Regulated and Merchant Transmission Investment – Lessons From Australia

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Key Points of Presentation

• Understanding the Australian context
• Merchant links in Australia
• Specific lessons from interaction of merchant links and regulated transmission
• Future direction
The Australian Context

- Scale and market power
- Gas and coal competition
- Market design
Australian Context – a big country!
But a Small Population - Market Power in Energy a Big Issue

Population:
US – 280 million
Australia – 19.5 million
(14.4 X)

Electricity Use:
US – 3,450 billion KWh
Australia – 178 billion KWh
(19.4X)

Victoria
8,088 MW
Queensland
6,720 MW
NSW
12,190 MW
South Australia
2,832 MW
Tasmania
1,641 MW

Maximum Demands: FY 2001
Australia's natural gas reserves are sufficient to meet current production rates for 105 years. The Bonaparte and Carnarvon Basins account for 72% of all reserves.

Proposed Investment in new transmission pipelines to 2005 $7.0 billion

Pipelines in use as at 30 June 2000

Transmission 19043 km
Distribution 73268 km
Total 92311 km

Reserves are shown as a percentage of total reserves.

Estimated Australian Gas Reserves as at 1 January 2000 = 127928 PJ (AGSO 2001)

Source: AGA
Australian Transmission System

- Longest a.c. system in the world (approx. 3,000 miles)
- Stability: big influence on constraints
- Losses cannot be ignored
- 25% load per mile compared with the USA
Some Differences Between NE US and Australian Electricity Markets

• National ‘Transco’ a relatively small step
  – National Electricity Market Management Company has a number of ISO functions
  – Stand alone transmission companies only
  – Only 4 regulated NEM transmission owners
  – Medium sized company by international scale
• ‘Energy only’ market - $10,000/MWh price cap
• Approximate nodal pricing only
• Significant role of stability in setting constraints
Transmission and ‘ISO’ boundary less developed
Some Key Policy Issues (1)

- State vs National Accountability – Federation
- Improving competition in energy supply
- Market power of electricity generators – particularly in small regions
- Price volatility:
  - the cost of risk
  - liquidity of interregional hedging markets
- Relatively weak transmission interconnection
- ISO (not for profit) performance drivers
Some Key Policy Issues (2)

• Architecture for National Transmission Organisation
  – Pricing Framework
  – Planning
  – ISO vs Transco
  – Regulation and merchant investment
  – Access rights
  – Accountability for reliability

• Governance arrangements – public policy vs participant interests

• Competitive neutrality – public vs private ownership
Current Framework for Transmission Investment

• Some distinction between reliability and congestion investment

• Public planning statements:
  – State based for reliability
  – National ‘Statement of Opportunities’ for interregional

• Investor can choose regulated or merchant path
• Merchant gets congestion residues between nodes
• Regulated links that pass regulatory test receive income from regulated transmission charges

• Regulatory test is an open and thorough cost benefit framework
Australian Merchant Links Unique

- No explicit benefit assessment for each project cf FERC approval in US
- Checks on market power relatively weak
  - Competition law only
  - 35% requirement
  - No open auction of rights
  - No explicit limits on the involvement of affiliates
  - No explicit limits on commercial arrangements with generators
- Can withhold capacity – no ‘use it or lose it’
- Hybrids – a new experiment in Australia?
Lessons from Australia (1)

• Directlink and QNI
• Highlighted the risks for merchant provider – partial control of integrated capacity very risky
• End game undefined (eg VIC – SA merchant owner seeking to control all new capacity)
QNI and Directlink – Network Context
QNI and Directlink Compared

**QNI**
- Regulated/overhead/AC
- Committed first
- 346 miles long
- Base capacity: 700MW
- Total cost $AUD350 million
- $AUD1,450/MW-mile
- Benefits $AUD125 million pa

**Directlink**
- Merchant/underground/DC
- First in operation
- 40 miles long
- Max capacity: 180MW
- Total Cost: $AUD135 million
- $AUD18,600/MW-mile
- Local reliability benefits unsettled
- “FTR” revenue $AUD4.9 million (fiscal 2001)
Queensland Pool Prices

A benefit not easily measured but real is the reduced cost of volatility risk management.

$AUS 2000/MWh

Significant QNI Capacity Available
Ancillary Service Impacts

Ancillary Services Costs

Weekly Price
Average Before QNI
Average After QNI
Lessons from Australia (2)

• Stakeholders will intervene with effect:
  – Governments: to ensure adequate reliability and acceptable price levels
  – Generators to protect market position
  – Gas suppliers to protect market growth

• Economies of scope & merchant framework:
  – Merchant proponent takes commercial position
  – Not necessarily consistent with overall system economics
  – Interaction between reliability and congestion complex
Lessons from Australia (3)

• Transmission market poorly analysed:
  – Transmission service needs poorly defined: assets vs capability, sensible service performance indicators
  – Common good characteristics: net economic value added should be performance driver
  – ISO constraint judgements: substitute for transmission investment!
  – Market failure mechanisms: poorly analysed
  – Economies of scope: not fully appreciated by many
  – Elasticity of demand: ignored in price signals effort
Future for Merchant Investment in Australia

- Uncertain in the short term
- Need holistic approach to transmission architecture first
- Architecture must suit policy context:
  - Eg energy market competition imperative
- Risky for network investors to pre-empt this
- US style links:
  - more chance of success
  - address market power issues better
- Desire to harness market forces is inevitable driver