The Reform Journey Continues
Energy Markets and Climate Change Policies
CEDA Energy Forum 2009

JOHN TAMBLYN
CHAIRMAN
AUSTRALIAN ENERGY MARKET COMMISSION

THIS PRESENTATION

- 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 AEMC

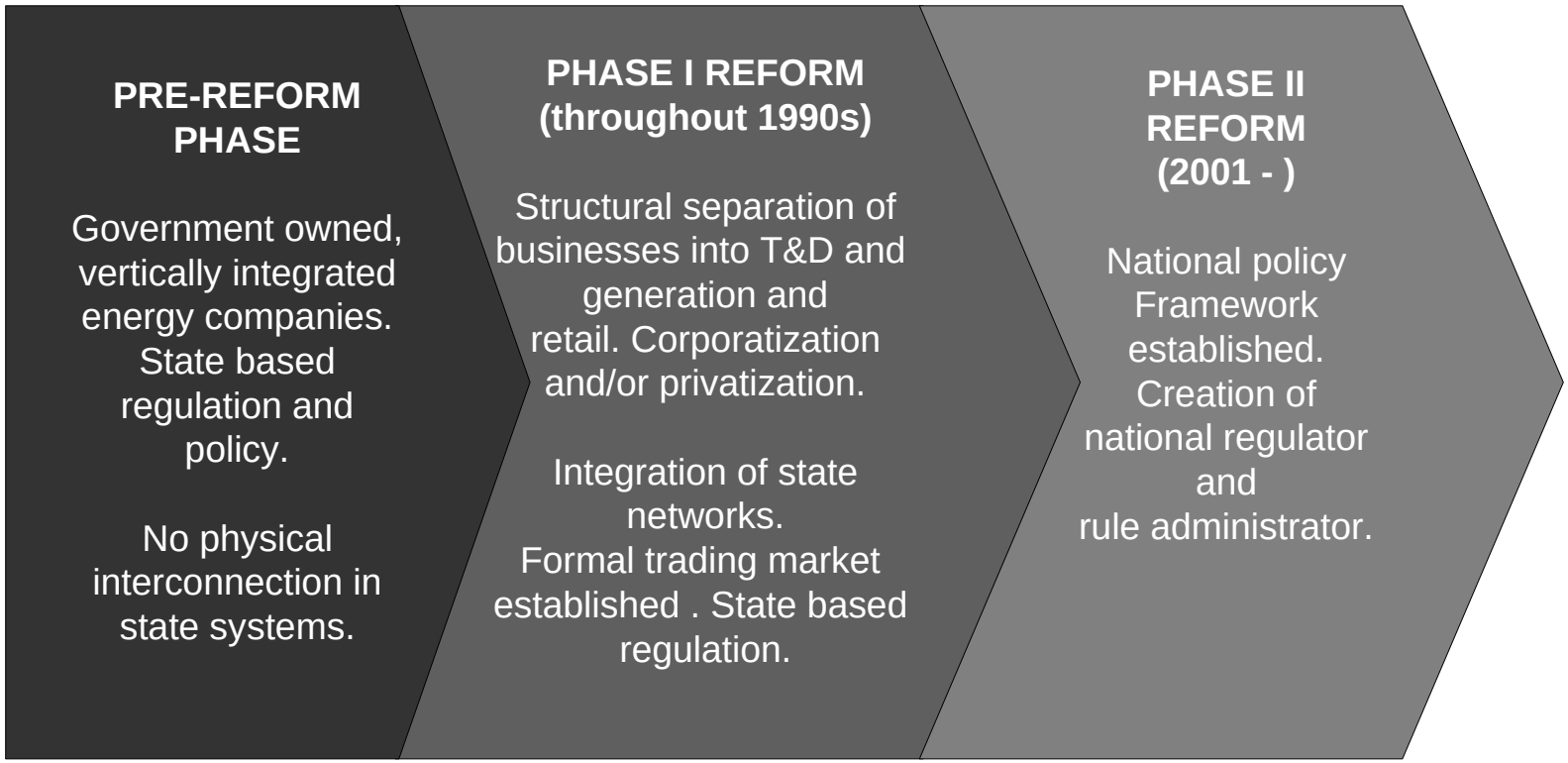
- Statutory body with national responsibilities
  - “Rule maker” for national electricity and gas markets
  - “Reviews” to provide advice to Ministerial Council on Energy
- Ongoing Review covering the subject matter of this presentation
- Due to report to Ministers in September 2009
- This presentation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

KEY FINDINGS

- 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

- **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

- **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

- 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 CO2-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)

- **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)

- **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)

- **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)

- **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

- 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.