

# Submission 43 - Society of Automotive Engineers Australia's Manufacturing Industry - Public inquiry

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## SAE-A AND ITS FOCUS

Established in the US in 1905, the Society of Automotive Engineers (SAE) International has more than 100,000 members: scientists, engineers, and technicians that advances vehicle knowledge in a politically neutral form for the benefit of society.

The organisation is a leader in connecting and educating engineers, technicians and scientists while promoting, developing and advancing automotive engineering.

SAE-Australasia is the third oldest automotive engineering society worldwide, founded in 1927 and currently represents 1,500 private and around 60 corporate members from all facets of the automotive industry, including engineers, designers, manufacturers, researchers, fuel & oil suppliers, service providers, road infrastructure engineering and engineering & science students.

Key objectives of the SAE-A are to:

- Advance the automotive industry in Australia by encouraging development and delivery of engineering mobility to the community
- Facilitate the exchange of ideas between SAE-A members and the community in general
- Promote the importance of automotive research and development in improving environmental, energy sustainability and cost-of-ownership outcomes in the community
- Recognise and reward excellence in automotive innovation and development

## SUBMISSION SYNOPSIS

The Australian automotive industry has a long history of leading edge innovation, with a number of worldwide 'industry standard' design features having originated in Australia. In order to foster the strategic importance of Australia's knowledge, design, and development capability, it is important to recognise that in terms of policy, the automotive engineering design, and research & development fields, could be separated from the production side of the automotive manufacturing industry.

The consequences of closure of the automotive industry, both manufacturing and engineering design, to the Australian economy would be significant with a projected overall negative impact to the economy of \$21.5 billion, in net present value terms, by 2018. Approximately 45,000 jobs would be terminated directly, with a further quarter of a million job losses in the support industries and broader economy. Additionally, a loss in foreign and domestic student interest due to universities losing technology partners, and a reduction in the overall calibre of STEM (Science, Technology, Engineering and Manufacturing) students is anticipated, as students seek alternative industries, which would in turn lead to a long term loss in engineering capability for Australia.

Australia has many natural advantages in designing and developing vehicles, particularly for the Asian and

Middle Eastern markets. We should leverage these advantages to continue developing vehicles that are considered premium vehicles in the international marketplace.

It is important to ensure that the right policy framework exists to promote and support local design and development of vehicles that can be sold without impediment in the global marketplace. Policy certainty, and addressing Australia's high energy costs and artificially high dollar would encourage and assist businesses operating in this country. Government departments following through on commitments to 'buy Australian' vehicles for Government fleets would be a step in the right direction, given that only 65% of the 2013 federal fleet was Australian made.

**Government investment into the automotive industry should be provided commensurate with the strategic importance of knowledge, design, research & development to Australia's national security and capability that it provides. Comparison with other developed nations such as Germany, the UK and the USA provide an indication as to what this level of support should be.**

## GREAT ACHIEVEMENTS

Australia is one of only 15 countries worldwide that is capable of achieving the entire life-cycle design, development, and production of a motor vehicle. This involves taking the project from conception to a finished vehicle, including all safety and durability testing, delivery, and whole-of-life service.

Australia exports not only tangible items such as vehicles, components and systems, but also intangible items such as intellectual property in the form of strategy, design, innovation, and test methodologies.

Australia can rightly be proud of its long history of vehicle design engineering, R&D and manufacturing. Since 2000 the automotive industry (OEMs, Tier1 and Tier2 suppliers) have lodged thousands of patents and other forms of intellectual property related to their R&D. There are many major achievements that have become ubiquitous, some examples of these are:

- In 1897, an Australian developed the differential, a fundamental part of all vehicles worldwide even today, only to have another develop an air-activated locking mechanism to stop it in 1982.
- The 'Ute', the design of which was sparked by a farmer writing to Ford (Geelong) in 1932 suggesting a need for a vehicle that she could use to go to church in on Sunday, and take pigs to market in on Monday.
- In 1970 an Australian invented the variable ratio rack and pinion steering, which was quickly adopted by manufacturers worldwide.
- In 1983 the first demonstration of the application of turbocharging to petrol engines for fuel efficiency through down-sizing and down-speeding
- In 1985 the fine-tuneable hydraulic valve for power steering
- In 1990 the development of variable pressure air bags
- Moreover, numerous innocuous items such as car radios (1925) and baby safety capsules (1984) are also 'Australian firsts'.

Currently, the Australian designed Holden 'Zeta' forms the structural basis for the iconic modern day Camaro. The current Ford Ranger and Mazda BT-50, sold globally, were also designed and engineered in Australia. Toyota Technical Center – Australia conducts engineering design and development for a range of global programs, often leveraging Australia's unique advantages to add value to the design process and final product.

The winner of this year's Young Engineer award in SAE-A's 2013 Automotive Engineering Excellence Awards developed a product and technique that has been made part of General Motors' global design process, an achievement that illustrates not just the excellence of Australian innovation, but also the calibre of Australia's STEM education.

## ISSUES NEEDING TO BE ADDRESSED

### A. BARRIERS TO A CONTINUED & SUCCESSFUL INDUSTRY

#### POLICY CERTAINTY

Vehicle platforms are typically considered to have a 14-year life, from initial conception and engineering development to the cessation of the production. Before production begins, automakers spend around 4 years in design, research and development of that car, leaving around 10 years during which the specific vehicle platform is produced.

For businesses to commit to investing in projects of this length – particularly large projects in which they will not see any return on investment for several years – they must have long term, stable and certain policies on which to base their business decisions.

*Issue to be addressed: Businesses require long term and stable policies on which to base decisions.*

#### ENERGY PRICING

According to IEA data, the price for Australia's industrial energy is one of the highest in the world, despite an abundance of low cost energy options being available. High-energy costs impact the profits of Australian businesses, and are a consideration of global manufacturers in looking for sites to manufacture new products.

As an example of the positive impact of lower energy prices, a recent boom in manufacturing in the USA has been driven by cheap energy, a result of the US government limiting exports of the vast quantities of natural gas and oil that have become possible to extract due to 'fracking' technologies.

*Issue to be addressed: Government policies to reduce the cost of energy to businesses should be established.*

#### TARIFFS AND NON-TARIFF BARRIERS

Non-reciprocal tariff and duty rates with our international partners mean that in reality there is no 'level playing field' for the automotive industry in the global marketplace.

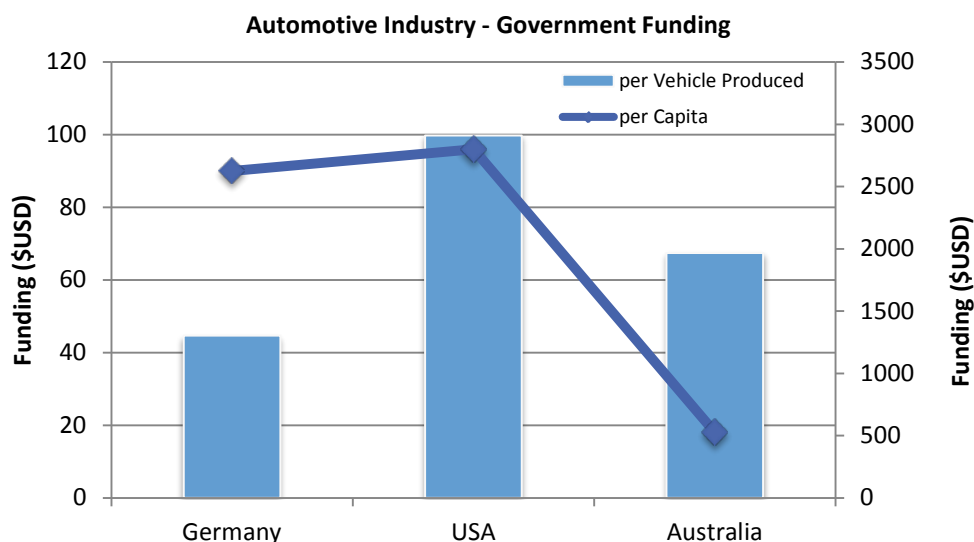
For example, Australian made vehicles sold into Thailand have a 50%-80% 'duty' applied, whilst Thai vehicles imported to Australia have no duty and zero tariff. This discrepancy helps to explain why Australia imported more than 185,000 from Thailand in 2012, making up 17% of vehicle sales, and exported zero vehicles in return.

*Issue to be addressed: Non-reciprocal tariff and duty rates with Australia's trading partners should be remedied.*

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## CO-INVESTMENT (OR GOVERNMENT GRANTS)

The amount of money provided on a per capita basis to the automotive industry in Australia is far lower than that provided to many of the other automotive design and manufacturing nations that recognise the strategic importance of their automotive industries. Whilst various sources offer differing data regarding total funding to the industry, some clarity can be obtained from observing the federal funding in Germany, the USA, and Australia (which shows funding per capita, and per vehicle produced).



Source: PPB Advisory Automotive, May 2013

*Issue to be addressed: Government funding for research, design and innovation commensurate with the strategic value of this area of knowledge.*

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## FISCAL POLICIES

The USA, Japan and Korea, all key automotive design and manufacturing nations, have held fiscal policies over the past years whereby they have lowered the value of their respective currencies compared to other nations.

Despite a strong local economy, Germany is advantaged by the weak Euro zone, and China sets the exchange rate to its advantage.

As a result of these policies, the Australian dollar is artificially high, and has been for such a length of time, that it has now seriously damaged Australia's competitiveness in all export industries, including the automotive industry.

*Issue to be addressed: Support for Australian export industries during periods where Australian fiscal policy holds the Australian dollar at an artificially high value*

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## FRACTURED POLICY

Whilst the Federal, Victorian, and South Australian State Governments have 'buy Australian vehicle' policies, in reality a large number of their respective fleet vehicles are imports. For example, in 2013 the Federal vehicle fleet had only 65% Australian manufactured vehicles and most local governments have very few.

The interests of Australian automotive industry are often ranked below those of other Australian industries, such as the agricultural industry, when free trade agreements are being negotiated.

As an example, immediately following the recent FTA with Malaysia:

- A volumetric (engine capacity) tax was imposed by Malaysia, which has essentially priced Australian made cars out of the Malaysian market. Australian cars imported into Malaysia are subject to taxes and duties equal to 145% of the original cost of the vehicle.
- Australia, meanwhile, maintains an import tariff of zero.

Whilst the government, through the department of industry, provides financial assistance to the automotive industry with schemes such as the ATS, this support is undermined by other departments (such as the trade department) as they seek to close the next FTA deal at the expense of other industries that need their support the most.

*Issue to be addressed: Consistency in policy across all government departments, and fulfilling commitments on supporting local industry, should be achieved.*

## B. CONSEQUENCES OF INDUSTRY CLOSING

Gooran Roos, Chairman of South Australia's Advanced Manufacturing Council, has stated that the multiplier effect of the automotive industry is large, with some:

- 15,000 to 16,000 people employed directly in automotive design, research and development
- 45,000 to 50,000 employed by manufacturing suppliers, and
- ca. 250,000 jobs dependent on the automotive industry throughout Australia.

The impact of the industry closing would be immediate, immense and almost irreparable. Whilst jobs may be created in other sectors of the economy the strategic loss of capability of engineering design and research and development would not be easily replaced.

In terms of capability, self-sustainability and strategic ability, a closure of the automotive industry in Australia would move us from being one of 15 nations able to design, develop and manufacture vehicles, to the standard of many third world countries. There would be a corresponding lowering of image internationally; a loss of employment capability for skilled, semi-skilled and low skilled workers, and also for young Australians, with a loss of positions for university graduates from engineering and science degrees, through to business degrees.

A loss of foreign students, particularly from Asia, along with related significant loss of overseas income, is also projected. Australia would become less desirable as a destination to attend our premium education institutions due to the loss of connections to high technology industry networks and the lowering of technological and business image versus institutions in other countries. These losses would extend beyond students in the technological disciplines of Science and Engineering but also include students in Business and Commerce.

Up to \$0.7 Billion of annual investment into automotive research and development would be under threat.

Additionally, the loss of such a significant part of Australia's manufacturing sector would be expected to impact other national manufacturing industries, due to the reduction in economies of scale (raw material supplies, shipping, etc.), and a reduction in high tech capabilities and service industries.

High technology industries such as Automotive and Aerospace attract a high number of high calibre students. If the Automotive industry is no longer available as a future career choice, it is projected that a large percentage of these high calibre students will seek alternative career paths – and thereby other fields of study – which would result in a lowering of the calibre of students within engineering degrees in Australia. In the long term, this would negatively impact the manufacturing sector as a whole.

The support of Australia's automotive industry through the Society's student Formula SAE-A program adds \$1.7 billion a year in educational and capability value to the engineering community. It is anticipated that the closure of product development and manufacturing of vehicles in Australia, then the Formula SAE-A competition/training program could no longer be supported.

## BENEFITS OF THE AUSTRALIAN AUTOMOTIVE INDUSTRY

### A. NATIONAL SECURITY

To have an independent capability to design, develop and produce product and equipment should be a mandatory requirement of all developed countries.

The Automotive industry is the leader and driver of technical advancement and capability in manufacturing. The skills and experience obtained by the techniques used in Automotive Engineering can improve many other endeavours and these benefits need to be strategically recognised by the Federal Government.

### B. ECONOMY

It is difficult to quantify the economic consequences of the loss of the automotive sector and the flow through impact on educational attractiveness. We can quantify the benefit of existing industry support through one of SAE's initiatives to give an indication of the scale of magnitude. It is estimated that support of Australia's automotive industry through the Society's student Formula SAE-A program adds \$1.7 billion a year in educational and capability value to the engineering community. It is anticipated that the closure of product development and manufacturing of vehicles in Australia, then the Formula SAE-A competition/training program could no longer be supported. It should be noted that the auto industry takes up only 5% of the students so trained. The remainder though, drawn to the 'high tech just in time' learning experience, find themselves attractive to a wide range of R & D and Manufacturing; from biomedical through to crane exports.

Monash University's Centre of Policy Studies and the Allen Consulting Group have released a study that attempts to estimate the economic impact from the car industry shutting down over a two year period from 2017 to 2018. According to the results of the study, Australia's GDP would be \$7.3 billion (0.6%) smaller by 2018, with an overall negative impact to the economy of \$21.5 billion in net present value (NPV) terms. Around 33,000 jobs would be lost in Melbourne with a 1.4% cut in gross regional product by 2018, whereas 6,600 jobs would be lost in Adelaide with economic output falling by an anticipated 0.9%. The social consequences and their imposts of this step change are not costed in the modelling.

### C. AUSTRALIA'S NATURAL ADVANTAGE

Australia is highly competitive in global terms and has some distinct advantages which should be capitalised on.

Australia has a highly capable tertiary education sector with numerous engineering schools in major universities throughout the country many with a reputation for innovation in technology and learning practices closely linked to the automotive industry.

Our proximity to the ASEAN region in which vehicle sales are booming and 'Australian made' is perceived as a premium and desirable product. This proximity provides us with a productivity advantage to many competitors, as customers are on the doorstep both in terms of distance and time zones.

Our strength in gaseous fuels application, from a resources and infrastructure perspective, could allow us to become a global leader in this field.

Australia is also an ideal location for vehicle development and research. With existing proving grounds, relatively low cost land for future developments, and high quality development roads, all of the infrastructure required is already in place. In addition, there are exceptional variations of temperature across the nation, and the seasonal changes complement testing times in the Northern Hemisphere.

## WHAT IS REQUIRED TO REMAIN COMPETITIVE AND SUCCESSFUL IN THE FUTURE

1. As a strategic measure, Australia must strive to maintain in-country engineering design, research and development capability in addition to manufacturing.
2. Recognise that in terms of policy, the automotive engineering design and R&D fields can be separated from the production side of the automotive manufacturing industry.
3. Ensure the right policy frameworks exist to promote and support 'global homerooms' of engineering platform design. This could be through mechanisms such as recognising and incentivising 'designed in Australia' vehicles.
4. Make use of Australia's natural advantages; develop global vehicles here that are desirable for Australia, Asia and the Middle East.
5. Capitalise on our gaseous natural resources (CNG, LNG and LPG) to encourage innovation and development so that we become global leaders in this area.
6. Enable suppliers to invest more readily into research and development.
7. Government of all levels should buy more Australian built or designed vehicles.
8. Recognise that non-tariff barriers result in an unequal playing field for Australia's manufacturers and consider the best way to address that so that Australia is not left uncompetitive.

A whole of government approach is required to both recognise the importance of the automotive industry and enable its continued success. A working group assigned to the automotive industry with representatives from all parts of government working together to ensure common objectives are maintained. At a minimum, departments across federal, state, and local government of tax, trade, innovation, manufacturing, environment and fleet, would have representation in this working group.

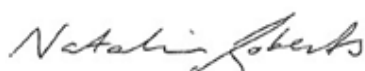
## CONCLUSION

The Australian automotive industry is an important part of Australia's industrial sector, and the strategic value of its knowledge, design, and research & development fields cannot be overstated.

The loss of the industry in Australia would have a significant adverse effect on the national economy, on the lives of hundreds of thousands of direct and indirect industry employees, and on those other industries that benefit from the presence of the automotive industry in Australia via knowledge transfer, and economies of scale.

Any prudent government will have a vested interest in retaining, promoting, and investing in an industry that contributes not only strategically to national security, but also to the financial well-being of its citizens, and the nation as a whole.

Yours Faithfully,



Natalie Roberts  
Executive Director  
Society of Automotive Engineers - Australasia