

# Real-world driving emissions testing in Australia

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## The need for real-world driving emissions testing

The AAA is calling on the Government to conduct Real-world Driving Emissions (RDE) testing of new vehicle models available in Australia each year and make the results available to consumers through the Green Vehicle Guide website.

Currently, Australian consumers have no accurate way of knowing a vehicle's true fuel efficiency and environmental performance. Therefore, Australians can't make an informed decision about which vehicle will put the least pressure on the family household budget.

Information about a vehicle's fuel efficiency and environmental performance is based on results from the standard laboratory test procedure. As demonstrated by both the Volkswagen scandal and a growing body of international literature, this test procedure is a very poor representation of real-world performance.

As governments around the world have introduced more stringent emissions regulations based on laboratory tests, car makers have optimised their vehicles to perform in the laboratory, not in the real world.<sup>1</sup>

As a result, the gap between fuel consumption results from the laboratory test procedure and real-world experiences has increased from around 9 per cent in 2001 to 42 per cent in 2015, according to international studies.<sup>2</sup>

By continuing to demand emissions reductions that are measured only in a laboratory, which are not being replicated under a real driving environment, governments are achieving no benefits for either consumers or the environment.

To achieve meaningful emissions reductions and help reduce fuel costs for consumers, we need to ensure that consumers have access to information on the real-world fuel efficiency and emissions performance of cars being sold on the Australian market.

<sup>1</sup> European Environment Agency, 2016, *Explaining road transport emissions: A non-technical guide*.

<sup>2</sup> International Council on Clean Transportation, 2016, *From laboratory to road: A 2016 update of official and 'real-world' consumption and CO2 values for passenger cars in Europe*. Available here: [http://www.theicct.org/sites/default/files/publications/ICCT\\_LaboratoryToRoad\\_2016.pdf](http://www.theicct.org/sites/default/files/publications/ICCT_LaboratoryToRoad_2016.pdf)

## AAA real-world driving emissions test program highlights the information gap

The AAA initiated its own RDE test program, following the Volkswagen emissions scandal. Under this program, the AAA commissioned consulting engineering firm ABMARC to test the real driving performance of 30 cars from the in-service Australian vehicle fleet, on Australian roads, using Australian fuels.

Preliminary results of the AAA's test program demonstrate that the fuel efficiency and environmental information provided to consumers when they are purchasing a new car does not reflect the true performance of vehicles under real driving conditions.

The vehicles tested to date are using up to 60% more fuel and producing up to 60% more CO<sub>2</sub> than the amount shown on the fuel consumption label affixed to the windshields of new cars at point of sale. Additionally, noxious gas emissions have been found to be up to eight times the legal limit.

The AAA test program results are consistent with findings from international studies of the gap between laboratory and real-world driving results.

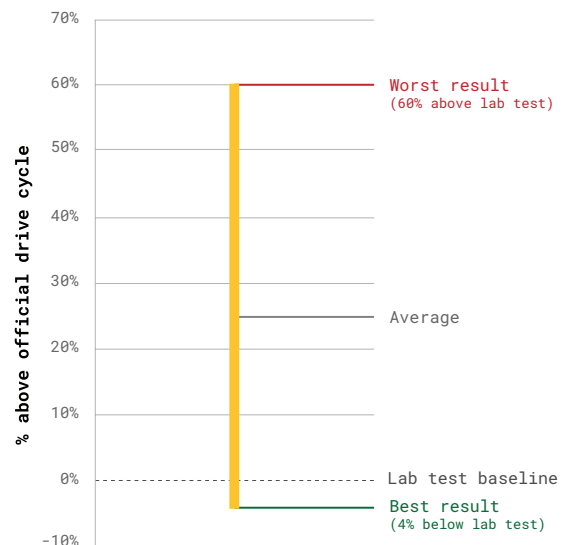


Fig. 1 Preliminary findings from the AAA real-world driving emissions testing pilot program, showing fuel consumption compared to official lab test results.



## New laboratory test procedures are not the whole solution

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The current laboratory test is being replaced with the Worldwide harmonised Light vehicles Test Procedure (WLTP), which is expected to better reflect real-world driving conditions.

However, the new standard test in itself is not the solution. International studies predict a 31 per cent divergence between WLTP fuel consumption results and real-world experiences in 2025.<sup>3</sup>

Relying on a laboratory test procedure will allow car makers to continue optimising their vehicles to perform in a laboratory, not in the real world.

## RDE is becoming the global standard

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RDE testing is being adopted across the world as a secondary measure of vehicle emissions and a means of keeping car makers accountable.

In April 2017, the Mayors of London and Paris announced they would provide car buyers with information based on on-road testing so they can make environmentally responsible choices. Other cities, including Seoul, Madrid, Mexico City, Milan, Moscow, Oslo and Tokyo, are expected to implement similar testing programs.<sup>4</sup>

The European Union is developing laws<sup>5</sup> that will require every member state to test one in every 50,000 new vehicles registered in that country the previous year. This is in addition to the mandatory RDE testing of new vehicles to ensure compliance with noxious gas emissions regulations (Euro 6d).

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<sup>3</sup> International Council on Clean Transportation, 2015, *From laboratory to road: A 2015 update of official and 'real-world' consumption and CO2 values for passenger cars in Europe*. Available here: [http://www.theicct.org/sites/default/files/publications/ICCT\\_LaboratoryToRoad\\_2015\\_Report\\_English.pdf](http://www.theicct.org/sites/default/files/publications/ICCT_LaboratoryToRoad_2015_Report_English.pdf)

<sup>4</sup> C40 Press Release, 29 March 2017, *Mayors of Paris and London announce car scoring system to slash air pollution on city streets*. Available here: [http://c40-production-images.s3.amazonaws.com/press\\_releases/images/161\\_Airvolution\\_Paris\\_launch\\_Press\\_Release\\_Final.original.pdf?1490749488](http://c40-production-images.s3.amazonaws.com/press_releases/images/161_Airvolution_Paris_launch_Press_Release_Final.original.pdf?1490749488)

## Benefits of real-world driving emissions testing in Australia

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An RDE testing program conducted in Australia, testing Australian vehicles, using Australian fuels, driven on Australian roads would provide Australian consumers with accurate information about which vehicles use the least fuel and emit the least CO2 in the real world.

An Australian RDE test program would allow consumers to make informed purchasing decisions, and allow policy makers to ensure that regulatory settings reflect real-world conditions.

An Australian RDE testing program would:

- Provide Australian consumers with the accurate information they need on real-world CO2 emissions and fuel consumption
- Empower Australian consumers to put pressure on vehicle manufacturers to bring their most efficient vehicle models to the Australian market
- Inform policy makers and ensure that the regulatory settings consider real world driving conditions, not just laboratory results
- Act as an audit mechanism that could identify vehicles that are designed to comply in the laboratory using defeat devices, which are prohibited under Australian emissions regulations.

<sup>5</sup> European Council, Press Release, 29 May 2017, *Car emission controls: Council agree to reform type-approval and market surveillance system*. Available here: <http://www.consilium.europa.eu/en/press/press-releases/2017/05/29-car-emission-controls-reform-type-approval-and-market-surveillance-system/>

# Proposed real-world driving emissions testing program

The AAA's proposed RDE test program would complement existing regulatory testing, not replace it.

In developing the proposal, the AAA has considered a number of program components, including the number of vehicles to be tested, criteria for vehicle selection, which emissions should be tested, testing guidelines, testing location, how results would be shared, expected costs, and who might conduct the testing.

## How many vehicles would be tested?

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The AAA proposes that 60 new vehicle models available in Australia each year be subject to a RDE test.

The AAA expects that if 60 vehicles were to be tested each year, results would be available for approximately 60 per cent of new vehicle sales within two years.

## How would vehicles be selected?

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The AAA proposes that detailed vehicle selection criteria be developed to guide the delivery of the program.

To ensure robust coverage of the new vehicle fleet, and to meet each of the program objectives, the AAA expects that the criteria would select vehicles to:

- Maximise the representation of Australia's new vehicle fleet
- Cover a representative range of:
  - Manufacturers
  - Vehicle segments
  - Fuel types
- Include vehicles of interest by:
  - Technology
  - Fuel type
- Include low volume, new market entries and models not sold into Europe or the USA.

## What would the program test?

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The testing would evaluate vehicle emissions in real-world driving conditions compared to the certified laboratory limits.

The AAA proposes the tests should measure fuel consumption, CO<sub>2</sub> emissions, noxious gas emissions, and particulate emissions. The testing of fuel consumption is critical to an Australian RDE test program, as other RDE tests conducted overseas currently focus only on noxious gasses and particulates, due to heightened air quality problems.

## How would the test be conducted?

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The AAA proposes the test be conducted using a standardised method that accords with the requirements specified by the European Commission's RDE regulations. This includes:

- Conducting the test over a designated route incorporating one third urban, one third rural and one third highway driving, with no less than 16 km distance travelled in each of the three segments
- A test duration of between 90 and 120 minutes
- Several tests being undertaken for each vehicle tested (this could be one cold start, and one hot start test per vehicle).

The testing procedure would be modified for Australia's unique roads and driving conditions (such as average speeds and ambient temperatures), and be conducted using Australian market fuels.

The testing would use a compact Portable Emission Measurement System (PEMS) to measure exhaust emissions, which meets the requirements of European and US EPA real-world driving regulations.

The AAA expects a Government-commissioned test program, following the European RDE procedure, to deliver results that are repeatable to within 3 to 5 per cent.

The repeatability factor of between 3 and 5 per cent is consistent with the AAA RDE test program results, which has been undertaken in accordance with strictly prescribed methodologies outlined in the European RDE procedure.



### Where would the tests be conducted?

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Testing must be conducted in Australia. Tests conducted overseas do not account for Australian conditions.

Australia's fuel standards are not the same as those in other markets, and emissions vary depending upon fuel quality. Also, European road conditions, average speeds and ambient temperatures are not representative of Australian conditions.

Cars sold in Australia must be tested under Australian conditions to ensure Australian consumers have the information they need about how their car will perform.

### How would results be shared?

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A key component of the AAA's proposed model is that results of RDE testing must be made available through the Government's Green Vehicle Guide Website, alongside laboratory test results.

Opportunities for additional consumer channels such as social media and smart phone apps would need to also be considered. The AAA expects the results would be replicated on commercial websites such as CarSales.com.au and, over time, by vehicle brands.

### What will the program cost and how will it be funded?

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The AAA estimates that it would cost in the order of \$3 million per year to test 60 vehicles per year and report the results to consumers through the Government's Green Vehicle Guide.

This cost should be covered by Government, given the high level of consumer and environmental benefit that the program would deliver, together with the information that will flow to policy makers who develop and administer the regulations.

However, the AAA recognises that Government resources are limited and that other funding sources may need to be considered. In the event that the cost is passed on to industry, the AAA estimates that vehicle manufacturers would need to contribute in the order of only \$3.00 from the sale of each of the 1.2 million new cars sold in Australia each year to cover the cost of the program. The \$3.00 per vehicle could be collected at the time of importation, and passed to the Department of Infrastructure and Regional Development to administer as part of its annual budget allocation.

### Who would undertake the testing?

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The AAA proposes that the Department of Infrastructure and Regional Development contract the testing through a competitive tender process. This would ensure that appropriate expertise and equipment is deployed to undertake the testing, at least cost to government.

The entity contracted to undertake the testing would also take carriage of updating and maintaining the Green Vehicle Guide website, and developing other consumer-facing technology applications (e.g. smart-phone apps) to ensure the test results are widely available.

The testing must be independent of vehicle manufacturers.