on engine capacity. This has contributed to a higher number of small vehicles and less numbers of large SUV and LCV's in Europe, particularly less numbers of large and four-wheel-drive SUV's and LCV's in comparison to Australia.

There is a longer history of smaller vehicles of less than two litre engine capacity in Europe, than the US and Australia. Higher fuel costs and registration taxes have contributed to a dominance of manual transmissions in Europe, versus the long term popularity and preference for automatic transmissions in US and Australia.

Narrower roads and urban congestion has also contributed to a historical dominance of smaller vehicles in Europe.

Comments to Draft RIS Appendix A Questions

What could be regulated?

Question:

1. *What parameter (CO₂ emissions or fuel consumption) should be used for an Australian fuel efficiency standard and why?*

Holden supports the FCAI response, for a fuel efficiency standard based on CO₂.

How could efficiency be measured?

Question:

2. *How should a vehicle's efficiency for the purpose of an Australian fuel efficiency standard be assessed and why?*

Holden supports the FCAI response, for the use of a standardized laboratory test to measure a vehicle model's CO₂ emissions. A standardized laboratory test is repeatable, verifiable and provides a baseline measurement for motor vehicle manufacturers and consumers alike to compare vehicles on a like-for-like basis.

How could a sales weighted average target be applied?

Question:

3. *How should a sales weighted target be applied in Australia and why?*

Holden supports the FCAI response, for the use of an attribute to develop sales weighted targets for Australia.

If an attribute based standard is adopted, what attributes could be used to determine manufacturer targets?

Question:

4. *If an attribute standard is adopted, which attribute should be adopted in Australia and why?*

Holden's preference is a footprint based attribute to encourage and derive the benefits of reducing vehicle mass. The US CO₂ standard is based on a footprint attribute. Given Australia's car parc is more closely aligned to the US than Europe, Holden recommends footprint based attribute, as is mandated in the US.

Due to the significant and increasing number of light commercial vehicles and SUVs in Australia, vehicle groupings should be split in two groups.

Holden recommends vehicle groupings should be split into two groups, using the US Government regulator – the National Highway Traffic Safety Administration (NHTSA) – CO₂ groupings, passenger motor vehicles (MA) and light commercial/SUV's (NA/MC) also including the following vehicles in the LCV/SUV group:

- Off road ground clearance with 2WD if GVM > 2.7 t
- 3 or more rows of seats where seats can be folded/pivoted/removed to carry cargo

The inclusion of these vehicles in the LCV/SUV group was done by NHTSA so as not to reduce consumer choice by unnecessarily penalising vehicles designed to carry or tow heavy loads and was also done by NHTSA to prevent manufacturers 'gaming' the system by replacing their large 2WD SUVs with 4WD to take advantage of the lower targets.

These groupings would translate similarly to vehicles in Australia, particularly vehicles purposed for agriculture, mining and remote area use.

The definition is available in USA Regulation '49 CFR 523.5 - Non-passenger automobile'.

How could targets be applied to different vehicle types?

Questions:

5. *How should a fuel efficiency standard be applied to each light vehicle category and why?*
6. *If SUVs are subject to a different target to passenger cars, how should SUVs be defined and why?*

Holden supports the FCAI position, that there be separate targets for passenger cars (ADR category MA) and light commercial vehicles (ADR category NA). SUVs that are categorized as MC category vehicles (off-road passenger vehicles) should also be included with the light commercial vehicle target, as well as vehicles designed to carry heavy loads as outlined in response to Question 4.

Some manufacturers may only have one or two products in the LCV/SUV group, so to prevent restricting consumer choice, Holden recommends providing for trading between the passenger vehicle and LCV/SUV groupings.

How could targets be phased in from 2020 to 2025?

Questions:

7. *How should targets for a fuel efficiency standard be phased in and why?*
8. *If annual targets are adopted, what targets should apply in each year for each segment and why?*
9. *If a percentage phase in is adopted, what percentage should apply in each year and each segment and why?*
10. *What flexibility arrangements should be allowed under an Australian fuel efficiency standard and why?*

Holden supports the position and recommendations of the FCAI.

Long product development lead times must be recognised. Vehicle products are carefully planned for particular destination countries, to enable design and calibration for the optimum operation and performance of the vehicle. This in turn leads to the optimum utilization of the vehicle's technologies, particularly to derive best powertrain performance and environmental outcomes. Full product development lead time can take up to five years before launch in the local market and therefore a CO₂ target should not be phased in from 2020 to 2025. The earliest year of phase in should be from 2022.

Holden agrees with the FCAI support for a mandated 2030 CO₂ target that commenced in 2020, with interim measurement points and a mid-term review. This timing aligns with the Australian Government's GHG reduction target to reduce emissions by 26-28 per cent below 2005 levels, by 2030. A 'business as usual' reduction rate should be allowed for the period 2017 to 2022. This sequence of timing would be similar to that of US, when a target for 2025 was set in 2011.

Holden believes the Australian Government should acknowledge reality of the delayed implementation of a mandated CO₂ standard of many years later than countries such as the US and should not pursue a 'fast catch-up' to the detriment of Australian consumer preference. A 'fast catch-up' would cause a significant increased price impact on vehicles that would be required for fast-tracked implementation of technologies into already established product delivery plans, or otherwise a requirement to remove previously planned models resulting in decreased consumer choice. Forcing a fast catch-up to the target levels of other global standards will ultimately detrimentally impact Australian consumers, through higher purchase costs or decreased choice.

Holden reiterates the FCAI advice, that to coincide with any type of accelerated (i.e. beyond current trend) rate of reduction, the Government needs to consider and introduce a range of incentives and credits to encourage change in consumers buying preference, as a consequence of the high research and development costs of implementing new technologies into the local market.

Use of banking and credits should be allowed to account for model cycle times of 5 years for a passenger car and 8 to 10 years for a large SUV and LCV.

What other incentives could a standard adopt to encourage supply of more fuel efficient vehicles under a standard?

Question:

11. What, if any, credits should an Australian fuel efficiency standard adopt to further encourage the supply of more fuel efficient vehicles, and why?

Holden supports the FCAI position.

Holden particularly points out that one of the least cost methods of reducing CO₂ is the introduction of low GWP air conditioning gas. Improvements in air conditioner efficiency and use of low GWP air conditioner gas provides up to 50% of the CO₂ reductions in the standard out to 2025.

In USA, air conditioning gas in vehicles comprises approximately 50% of installed air conditioning gas in the country and represents a significant global warming potential. The current air conditioning gas used in vehicles in Australia is R-134a which has a GWP of 1430. This represents approximately one tonne of CO₂ equivalent per vehicle and there are approximately one million vehicles added to the Australian market each year. The new mobile air conditioning gas R-1234yf has a GWP of less than 1 and the inclusion of air conditioning gas in vehicle CO₂ targets has accelerated the uptake of this new gas in USA much faster than national targets would have achieved.

Holden refers to and supports the comprehensive off-cycle credits table in the FCAI submission which are utilised by both the US and EU systems to further reduce real world CO₂ emissions.

Which entities could be required to comply?

Question:

12. Which entities should be required to comply with a fuel efficiency standard and why?

Holden supports the FCAI position.

Should all entities be subject to the same requirements?

Question:

13. What concessional arrangements should be offered to low volume suppliers under an Australian fuel efficiency standard and why?

Holden supports the FCAI position.

What penalties could be applied if entities failed to comply?

Question:

14. What penalties should be applied to entities that failed to comply with a fuel efficiency standard and why?

Holden supports the FCAI position.

Conclusion

Holden supports the submission of the FCAI and an industry position that a mandatory CO₂ emissions standard should be developed for Australia and be relevant to Australia's motoring demographic and consumer preferences.

CO₂ target levels should then be developed that reflect the Australian market and which are realistic and possible for manufacturers to achieve.

Adoption of overly aggressive fleet average CO₂ targets not reflective of Australian motoring demographics, consumer preferences and the relatively low cost of fuel in Australia compared to higher fuel cost markets such as Europe, will impact the range of vehicles available in Australia and restrict Australian consumer choice.

The Australian motoring demographic continues to create strong demand for larger, higher capacity engine vehicles. Agricultural, mining and trade industries rely heavily on these type vehicles.

Holden considers that the matter of Australian fuel quality should first be dealt with, which in turn enables timing of Euro 6 introduction and CO₂ target levels to subsequently be determined.

Holden will continue to work with the FCAI and Australian Government to provide input on the development of a mandated CO₂ standard, proposed introduction of Euro 6 and the associated issue of fuel quality in Australia.