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Renewable Energy: Fostering Innovation

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INVESTMENT PERSPECTIVES
MELBOURNE, NOVEMBER 2015

Oliver Yates
Chief Executive Officer

About the Clean Energy Finance Corporation

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Driving productivity gains, lowering energy costs and reducing emissions

- Independent, Australian Government institution that operates like a traditional financier
- Private sector expertise with public purpose - Finance for energy efficiency, low-emissions and renewable energy projects and programs across the economy
- Access to $2 billion a year over 5 years
- Expects a return on investment
- Can work on projects that are smaller, more complex or new to the Australian market
- Operates as a co-financer to encourage greater bank participation in the sector

CEFC highlights since inception

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CEFC HIGHLIGHTS

$1.4b
TOTAL CEFC COMMITMENTS

$3.5b
TOTAL PROJECT VALUE

55
DIRECT INVESTMENTS

34
PROJECTS CO-FINANCED

Since the CEFC began investing in 2013

At 30 June 2015

The CEFC's investments are diverse

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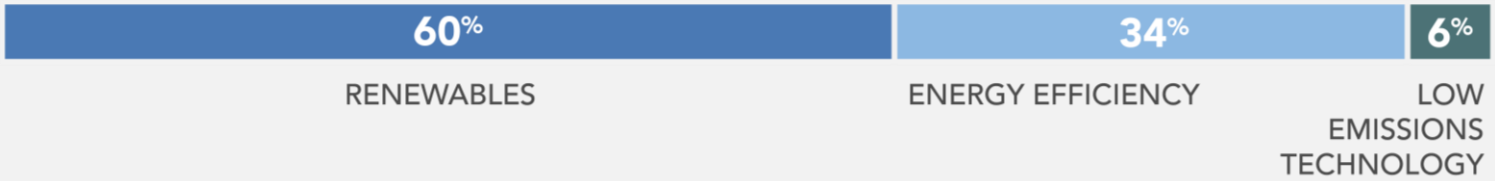

$426m Solar PV

$259m Wind

$103m W2E/Bioenergy

$40m Solar thermal

$21m Ocean

$489m Energy efficiency

$81m Low emissions technology

Since the CEFC began investing in 2013

At 30 June 2015

The CEFC has a $3.8 billion pipeline of opportunities

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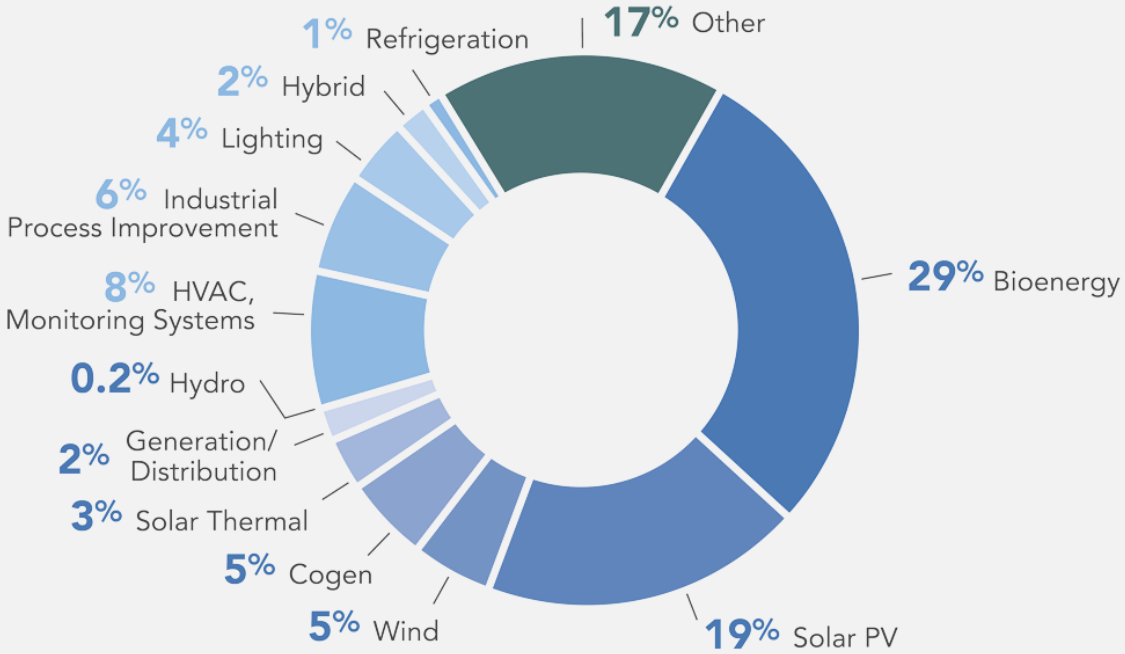

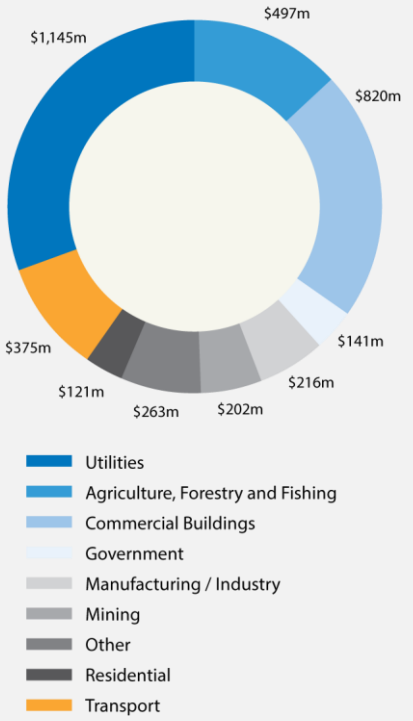

At June 2015, based on$3.6b pipeline at the time

$3.8b pipeline of opportunities at September 2015

What we're doing in solar

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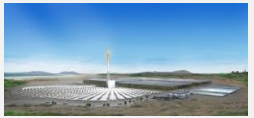
Cornerstone investor for new solar technologies	Underwrote debt for Sundrop Farms solar thermal greenhouse
New financing models, setting a precedent for the financial market	Solar leasing and PPAs. $250m large-scale solar program.
Finance for smaller utility-scale projects	$13m for Uterne PV plant in NT. $15m for DeGrussa solar and storage in WA
Financing merchant solar, when needed	56MW Moree Solar PV Farm



We invest in projects, programs and funds

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ENERGY EFFICIENCY EQUIPMENT, VEHICLES, SOLAR AND STORAGE

Indirect CEFC financing programs and funds

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LARGER LOANS / MAJOR PROJECTS OR PROGRAMS

Direct CEFC investments

Technological change and greenhouse gas policies are creating opportunities and challenges for investors

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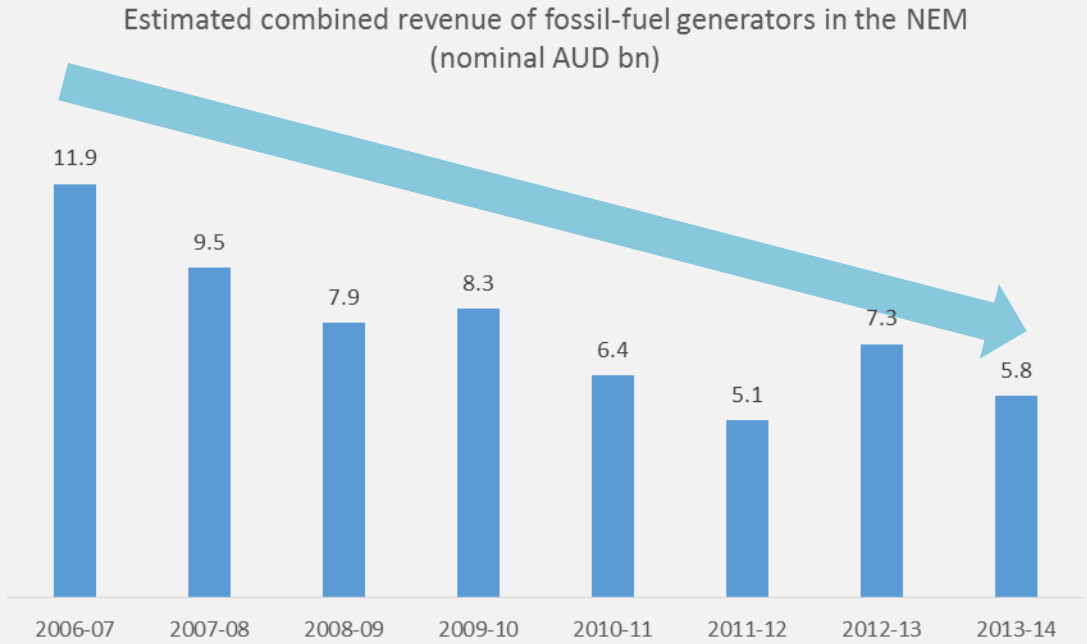
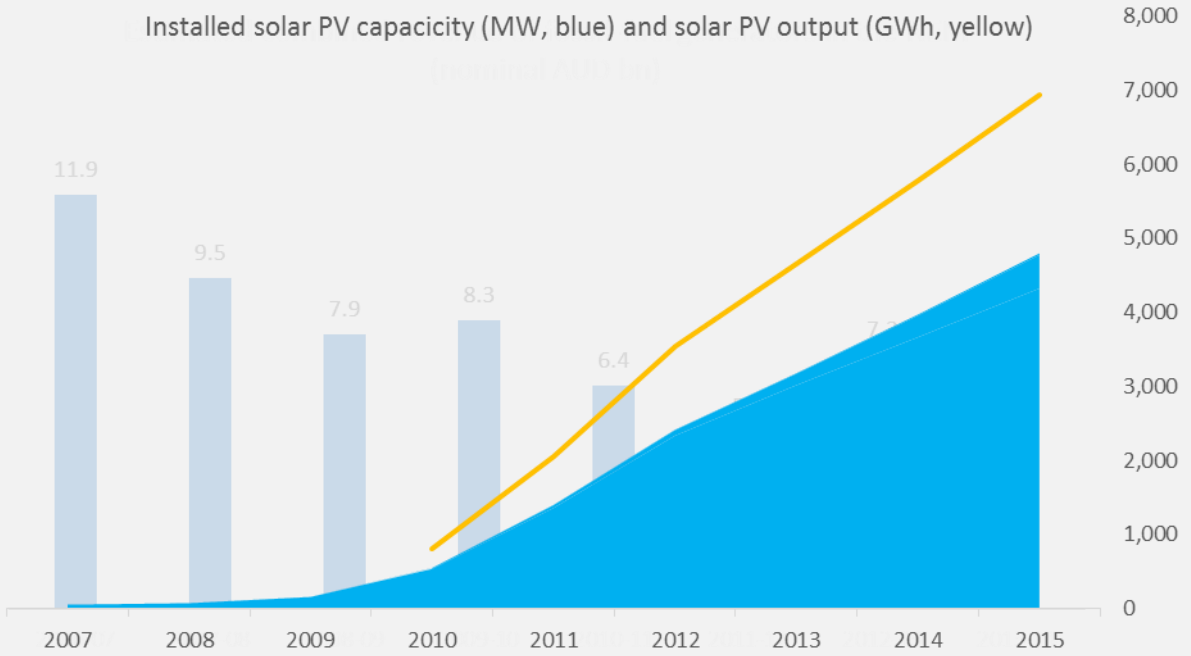


Since 2006, fossil fuel generator NEM revenue is estimated to have fallen by 50%

Source: Australian Energy Regulator, Australian Energy Market Operator, Bloomberg New Energy Finance (BNEF)

Solar has grown to nearly 10% of NEM capacity and 4% of NEM demand



Since 2010, installed solar PV capacity and generation have increased at an average annual rate of 61%

Source: BNEF

How is this reflected in willingness to lend across the energy sector

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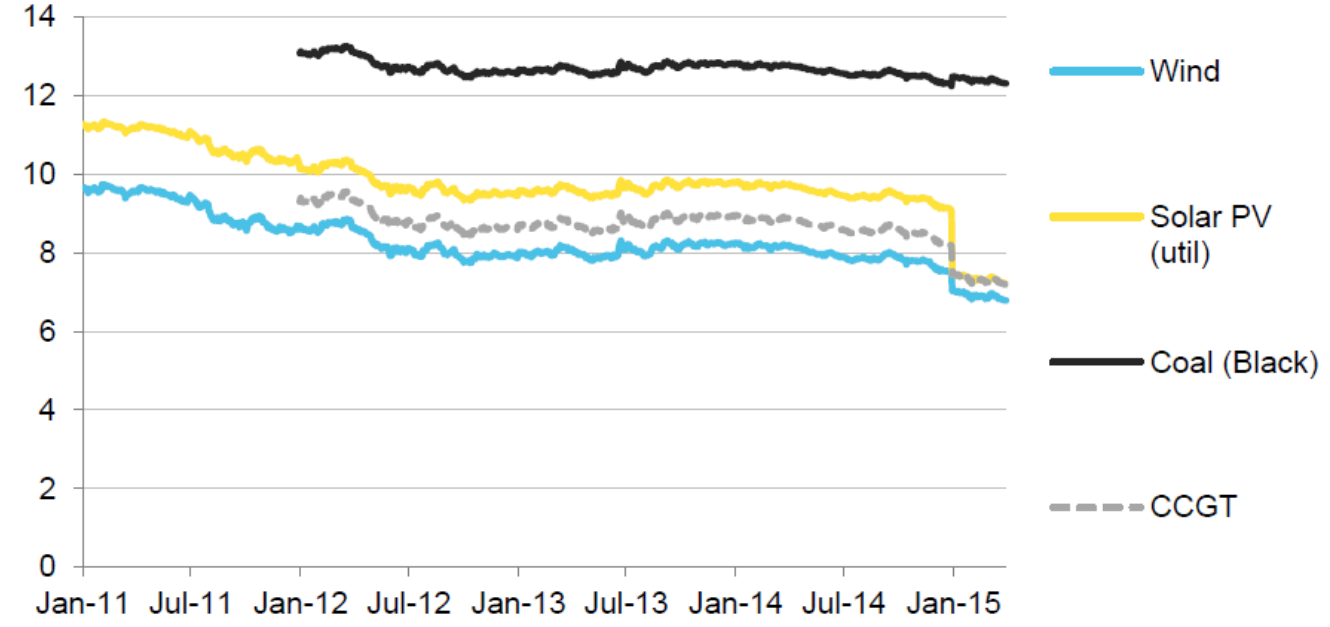
Figure 1: Weighted Average Cost of Capital for new build energy projects in Australia (%)



How might incumbents respond to technological and policy changes?

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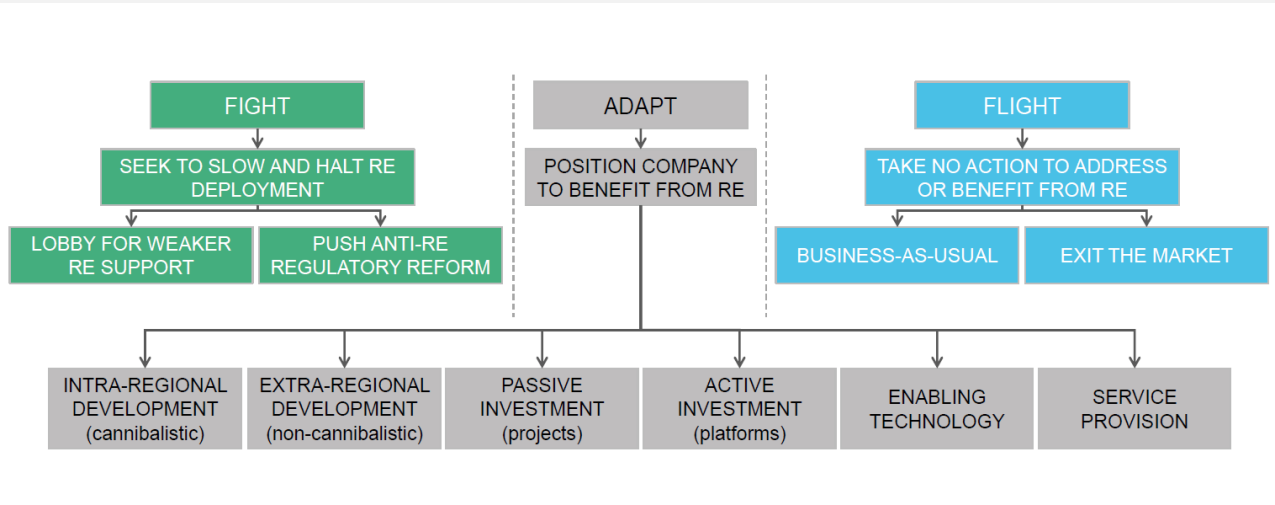
BNEF'S VIEW



Other strategies

Asset isolation
- South 32
- E.ON

Capacity payments

Access to transmission infrastructure (e.g. Optional firm access)

Source: BNEF, CEFC

Large- and small-scale solar and batteries opportunities in Australia may require investment of $28 billion by 2020

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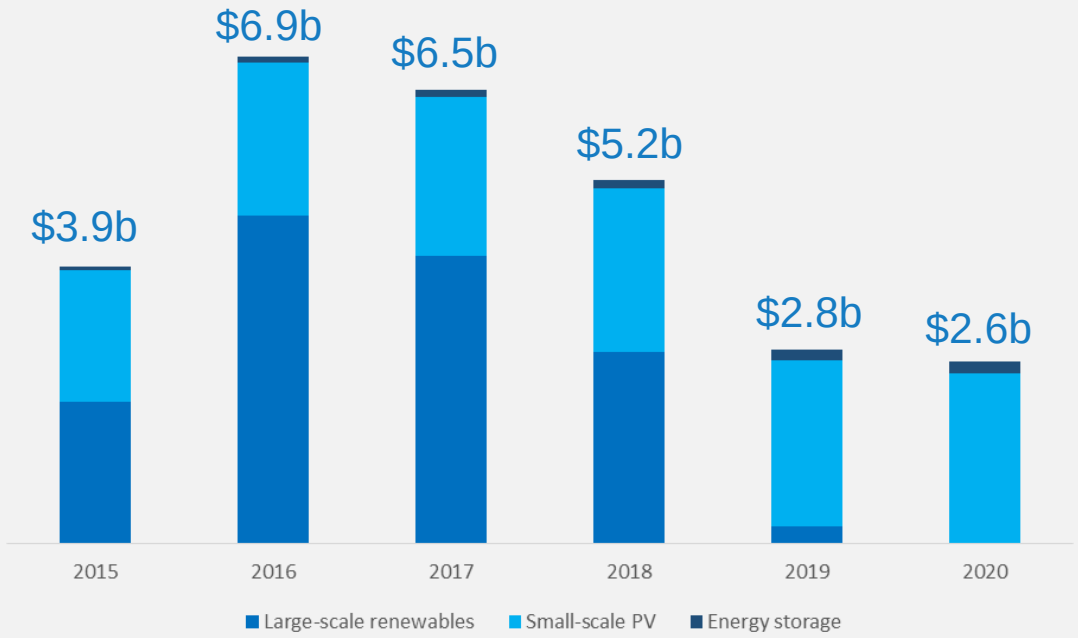
ANTICIPATED ANNUAL RENEWABLES INVESTMENT (AUD b)



For total additional large- and small scale capacity of nearly 14 GW

Source: BNEF

Australia's 33,000GWh LRET is driving large-scale demand

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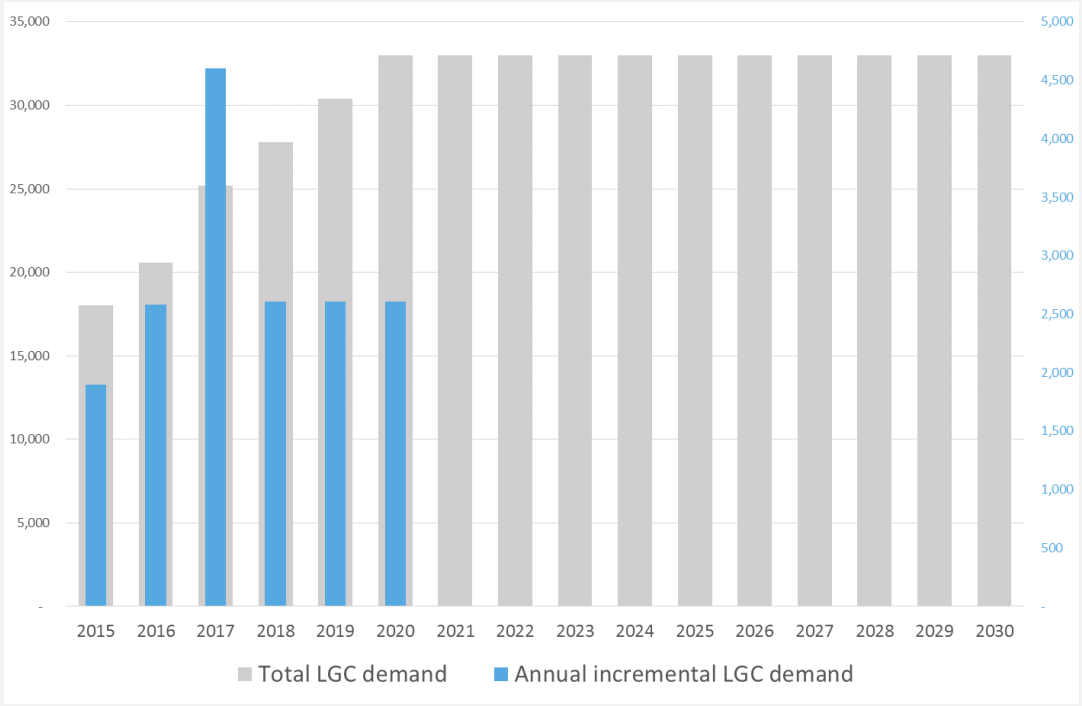


Demand capped at 33,000 GWh by 2020

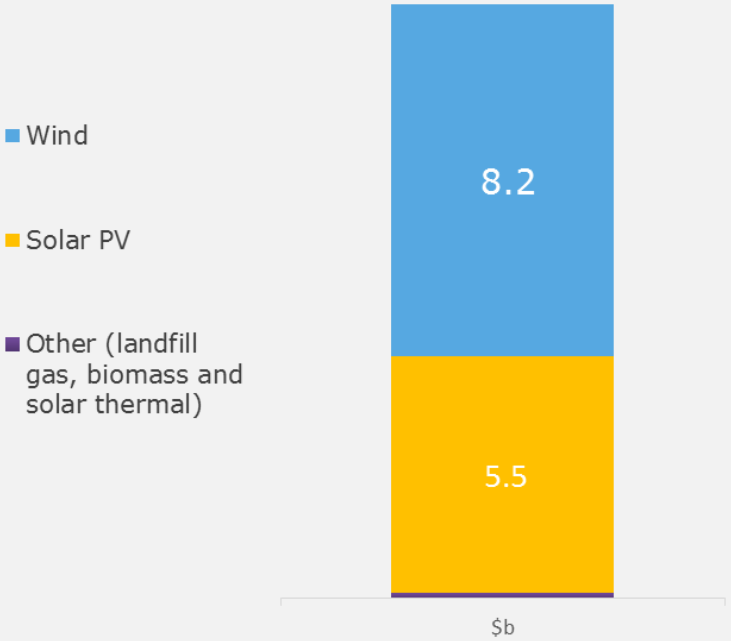
Supply uncapped

What happens to price when demand is capped but supply is uncapped?

Prices go down

Source: Renewable Energy (Electricity) Act 2000

Forecast investment required to 2020 to meet the LRET (AUD b)



Total: ~$14b

Solar: $5.5b

Wind: $8.2b

7.75GW total
1.15GW committed
6.60GW additional

Source: BNEF

Forecast investment in small-scale renewables to 2020 (AUD billions)

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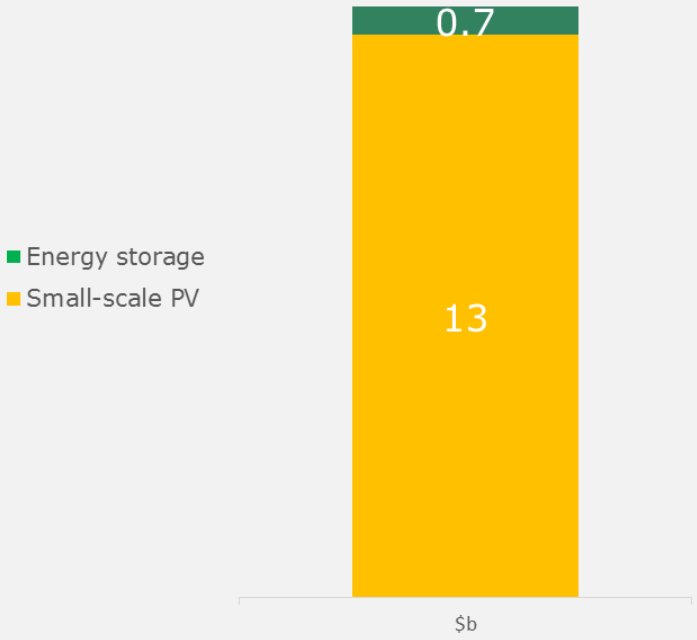

Total: ~$14b

Solar: $13b

Storage: $0.7b

6.1GW Solar
391MW Storage

Source: BNEF

Renewables should continue to grow strongly after 2020, driven by continued technological innovation and policy change

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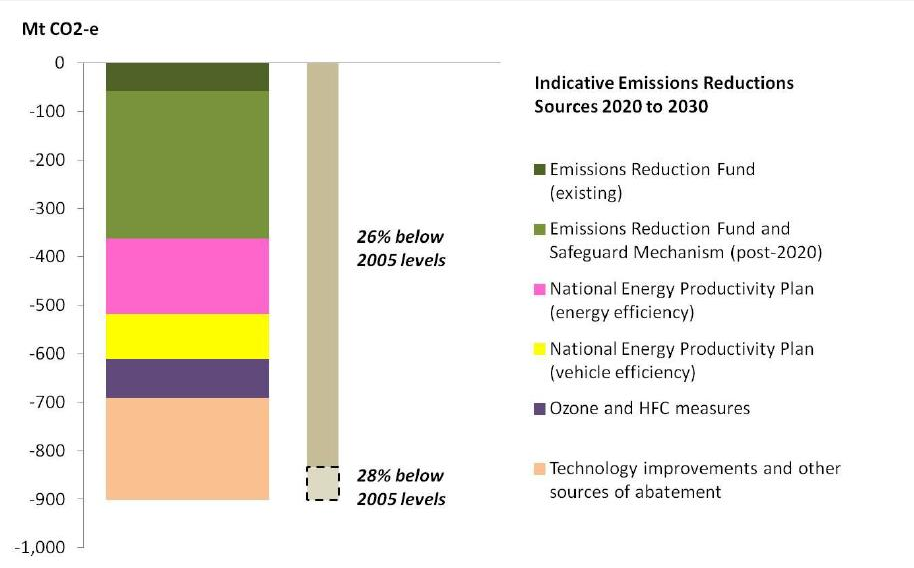
Australian Government



ALP

"adopting policies to deliver at least 50% of our electricity generation from renewables sources by 2030."

State policies

ACT: 90% renewable energy by 2020
QLD: 50% renewables target by 2030
VIC: At least 20% by 2020
SA: 50% by 2025 (already at 40%)

Source: Australian Government, Australian Labor Party, state governments

What might a 50% target mean in terms of renewables generation? Depends on your NEM demand forecast.

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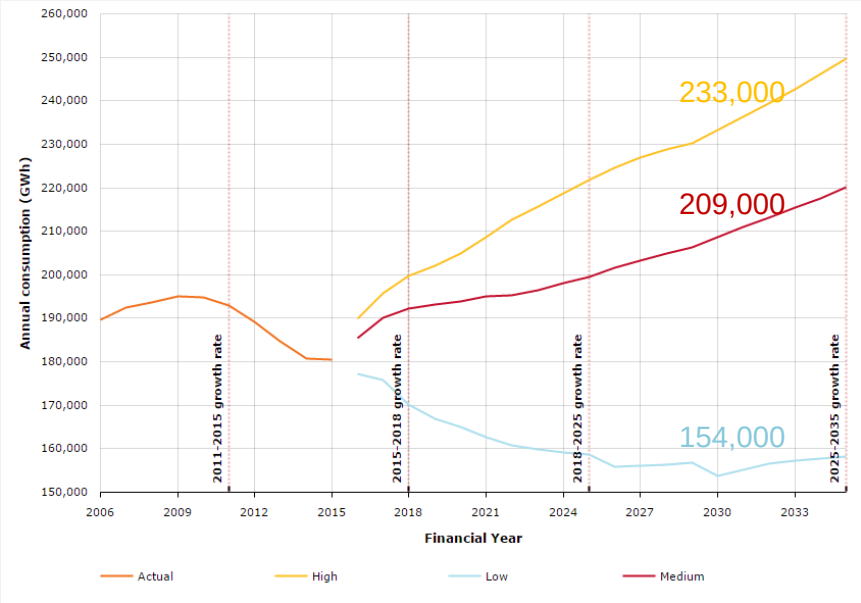
Actual and forecast NEM grid demand (GWh)



Plus solar generation in 2030 (GWh)		Total energy demand in 2030 (GWh)		Indicative 50% renewables target for NEM (GWh)
+ 17,997	=	251,000	=	~125,000
+ 22,000	=	230,000	=	~ 115,000
+ 25,805	=	179,609	=	~90,000

Not including SWIS and off grid (around ~65,000GWh in 2030)

Source: AEMO, ACIL Allen for SWIS, Other and Off-grid numbers (RET Review Modelling: Market Modelling of Various RET Policy Options)

Australia's economy will continue to grow, even with cuts to emissions

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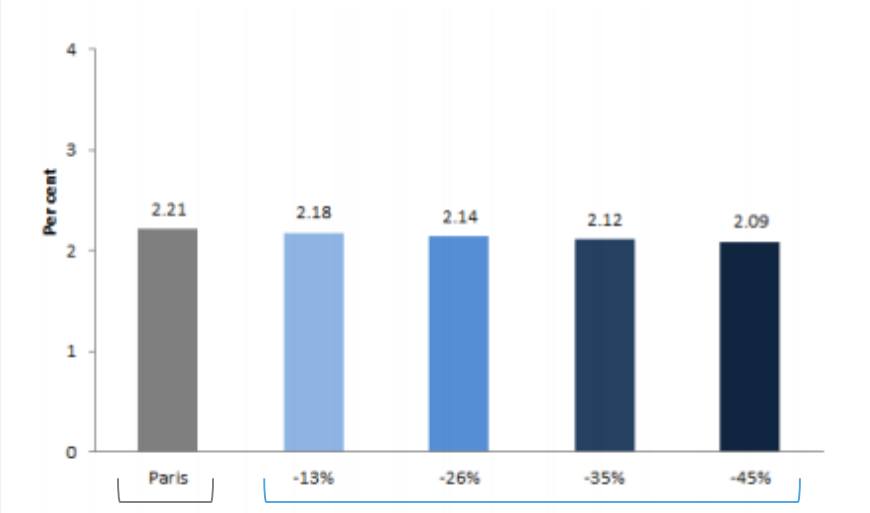
Figure 3: Average annual growth, real Australian GDP, core target scenarios and Paris scenario, 2020 to 2030 (per cent per year)



"Paris" scenario is based on other countries' announced emissions reductions targets for UNFCCC negotiations in Paris in 2015

Emissions reductions scenarios for Australia ranging from -13% to -45% below 2005 levels in 2030.

*Under all five scenarios, average annual **GDP growth continues to be above 2 per cent.***

Growth rates range from 2.09 to 2.21 per cent a year.

Target impacts are sensitive to future costs of new energy technologies.

Good news!
All scenarios will lead to growth in renewable energy, energy efficiency and low-emissions technology.

Source: McKibbin Software Group

The rate of technology disruption is often underestimated

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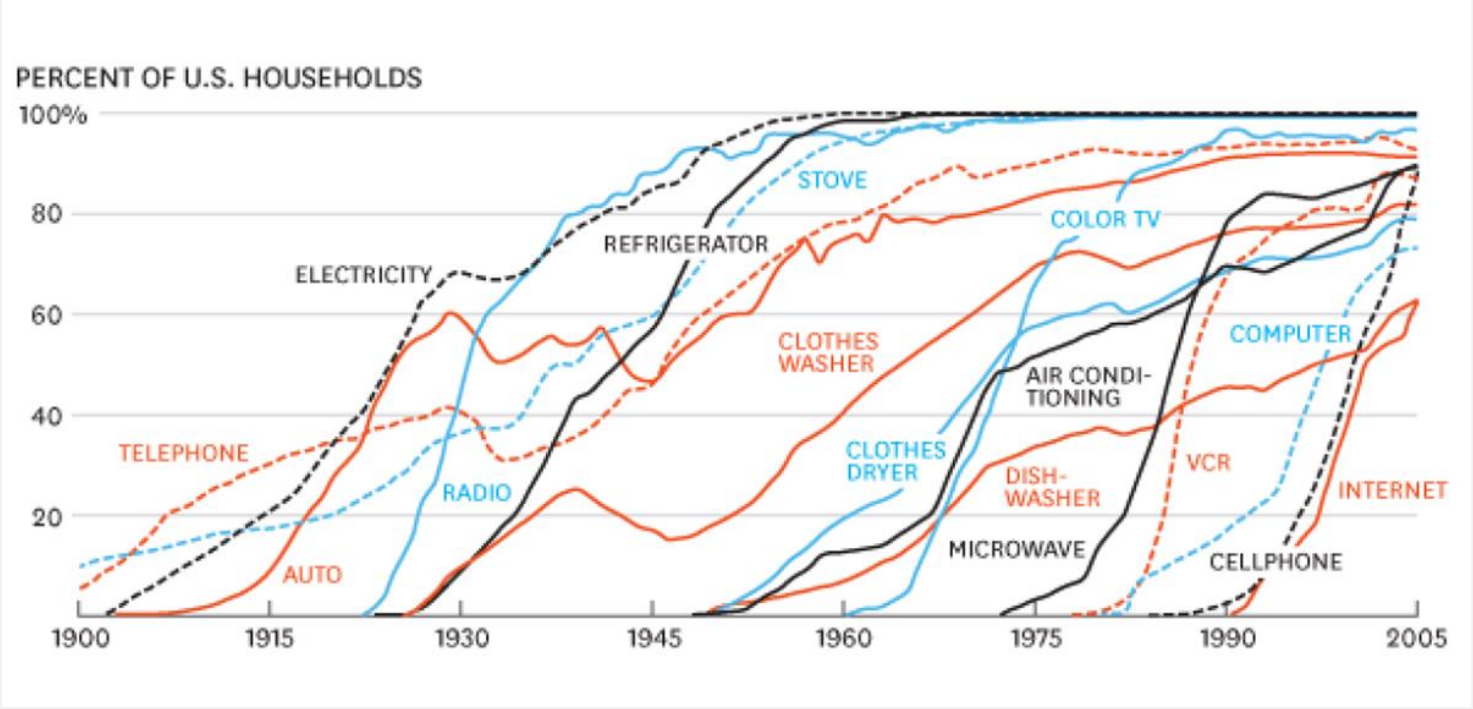
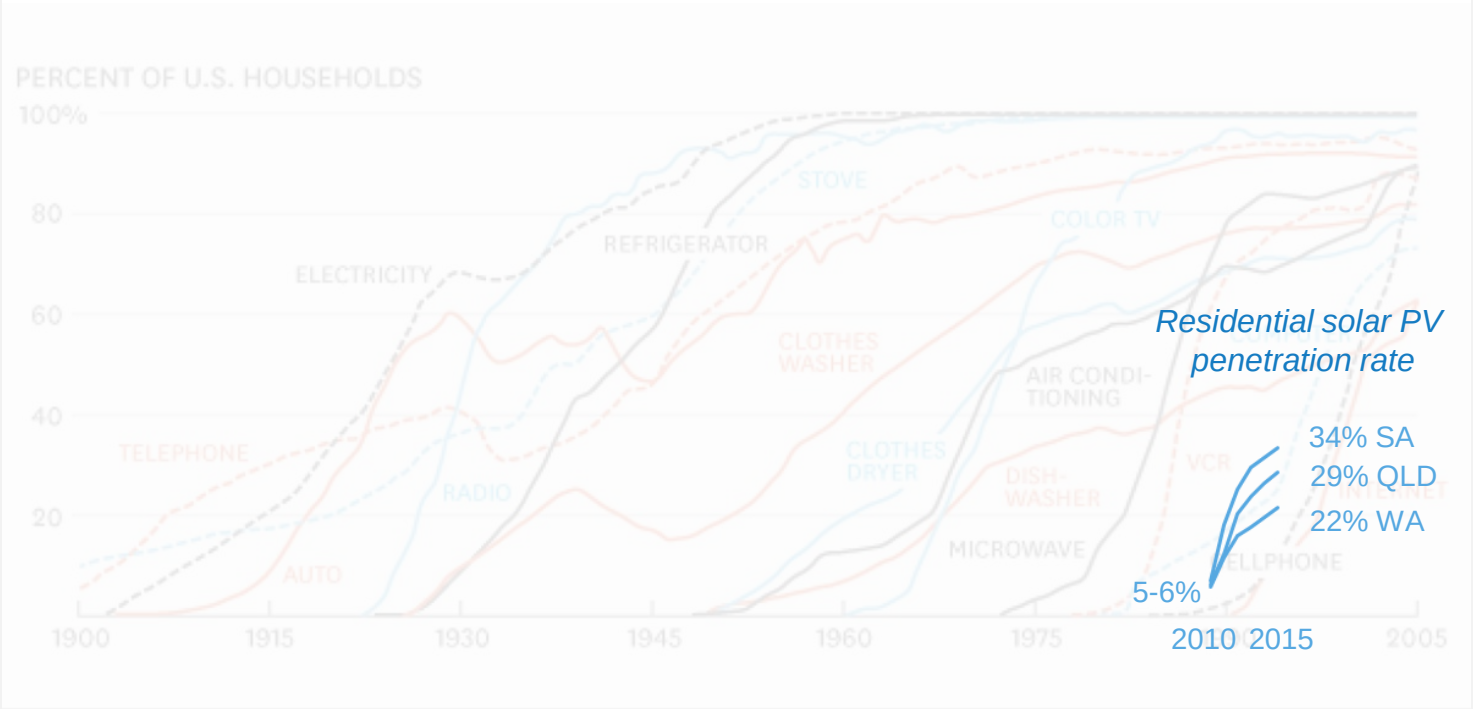


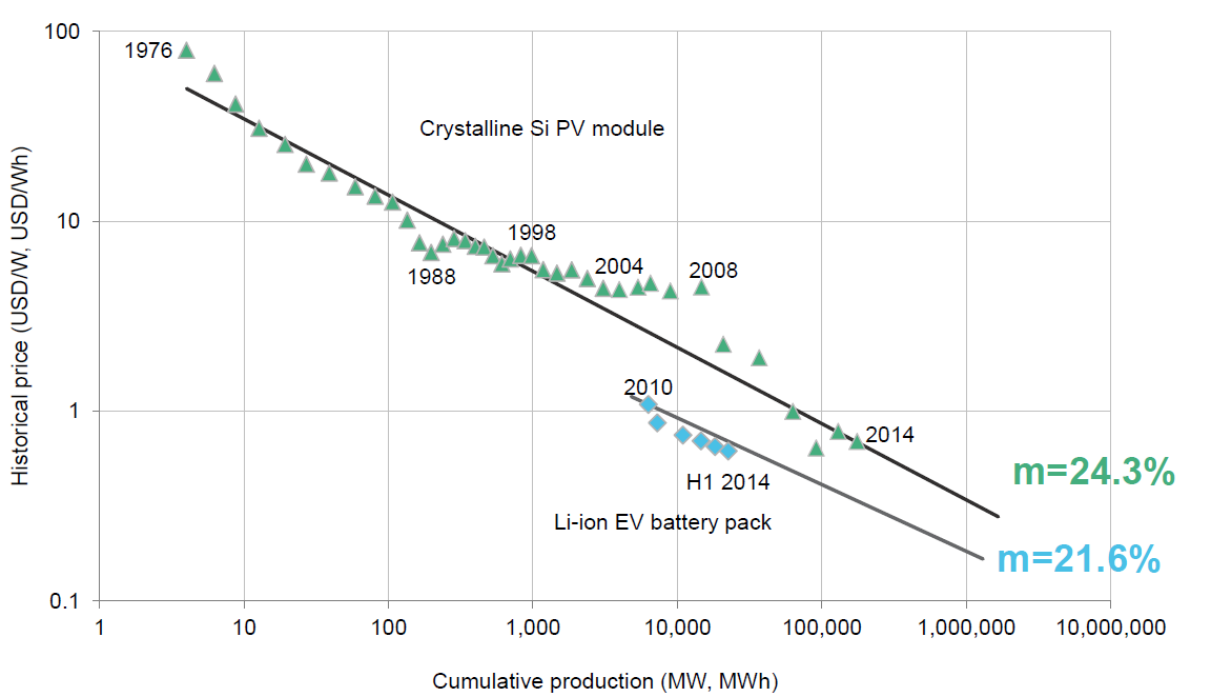
Source: Michael Felton, The New York Times, Harvard Business Review

The rate of technology disruption is often underestimated



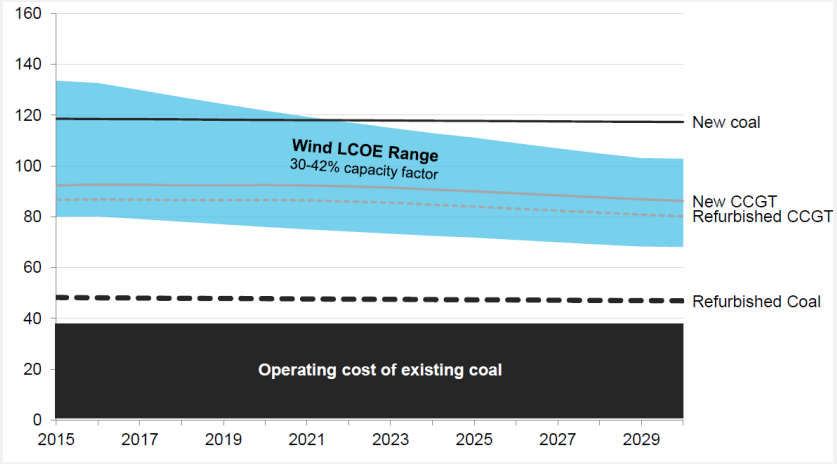
Source: BNEF

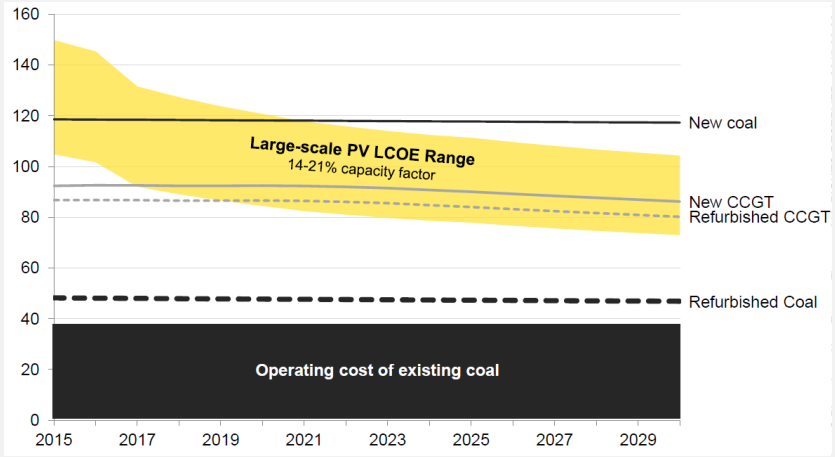
Battery costs have been falling at the same rate as solar module prices



Source: BNEF

The cost of renewables will keep falling but existing and refurbished coal is still cheap to run – for now



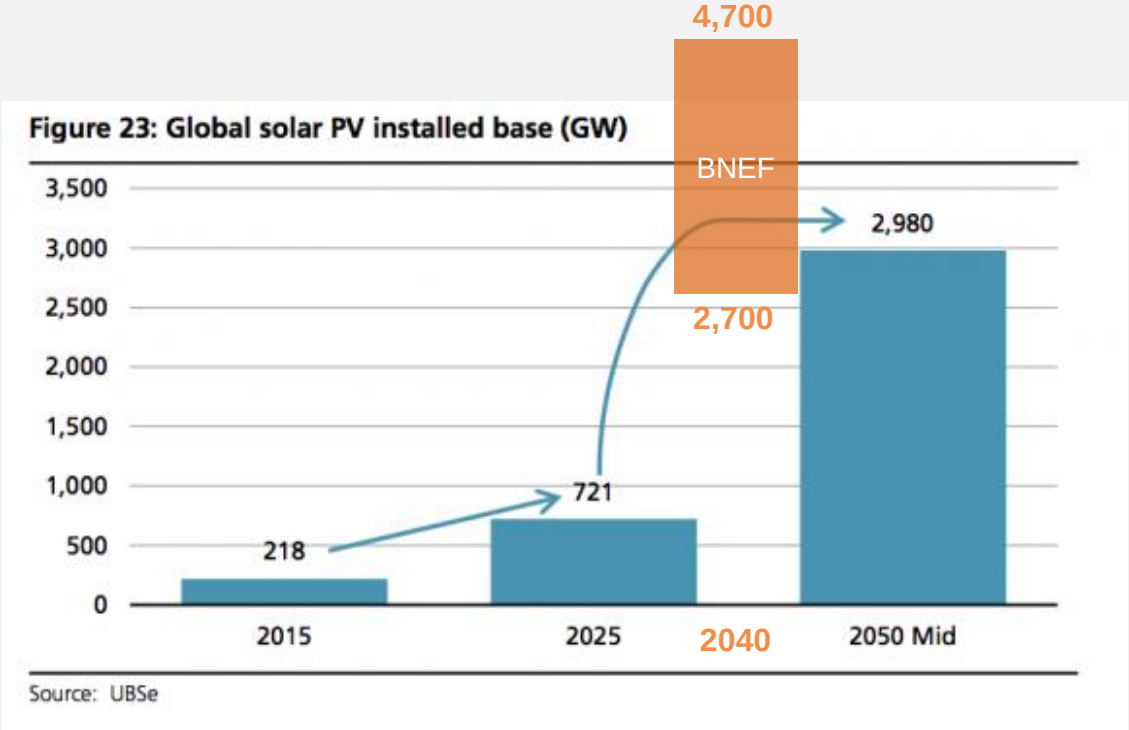


Source: BNEF

Forecast global investment in renewable energy has been revised upward

Source: IEA

Global forecasts for solar are optimistic



Source: UBS, BNEF

Where are the investment opportunities?

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Ubiquitous LED lighting

Solar everywhere

Energy storage

Smarter energy management

Widespread bioenergy

Electric and hydrogen vehicles

Exporting renewable energy?

What else should investors be thinking about?

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