Gas & Electricity Markets Wholesale Price Update

EUAA Tasmanian Energy Forum

22 March 2016

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Agenda

- How Did We Get Here?
  - Select events during late 2015
- Tasmania Isolation
  - Snapshot post Basslink outage
- Looking Ahead
  - Factors to watch

How Did We Get Here?

Hydro Weighs Heavily On Tasmanian Energy Balance

Hydro Dominant

- ~85% of generation post 2014
- Highly correlated to rainfall

VIC Import through Basslink

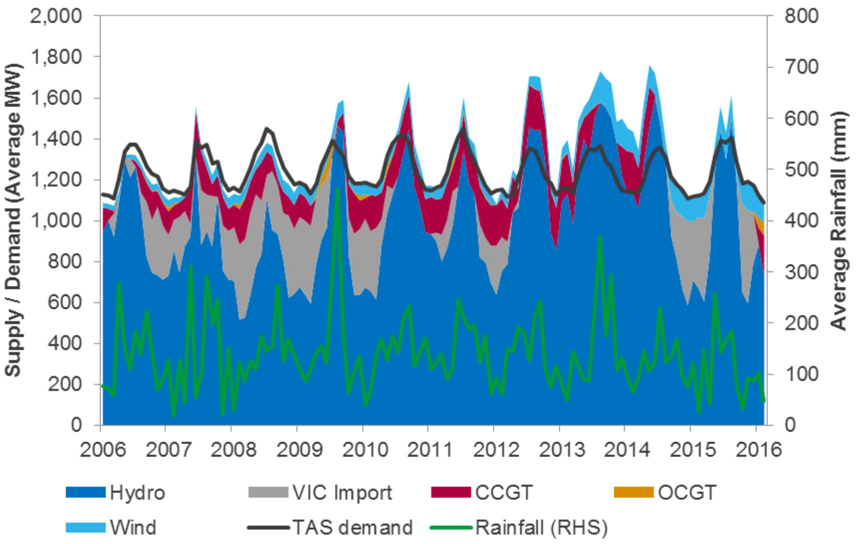
- Spring/Autumn lulls

Gas Generation

- Strong Until 2014

Wind

- Increasing



Source: AEMO, BOM, SE Global Research & Analytics

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Opportunity in Carbon

Hydro Storage Level

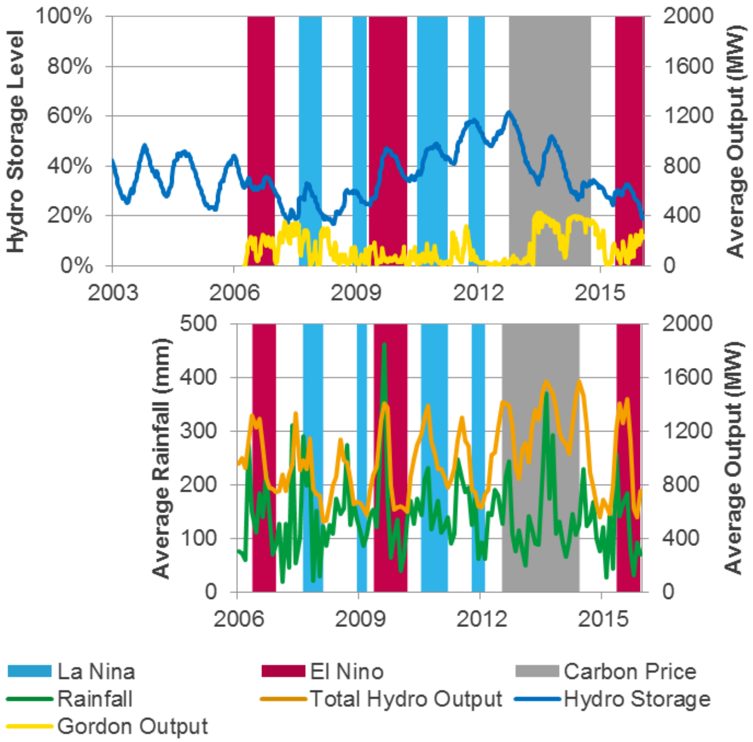
- Long-term average ~30%
- Storage build up pre-Carbon to ~60%
- Storage return to ~30% post-Carbon[1]

Gordon and Storage

- Largest hydro station
- Increased output during Carbon

Climate Events and Rainfall

- El Niño[2] typically *less* rain
- La Niña typically *more* rain



Source: AEMO, BOM, SE Global Research & Analytics

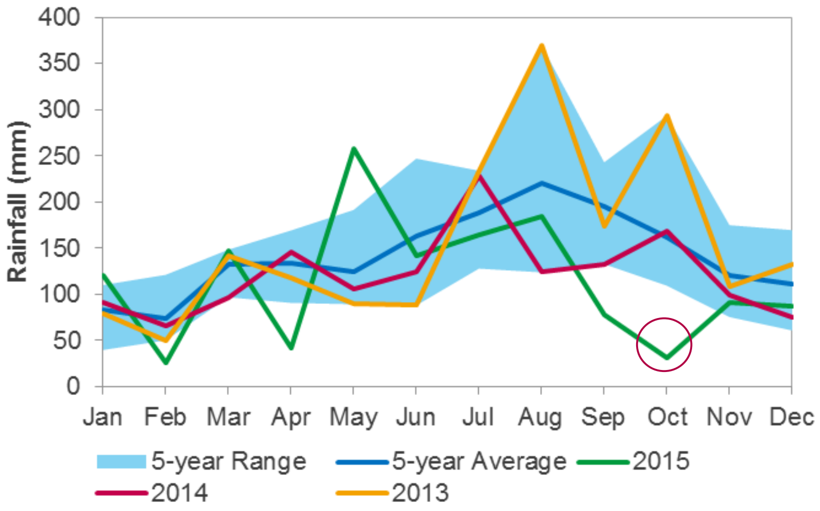
Weather Not Permitting

Tasmanian Rainfall

- Driest October on record[4]
- Hydro storage levels fell below 20%

Climate Influences

- 2015 El Niño
- Positive Indian Ocean Dipole[3]



Source: BOM, SE Global Research & Analytics

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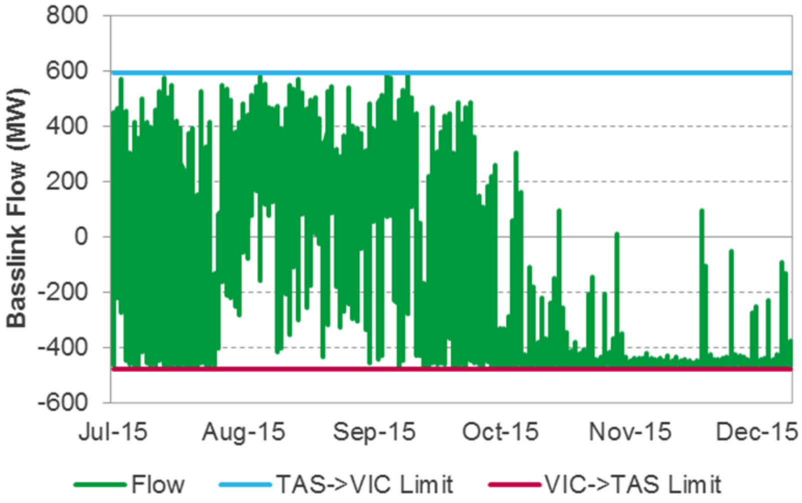
Victoria Acting As Lifeline

Basslink Interconnector

- Bi-directional
- Strong imports since October 2015
- Crucial lifeline[5]



Source: AEMO, SE Global Research & Analytics

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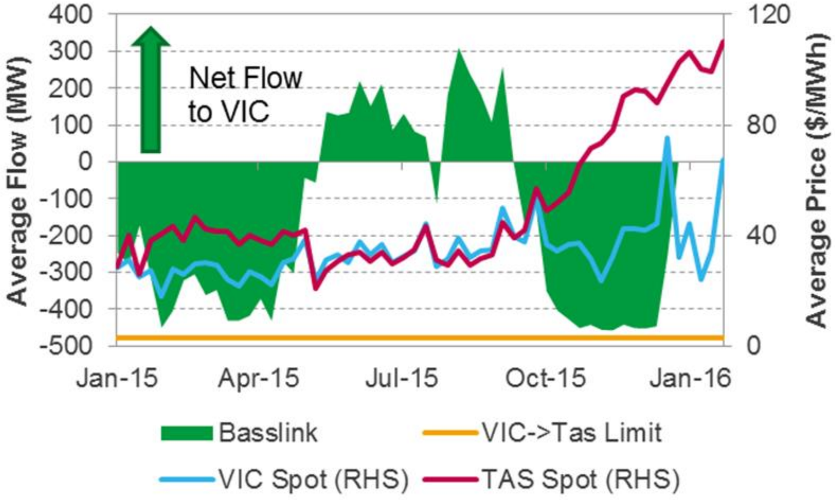
Lifeline Cut Off

Basslink Interconnector

- Outage on 20 December 2015[6,7]

Spot Price Impacts

- Divergence between Victoria and Tasmania
- Increased Tasmanian prices



Source: AEMO, SE Global Research & Analytics

Happenings Around Other NEM Regions

Utility-scale Solar

- Broken Hill, Nyngan and Moree in 2016[8] - 211MW

Structural Change in South Australia

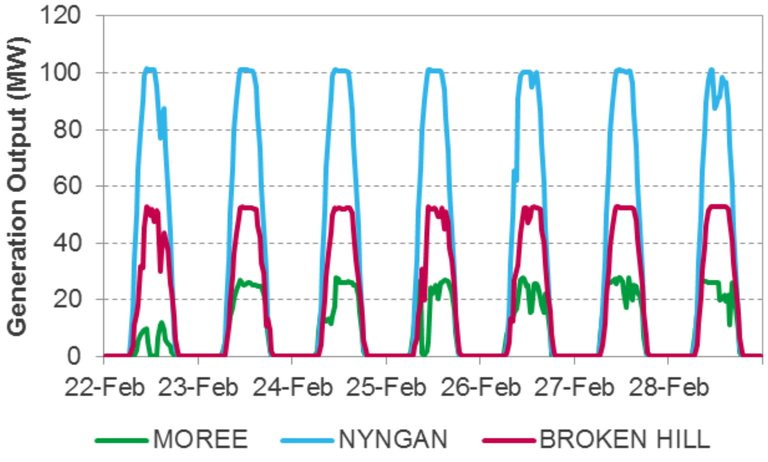
- Closure of 520MW Northern power station[8]

Climate Change Mitigation

- Climate Agreement in Paris to limit global warming well below 2°C[9]

Queensland LNG Export in Full Swing

- All three LNG projects now exporting[10,11,12]
- Electricity demand growth (+~250MW)[13]



Source: AEMO, SE Global Research & Analytics

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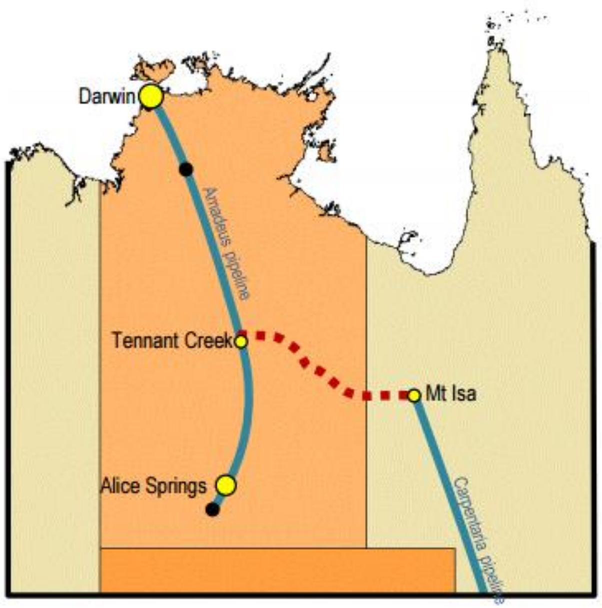
Gas Market Developments

Northern Gas Pipeline

- Connects to Mt Isa from 2018[14]

Gas Players Reshuffle

- Shell-BG Merger[15]
- AGL Exits Upstream Gas[16]



Source: Jemena

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How Did We Get Here?

Hydro Weighs Heavily On Tasmanian Energy Balance

Opportunity in Carbon

Weather Not Permitting

Victoria Acting As Lifeline

Lifeline Cut Off

Happenings Around Other NEM Regions

Gas Market Developments

Tasmania Isolation

Change In Tasmanian Energy Balance

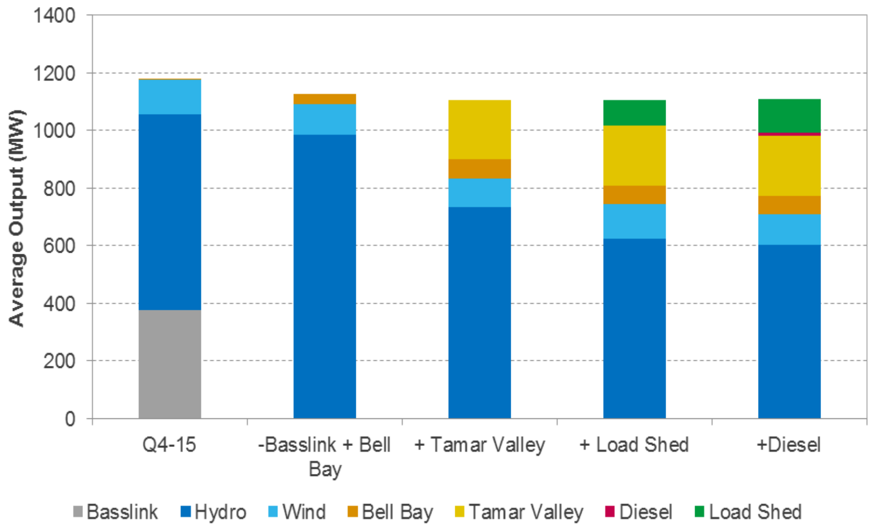
Basslink Outage 20 December 2015

Bell Bay Peaking Plant Operate as Intermediate

Tamar Valley CCGT (208MW) from 20 January 2016

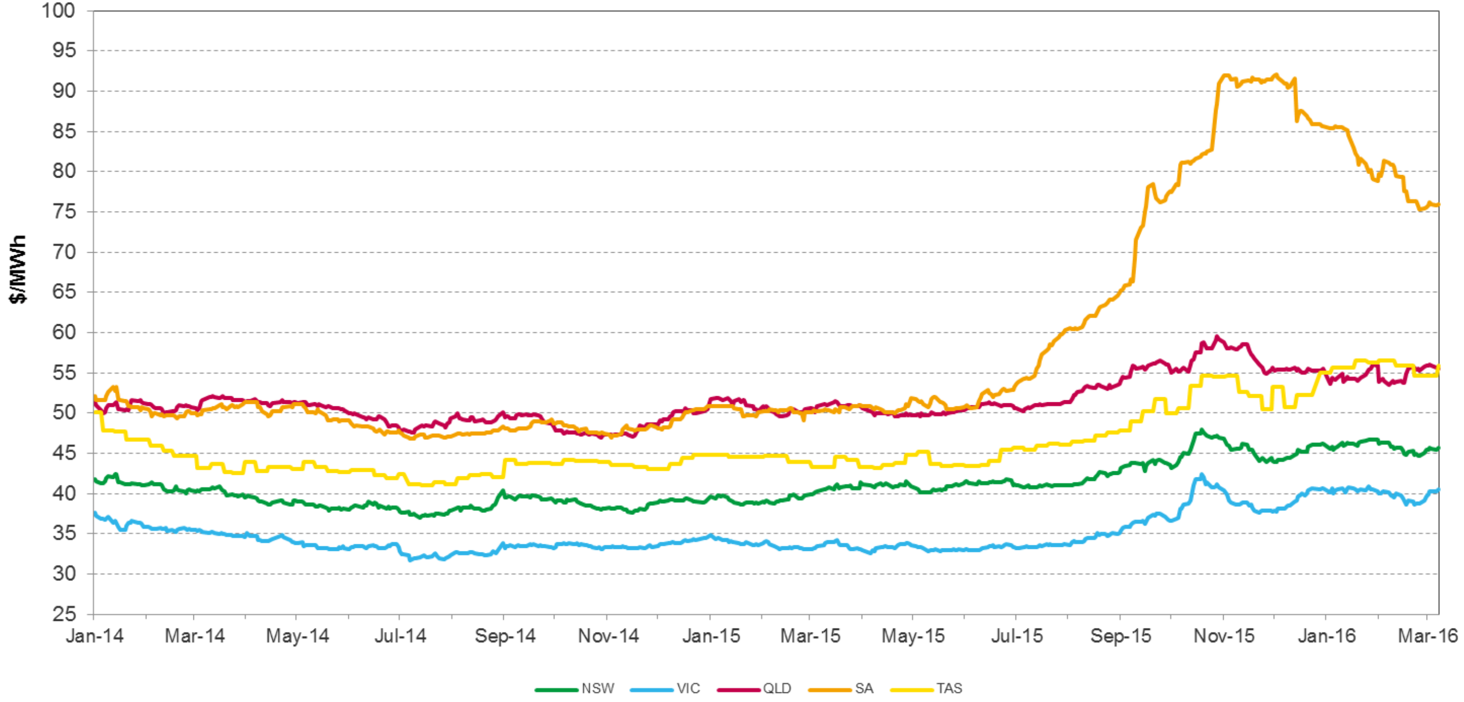
Load Reduction Late February (~100MW)

First Diesel Generation (24MW) 10 March 2016



Source: AEMO, SE Global Research & Analytics

NEM Forward Price Evolution: FY-16/17



Source: Hydro Tasmania, SE Global Research & Analytics

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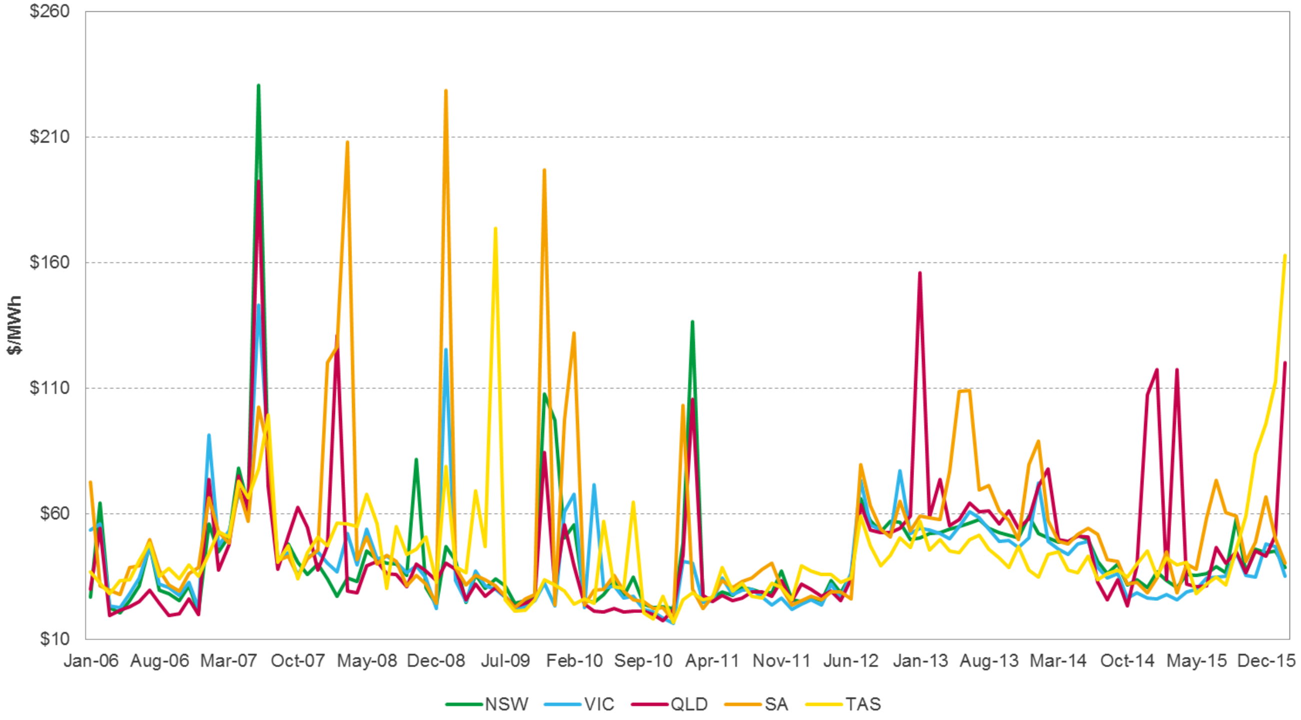
NEM Spot Price Evolution



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NEM Isolation

Change In Tasmanian Energy Balance

NEM Forward Price Evolution: FY-16/17

NEM Spot Price Evolution

Looking Ahead

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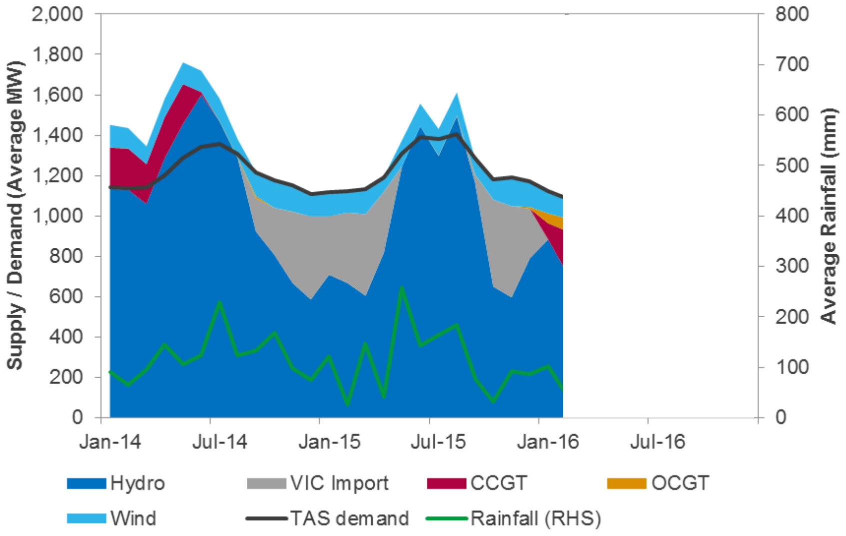
Tasmania – Remainder Of 2016

Scenario

- Long-term Average Rainfall
- Tamar Valley CCGT and Bell Bay OCGT
- No Basslink
- No Load Shed
- No Diesel

Assessment

- Autumn/Spring Gap of ~150MW
  - Tamar Valley Peaking (58MW in April)
  - Diesel Generators (up to 100MW by end of March)
  - Total of ~150MW
- Winter OK



Source: AEMO, BOM, SE Global Research & Analytics

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Long-Term Options for Tasmania

Return of Basslink

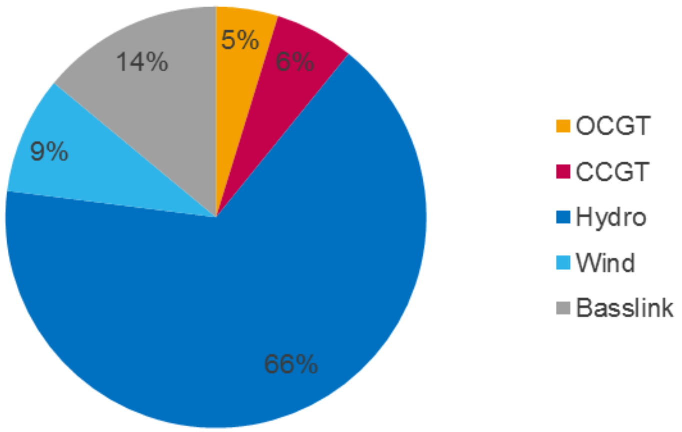
- Second Basslink longer term
- Bullish factors for Victoria
  - South Australia
  - Aluminium smelters and emission challenge

Gas-fired Generation

- Price of gas
- Global LNG glut

Renewable Generation

- Large-scale solar may recharge industry
- Good wind resource in Tasmania



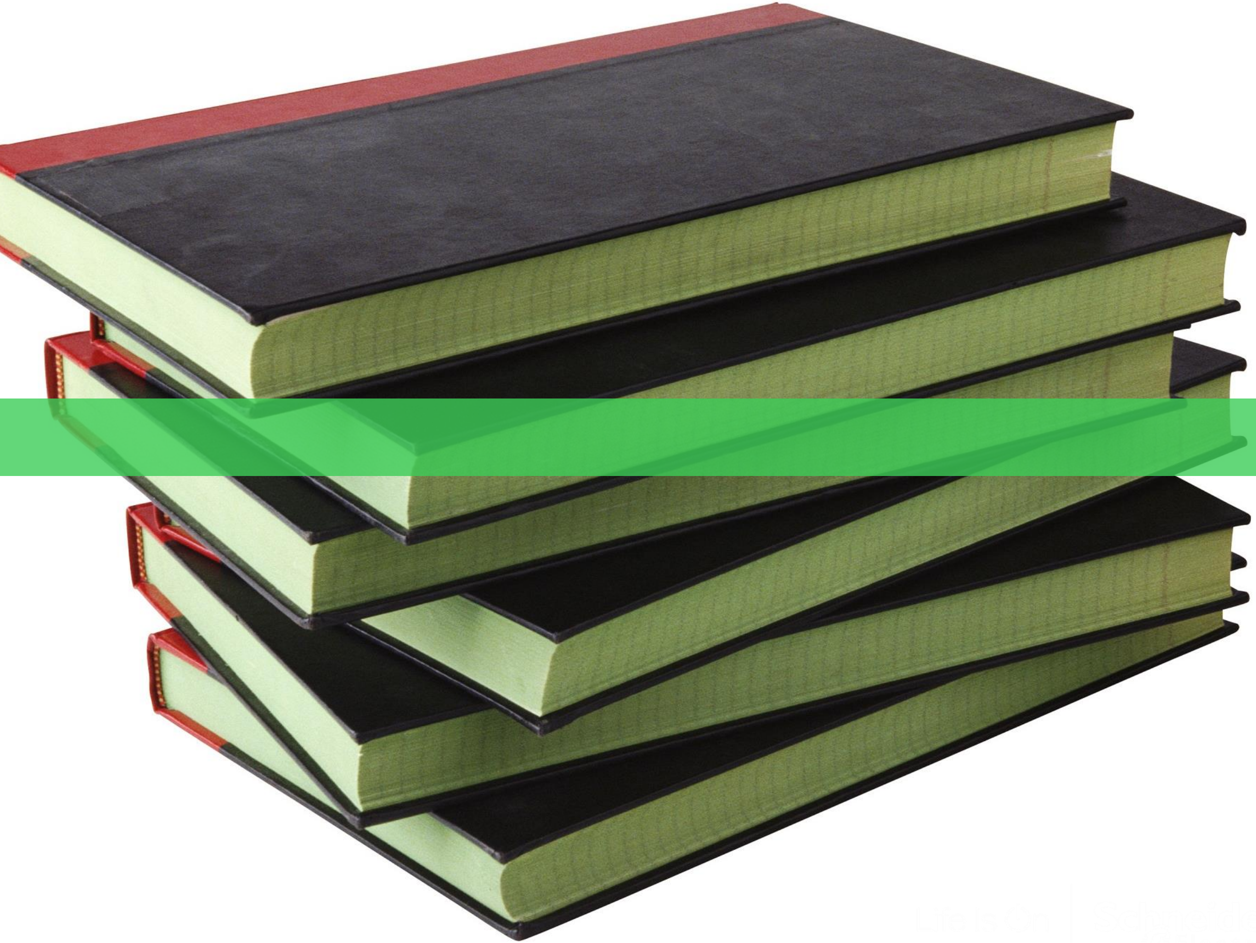
Source: AEMO, SE Global Research & Analytics

Looking Ahead

Tasmania – Remainder of 2016

Long-Term Options for Tasmania

Additional Reading



Additional Research

Global Research & Analytics Research cited in this presentation includes research linked below, as well as research available only to ESS Risk Management clients

- [1] *September 2014 Monthly Outlook*
- [2] *Q4-14 Quarterly Outlook &* 18 August 2015 Weekly Outlook (link)
- [3] *Q4-15 Quarterly Outlook &* 19 October 2015 Weekly Outlook (link)
- [4] 2 November 2015 Weekly Outlook (link)
- [5] *December 2015 Monthly Outlook*
- [6] 22 December 2015 Weekly Outlook (link)
- [7] *January 2016 Monthly Outlook*
- [8] 13 October 2015 Weekly Outlook (link)
- [9] 15 December 2015 Weekly Outlook (link)
- [10] 14 July 2015 Weekly Outlook (link)
- [11] 19 October 2015 Weekly Outlook (link)
- [12] 12 January 2016 Weekly Outlook (link)
- [13] *Q3-15 Quarterly Outlook*
- [14] 17 November 2015 Weekly Outlook (link)
- [15] 24 November 2015 Weekly Outlook (link)
- [16] 9 February 2016 Weekly Outlook (link)

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Thank You

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