

# The Reform Journey Continues

## Energy Markets and Climate Change Policies

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# THIS PRESENTATION

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- Interactions between energy markets and climate change policies
- Two ‘flagship’ national policies:
  - Carbon Pollution Reduction Scheme (CPRS)
  - Expanded Renewable Energy Target (ERET)
- Will involve transformation of energy markets
- Over-laid on an evolving national electricity market
- Are there any “stress points”?
- Focus specifically on east coast electricity market – but recognise some wider interactions, e.g. gas markets

# THE AMEC

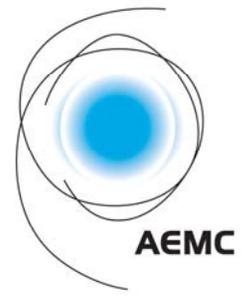
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- Statutory body with national responsibilities
  - “Rule maker” for national electricity and gas markets
  - “Reviews” to provide advice to Ministerial Council on Energy
- Ongoing Review covering the subject matter of this presentation
- Due to report to Ministers in September 2009
- This presentation sets out our preliminary findings

# KEY FINDINGS

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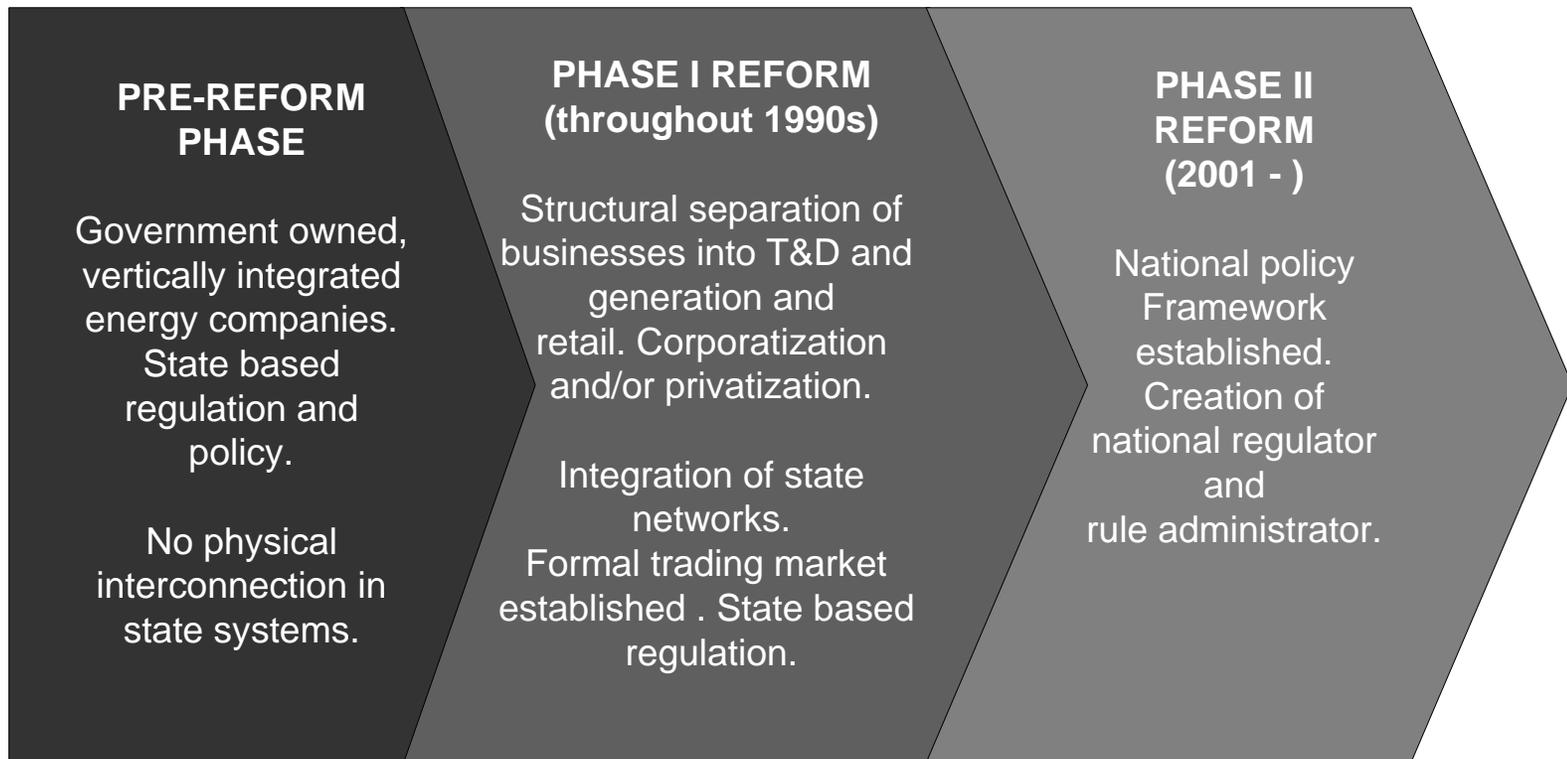
- Many strengths in the current frameworks:
  - Current framework has sustained competition and significant new investment in both networks and generation
  - Internationally respected market design
  - Reflected in generally sanguine views of market participants
- But some areas of concern:
  - Retail price regulation
  - Transmission connections for large-scale remote renewables
  - Short-term reliability management



# Context



# POLICY REFORM AND THE COMPETITION AGENDA



# INDUSTRY STRUCTURE

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- **Competitive generation and (increasingly) retail**
  - Energy traded through central pool (around \$11bn last year)
  - Contracts derived from pool prices to manage risk
  - Trend towards vertical integration (“gen-tailers”) with national presence
  - Approx 45GW of installed capacity serving peak demand of approx 30GW
- **Regulated transmission and distribution networks**
  - National framework of regulation
  - Economic regulation of revenues and pricing
  - Open access regime
  - Total Regulatory Asset Base (RAB) of around \$38bn

# Performance to date

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- **Reliability**

- Generally strong performance
- Standard of 0.002% annual average Unserved Energy
- Individual events, e.g. 29/30 January in Vic and SA, above this level extremely rare

- **Investment**

- 11GW of generation capacity built in last ten years in the NEM
- \$300m per year average
- Mainly gas plant – peaking (OCGT) and intermediate (CCGT)
- Doubling of expenditure on transmission networks over past three years (\$760m to \$1,580m)

- **Competition**

- Two recent reviews of retail competition (in Vic and SA) show competition to be effective.

# Current Electricity Market Challenges

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- Rapid growth in peak demand
- Drought constraints on energy capacity
- Requirement for new investment in network and generation capacity to accommodate continuing energy demand growth
- Tightening demand and supply conditions.
- Impacts of international financial crisis
- Impacts of climate change policies

# Climate change policies and energy markets



# Carbon Pollution Reduction Scheme (CPRS)

- **How it works:**
  - Requirement to buy permits to emit CO<sub>2</sub>-equivalent gases
  - Quantum for sale consistent with target emission reductions
  - Prices carbon (initially at around \$23 per tonne)
  - Tighter volumes (and higher prices) over time
  - Long term policy instrument
- **Impacts on energy markets**
  - Large change to economics of generation
    - Due to large differences in carbon intensity of generators
    - Implies shift from coal to gas in medium term
    - Development of new technologies (e.g. CCS) in longer term
  - High wholesale prices (and perhaps greater volatility)
    - Implies higher retail prices – and reduced demand
  - Potential changes to location of generation relative to demand

# Expanded Renewable Energy Target (ERET)

- **How it works:**

- Obligation on retailers to surrender certificates demonstrating that set % of electricity was bought from renewable sources
- Alternatively pay 'buy out' price
- Required % increases over time to 20% by 2020
- Value of certificates provides subsidy to renewable generation

- **Impacts on energy markets**

- Stimulate investment in renewable generation
- Ability to 'bank' certificates creates incentive for early investment
- Early investment likely to be wind generation – and in remote areas
- Output from wind generation is variable and intermittent
  - Need for complementary investment in 'peaking' generation
  - Makes system operation more challenging

# Transforming our generation (1)

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- **Current frameworks**

- Spot market with regional prices calculated every 30 mins
- Generators paid for energy, not capacity
- Traded contracts derived from spot market signal value of both energy and capacity
- Open (“non-firm”) access to transmission networks
- Negotiated connection charges

- **Strengths**

- Clear price signals for new investment based on costs and scarcity – covers energy and capacity
- Key regulatory role to set and maintain maximum price in spot market, and robust processes for doing this

# Transforming our generation (2)

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- **Risks**

- Inherited tight supply/demand balance in some regions
  - May reflect policy uncertainty and investment deferral
  - Contributed (in part) to recent events in Vic and SA
- Short term transition to manage as investment adjusts to new, carbon-reflective economics
- “Transitional” might be elongated by developments in global financial markets
- Therefore prudent to review existing system operator tools for managing reliability in short-term

# Transforming our networks (1)

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- **Current framework**

- Regional monopoly networks are regulated
- Potential for ‘merchant’ transmission – but limited application
- Bilateral negotiation for network connection
- “Common carriage” model in transmission (“non-firm” access)

- **Strengths**

- Robust framework of regulation:
  - economic incentives for efficiency
  - Consultation on investment planning
- Proposed National Transmission Planner to help inform planning by regional transmission businesses

# Transforming our networks (2)

- **Risks**

- Efficient and timely planning of new investment to connect remote renewables
  - Step increase in number of new connections
  - Wind generations seeking connection in remote areas
  - Need to consider ‘clustering’ of applications and future growth
- Not clear that current framework based on bilateral negotiation will deliver the right outcome
- Actively considering options for change:
  - Allocation of risk re. cost of ‘over-sizing’
  - Current position – no risk for consumers, but no ‘oversizing’
- Also prudent to review strength/form of signals in market more generally guiding locations of new generation

# Transforming our electricity consumption (1)

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- **Current framework**

- Cost of supply reflected to consumers through retail tariffs
- Regulated tariffs for small customers in most jurisdictions
- Some evidence of active use of demand-side response

- **Strengths**

- Market framework appears to support effective retail competition
- Implies that tariffs can reflect efficient costs
- Market framework also appears to support demand-side response
  - limited transparency on volume and form
  - Ongoing AEMC review of potential barriers

# Transforming our electricity consumption (2)

- **Risks**

- CPRS and RET will put pressure on retailer costs
- Jurisdictional price regulation may be inflexible to these changes
  - Costs not revealed to consumers – hence no response
  - Could place financial pressure on otherwise efficient retailers
- “Retailer of Last Resort” processes to handle retailer failure have weaknesses which could cause undue disruption
- Opportunities for greater demand-side response not met
  - Lack of interval metering for most users – although plans to change
  - Other barriers in market framework not addressed.

# CONCLUDING REMARKS

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- Energy markets have many strengths in their design and operation – reflecting ongoing process of reform
- But should not lose sight of the implied magnitude of the change for electricity supply industry CPRS and ERET
- (Very) high carbon-intensity starting position, given historical reliance on coal-fired generation
- Preliminary finding that existing frameworks are broadly resilient to changes in market behaviour implied by CPRS and ERET
- However, small number of risk areas where we are developing and assessing options for change.