

# Benefits of Electric Vehicles for Australia

## *How a shift to electric vehicles (EVs) will benefit Australia*

Shifting to electric vehicles (EVs) will benefit Australia by:

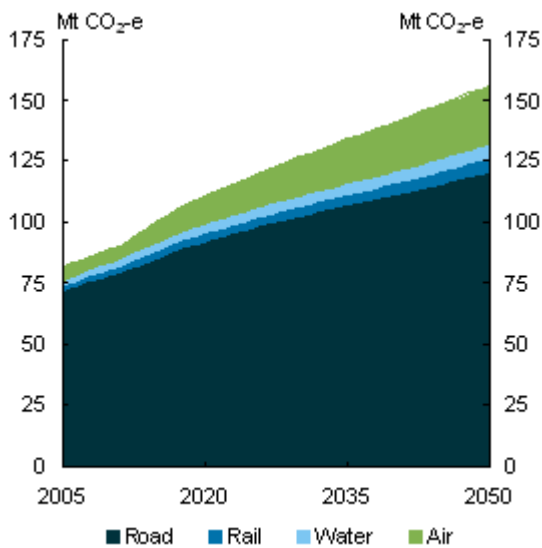
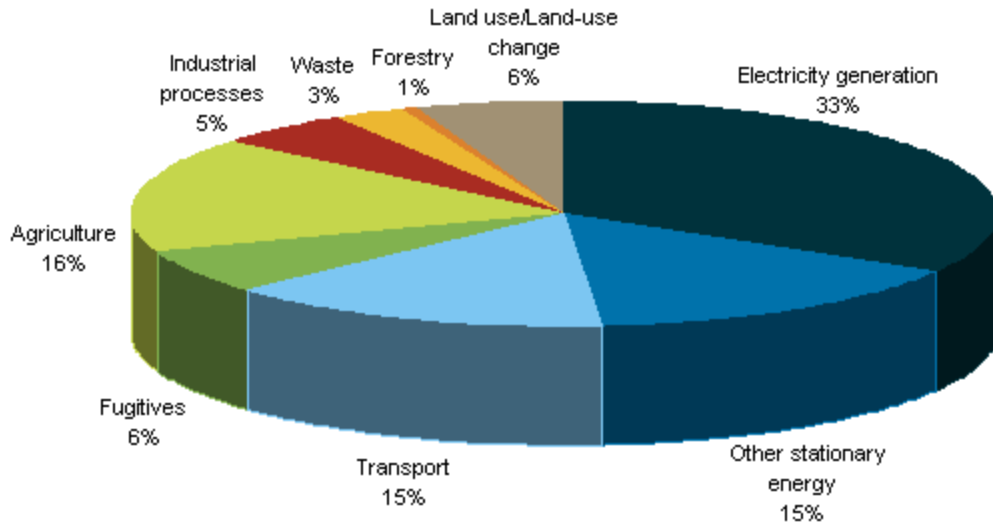
1. reducing global emissions, which is needed in the light of climate change
2. reducing local emissions will also improve our health
3. reducing the need to import oil, thus improving Australia's balance of payments and energy independence
4. protecting existing jobs, while creating green domestic jobs and investment opportunities in renewable energy, vehicle conversions, EV recharging infrastructure, etc.
5. making the electric grid more resilient, by load balancing and decentralisation
6. improving the quality and convenience of travel, by reducing noise, fumes, vibration and the need for maintenance and refueling of vehicles
7. electric-assisted bicycles can help avoid obesity and keep people fit, apart from resolving road congestion and making travel more affordable
8. electric trains and light rail can also help resolve road congestion, and can offer a public transport alternative that can quickly move large amounts of people

Below follows some background information to illustrate each of the above points.

Contributions to this document are welcome - to suggest changes, additions and other sources to illustrate the above points, go to:

<http://j.mp/EVbenefits>

1. The chart below shows the [Treasury estimates](#) for the share of Australia's cumulative emissions 2005 - 2050 of transport (Source: Treasury estimates from MMRF).



Road transport activity in Australia nearly doubles between 2006 and 2050 in [Treasury projections](#), resulting in a projected growth in emissions on the image on the left. Obviously, any effort to reduce Australia's emissions will have to look at transport. EVs produce no emissions, while Australia has plenty of scope to produce electricity in clean ways.

As the above image further shows, transport, electricity and fugitive emissions that result from mining together comprise more than half of Australia's emissions. This makes the combination of EVs and renewable energy particularly interesting, in efforts to combat global warming.

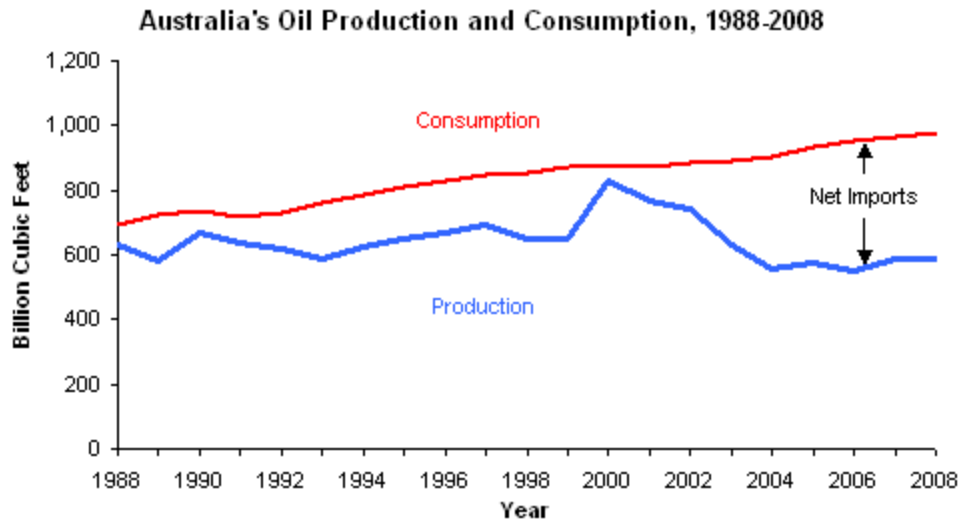
As discussed under point 5, EVs and renewable energy also go hand in hand in other ways.

2. Vehicle emissions are responsible for many health problems, especially in urban areas that are prone to [smog](#). A prepublication of the study [Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use](#) by the U.S. National Research Council concludes that fossil fuel comes with huge hidden health costs. In 2005, the vehicle sector produced \$56 billion in health and other non-climate-change damages in the U.S.



Part of [a smoggy morn](#), uploaded CC to Flickr.com on 28 October 2007 by yewenyi with tags including Sydney and smog.

3. Oil production in Australia peaked in 2000 at 828,000 barrels per day (bbl/d) and has since been declining. In 2008, Australia consumed approximately 954,000 bbl/d of crude oil, condensate, and products, of which almost 40 percent was imported, according to the September 2009 [country brief on Australia](#), which also features the image below (1 cubic foot = 28.32 liter).

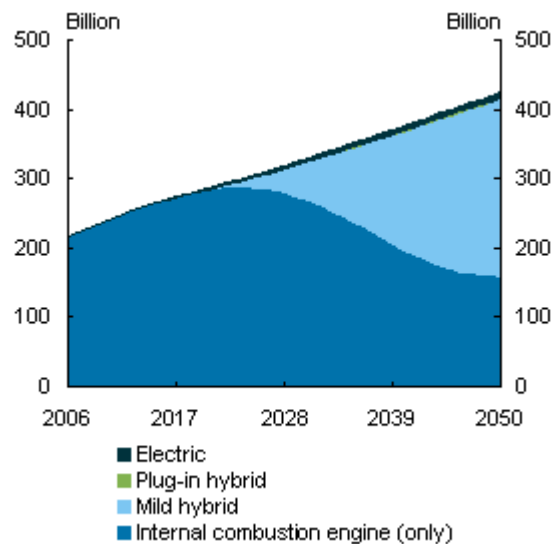
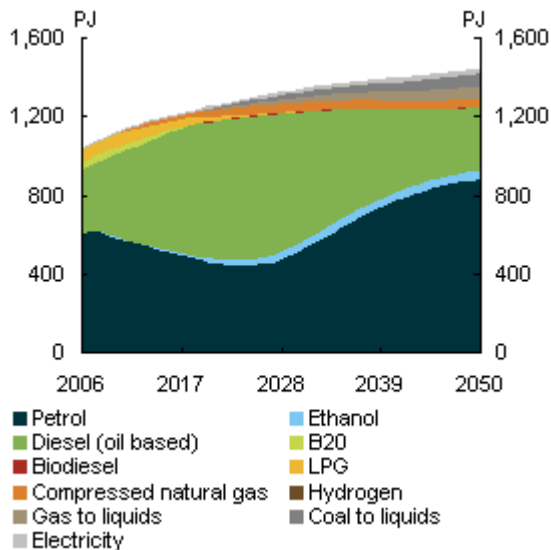


Source: EIA

Without government support for EVs, the need for oil imports can be expected to show little improvement, as illustrated by the [Australian Treasury's projections](#) pictured below.

The image on the left shows Treasury projections of how vehicles will be powered between today and 2050. Conventional fossil fuel, in particular petrol and diesel, continues to dominate.

The image on the right shows kilometres travelled by mode, with Treasury projecting only little growth in electric and plug-in hybrids in Australia between today and 2050, when a total of 17 petajoules (PJ) of electricity is projected to be used in transport – around 5 TWh – which amounts to around 1 per cent of total Australian electricity production in 2050. Hydrogen technologies are not deployed.



In conclusion, reducing the need to import oil will significantly improving Australia's balance of payments and energy independence. Shifting to EVs can achieve just that.

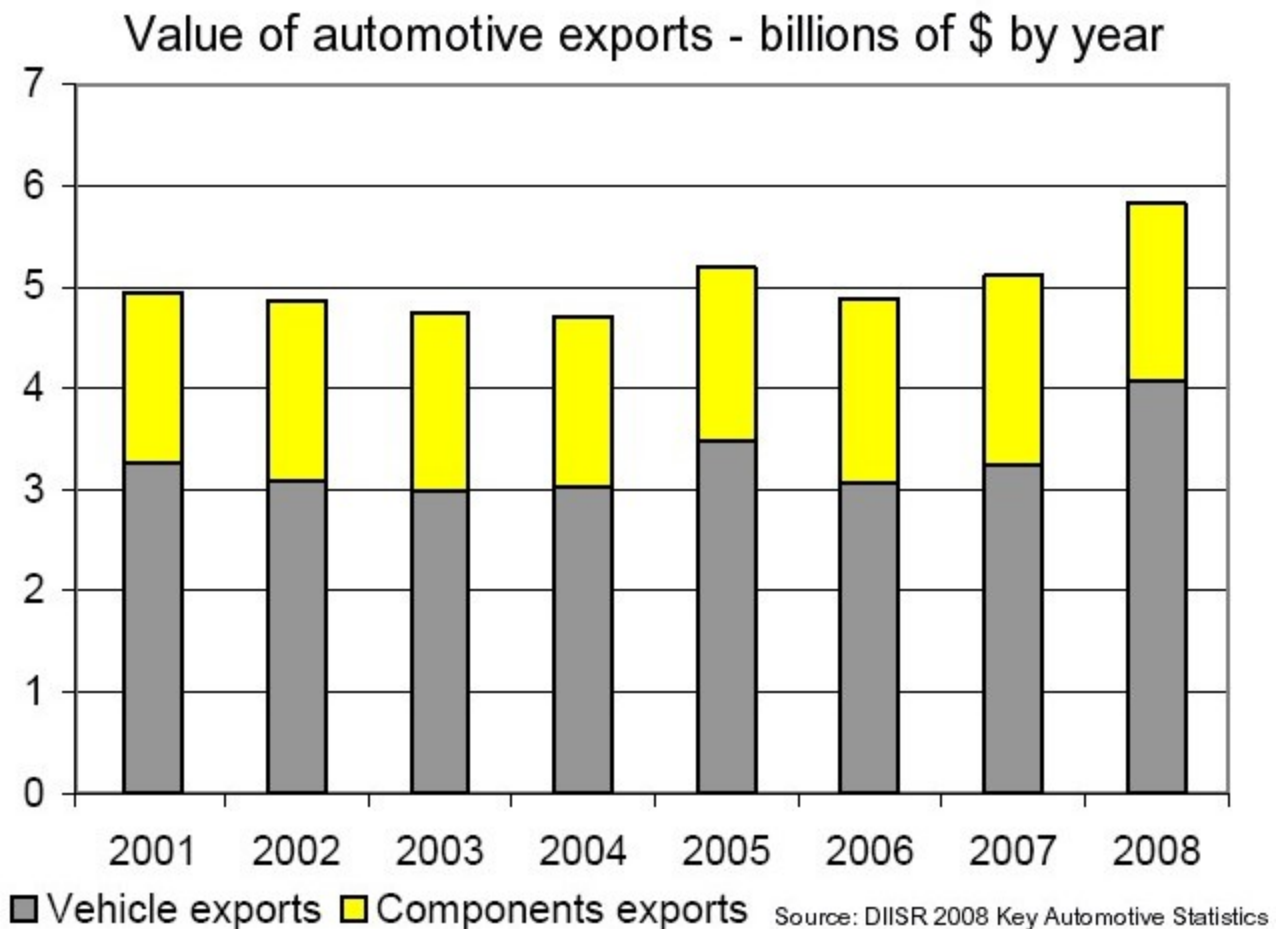
4. In the article [Australia's Take on an EV Future](#), Ben Kenealy of [Better Place](#) points out that Australia is one of only about 14 countries worldwide that produce a complete car from original design and engineering through to final assembly.

While Australia has vast distances that, at first glance, may seem to make EV introduction more difficult, the vast majority of people in Australia lives in the suburbs of one of the seven large cities, while doing nearly all of their driving within these cities.

Furthermore, more than 50% of households have two or more cars, which makes it easier to make the switch to electric for at least one of the cars.

Finally, Australia's low fuel efficiency (11.1 litres per 100km) is a further argument in favor of switching to electric vehicles. Australia's fuel efficiency is much lower than Europe's and has improved less than 1% in total over the last ten years.

These are reasons why Better Place plans to roll out a national network of recharging points and battery swapping stations for electric vehicles, starting in Canberra.

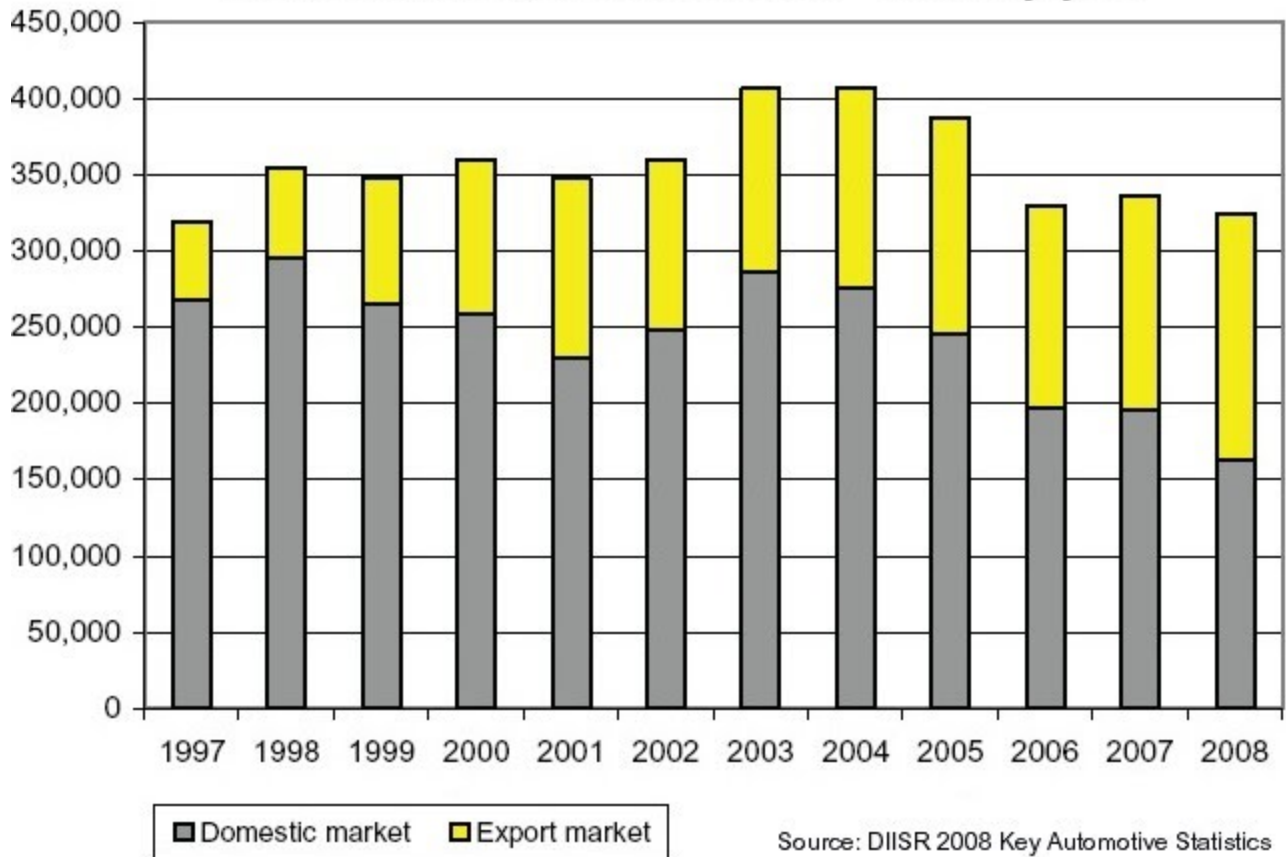


Furthermore, as the above image from [Department of Innovation, Industry, Science and Research statistics](#) shows, Australia's automotive exports alone were worth almost \$6 billion in 2008, up from around \$5 billion for each of the seven preceding years. A shift of those export markets to electric vehicles will put those exports at risk, if Australia failed to shift its production to electric vehicles and associated components.

The automotive manufacturing industry [employs around 46,000 people](#), while a further 100,000 jobs are estimated to directly or indirectly depend on the automotive industry in industries such as steel, glass, plastics and services. On 10 November 2008, the Government launched *A New Car Plan for a Greener Future*, providing \$6.2 billion to assist the automotive industry to prepare for a low carbon future and to make the industry indispensable to global markets and supply

chains. This includes a \$10.5 million expansion of the LPG vehicle scheme that doubles payments to purchasers of new private use vehicles that are factory fitted with LPG technology. However, no such grants are available for conversion of vehicles to EVs, despite the potential of conversion of existing vehicles to electric to create a huge market for components, which also comprise a large part of exports, as illustrated by above image.

### Australian Vehicle Production - units by year



5. As discussed above, EVs and renewable energy go hand in hand -- their combination can significantly reduce emissions of greenhouse gases. Since EVs can be recharged at night, when there is little demand for electricity, EVs can be accommodated with little expansion of the grid.

Wind turbines generate a lot of energy at night, when there is little demand for electricity. As more wind turbines get installed, such energy would go to waste, unless it can be stored. EVs can make the electric grid more resilient, by load balancing and decentralisation of the sources that feed electricity into the grid. EVs can feed surplus electricity into the grid at times of high demand, during emergencies and to help sudden demand, e.g. to accommodate sudden heavy use of rapid recharging facilities.

6. EVs can improve the quality and convenience of travel, by reducing noise, fumes, vibration and the need for maintenance and refueling of vehicles. This point has been discussed in further detail at the [Electric Vehicles - Frequently Asked Questions knol](#).

7. Electric bicycles can be a good alternative to people who would like to use bicycles, but have problems driving longer distances, and driving uphill or against the wind. Having the option of being assisted by an electric motor can just tip the balance to make more people use bicycles. Electric bicycles are a healthy and affordable alternative compared to cars. Apart from helping resolve road congestion, they can also help avoid obesity and keep people fit.

8. Electric trains and light rail can also help resolve road congestion, and can offer a public transport alternative that can quickly move large amounts of people.