



Holden

GM Holden

Submission to Australian Government

Draft Regulation Impact Statement
Vehicle emissions standards for cleaner air

Ministerial Forum on Vehicle Emissions

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Key Points

- Holden fully supports the submission of the FCAI in response to the Draft RIS
- To enable the introduction of Euro 6 and derive the public health benefits, the issue of high sulphur content in all grades of Australian petrol must be properly addressed
- If emissions standard EU September 2017 Euro 6 is to be mandated, an introduction date for new vehicle models should not be until there is widespread national availability of 95 RON 10ppm sulphur petrol as the predominant market fuel
- Australian fuel quality and the high sulphur content in petrol should be dealt with first, which in turn enables the timing of Euro 6 introduction and CO₂ target levels to subsequently be determined

Introduction

GM Holden (Holden) welcomes the opportunity to respond to the Australian Government's Vehicle emissions standards for cleaner air 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 labs to undertake global calibration work for GM to levels of the full suite of Euro 6 (EU6). 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 information and opinion 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, including IHS Polk and ABMARC.

The FCAI led automotive industry has taken a united approach in formulating its submission to the Australian Government for what it considers to be a sensible position for the Government to take, to implement regulation which improves air quality whilst acknowledging the technical impediments which will occur for as long as the predominant market fuel used by Australian motorists has a high sulphur content.

Holden believes that fuel quality standards need to be aligned to vehicle emissions standards and also supports the FCAI's parallel submission to the Discussion Paper 'Better Fuel for Cleaner Air' dated December 2016.

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.

To enable the introduction of Euro 6 and derive the public health benefits, the issue of high sulphur content in all grades of Australian petrol must be properly addressed.

If the Government is to mandate emissions standard EU September 2017 Euro 6, an introduction date for new vehicle models should not be until there is widespread national availability of 95 RON 10ppm sulphur petrol as the predominant market fuel.

Holden considers that this matter of fuel quality and the high sulphur content in petrol should be dealt with first, which in turn enables the 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 LCV's.

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. This strategy also supports the national interest by enabling Australian access to the most CO₂ efficient vehicles available.

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

Holden welcomes Euro 6 harmonisation in Australia with Europe, however we note that Real Driving Emissions (RDE) testing in Europe is difficult to perform in an Australian context given that Europe has lower urban speeds and higher highway speeds. Implementation of RDE in Australia as a certification test would require extensive further development, to ensure consistent comparison between national jurisdictions. Holden would welcome the opportunity to work with the Government to work out an appropriate way forward.

Petrol Fuel Quality

Australian petrol differs substantially from European market fuel defined by EN228. The major specification differences relate to RON, sulphur and aromatics content. Holden agrees with the FCAI position that to deliver the expected pollutant and CO₂ emission reductions, compatible market fuel to EN228 must first be available widespread nationally.

More stringent CO₂ targets are encouraging a shift to smaller engines, often turbocharged, and this is an increasing trend into the future. In Holden's experience, in hot environments these powertrains are more sensitive to octane ratings and can have reduced performance on 91RON fuel. Holden recommends that some of its smaller turbo-charged models use 95RON fuel. Holden supports the FCAI position for the introduction of 95RON as the base grade petrol.

The high levels of sulphur in Australian market petrol is a significant issue. Many new engine and emission technologies require a maximum of 10 ppm sulphur to meet the requirements of Euro 6 and to deliver the anticipated environmental benefits. However, Australia's fuel quality standard for petrol still allows up to 150 ppm sulphur for 91 RON petrol and up to 50 ppm sulphur for 95 RON petrol.

Modern internal combustion powertrains rely on many technologies to achieve a balance of high performance, reliability, low fuel consumption and minimum emissions. These technologies include efficient combustion and after-treatment systems including three-way catalysts and On-Board Diagnostic monitoring systems.

There are many publically available studies published by governments, OEMs, component manufacturer associations, NGOs and other research organisations which have documented the negative effects of fuel sulphur on these systems. These groups include the US Environmental Protection Agency (EPA), Manufacturers of Emissions Controls Association (MECA), European Commission (EC), Society of Automotive Engineers International (SAE) and The International Council on Clean Transportation (ICCT).

Australian petrol also has a higher aromatic content than the European specification. This causes higher combustion chamber deposits which leads to higher tailpipe and particulate emissions. Reducing aromatics also reduces CO₂ emissions. Holden supports harmonising aromatic content with EN228.

Global regulators have progressively acknowledged the interaction between emissions control systems, fuel specifications and air quality with aligned planning and appropriate regulation that balances both automotive and refinery technologies with public health needs. The reasons behind these regulator decisions have been well documented. Addressing this is foundational for the tightening of light vehicle emissions standards and gaining access to new technologies for CO₂ reduction in future.

Holden fully supports the FCAI submission on improving fuel standards for cleaner air.

Fuel Availability and Pricing

Holden advocates that widespread national availability of EN228 quality petrol at a competitive price is a necessary precursor for the successful adoption of Euro 6. Any parallel availability of older specification petrol during a phase out period will require similar pricing (or some form of refuelling interlock) with the new specification petrol to ensure wide acceptance. Motorists have a natural tendency to use the cheapest fuel available and this would compromise in-field-emissions performance and durability.

The existing car parc of Australian vehicles will not be adversely impacted by the use of 95RON 10ppm sulphur petrol. The vast majority of the existing car parc was manufactured in 1986 and later and uses catalyst emissions after treatments systems. This fleet will have reduced noxious emissions with the use low sulphur petrol.

New Technologies

Improved emissions and particulate control of petrol engines will see the widespread adoption of higher pressure fuel systems for better fuel atomisation and improved after-treatment systems including the use of gasoline particulate filters.

EN fuel standards including 10ppm sulphur and lower aromatic content in petrol support gasoline particulate filter technology and performance.

Gasoline particulate filters are sensitive to sulphur and aromatic content, with ash and soot formation respectively causing blockage which then requires more frequent regeneration

cycles and higher fuel consumption. High sulphur fuels also cause sulphates to form in the exhaust downstream of the particulate filter and increase particulate emissions. Low sulphur and low aromatics fuels must be widely available nationally to avoid these effects and to achieve the environmental and air quality outcomes intended.

Future Emissions Regulation Direction

It is likely that the UN ECE covering light vehicle emissions will change more frequently in future years.

To support this, it is essential that our Australian Fuel Quality standards track any EN fuel standards changes so that we can successfully and reliably deliver vehicles with real world emissions performance to progressively lower emissions. It is expected this will require more frequent (and synchronous) Fuel Quality Standards and Light Vehicle Emissions Reviews in future.

Conclusion

Holden fully supports the submission of the FCAI in response to the RIS. To enable the introduction of Euro 6 and derive the public health benefits, the issue of Australian petrol quality in all grades must be properly addressed.

If the Government is to mandate emissions standard EU September 2017 Euro 6, an introduction date for new vehicle models should not be until there is widespread national availability of EN228 petrol as the predominant market fuel.

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