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Prototype hybrid electric vehicle hits the road

The NSW Deputy Premier and Minister for the Environment and Climate Change, Carmel Tebbutt, today launched Australia's first hybrid-electric car that can feed power back into the grid, which holds potential to transform the way we power our cars and use energy.

Ms Tebbutt said the prototype car, named SWITCH, could supply energy to the grid during times of peak demand and could also be charged using renewable energy.

Engineered by researchers at the University of Technology, Sydney (UTS) in a project funded by the NSW Government, SWITCH is an example of the kind of cutting edge research currently underway into greener transport solutions.

"SWITCH provides us with a glimpse of what a cleaner, greener future may look like in NSW," Ms Tebbutt said.

"We know that people want to play their part when it comes to reducing their impact on the environment."

"SWITCH not only saves up to 2.8 tonnes of greenhouse gas emissions a year, compared to an average car - it also acts as a portable storage unit for renewable energy."

This prototype has the potential to reduce petrol use and greenhouse gas emissions, but also help families save money.

Based on a 30km per day commute it's estimated that Switch would cost as little as 50 cents per day to charge with off-peak power.

Householders could one day save money by powering their car at night when electricity is cheapest and feeding back into the grid at times when electricity is more expensive.

SWITCH could also give a big boost to renewable energy by storing green energy when the wind is blowing or the sun is shining, and then supplying this clean, green energy to the grid when demand is at its peak.

While the vehicle is only at the trial stage, it is possible that new smart grid technology could control a whole fleet of cars so that they charge or supply energy at different times.

"This is cutting edge, innovative research that the NSW Government is supporting as part of our push to be the greenest, smartest state in Australia," said Ms Tebbutt.

SWITCH was unveiled by Ms Tebbutt and researchers at the UTS Institute of Sustainable Futures.

Research Project Director Chris Dunstan, of UTS, said the SWITCH prototype was the next step in the electric vehicle revolution and opened up exciting opportunities for renewable energy storage.

"The research team at UTS adapted the car from a standard Toyota Prius by adding extra batteries, controls and connections so that it can charge from — or feed into — household mains power supply," he said.



Carmel Tebbutt MP

Deputy Premier

Minister for Climate Change and the Environment | Minister for Commerce



“The extra batteries can store energy at off-peak times and feed power back into the grid at times of peak demand. On a large scale, this could level out peaks and troughs in power supply across regions.

“This car can also support renewable energy sources, such as solar photo-voltaic cells and wind turbines, by storing energy at times of peak production for use later on.”

The hybrid technology also gives the plug-in car a distance advantage over electric-only cars because the petrol engine can keep the car going long after the mains-charged batteries are exhausted.

Last month, Ms Tebbutt announced the NSW Government was setting up an inter-agency Electric Vehicles Taskforce to review the technology, infrastructure, policy and legislation on electric vehicles and look at any barriers to introduction that may exist. The taskforce met for the first time last week.

Following the launch, SWITCH will be trialled as a fleet vehicle by staff at the Department of Environment and Climate Change. The progress of the car, its fuel efficiency and electricity tariffs will be monitored in partnership with EnergyAustralia and posted on the department’s website at www.environment.nsw.gov.au

For information about the Electric Vehicles - Cars of the Future Open day, visit http://www.eec.energyaustralia.com.au/openDay_landing.html



DECC/UTS Grid Interactive Plug-in Hybrid Specs



- Base model: 2006 Toyota Prius
- Charged off standard 240V power using on board battery charger with charge time of approximately 3 hours
- Can feed energy back to the grid at 1.7kW through a standard solar type inverter
- 4.1kWh K2 Lithium Iron Phosphate (LiFePO₄) additional battery pack (35kg)
- Range in electric only vehicle mode of over 35km at low speeds
- Cost to recharge on Green Power at \$0.22 per kWh is less than \$1
- Fuel economy of under 2L/100km in city driving (depending on conditions and driving style). This gives a fuel cost equivalent of under \$0.40 per litre of petrol compared to a conventional mid size car (with petrol at \$1.50 per litre)
- More than 2000 charge cycles/discharge cycles down to 80% capacity
- Maximum battery discharge rate of 80A (20kW)
- Interfaces seamlessly with the Toyota Hybrid System and Toyota OEM battery
- Embodied energy in batteries estimated at approximately 1 tonne of CO₂-eq (paid off in 1 year if charging using renewable energy)