



Australian climate change policy – where to from here?

Tim Nelson
February 2016

Energy in
action.[®]

Since 1837

AGL

AGL's Nyngan Solar Plant

Agenda

- 1 Energy-only (EO) markets and renewable energy investment
- 2 Barriers to exit
- 3 Where to from here? Carbon, sunk costs and electricity markets
- 4 Some policy recommendations

This presentation is sourced from these publications:

Nelson, T. Reid, C. and McNeill, J. (2015), "Energy-only markets and renewable energy targets: complementary policy or policy collision", *Economic Analysis and Policy*, Vol. 46, pp. 25–42.

Nelson, T. (2015), 'Australian Climate Change Policy – Where To From Here?', *Economic Papers*, Vol. 34, No. 4, pp. 257–272.

> Australian climate change policy – where to from here?

> AGL External

> February 2016

Energy-only markets and renewable energy investment

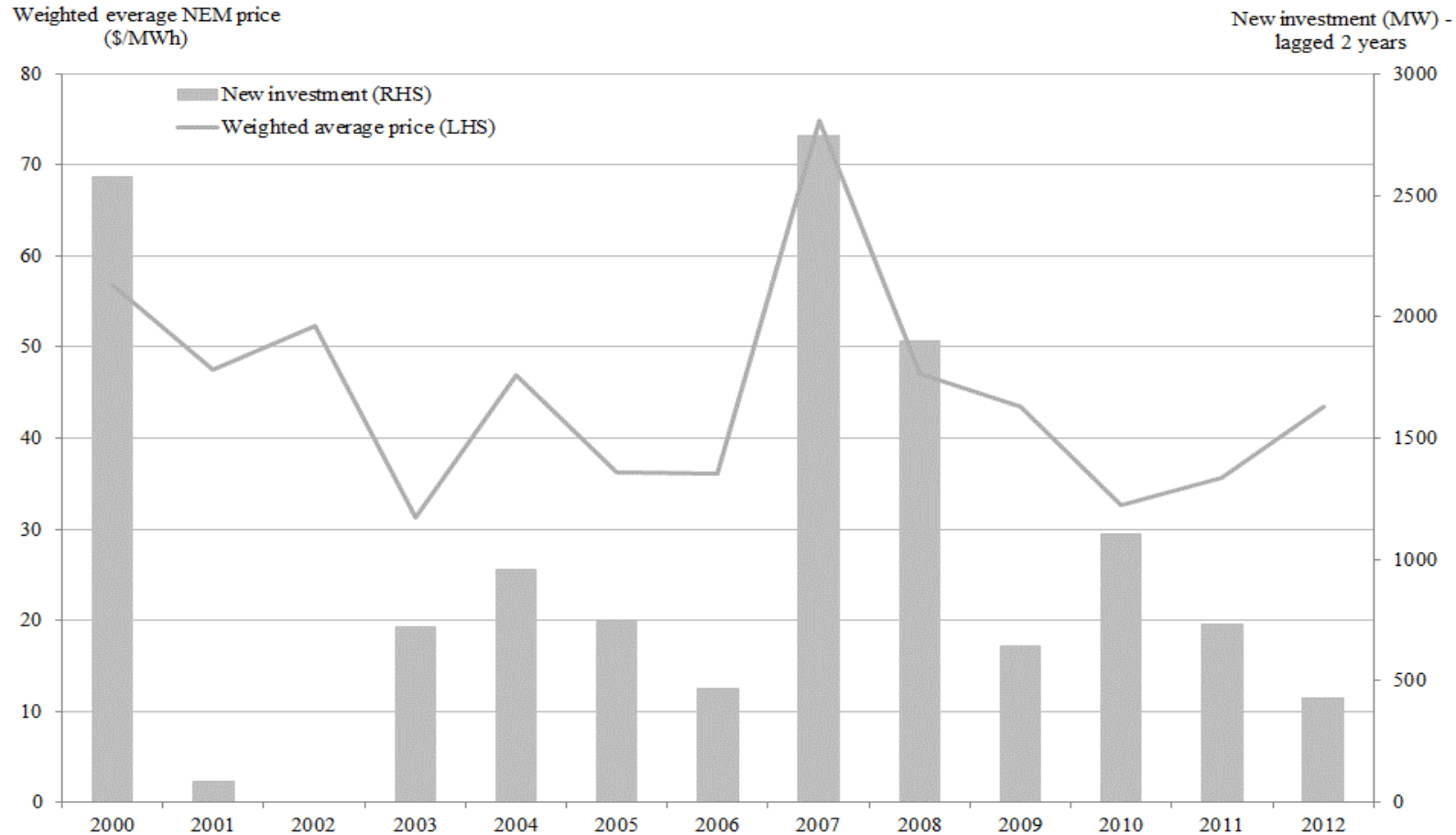


Energy in
action.[®]



Energy-only markets

Annual average prices have only exceeded LRMC CCGT once



> Australian climate change policy – where to from here?

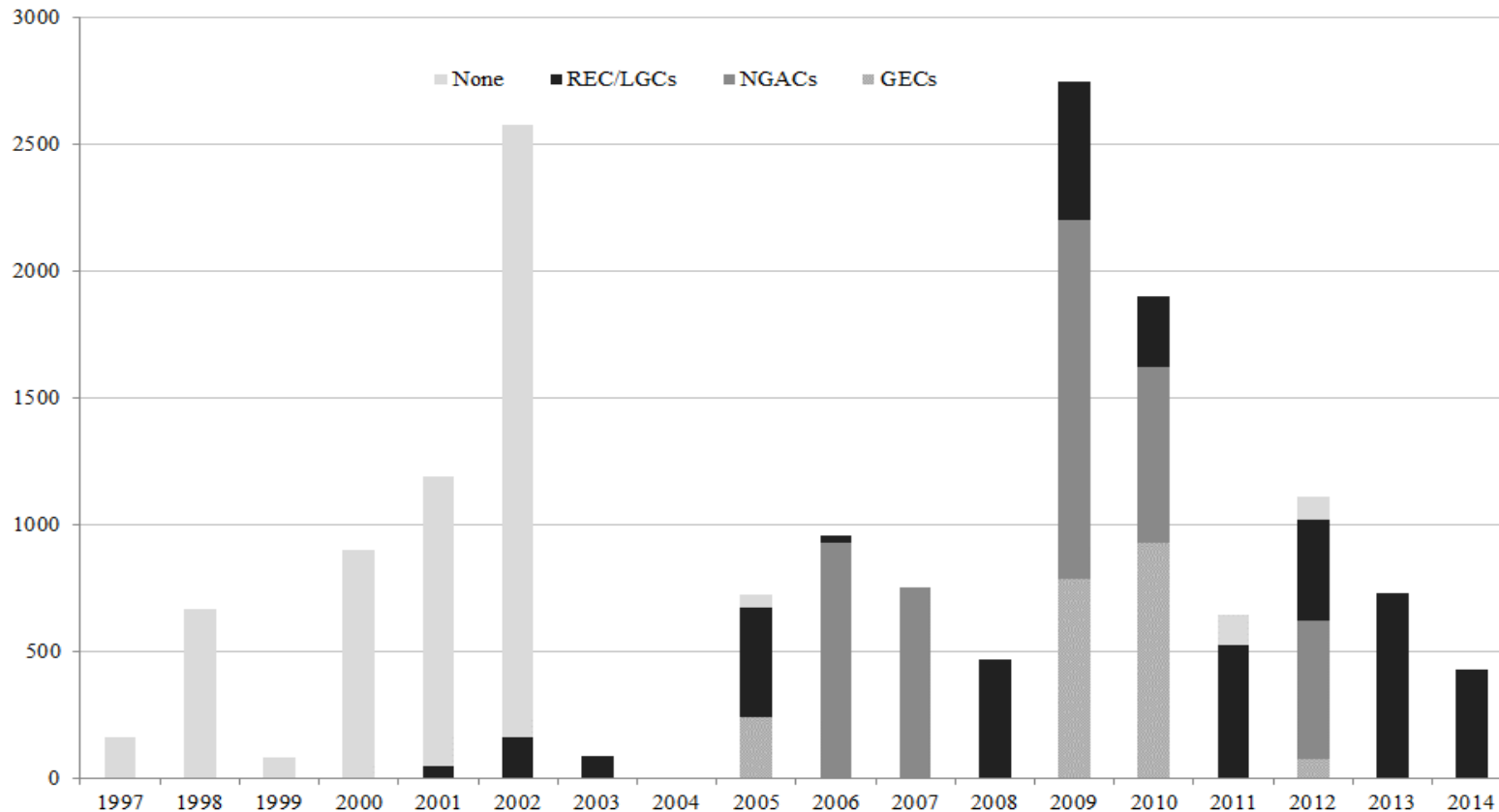
> AGL External

> February 2016

Policy induced capacity...

Policies have been introduced which have created significant incentives for new capacity despite a demand/supply balance not warranting it

New investment (MW)



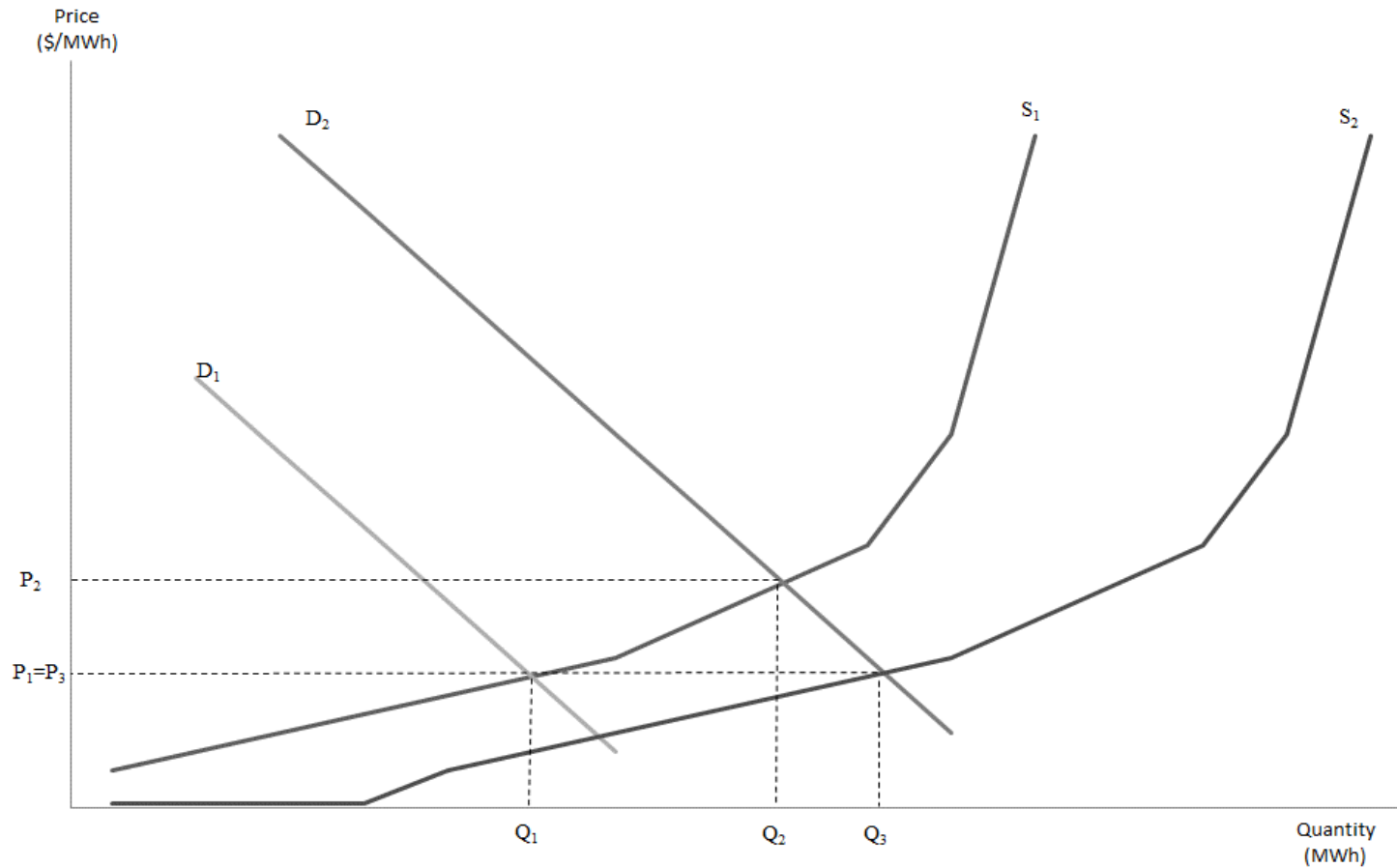
> Australian climate change policy – where to from here?

> AGL External

> February 2016

Energy-only markets and RET

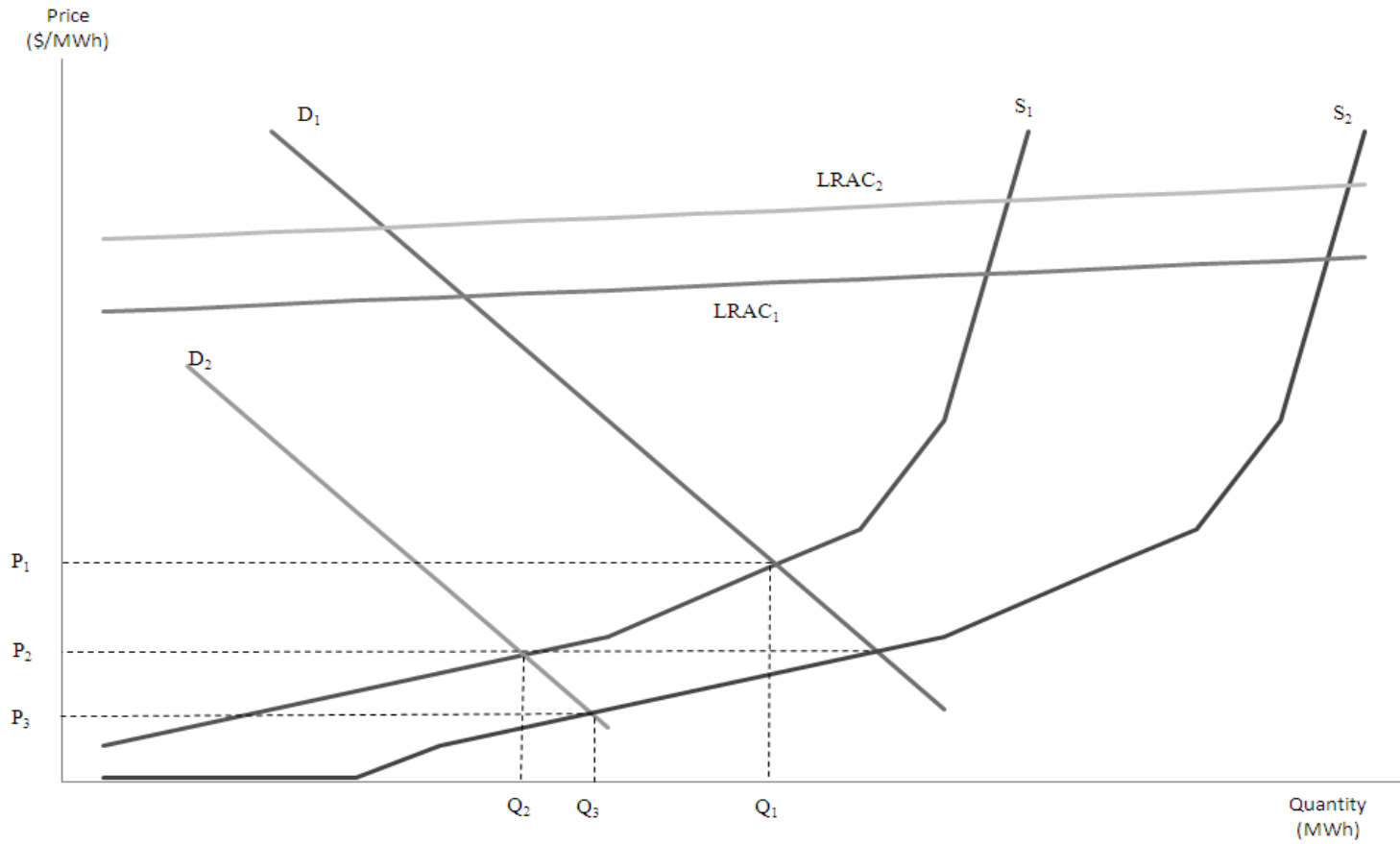
New electricity demand was expected to match policy-induced new supply



- > Australian climate change policy – where to from here?
- > AGL External
- > February 2016

Energy-only markets and RET

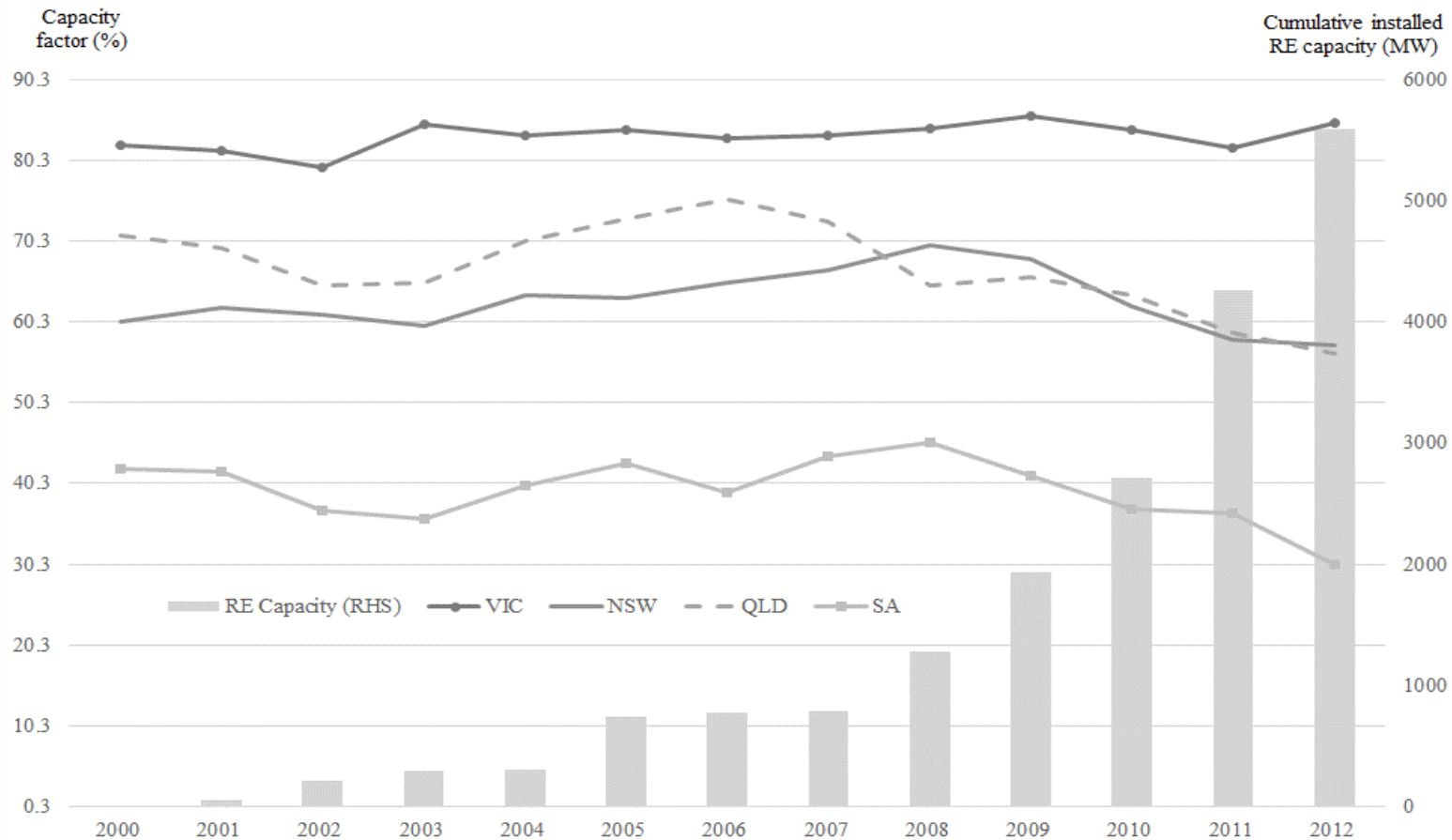
But demand declined and new capacity was added...older capacity didn't retire in large volumes



- > Australian climate change policy – where to from here?
- > AGL External
- > February 2016

Impacts on thermal plant CF

Capacity factors for existing plants have fallen – in an energy-only market, this has reduced revenues for all participants (the MOE)



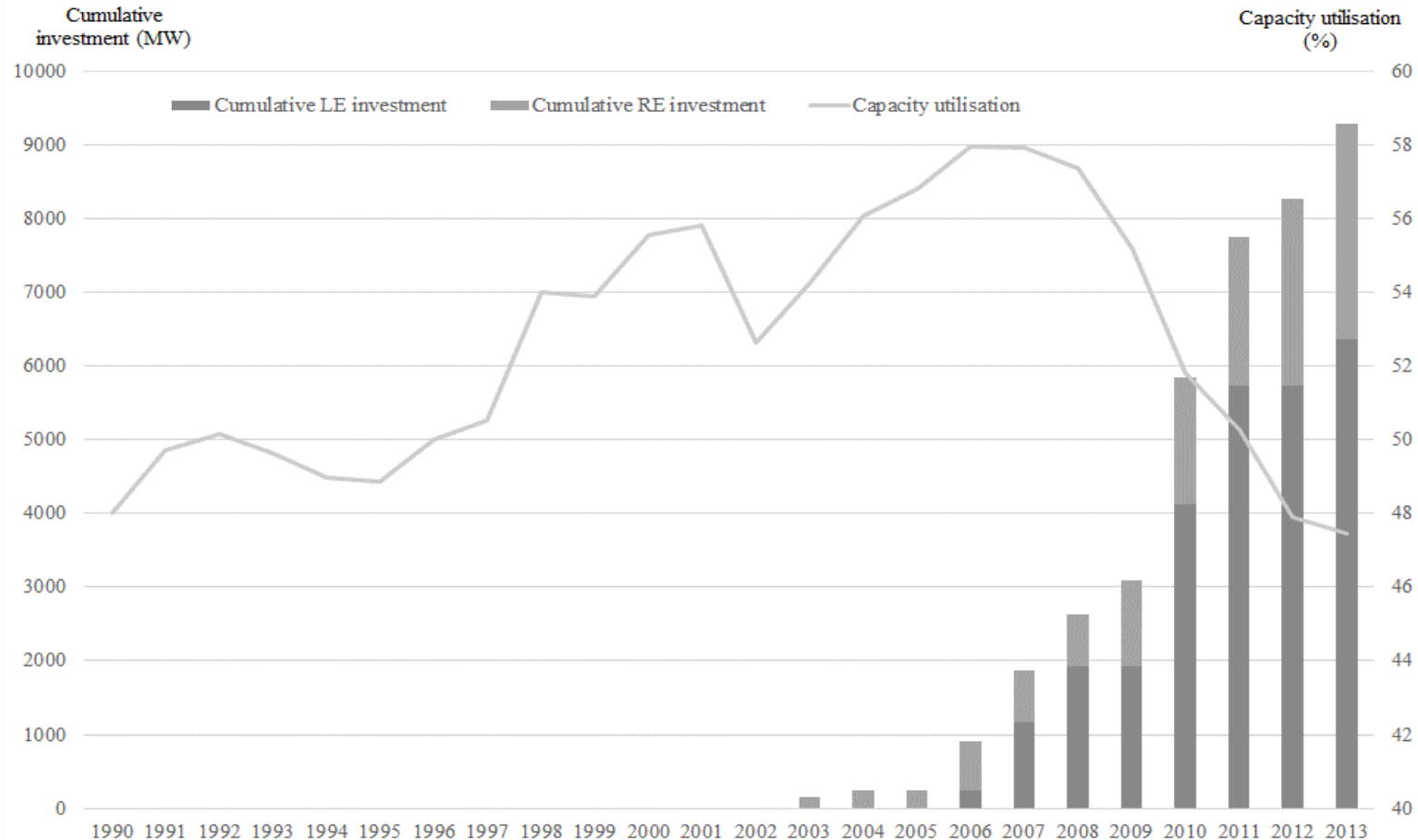
> Australian climate change policy – where to from here?

> AGL External

> February 2016

Capacity utilisation....

Demand declining and new policy-induced capacity has led to reductions in capacity utilisation



> Australian climate change policy – where to from here?

> AGL External

> February 2016

Barriers to exit

Energy in
action.[®]

Since 1837

 **AGL**

Barriers to exit?

Why aren't more old plants being decommissioned?

- 1 Policy uncertainty: Why would you do anything?
- 2 Asset sweating: 72% of the existing steam plant past design life
- 3 First mover disadvantage
- 4 Remediation costs

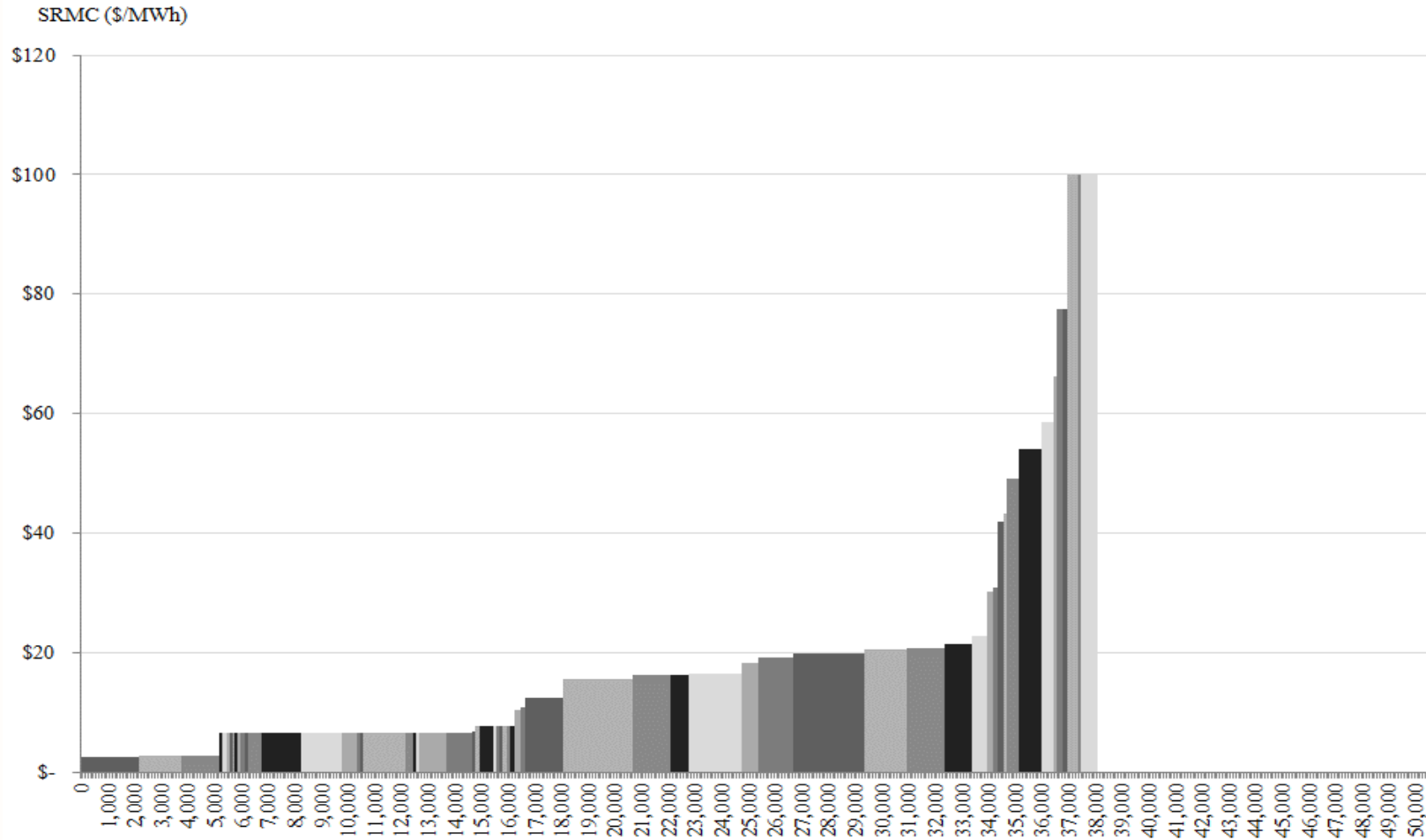
> Australian climate change policy – where to from here?

> AGL External

> February 2016

Barriers to exit?

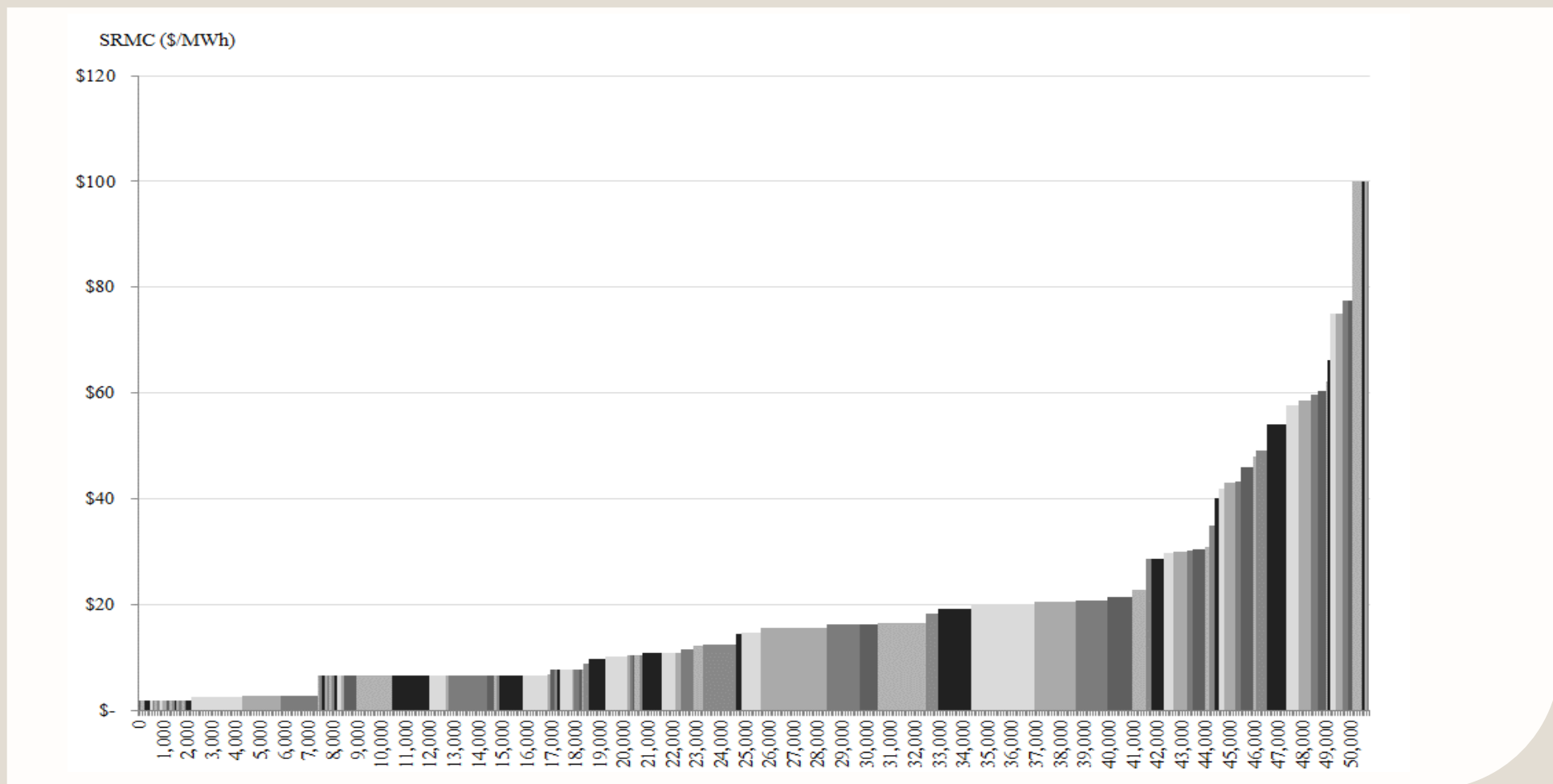
The evidence – supply curve in 1998 and today



- > Australian climate change policy – where to from here?
- > AGL External
- > February 2016

Barriers to exit?

The evidence – supply curve in 1998 and today



> Australian climate change policy – where to from here?

> AGL External

> February 2016

Complementary policy required

Renewable/low emission energy investment incentives may need to be coupled with closure to ensure sustainable investment environment

- 1 Market based mechanism – 1 MW in for 1 MW out
- 2 Regulatory closure (e.g. Canada)
- 3 Government funded (e.g. Contract for Closure)
- 4 Jotzo model

Longer term, policy makers likely to recognise that energy-only markets are unsustainable where two key assumptions are violated

- Continuous demand growth; and
- Supply driven by energy economics and not climate/renewable policy

Systems with high penetration of renewables require alternative market design

Carbon pricing, sunk costs and electricity markets

Energy in
action.[®]

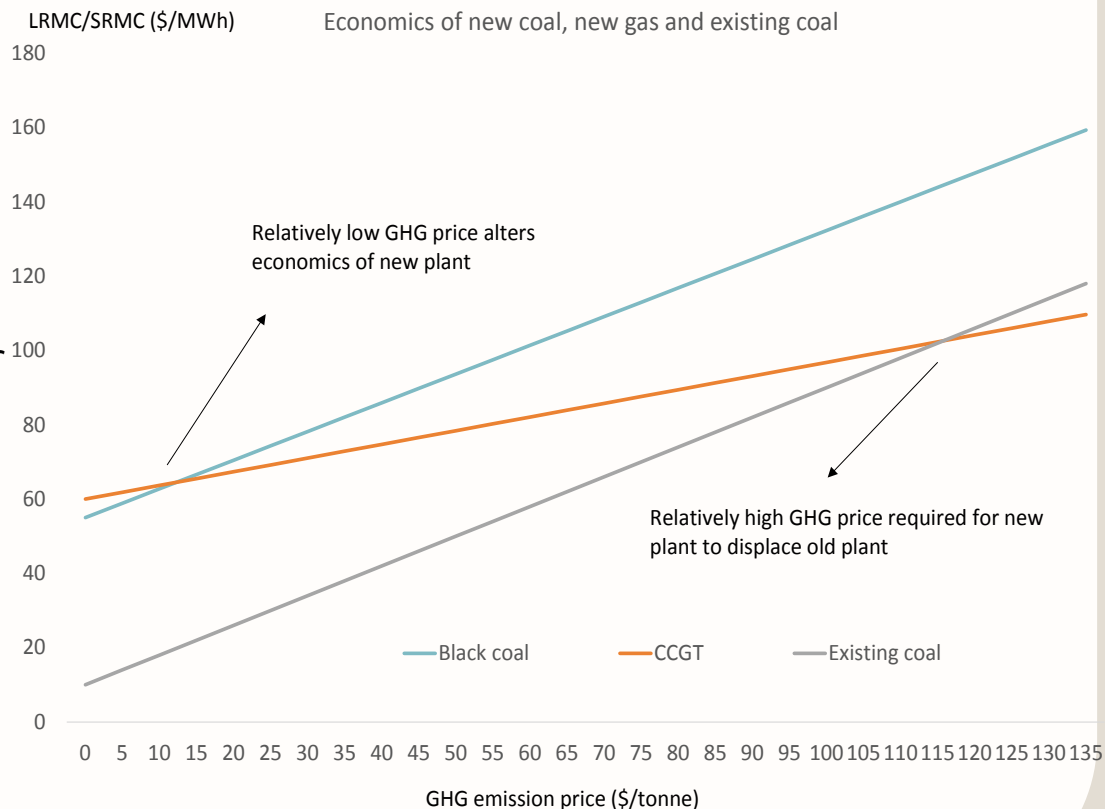
Since 1837

 **AGL**

Carbon pricing, sunk costs and electricity markets

Is carbon pricing the answer?

- > Carbon pricing debate in Australia has stalled
- > Carbon price of over \$100/tonne required to displace coal
- > International experience
 - > US regulation for new power stations
 - > Canadian regulation for old power stations



> Australian climate change policy – where to from here?

> AGL External

> February 2016



Policy recommendations

- most important is
that energy and
climate policy are
better integrated

Energy in
action.[®]

Since 1837

The logo for AGL, featuring a stylized sunburst icon to the left of the letters 'AGL' in a bold, white, sans-serif font, all contained within a blue rectangular box.

A new approach

Carbon pricing is a politically contentious topic – it may be time for something new based upon international experience

- › Australian policy could be set in a way that both transitions the domestic power sector and contributes to a level-playing field of technology development
 - › emissions standards for all new power stations
 - › regulation which drives the progressive closure of older, emissions-intensive power stations or retrofitting with CCS technology
 - › continued incentives for renewable energy (such as the RET) with increased scope to include all zero and near-zero emission energy sources
- › This would provide sustainable market revenues for new renewable and other zero emission electricity generation investment
- › A carbon price could still be utilised but the additional measures above would facilitate more targeted and sustainable emissions reductions

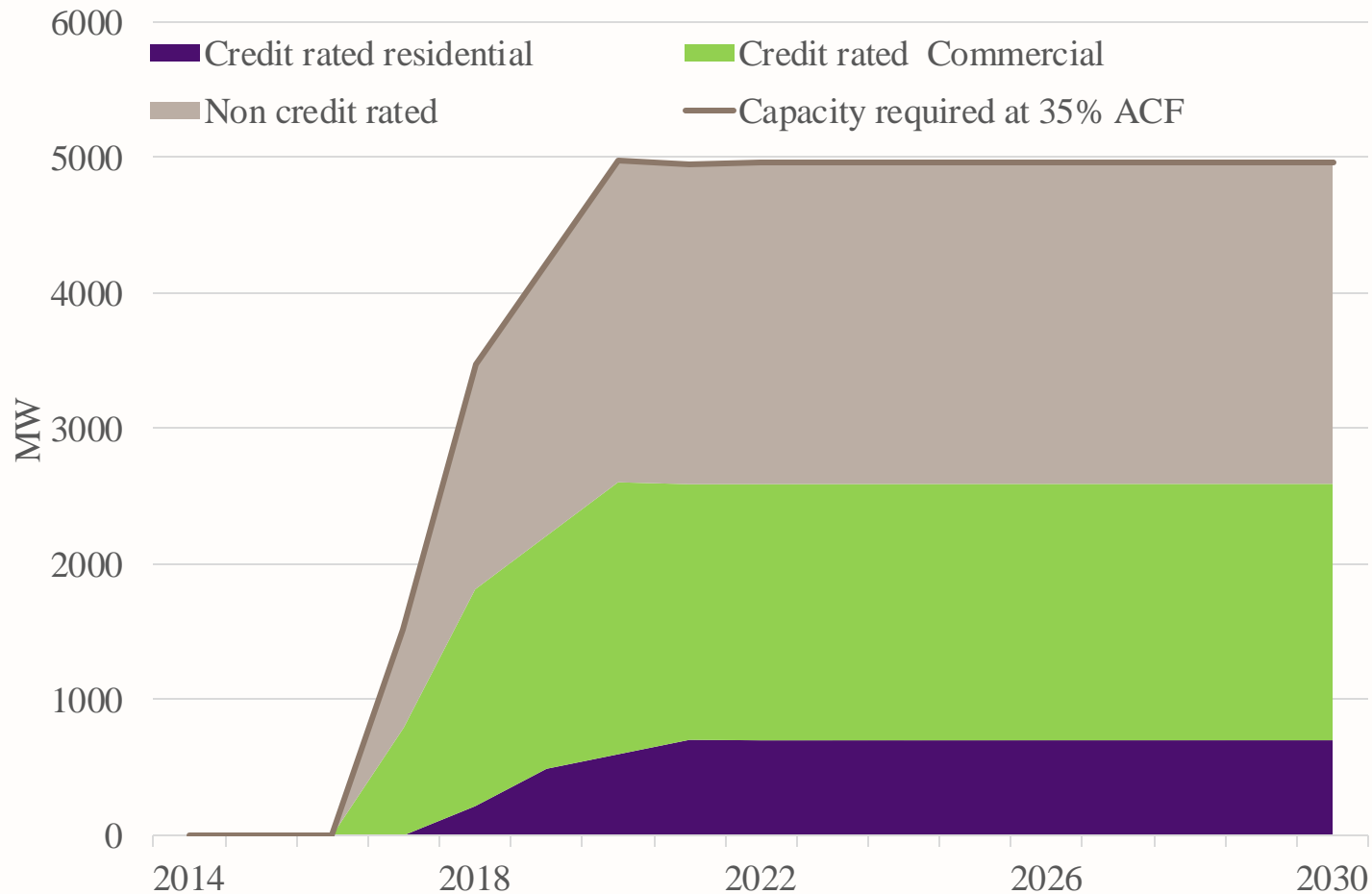
› Australian climate change policy – where to from here?

› AGL External

› February 2016

Renewable energy investment

New financing models will be needed



> Australian climate change policy – where to from here?

> AGL External

> February 2016

More information

- › Do yourself a favour...*Future of Utilities: Utility of the Future* published by Elsevier in late 2015 – great for any Christmas stocking....
- › Blog – aglblog.com.au
- › Twitter - @tanelsonaus
- › Google Scholar -
<https://scholar.google.com.au/citations?user=oEzbRF4AAAAJ&hl=en>

- › Australian climate change policy – where to from here?
- › AGL External
- › February 2016