



# Energy Market Design and Promotion of Efficient Emissions Reductions

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# A change in energy policy focus

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- Original motivation for energy market liberalisation was competition and efficiency
- Now charged with delivery of a different policy objective
  - lower carbon emissions with efficiency and energy security
- Are existing market structures and frameworks consistent with the new policy agenda?

# Energy markets are “front and centre”

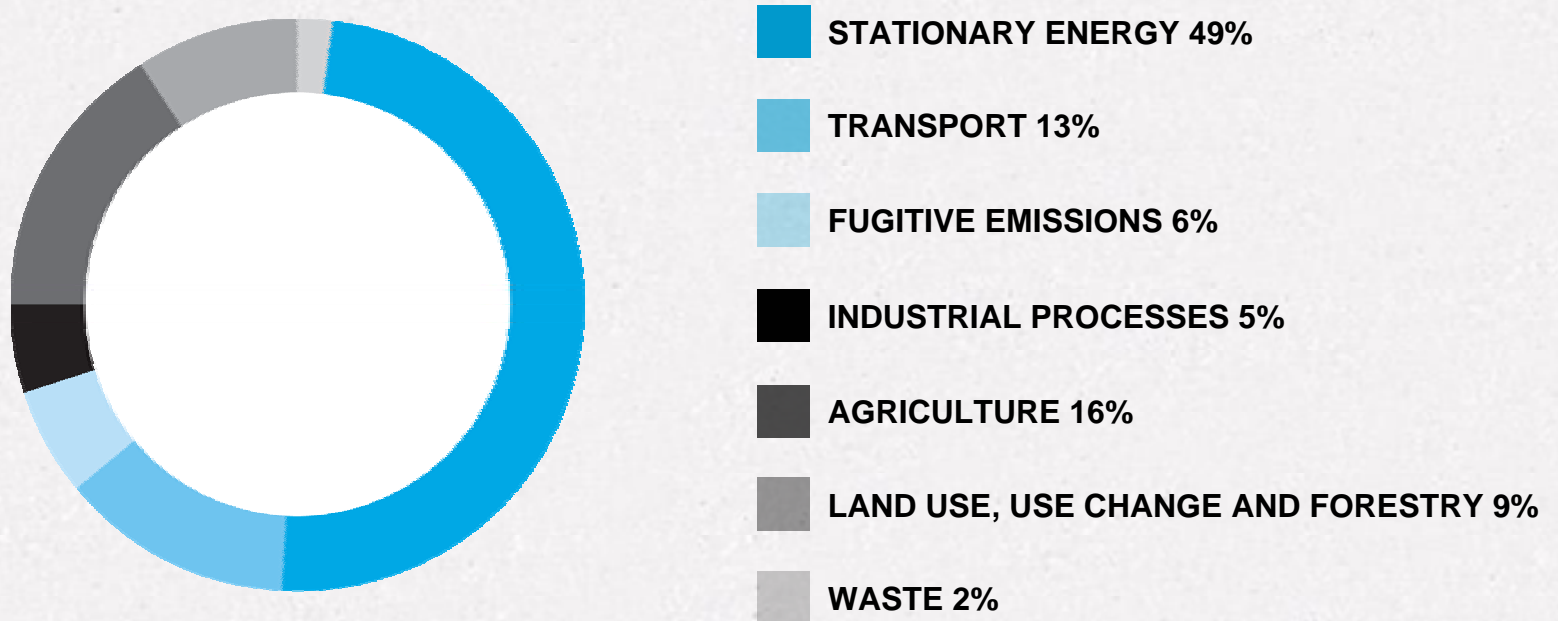
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- Meaningful emission reductions require large-scale change in energy markets
- 49% of Australia’s carbon emissions are from the stationary energy sector
  - Because we rely on coal for electricity generation
- Given effective climate policy still reliant on coal medium term.

# Energy 49% Australia's Carbon Emissions

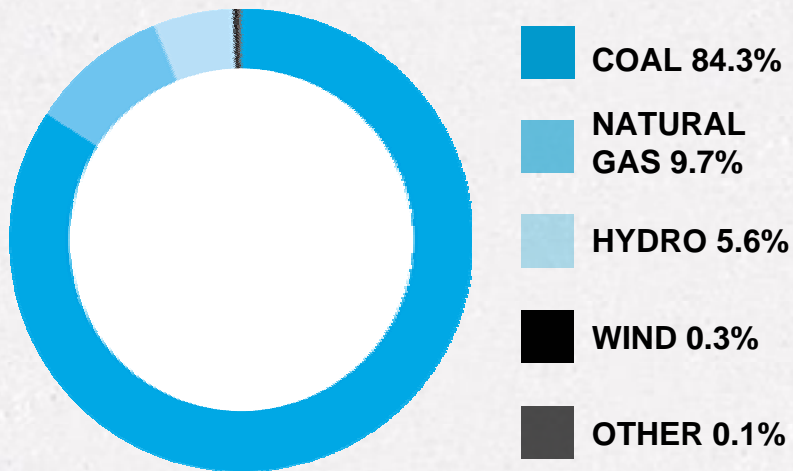
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# Still reliant on coal in the medium term

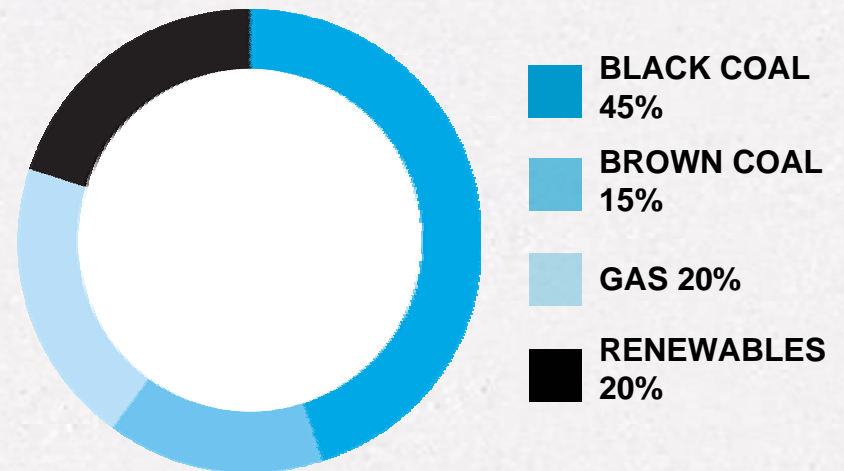


**CURRENT**



Source: ESAA

**2020**



Source: Commonwealth Treasury



# Australian climate policy

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## **Carbon Pollution Reduction Scheme (CPRS)**

- Explicitly price CO<sub>2</sub> emissions
- 'Cap & Trade' design
- Proposed to commence 2011
- With \$10 cap for first 12 months

## **Renewable Energy Target (RET)**

- Obligation on retailers
- % of electricity from Renewables
- Profiled to 20% by 2020

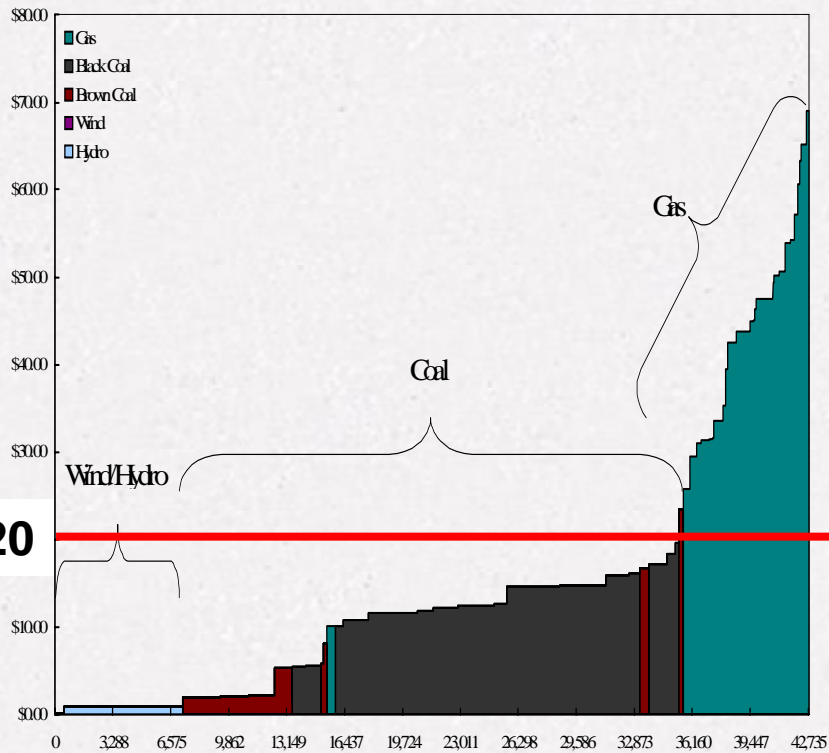
# Changing energy market dynamics

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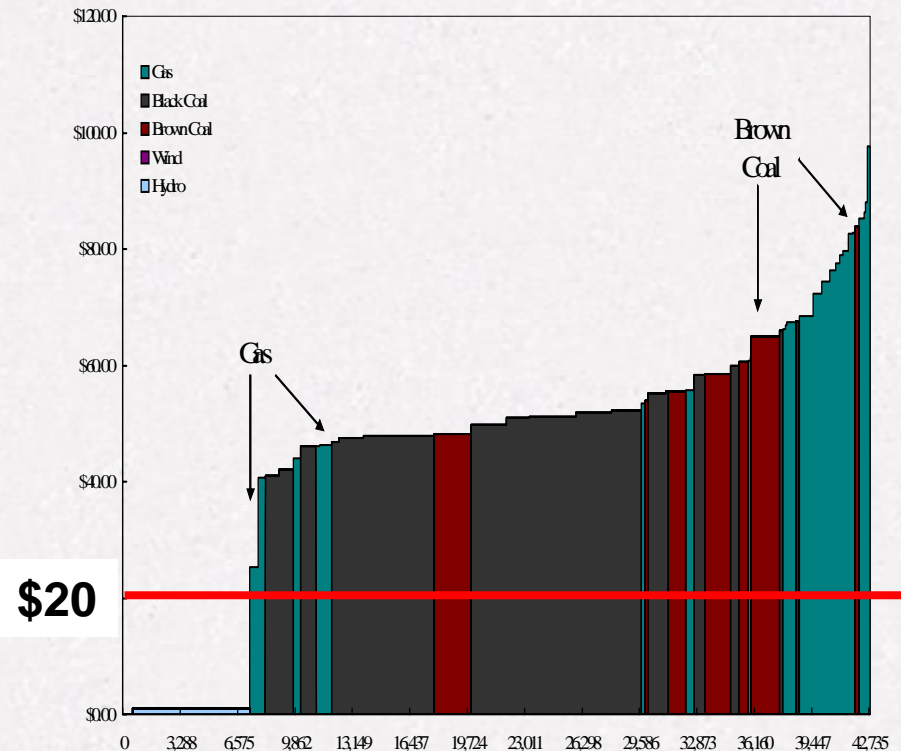


- Pricing carbon will:
  - Increase prices in energy spot and contract markets
  - Increase level of volatility of retail costs
  - Change the pattern of generation entry and retirement
  - Alter the timing and location of new transmission investment
- The obligation for retailers to buy a proportion of supply from renewable sources will:
  - Compound the change in generator entry
  - Initially, focus on wind-powered generation
  - Increase intermittent output, in potentially remote locations

# Absolute & relative generation costs



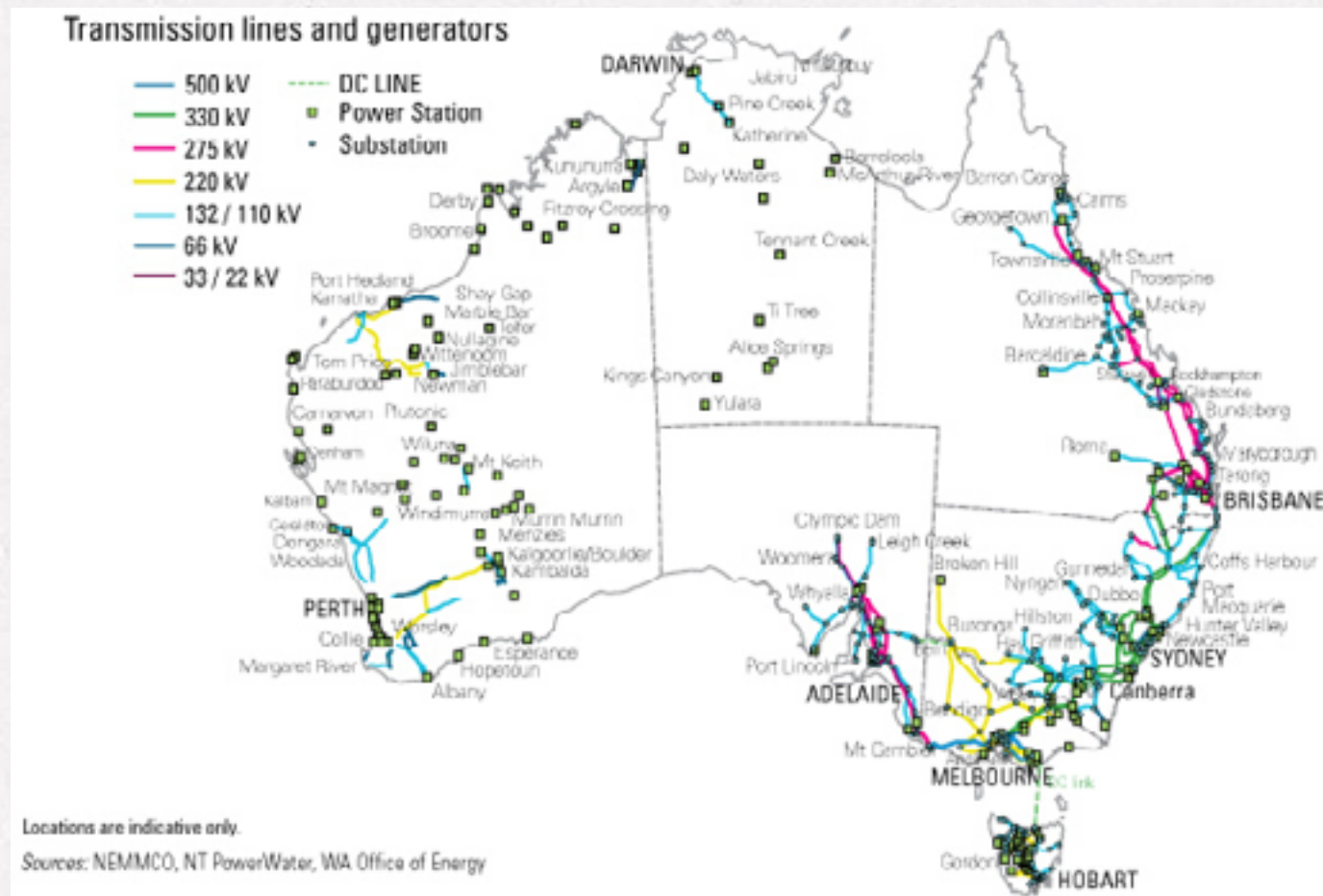
**Current running costs**



**..with \$40 carbon price**



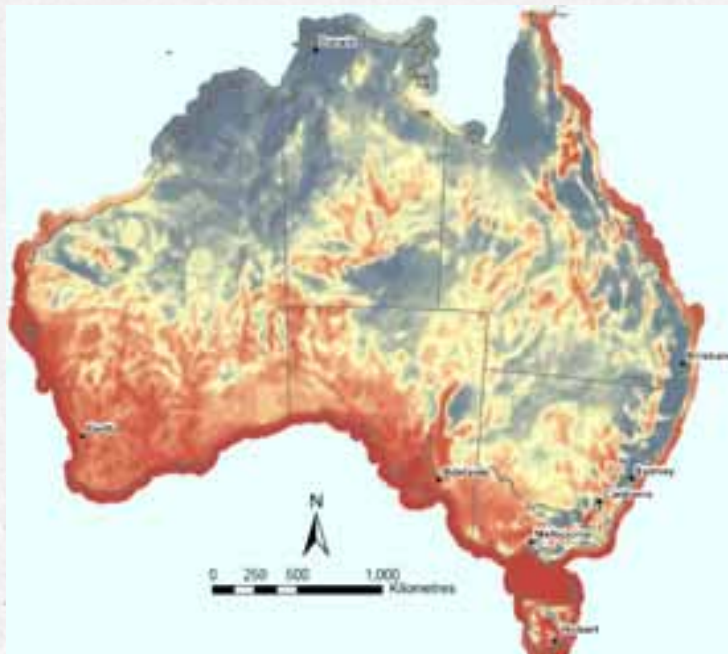
# Australia's current electricity transmission and generation



# Australia's wind and geothermal resources

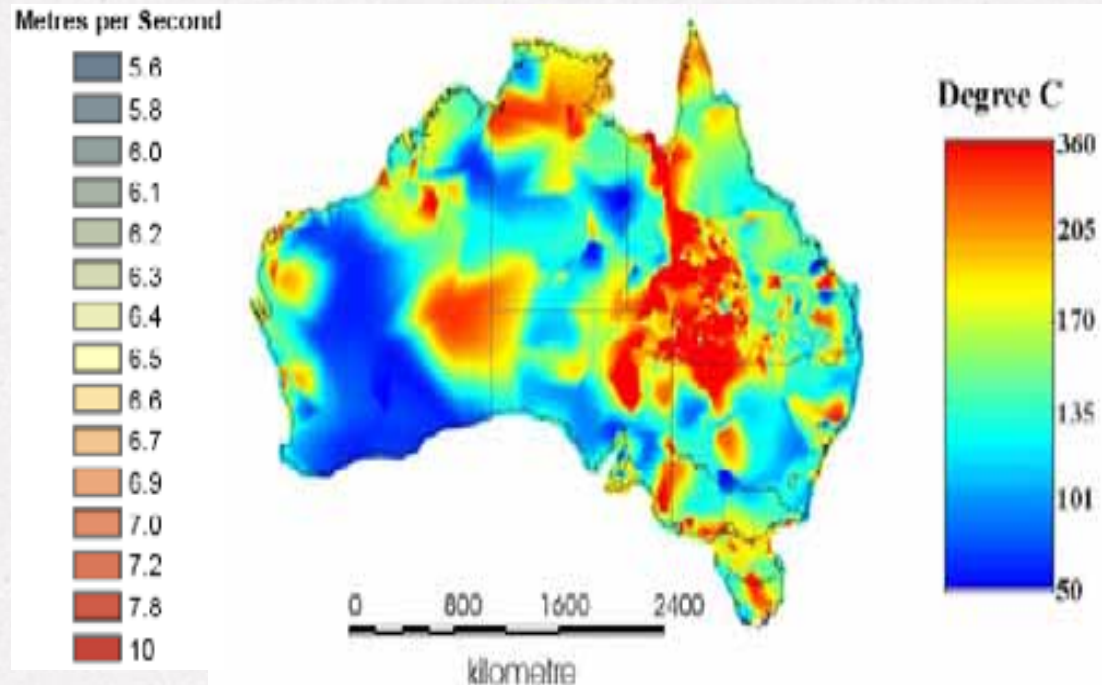


**Mean Wind Speed**



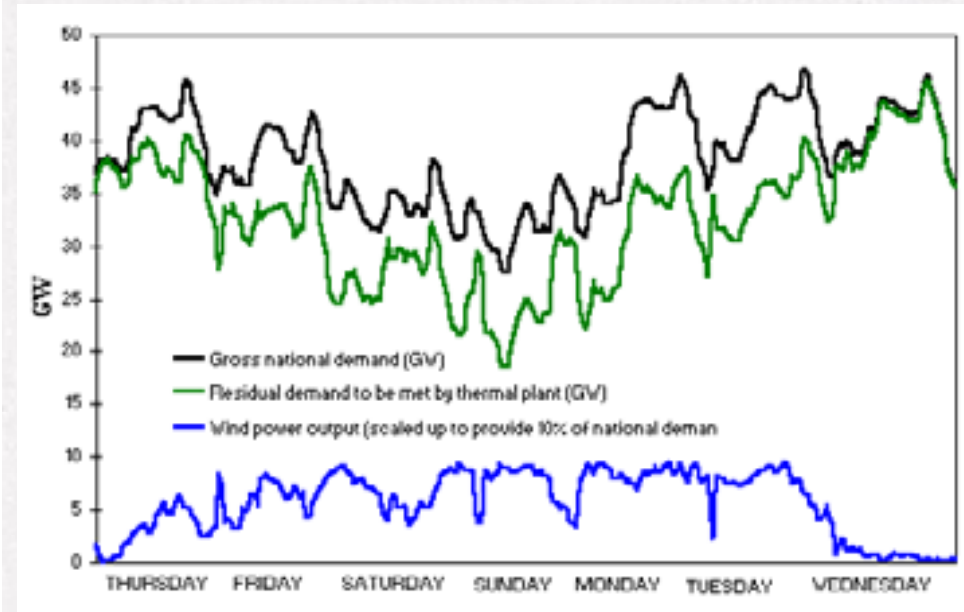
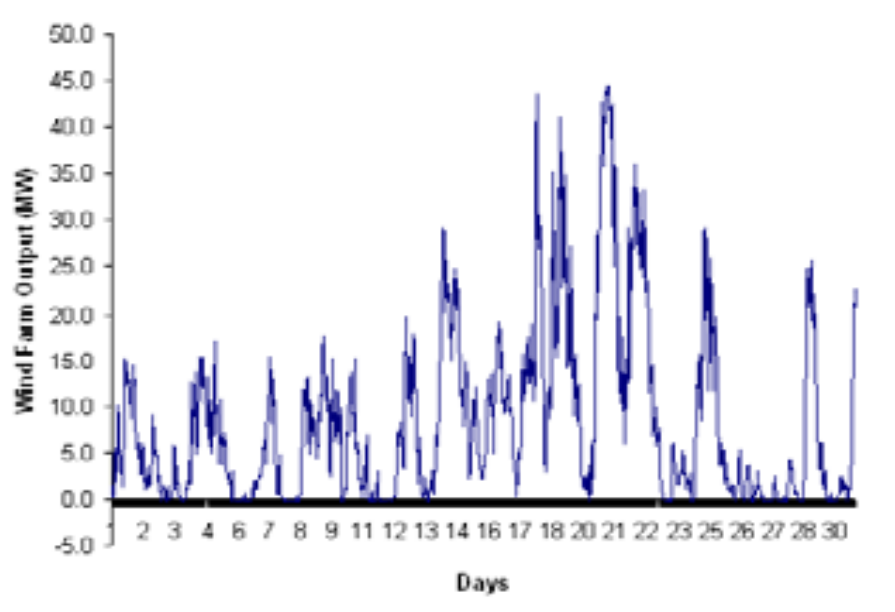
Source: [www.environment.gov.au/renewable/atlas](http://www.environment.gov.au/renewable/atlas)

**Heat Flow Map**



Source: <http://www.rise.org.au/info/Res/geothermal/index.html>

# More highly variable generation output





# AEMC Review

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- Directed to undertake a review on behalf of Australia's council of energy Ministers
- Stress test of current market frameworks against ETS and 20% Renewable Energy Target
- Reported to Ministers last month, following 14 months of analysis and consultation
- Key findings:
  - many aspects of the framework appear resilient
  - but a number of changes are required



# Delivering generation and network investment



- “Energy Only” market can signal required generation investment.
  - Ability to raise price cap
  - Climate policy changes signals does not invalidate market mechanism
- Economic regulation of networks can incentivise and finance efficient investment
- But some refinements proposed

# Findings (1)

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- Retail
  - Price regulation, where maintained, needs to be more flexible to cope with uncertainty in carbon inclusive energy costs
  - Necessary to mitigate risk of regulation-induced retailer financial distress
- Transmission investment planning
  - Regulatory framework needs to provide for investment in initially 'over-sized' connection assets to support prospective new (particularly remote) generation clusters
  - Benefits because of large scale economies – but also risks of asset stranding

# Findings (2)

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- **Transmission cost recovery**
  - Greater inter-regional flows mean cost recovery on a regional basis is increasingly problematic
  - Proposal for inter-regional transmission charging regime
- **Generation**
  - Significant new entry and exit highlights need for robust locational signal
  - They can mitigate trading risks from network congestion, and risk of inefficient transmission investment
  - Proposal to develop 'deeper' connection or use-of-system charges for generators