Regulatory landscape for the Electricity sector in Australia

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The National Electricity Market

- The longest AC grid in the world.
- Five regions with limited interconnection
- Energy only market
- Gross pool
- Real time
- Central dispatched
- Marginal pricing
- High spot price risk
  - $14 500/MWh cap
  - -$1000/MWh floor
- Financial markets to hedge risk
- No market power mitigation

Source: Australian Energy Market Commission
Current state of the National Electricity Market

- Peak demand is rising*, particularly in Queensland (reaching a record level in February 2018) and NSW.
- Coal generators are being retired and not being replaced
- High gas fuel costs are contributing to high electricity prices.
- Growing investment in renewable generation
- Uncertainty about governments’ energy and climate change policies is affecting investor confidence.
Electricity – the generation mix is changing

Australian large scale renewables investment

Australian solar PV installations since April 2001

Source: Clean Energy Regulator

Source: Australian Photovoltaic Institute
This has implications for planning of key electricity infrastructure – including transmission

Source: Australian Energy Market Operator
The changing generation mix has coincided with increases in prices

Source: Australian Energy Market Commission
Electricity – affordability challenges

CPI for electricity compared with other sectors and wage growth

Source: Australian Bureau of Statistics
What’s the AER’s role?
Australia’s energy governance regime
Guided by the National Energy Objectives

The National Electricity Objective:
• to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:
  – price, quality, safety and reliability and security of supply of electricity
  – the reliability, safety and security of the national electricity system.

The National Gas Objective:
• to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.

The National Energy Retail Objective:
• to promote efficient investment in, and efficient operation and use of, energy services for the long term interests of consumers of energy with respect to price, quality, safety, reliability and security of supply of energy.
AER strategic objectives

Strategic objectives which drive our annual work program are:

• Drive effective competition where it is feasible
• Provide effective regulation where competition is not feasible
• Equip consumers to participate effectively, and protect those who are unable to safeguard their own interests
• Use our expertise to inform debate about Australia’s energy future, the long-term interests of consumer and the regulatory landscape
• Take a long-term perspective while also considering the impact on consumers today
Achieving our objectives

We monitor markets, regulated businesses and the consumer experience.

We analyse issues, using our economic, legal and technical skills.

We make decisions so that all Australian energy consumers are better off, now and in the future.

We act to increase compliance and stop harmful behaviour.
The AER works across the electricity supply chains

- **Generators**
  Produce electricity from sources including coal, gas, solar, wind, and biomass

- **Transmission networks**
  Convert low-voltage electricity to high voltage for efficient transport over long distances

- **Distribution networks**
  Convert high-voltage electricity to low-voltage and transport it to customers

- **Energy retail interface**
  - **Alternative energy providers**
    Install solar panels or other small-scale generators at a customer's premises and sell output to the customer or other customers
  - **Authorised or licensed energy retailers**
    Buy electricity from generators and sell to energy users
  - **Energy onsellers**
    Buy energy from authorised retailers and resell to customers in embedded networks

- **Energy customers**
  - **Households** (no solar panels)
  - **Households with solar panels and batteries**
    May sell excess energy back to their retailer
  - **Large retail customers**
  - **Embedded network customers**
    e.g., Apartment buildings, caravans parks
Wholesale
Wholesale market roles

• Monitoring wholesale market performance
  – Publish weekly reports
  – Publish reports where price exceeds thresholds set out in the electricity and gas legislation

• Monitoring compliance with electricity and gas legislation
  – Risk assessment approach undertaken to determine type and frequency of monitoring for each provision
  – Ongoing process to take into account new/revised legislation

• Monitoring and reporting on Effective competition to identify:
  – whether there is effective competition in the market
  – features of the market that may be detrimental to effective competition or the efficient functioning of the market

• Report findings every two years – December 2018
Wholesale electricity market legal framework

• National Electricity Market (NEM) - began December 1998
  – Many years of successful operation
  – Entry and exit has occurred

• Obligations set out in:
  – National Electricity Law
  – National Electricity Rules
  – Associated procedures
The spot market design

- Five regions with limited interconnection
- Energy only design plus 8 Ancillary service markets
- Gross pool
- Real time market only - 5 minute dispatch and settlement*
- Security constrained dispatched
- Marginal pricing
- High spot price risk
  - $14 200/MWh cap
  - $1000/MWh floor
- Financial markets to hedge risk
- No market power mitigation provisions
Volatile spot prices

Trading intervals above $5000/MWh (annual)

Several years of volatile high prices
MEU rule change proposal
Declining electricity demand
AEMC rule determination

Source: AER; AEMO. Last updated: 3 Apr 2017 - 10:51 am
Analysis of generators’ offers

Monthly average capacity offered by NSW generators, by price
Sustained high prices

Monthly volume weighted average prices NSW

High summer demand, limited imports

Sustained high prices post summer
Promoting competition in the wholesale sector

• Monitoring and reporting on effective competition in wholesale.
  – Is there effective competition in the market?
  – Are there features of the market that may be detrimental to effective competition within the market?
  – Are there features of the market that may be impacting detrimentally on the efficient functioning of the market (and if so, assess the extent of the inefficiency)?

• Adequate enforcement powers and penalties are necessary:
  – proportionate to the offence
  – acts as a deterrent
  – provides certainty that the policy objectives are to be met.

• The ACCC and Energy Security Board have recommended that the AER needs the powers to address market manipulation.
Networks
AER role in networks

AER has two broad energy network regulation roles:

1. Approving the amount of revenue that transmission and distribution network businesses can recover from customers for using networks. This is done through the regulatory determination process.

2. Networks pricing and oversight.
The AER regulatory process

- **AER Framework & Approach**
  - Classification of services
  - Control mechanism (revenue caps, price cap, other)
  - Incentive Schemes

- **Business revenue proposal**
  - Building block inputs
  - Application of incentive schemes etc.

- **AER Issues paper**

- **Public forum**

- **Public forum**

- **AER draft decision**

- **Public submissions**
  - Revised proposal
  - Submissions

- **Business revised proposal**

- **Public submissions**

- **AER final decision**
An incentives-based regime: the building blocks

Capital costs

Return on capital
(projected/forecast capital base \times \text{rate of return})

Regulatory depreciation
(depreciation net of indexation applied to capital base)

Operating expenditure (opex)

Incentive mechanism
(increment or decrement)

Corporate tax income
(net of value of imputation credits)

Total revenue
# The incentive arrangements

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>EBSS</strong></td>
<td>Efficiency benefit sharing scheme – provides for a fair sharing between network businesses and network users of opex efficiency gains and losses made during a regulatory control period</td>
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<tr>
<td><strong>CESS</strong></td>
<td>Capital expenditure sharing scheme – allow for the benefits/costs of capex underspends/overspends to be shared between network businesses and their customers</td>
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<tr>
<td><strong>DMIS</strong></td>
<td>Demand management incentive scheme – provide incentives for network businesses to implement efficient non-network alternatives and manage demand</td>
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<tr>
<td><strong>STPIS</strong></td>
<td>Service target performance incentive scheme – provide incentives for network businesses to maintain and improve service performance</td>
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AER benchmarking

• Benchmarking compares current performance of a business to its own past performance and to the performance of other businesses

• The National Electricity Rules require the AER to:
  – have regard to network benchmarking results when assessing and amending network capex and opex expenditures, and
  – to publish the benchmarking results in an annual benchmarking report.
Benchmarking reports

• The AER’s annual benchmarking reports presents results from three types of 'top-down' benchmarking techniques:
  – Productivity index number models (PIN), such as total factor productivity
  – Econometric opex cost function models
  – Partial performance indicators (PPIs).

• The AER has published five benchmarking reports. The most recent report was published on 30 November 2018.

Past results: multilateral total factor productivity
Consumer Challenge Panel

• The CCP is an advisory board to help us make better regulatory determinations by providing input on issues of importance to consumers
• CCP objectives:
  – Ensuring proposals are in consumers’ long term interests
  – Advise us on the effectiveness of networks’ engagement activities with customers and how this is reflected in the development of their proposals
• Sub-panels of 3 to 4 members work on each regulatory determination (generally a cluster of businesses that are jurisdiction based). Members are allocated based on their expertise and conflicts of interest.
Retail
Retail market legal framework

Jurisdictional application legislation including transitional arrangements

- National Energy Retail Law
- National Energy Retail Regulations
- National Energy Retail Rules
- AER procedures and guidelines
Retail Markets performance/affordability data

The AER publishes data reported by retailers under the AER (Retail) Performance Reporting Procedures & Guidelines

What do we collect? Each quarter:

• Retail market data
• Market activities data
• Hardship program data
Who provides data?

41 retailers (54 reporting entities)

5 jurisdictions – NSW, ACT, QLD, SA, TAS

3 retailers control about 85% of the retail market

105 unique data sets

Energy offers: energymadeeasy.gov.au
### Quarterly Reports (Electricity/Gas) [www.aer.gov.au](http://www.aer.gov.au)

**Sector**
- Electricity
- Gas

**Category**
- Hardship programs – quarterly update
- Disconnections – quarterly update
- Payment plans – quarterly update
- Complaints – time series
- Contract types – time series
- Customer numbers – time series
- Disconnections (residential) – time series
- Disconnections (small business) – time series
- Energy debt – quarterly update
- Energy debt – time series
- Hardship programs – time series

### Graphs
- 2016 Q3 Debt levels of gas customers enrolling hardship programs - by retailer
- 2016 Q3 Debt levels of electricity customers enrolling hardship programs - by retailer
- 2016 Q3 Gas customers exiting hardship programs - by retailer
- 2016 Q3 Average debt of customers on hardship programs - by retailer
- 2016 Q3 Average debt of customers on entry to hardship programs - by retailer
- 2016 Q3 Electricity customers exiting hardship programs - by retailer
- 2016 Q3 Customers on a hardship program - by jurisdiction
- 2016 Q3 Small business customers reconnected within 7 days - by retailer
- 2016 Q3 Customers on a hardship program - by retailer
Residential Electricity Bills and Composition – NEM Average

Source: AEMC, 2017
Residential Electricity Prices (PPP USD)

Source: IEA, 2017
Vertical Integration of Generation and Retailing

**SA Vertical Integration**
- Electricity generation
- Electricity retail

**Queensland Vertical Integration**
- Electricity generation
- Electricity retail

**NSW and ACT Vertical Integration**
- Electricity generation
- Electricity retail

**VIC Vertical Integration**
- Electricity generation
- Electricity retail

*Source: AER*
Promoting competition in the retail sector

• Consumers need to be equipped with the tools and information to engage confidently with the market. We’re helping enable this through measures including:
  – Energy Made Easy website
  – Retail Pricing Information Guidelines.

• Robust consumer protections are critical, for example:
  – hardship requirements
  – explicit informed consent provisions.

• Adequate enforcement powers and penalties are necessary:
  – proportionate to the offence
  – effective deterrents.
  – provide certainty that the policy objectives are to be met.

• The ACCC has made recommendations for further improvements, including:
  – a default offer price
  – publishing a reference bill amount (and discounts anchored to this)
  – advancing consumer data right in energy
  – better support for vulnerable consumers.
Competition in the Eastern Australian wholesale electricity market
Australia’s Eastern Electricity Market

- almost 10 million customers
- one of the world’s longest AC interconnected systems
  - 4500 km over 5 regions
- electricity sector
  - 220 scheduled/semi generators over 30 MW
  - 5 transmission networks
  - 6 interconnector businesses
  - 13 distribution networks
Prices at Record Levels

Yearly volume weighted average prices

- Price at record levels
- Prices start increasing significantly in 2015-16
- Carbon pricing 2012-13 and 2013-14

- Queensland
- NSW
- Victoria
- South Australia
- Tasmania
The supply demand balance has tightened

Additional and withdrawn capacity in the NEM
The wholesale market is concentrated
Evolving with the market
An evolving market
Key electricity reforms

• Implementing recommendations from the Australian Competition and Consumer Commission’s Retail Electricity Pricing Inquiry.
  – The Australian Energy Regulator has commenced work on a default market offer (DMO) price and reference bill.
• Retailer reliability obligation.
• Coordination of Generation and Transmission Investment and Integrated System Plan
• Value of Customer Reliability (VCR)
• New Reg
More collaborative and consumer-centric

• While maintaining the fundamental principles, we are evolving the way we regulate:
  – Working more collaboratively and engaging with energy businesses earlier in the process.
  – Putting consumers at the heart of decision making.
  – Identifying key points of disagreement early and working together to resolve them.
  – Our *New Reg* project (with Energy Consumers Australia and Energy Networks Australia) seeks to achieve the above.
Conclusions

• As the market evolves and we work through recommendations of various reviews, we do not lose sight of:
  – importance of competitive pressure in bringing out good economic performance
  – long term interest of consumers being at the heart of decision making
  – importance of an effective and empowered regulator.
Thank you – any questions?