



AMEU/SAIEE joint virtual webinar

“Evolving business models for a sustainable SA municipal Dx Electricity Utility” 16 August 2022

Session 3 (Theory/Case Study) The Australian Experience

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Presentation outline

- Setting the Scene
- Legal Framework of the Australian Energy Sector
- How lawmakers achieve their objectives
- Recent market developments, issues and learnings

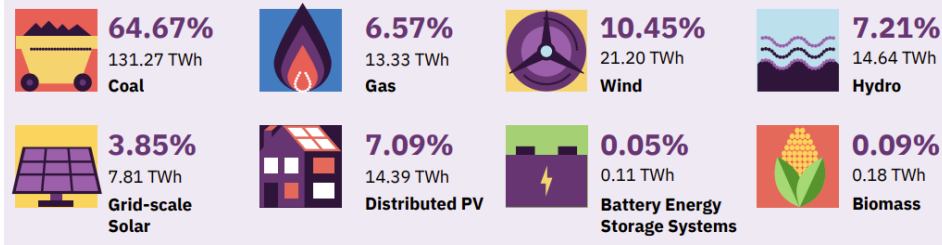
Setting the scene

- Australia is 6 x the size of South Africa
- 25m v 56m people
- Installed capacity: 65,252MW v 58,000MW
- Characteristics:
 - Unbundled – Gx, Tx, Dx and retailers (1998)
 - Interconnected East cost grid (80%)
 - Competition between generators
 - Competition between retailers for customers
 - Electricity traded through wholesale market
 - Secondary derivative market
- Similarities
 - Traditionally coal dominated
 - Large coal export country
 - Similar weather, irradiation and wind

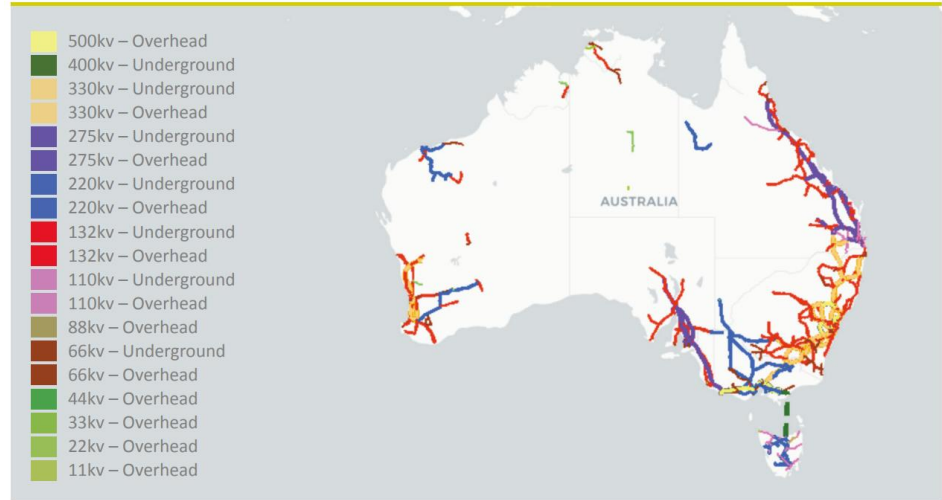


Setting the scene


Annual generation by fuel type (2020/21)



Australia's transmission networks



Source: Australian Renewable Energy Agency

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There are over **504** registered participants in the NEM, including market generators, transmission network service providers, distribution network service providers, and market customers.

- 


The NEM commenced operation as a wholesale spot market for electricity in December 1998.

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The NEM incorporates around **40,000 km** of transmission lines and cables.

- 

The NEM supplies about **204 terawatt** hours of electricity to businesses and households each year.

- 

\$11.5 billion was traded in the NEM in FY 2020-21.

- 

The NEM supplies approximately **10.7 million** customers.

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The NEM has a total electricity generating capacity of **65,252 MW** (as at December 2021).

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The NEM has approximately **14 GW** of distributed solar (as at Dec 2021). Collectively the largest generator in the NEM.

Setting the scene

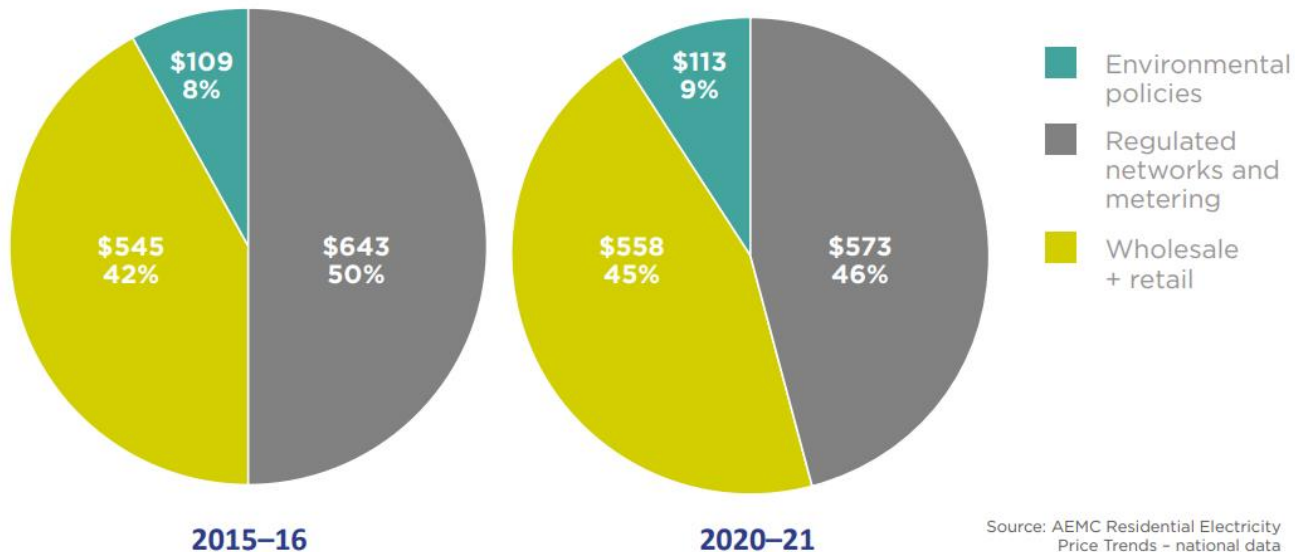
- Australian Constitution v South African Constitution
- Federal v state



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Setting the scene - National Average Electricity Prices



Setting the Scene



Australian Energy Market Commission

Rule maker, market
developer and expert adviser
to governments

*Protects consumers and achieves
the right trade-off between cost,
reliability and security.*



Australian Energy Regulator

Economic regulation
and rules compliance

*Polices the system and
monitors the market.*

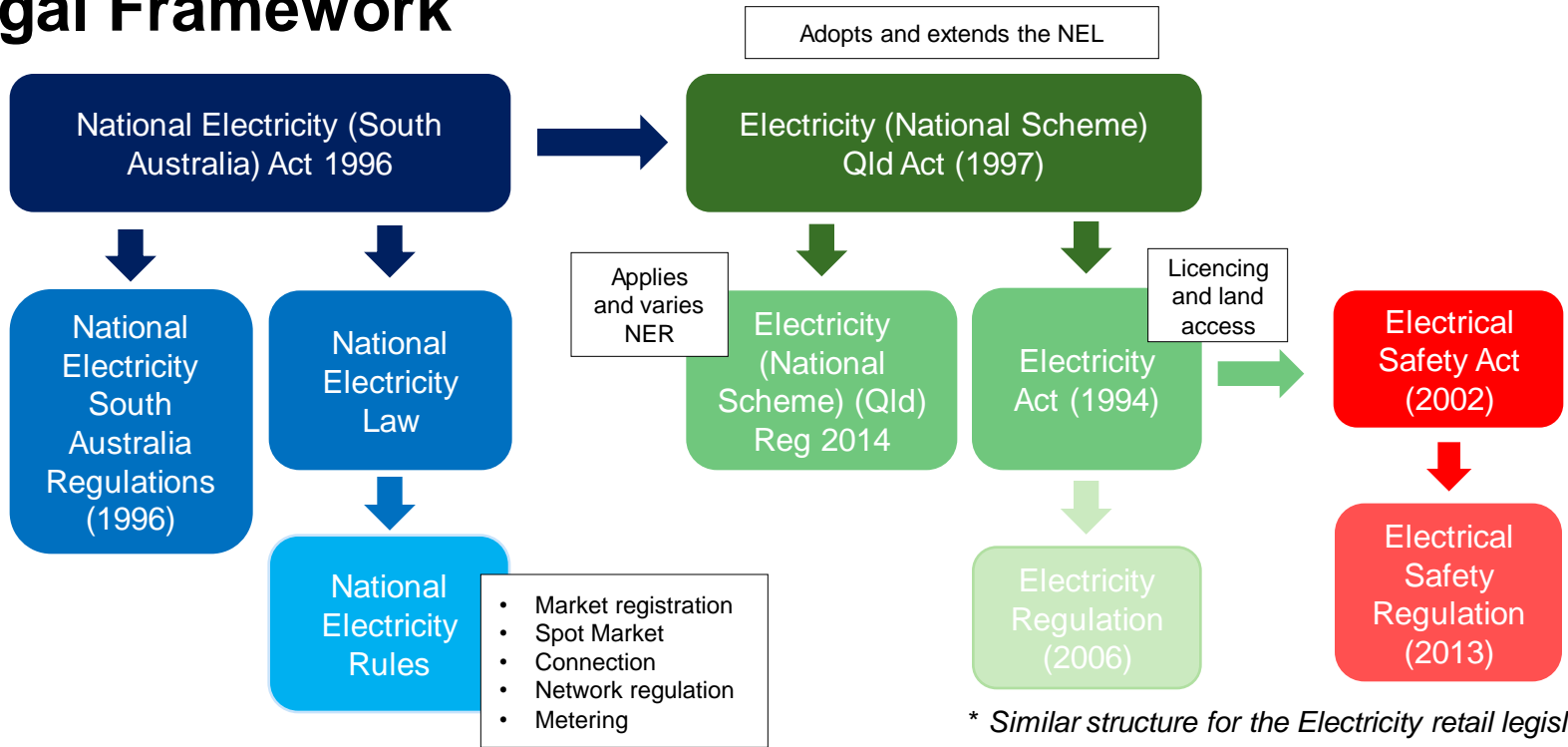


Australian Energy Market Operator

Electricity and gas systems
and market operator

*Works with industry
to keep the lights on.*

Legal Framework



How lawmakers achieve their objectives

Ownership	Fuel source	Market Structure	Industry Structure	Tariff structures
<ul style="list-style-type: none">• State owned• Privately owned• Hybrid	<ul style="list-style-type: none">• Coal• Gas• Nuclear• Renewables	<ul style="list-style-type: none">• State controlled• Pool	<ul style="list-style-type: none">• Separation between sectors• Vertical integration• Centrally planned• Free market	<ul style="list-style-type: none">• Centrally fixed• Market driven• State subsidised• Cross subsidies

Recent market developments, issues and learnings

- Regulatory environment
 - States driving RE expansion
 - No central policy
 - Market rule changes - batteries
- Expansion
 - Customer demand set to double by 2050
 - Contractor shortage
 - Tx supply chain – up to 40% increases in capital expenditure
 - 10,000km of Tx expansion by 2050
 - Distributed Energy Resources – Mines go off-grid, diesel Gx to RE and H2
- Coal
 - Societal pressure for coal Gx closure
 - 14GW of 23GW to withdraw by 2030

Recent market developments, issues and learnings

- Market
 - Suspension
 - Dawn of storage and EVs – market is no longer fit for purpose – load used to follow demand, now demand follows load
- Transmission
 - Grid connection – long thin grid
 - Private Tx not incentivised to expand networks, wants government support
 - Misalignment between Gx and Tx/Dx development
- Storage
- Hydrogen
 - Applications
 - How green is green?
 - Blue hydrogen as a transition fuel

Thank you



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