ELECTRICITY NETWORK TRANSFORMATION ROADMAP

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Customers in Control of Australia's Energy Future

Australia's energy system will see a historic transfer of power from energy utilities to customers, according to the Interim Report of the *Electricity Network Transformation Roadmap* project.

In an Australian first, the CSIRO and the Energy Networks Association (ENA) are partnering to develop a ten year transition plan for the electricity sector which is focused on customers and developed with stakeholders.

"The big shift in our energy future is the transfer of decision-making and control from a handful of energy utilities to millions of Australian customers," ENA CEO John Bradley said.

"CSIRO's latest analysis shows more than $224 billion – or more than a quarter - of all electricity system expenditure to 2050 is likely to be made by consumers.

"The Grid can enable that transformation while maintaining a highly reliable, quality service to meet the needs of customers.

"The Electricity Network Transformation Roadmap will assist Australia's electricity system to support customer choice and control, reduce costs, ensure fairness and deliver the clean energy transition."

Key findings in the Interim Report include:

- **In the next ten years, storage costs could fall by approximately two-thirds and the cost of solar panels will fall by a third.**
- **The outlook for long-term electricity customer bills has improved since 2013 modelling and sees a slightly lower share of income spent on electricity than previously expected - due partly to the benefits of battery storage to the system.**
- **There will be stronger incentives to take up solar panels but also the potential for increased cross subsidies among customers if cost-reflective pricing is not addressed.**
- **The electricity sector could play a significant role in efforts to reduce greenhouse gas emissions with up to 51% abatement in the sector by 2030.**
- **The electricity grid has a key enabling role in all scenarios although it may be used very differently – as a 'platform' for new energy services.**

CSIRO Energy Chief Economist, Paul Graham, said, "the CSIRO's 2013 Future Grid Forum provided a detailed view on Australia's future electricity system. This 2015 update of four scenarios will act as the baseline for final Roadmap recommendations, due late 2016."

Greenhouse gas reductions

"With the Paris Climate Conference underway, the report confirms that the electricity sector can play a significant role in Australia's efforts to reduce greenhouse gas emissions.

"By 2030, projected electricity sector abatement will range from 29% to 51% compared to 2005," Mr. Graham said.

One scenario models near zero emissions from the electricity sector by 2050. This relies on the grid to connect dispersed large-scale renewables, requiring more network infrastructure than other scenarios - with about 73% of electricity provided by the grid from large -scale renewable generation and the remainder from rooftop solar panels installed by the end-user.

ena energy networks association

CSIRO

A partnership between the ENA and CSIRO

Improved bill outcomes and more solar and storage

Mr Graham said that the outlook for long-term electricity customer bills has improved since the 2013 Future Grid Forum Modeling.

“The CSIRO forecasts that electricity retail bill increases will be less than previously forecast, and expect them to remain the same 2-3% share of average household expenditure, as they are today,” Mr Graham said.

“Solar and storage costs have also become more competitive since 2013, with current costs already 20% lower.

“Storage costs are now expected to fall by around two-thirds in the next 10 years, while solar panel costs are expected to fall by around one-third,” Mr Graham said

“Falling storage costs can improve the competitiveness of grid-delivered electricity, contributing to lower bills for grid-connected customers by enabling peak demand reduction and more efficient operation of networks.”

Australia’s electricity network business model to evolve

“The CSIRO analysis indicates a modernised electricity grid remains important to even the most decentralised scenarios - but this relies on the value it can provide to customers,” Mr Bradley said.

“The technologies and role of the network is set to change significantly with an increasingly ‘two-way’ network, with some scenarios seeing up to 45% of electricity from onsite generation – such as solar panels on homes,” Mr Bradley said.

Mr. Bradley said that the business model of the network could evolve fundamentally to a ‘platform provider’, enabling new energy services and uses, as opposed to the conventional ‘poles and wires’ service.

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

The Network Transformation Roadmap, to be released in late 2016, will identify specific actions for businesses, policy and regulation as part of an integrated pathway for Australia’s energy transition over the next decade.

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Australia’s national science agency CSIRO and the peak national body representing gas distribution and electricity transmission and distribution businesses in Australia, the Energy Networks Association (ENA) have partnered to develop an Electricity Network Transformation Roadmap (the Roadmap).

The Roadmap program is a two stage process running over approximately 18 months. The Interim Program Report outlines the findings of Stage 1, which ran from July to October 2015, and includes a refresh of the CSIRO Future Grid Forum scenarios.

Figure 2.16: Projected cumulative electricity sector investment and operating expenditure to 2050 (including percentage contribution of each supply chain component), by scenario