ELECTRICITY NETWORK TRANSFORMATION ROADMAP

MEDIA RELEASE

2015-25

Embargoed until 12 am 15 July 2015

Electricity sector transformation to be mapped in unique Australian partnership

Brisbane, Australia:

The Energy Networks Association (ENA) and CSIRO today announced an Australian first partnership between the national science agency and electricity networks to deliver an *Electricity Network Transformation Roadmap*.

The Roadmap will set out a pathway for the transformation of the electricity network industry over the next decade, supporting better customer outcomes as the sector accommodates rapid adoption of new technologies.

Building on the CSIRO's Future Grid Forum in 2013, the roadmap development process will involve collaboration across the energy supply chain, including consumer representatives, service and technology providers, policy makers, regulators, and academia.

"Australian electricity networks are delighted to partner with the CSIRO to ensure our electricity system is future ready and oriented towards empowered customers," said Energy Networks Association CEO, John Bradley.

"Australia has a clear window of opportunity to reshape our electricity system to enable customer-driven take up of new services, like renewable and low-emission generation, home automation, battery storage, and electric vehicles."

The transformation of the Australian energy system is already underway with 1.4 million household generators, significantly greater consumer engagement, falling per capita consumption, and smart grid technologies enabling better network services.

The Network Transformation Roadmap project will use the best available science from CSIRO and close collaboration with stakeholders to inform a ten year transition plan.

Central to the transformation will be the evolution of the way customers use, produce and value electricity and energy services.

"Energy transformation is challenging traditional business models but it is also creating opportunities for alternative services to unlock additional value for both homes and businesses," said CSIRO Chief Economist, Paul Graham.

Australian households are world leaders in the uptake of household solar power, with almost 15% having adopted the technology – more than triple that of Germany, in second place.

The internationally significant penetration of rooftop solar panels in Australia combined with the promise of accessible energy storage technology within a few years, means that Australian networks are in a unique position to lead the world in demonstrating how to transform the energy system in a way that is responsive to customer choice.

"Australia is an ideal place to launch this collaboration. While other developed countries around the world face similar change pressures, Australia's impressive rates of household solar penetration together with its market diversity – from remote rural networks to highly urbanised cities are truly unique," said Mr Graham.

ena energy networks association

CSIRO

A partnership between the ENA and CSIRO

There is enormous potential for new business models such as micro-grids or ‘transactive’ automated demand control systems to replace our conventional model of supplying bulk power to largely passive consumers, and we are well placed to explore these opportunities within the sector.

The Roadmap development process can therefore take into account the expertise available both in Australia and internationally and adapt them for Australian energy customers.

“We look forward to working with all stakeholders to position electricity networks and supply chain participants to meet customers changing expectations for the future,” said Mr Bradley.

Project partners will deliver findings in two parts: first, an Interim Report in November 2015 to share early learnings, and then an Industry Transformation Report and the final Roadmap in October 2016.

ENDS

For an overview of the *Electricity Network Transformation Roadmap* click here

More information about *Electricity Network Transformation Roadmap* can be found here

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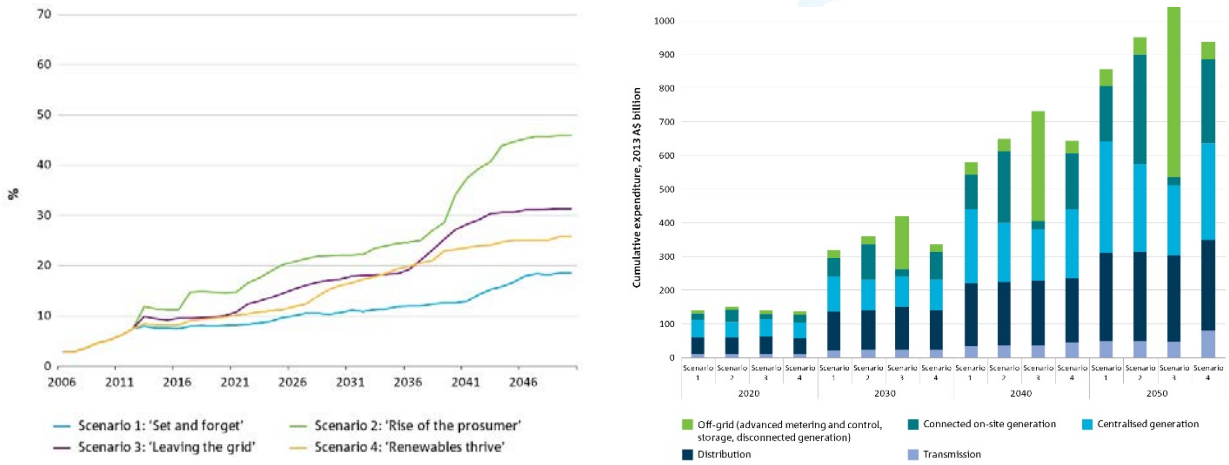
Background facts on electricity system trends

1. Long-term uncertainty in Australia's energy system

In 2013, CSIROs Future Grid Forum analysed four very different energy futures. By 2050, on-site generation may provide as little as 19% or as much as 45% of energy to customers. The outcomes for system costs and customer bill outcomes could also be very different.



Share of on-site generation (left) and projected cumulative system costs (right) from *Change and choice*

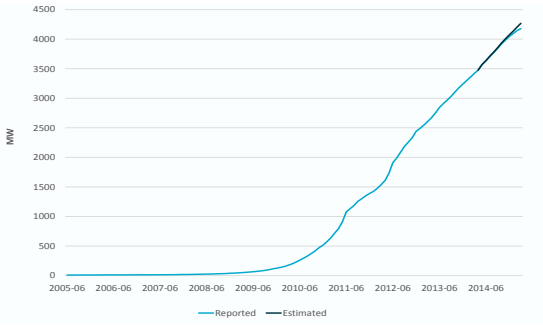
2. Recent trends in Energy Demand

- Australia's total energy consumption has declined in recent years. The modest growth forecast by AEMO in the near term is driven by LNG industry activity in Queensland. Residential and Commercial per capita consumption has declined steeply and is forecast to continue to decline over the forecast period.

Comparison of low, medium and high consumption scenarios to 2024–25. Source: AEMO National Electricity Forecasting Report 2015

3. World Leading Solar Penetration

- Australia has the world's highest rates of rooftop solar PV penetration, with installed capacity approximately 4,200 MW. This has been driven part by significant government subsidies and falling solar technology costs, which declined from $12 per kW in 2005[1] to $1.85 per kW in 2015[2]

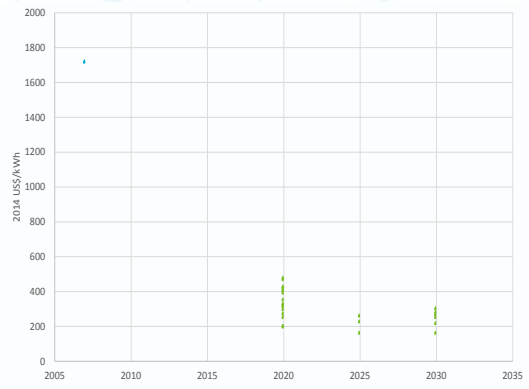


Australian solar panel uptake. Source: Australian PV Institute, http://pv-map.apvi.org.au/analyses [accessed 2 July 2015]

[1] Watt, Muriel (2006), National Survey Report of PV Power Applications in Australia: 2005.
[2] Solar Choice (2015), "Residential Solar PV Price Index: June 2015," www.solarchoice.net.au/blog/residential-solar-pv-system-prices-june-2015 [accessed 8 July 2015]

4. Battery Storage

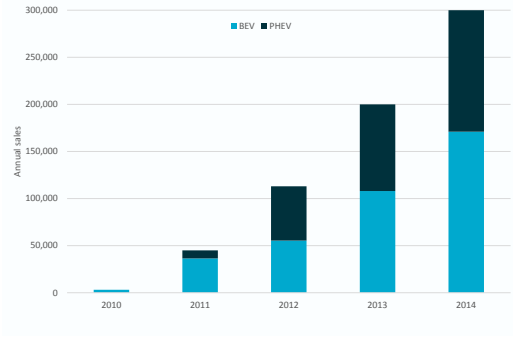
- A number of new entrants are targeting electricity customers with offers of battery storage, including solar + storage packages. This has been driven in part by recent progress in falling technology costs. Most Australian network utilities are trialling or deploying 'grid scale' storage to improve network performance or avoid more expensive investments.



Cost of Lithium-ion battery packs. Source: Nykvist and Nilsson (2015)

5. Electric Vehicles

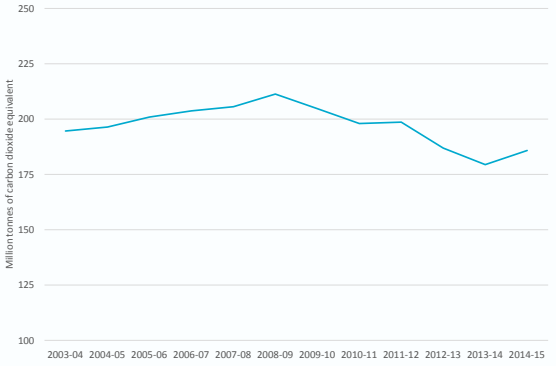
- Australia has seen relatively low levels of penetration of electric vehicles, with approximately 1,900 estimated to have been sold as at 2015, according to AEMO. This compares to 275,000 electric vehicles in the USA, 108,000 in Japan and 83,000 electric cars and 230 million electric bikes in China[3].
- The technology remains a potential game-changer both for Australia's energy emissions profile and for the electricity system, as electric vehicles may contribute to distributed storage (through vehicle-to-grid charging) and network efficiency.



Annual global EV sales. Source: International Energy Agency *Global EV Outlook* (2015)

6. Electricity Generation and Emissions

- The Australian Government is preparing to release its post 2020 emissions targets. This will be used to inform the Paris Agreement which is to set out how countries address climate change after 2020, when current emissions reduction commitments under the UNFCCC and Kyoto Protocol lapse.



Annual electricity sector Greenhouse gas emissions. Source: Department of Environment (2015) and Pitt & Sherry *carbon emissions index*

[3] IEA, *Global EV Outlook 2015, http://www.iea.org/evi/Global-EV-Outlook-2015-Update_2page.pdf [accessed 8 July 2015]*