

PARADOX IN PARADISE: WHERE WILL AUSTRALIA'S ENERGY POLICY AND MARKETS TAKE US NEXT?

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Overview

Australia's energy policy and market presents a confusing paradox for policy makers and economic analysts. Australia's climate change policy has oscillated from one strategy to another¹ from having Energy White Papers that focused on addressing climate change and prioritising renewables (RET, 2012), to an Energy White Paper that sees coal as the future energy source for domestic electricity (DIS, 2015a). In terms of resources and development, Australia is both a fossil fuel and renewable energy paradise. It has some of the world's best coal, and gas and uranium resources along with consistently high solar radiation, wind velocities, and the space and skills to install renewables (CEC, 2015). Despite its having the world's largest uranium resources, it has a populace that vehemently opposes nuclear power, and is so in favour of renewables that it is installing more solar PVs on its homes than anywhere else in the world (APVI, 2015).

On the one hand, Australia has some of the highest per capita emissions in the world, is the second largest coal exporter (BP, 2015), and plans to increase coal production by 1.2% per annum to 2050 (BREE, 2014). The government is prioritising fossil fuel power in policy (DIS, 2015a) and steering investment away from conventional renewables². It also has the world's most-polluting, least-efficient and oldest sub-critical coal power fleet (Oxford, 2013). On the other hand, Australia also projected lower levelised cost of electricity (LCOE) for renewables than for coal by 2020 (CSIRO, 2014) and the all committed new generation projects are renewables (DIIS, 2015, in 2014 coal generation declined by 5% and renewables increased to 15% of total electricity generation (DIS, 2015b), improving energy efficiency (AEMO, 2015a) and an energy productivity target (DIS, 2015a). Within the market, electricity prices are increasing in the face of deregulation, declining energy demand (DIS, 2015b), and a 20% excess in electricity capacity (ESAA, 2015). The above points raise three interesting questions. Are the changing policies creating an environment that is discouraging investment in new power generally because they are uncertain on the future path? Is coal Australia's energy future, or is it renewables? And, if we have ample opportunity for renewables in Australia, is Australia progressing them enough?

Methods

This paper reviews and analyses recent publications on Australian energy policy and data to elucidate the paradoxes to come to the above mentioned three questions. It then focuses on those three questions to look at the growth in renewables despite uncertainty in Federal government renewables policy and funding, previously unanticipated shifts in the market, including reduced energy generation, inadvertent energy efficiency improvements, and shifting load profiles in the residential and commercial sector due, in part, to high numbers of PV installations. The Business as Usual (BAU) projections from 2013 to 2040 in the Outlook use IEA statistics for historical data, and Australian policy and data to develop a top-down demand model and a bottom-up supply model for electricity generation and capacity. The energy demand model uses sub-models for the transport sector, residential, commercial and agriculture sector, and the industrial sector.

Results

Under APERC's BAU, Australia exceeds the current Renewable Energy Target 33 TWh of utility renewable electricity generation by 2020, reaching 51 TWh including rooftop solar by 2020. Total renewable electricity generation increases to 86 TWh (28%) by 2040*. However, this is significantly less than the modelling projections

¹ See., e.g.: <http://www.wri.org/blog/2012/09/america-can-learn-australia%E2%80%99s-new-clean-energy-future-package>; or http://www.cdclimat.com/IMG/pdf/12-05_climate_brief_15_-_ets_australia.pdf.
http://www.slate.com/articles/technology/future_tense/2014/09/australia_s_environmental_movement_has_been_overthrown.html; or <http://www.wsj.com/articles/australia-repeals-carbon-tax-1405560964>.

² While there has been a change in government from the Abbott to the Turnbull government, there has been no shift in existing energy policy. See., e.g'. <http://www.theguardian.com/australia-news/2015/oct/20/malcolm-turnbull-refuses-to-back-clean-energy-finance-corporation>; <http://www.theguardian.com/environment/2015/jun/11/windfarms-may-have-potential-health-impacts-tony-abbott-says>; <http://www.abc.net.au/news/2015-07-13/pm-defends-decision-to-axe-wind-solar-from-cefc-spending/6615372>; or <https://www.newscientist.com/article/dn27908-australian-government-sets-up-renewable-energy-body-to-fail/>.

* Outlook results still being finalised at 10 December 2015.

of 60% RE generation by 2040 by Bloomberg, which assumes more optimistic renewable development (BNEF, 2015) and the preliminary results in the Outlook's High Renewables scenario of 52% RE generation by 2040.

Conclusions

2016 will be an important election year for determining Australia's energy future, and given the existing contradictions between Australia's energy market and energy policy, understanding its present context is imperative to knowing which direction the country will go in the future. This paper attempts firstly to identify and explain how and why such market and policy paradoxes, and subsequent questions, occur in Australia. Secondly, it offers Australia's future potential energy mix to 2040 by using APERC's 2016 forthcoming APEC Energy Demand and Supply Outlook 6th Edition (the Outlook) under BAU scenario assumptions, which presents a conservative projection on Australia's future energy production and energy mix based on current Federal and State government policies*. Accordingly, although investment uncertainty exists in Australia, it has not impeded renewable development as much as initially perceived, and ultimately the extent to which renewables will grow in Australia requires consistent and uninterrupted policy action, if it is to reach the potential indicated in the High Renewables scenario or Bloomberg's analysis.

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