Centre for Energy and Environmental Markets

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Implications for Tasmania joining the NEM

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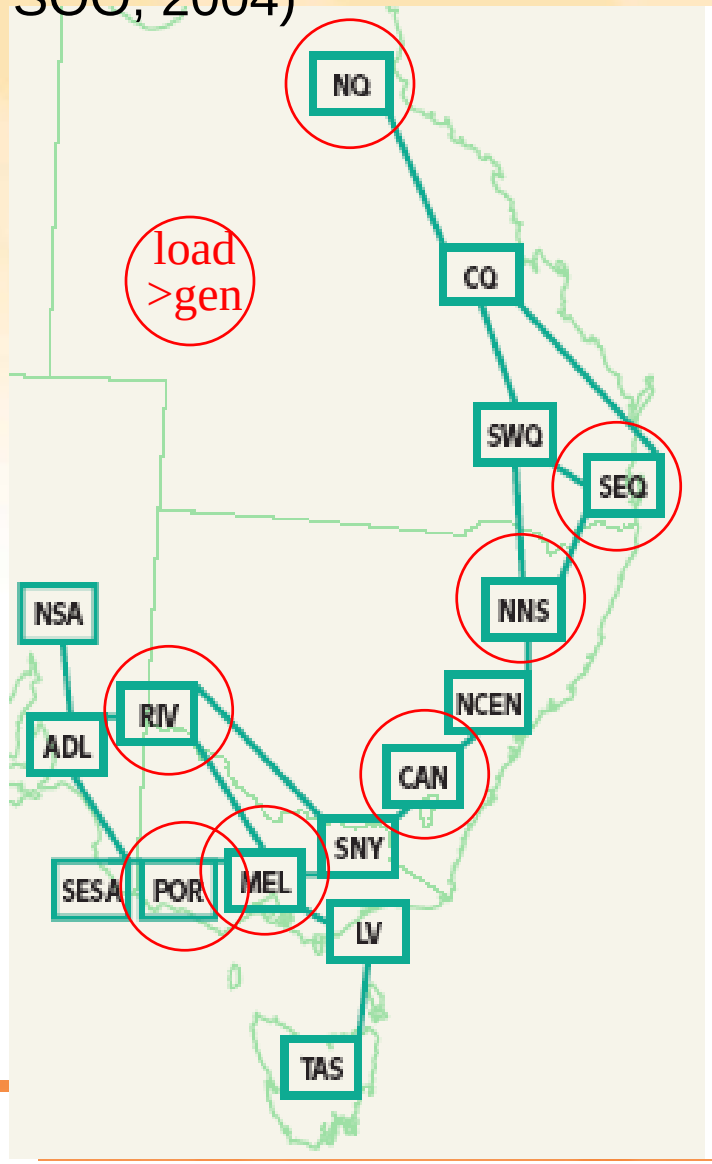
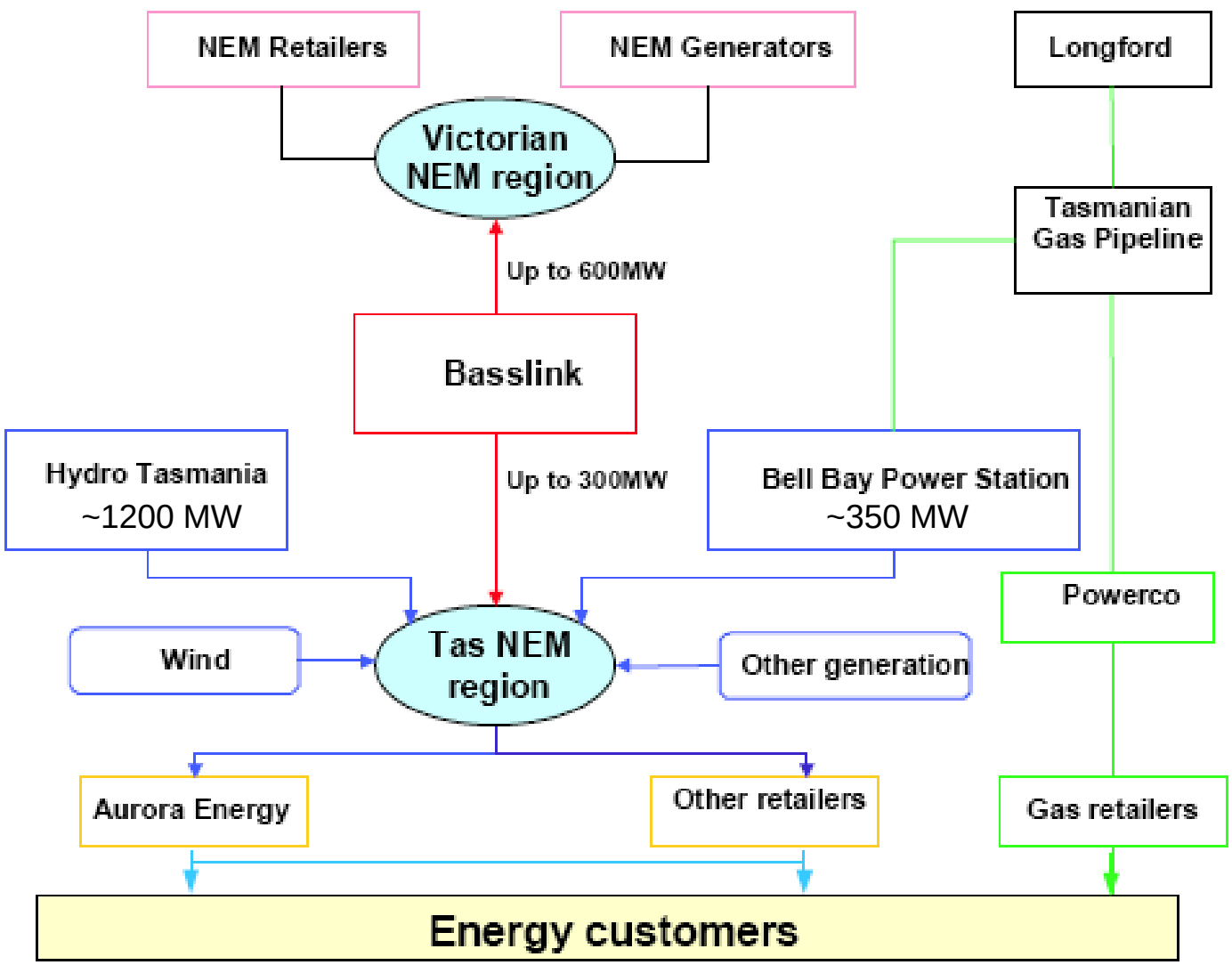
16 region NEM model

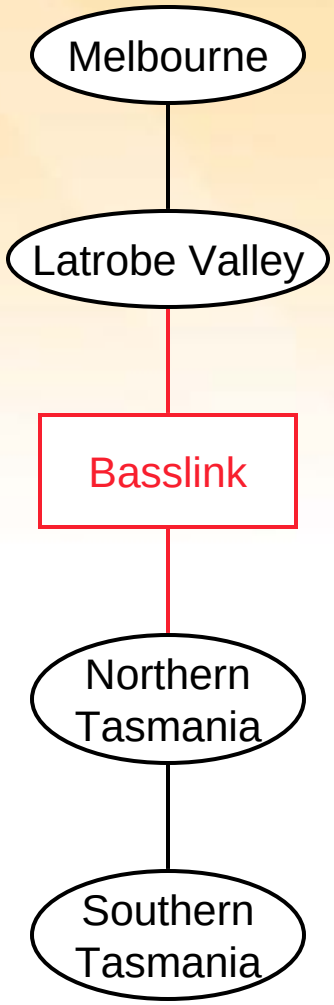
(NEMMCO SOO, 2004)

Node	Pk Ld (MW)	Gen Cap (MW)	Net Gen (MW)
NQ	1250	800	- 450
CQ	1900	4150	2250
SWQ	200	2150	1950
SEQ	4350	1450	- 2900
NNS	800	150	- 650
NCEN	10000	11650	1650
CAN	800	300	- 500
SNY	800	3900	3100
MEL	5750	800	- 4950
LV	900	7000	6100
POR	650	0	- 650
SESA	100	150	50
RIV	500	50	- 450
ADE	2100	2250	150
NSA	200	1100	900
TAS	1500	2500	1000



Tasmanian electricity & gas industries & Basslink
(Govt. of Tasmania, 2003)





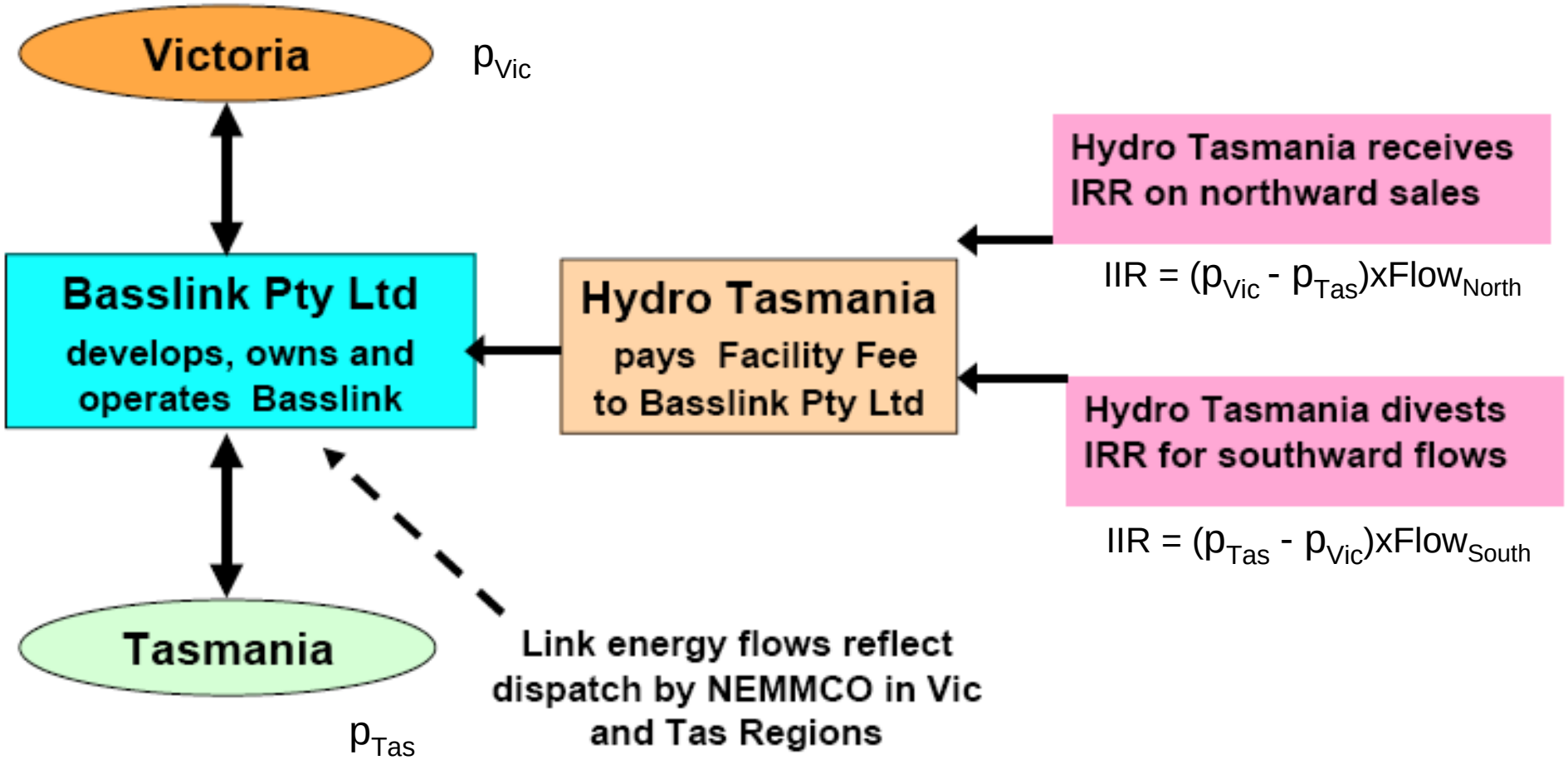
Tasmania & mainland electricity industries

(Tas Govt, 2000)

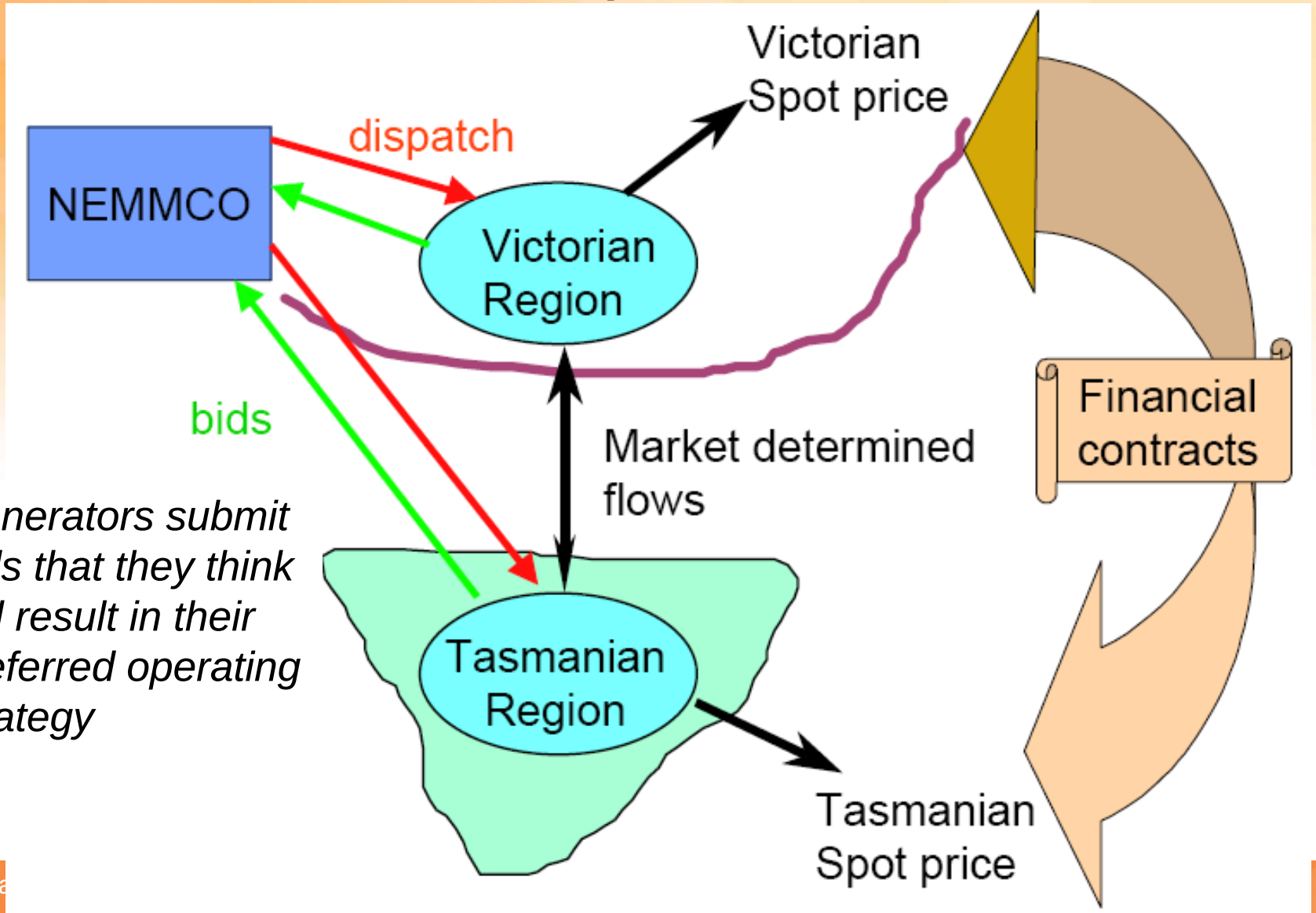
Box 1: Tasmania in Comparison with the NEM

Tasmania	NEM States
• Small generation sector - 9800 GWh	• Large generation sector - 158,000 GWh
• Almost exclusively hydro generation	• Largely thermal generation
• Integrated operation of generation facilities to ensure maximum generator efficiency	• Competition drives efficiency
• Energy constrained	• Capacity constrained
• Most electricity generated is used by a small number of major customers	• More balanced load profile
• ~~No natural gas at present~~	• Natural gas available

Basslink business model (Tas Govt, 2000)



Basslink market operation (Tas Govt, 2000)

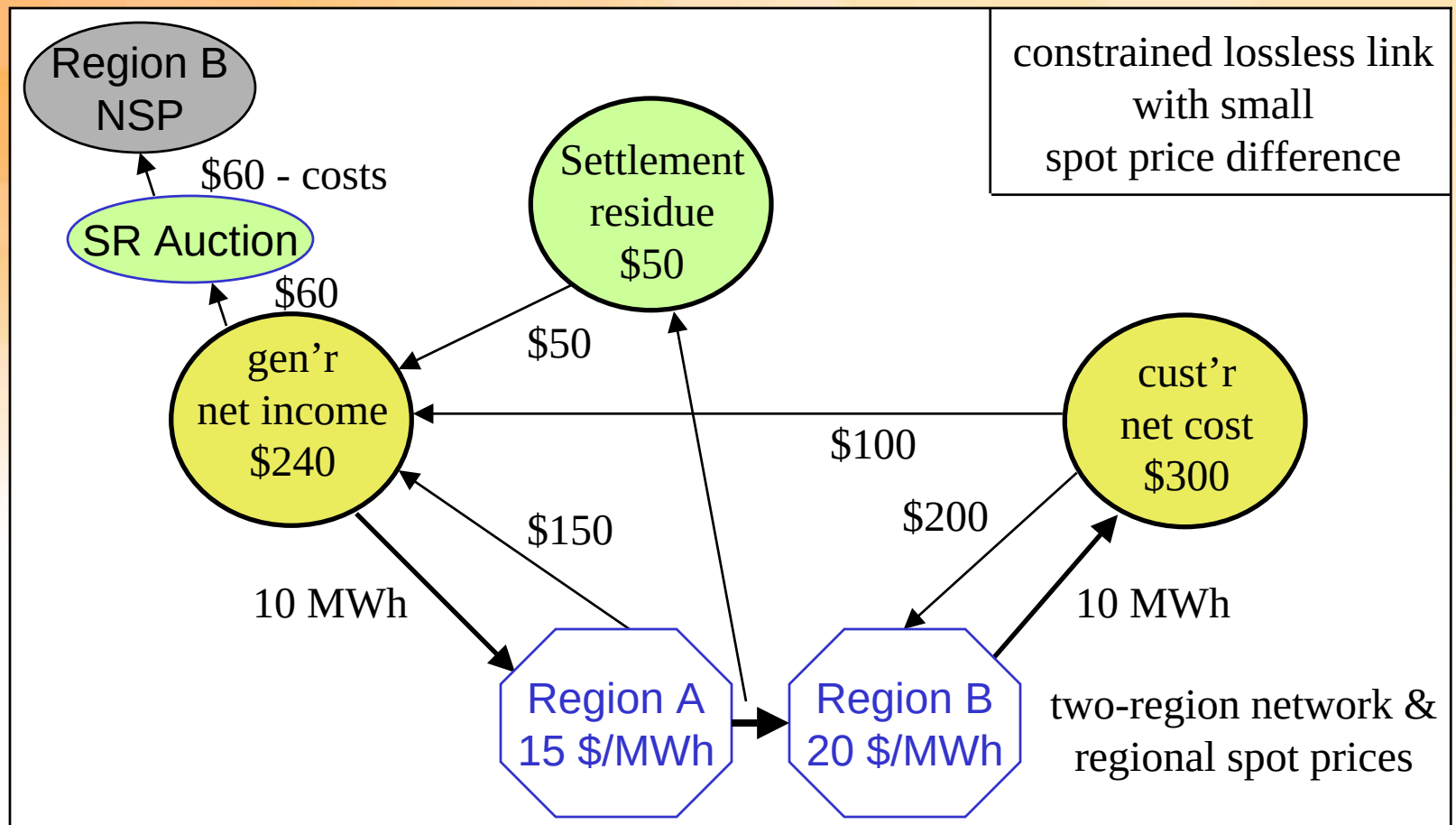


Generators submit bids that they think will result in their preferred operating strategy

Hedging regional spot price differences in the NEM using spot market settlement residues

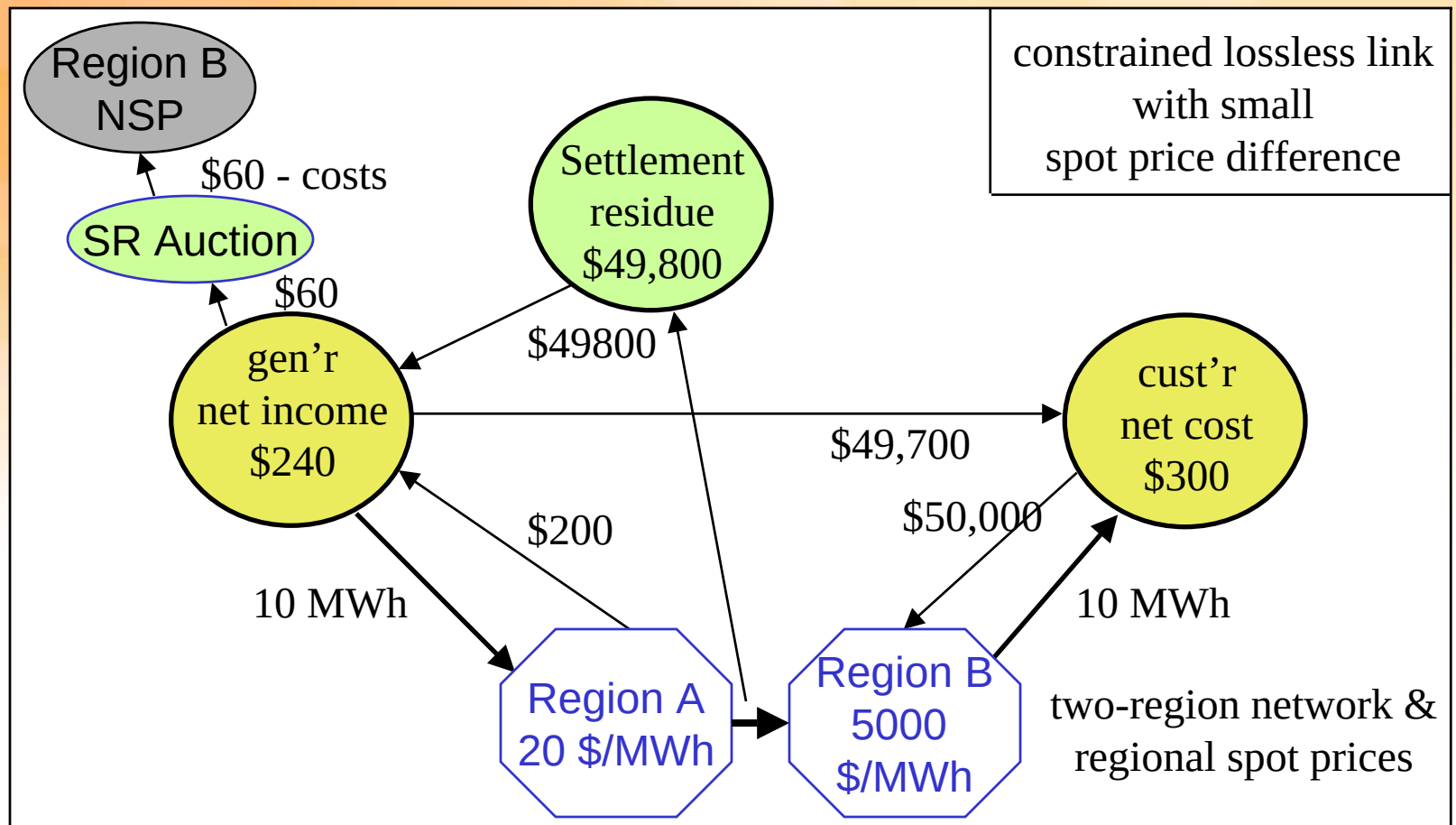
- A hedge against differences between regional spot prices for one direction of flow
  - Difference in regional reference prices multiplied by interconnector power flow for each spot market interval
- An incomplete hedge:
  - Doesn't cover interconnector losses or outages
- NEMMCO 3-monthly settlement residue auctions
  - For regulated interconnectors
- ACCC required HT to auction Vic > Tas residues:
  - AFMA contracted to implement & run auction

Inter-regional settlement residue example



Generator sells a 10 MWh hedge contract on region B price to customer at $30 MWh & buys a directed 10 MWh hedge (B-A) from NEMMCO SR auction at cost of 6 $/MWh (expected spot price difference between regions)

Inter-regional settlement residue example ctd



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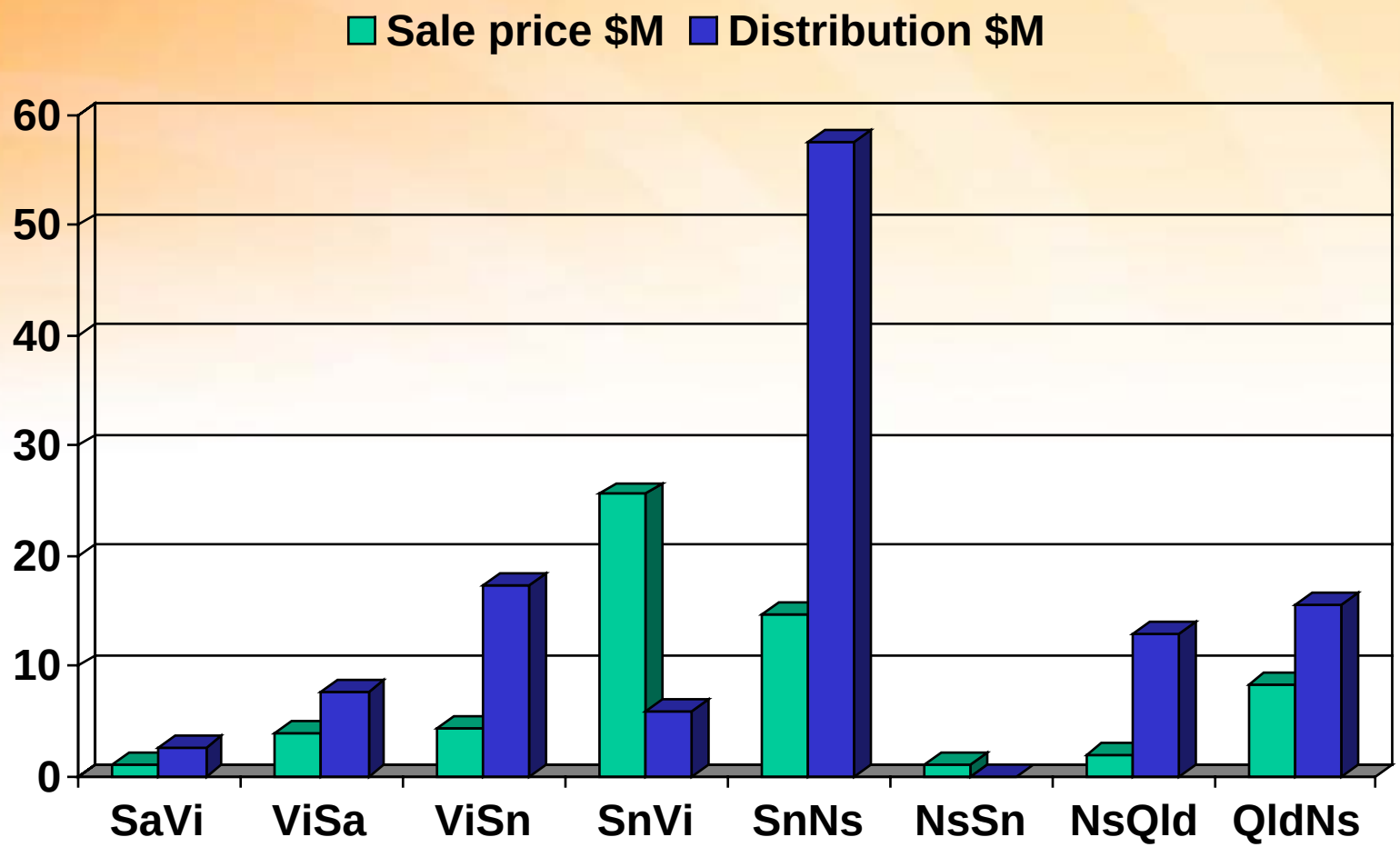
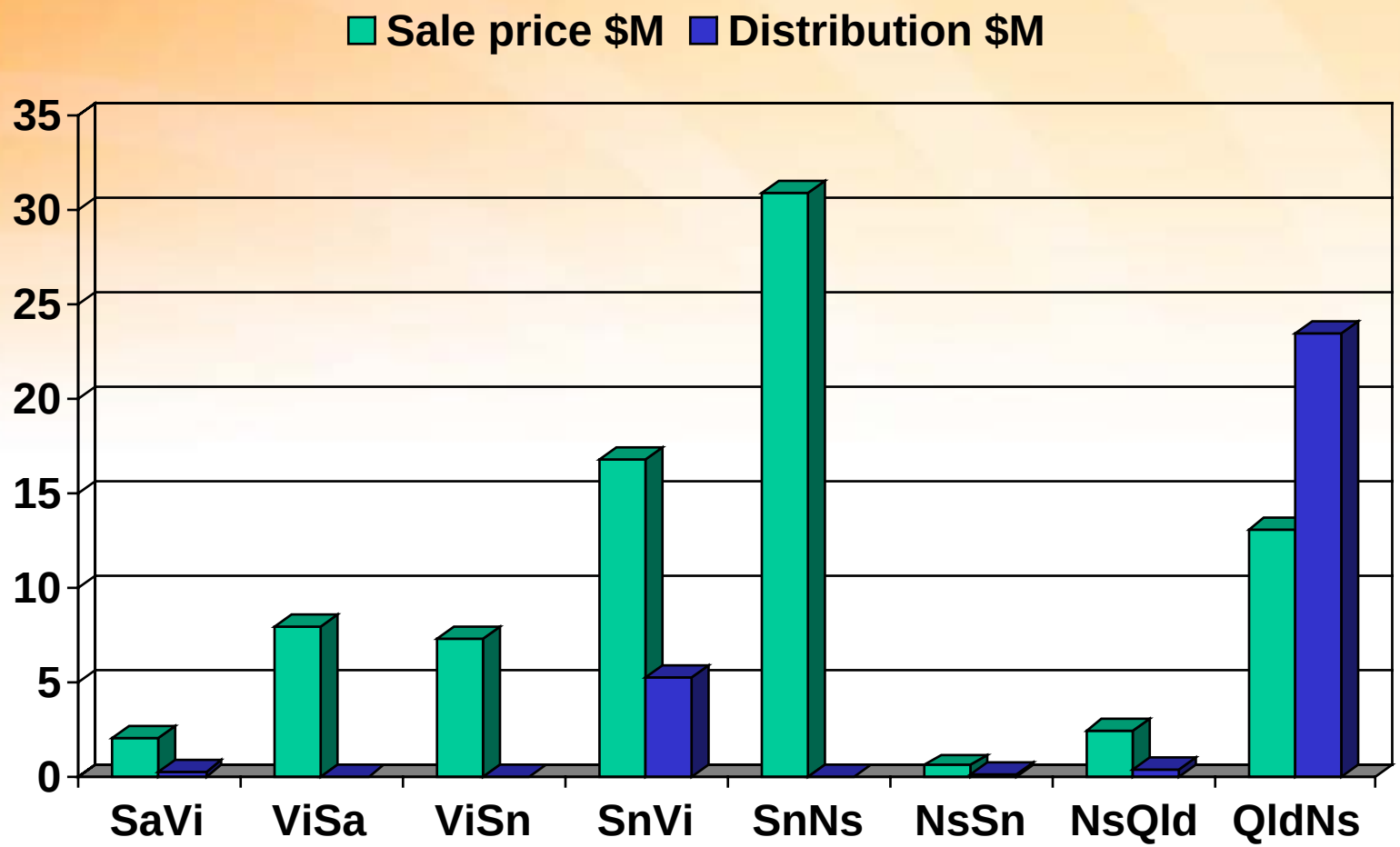
Annual outcomes of NEM SRAS for FY03

(SRC report FY03 see www.nemmco.com.au)

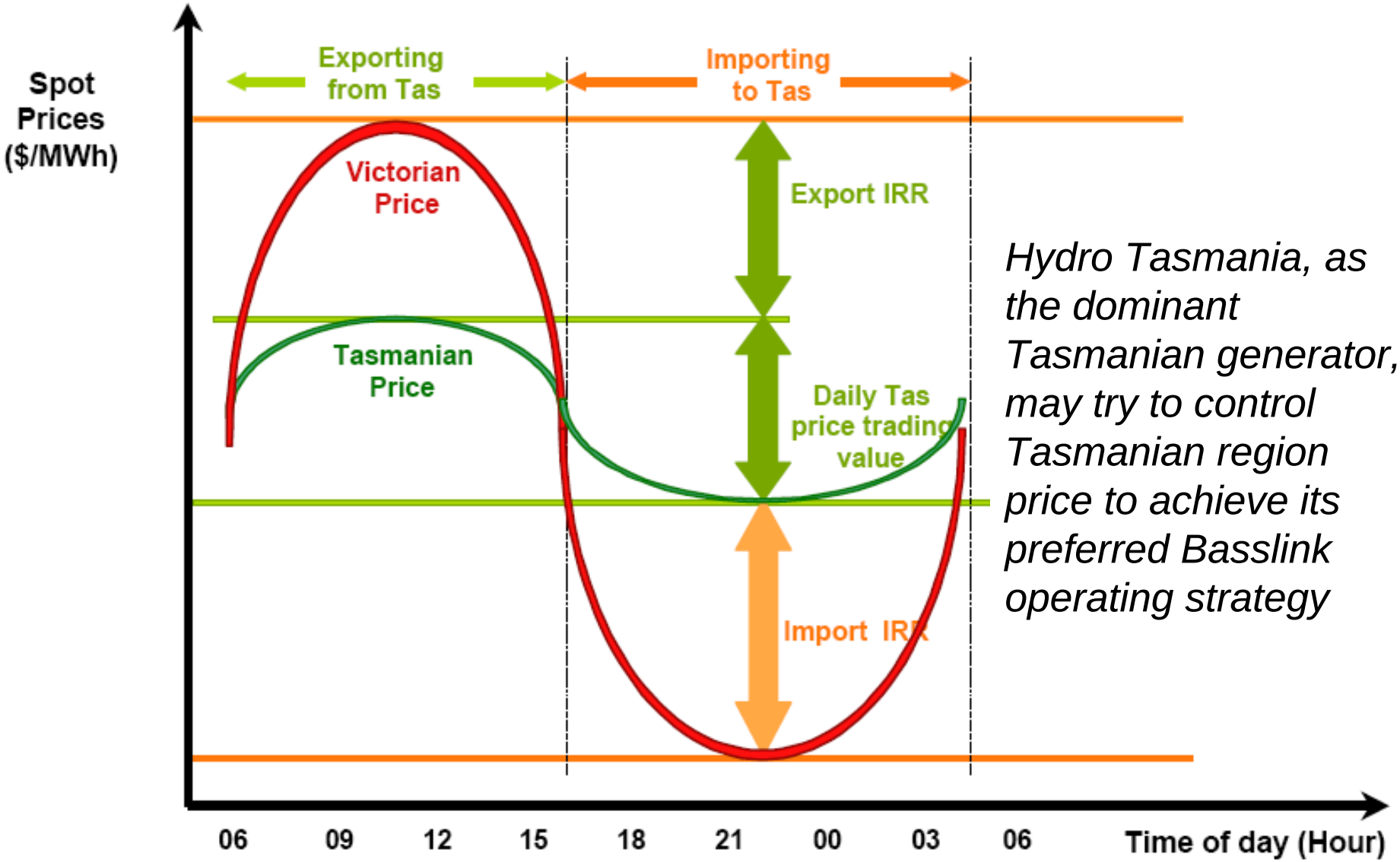


Annual outcomes of NEM SRAS for FY04

(SRC report FY04 see www.nemmco.com.au)

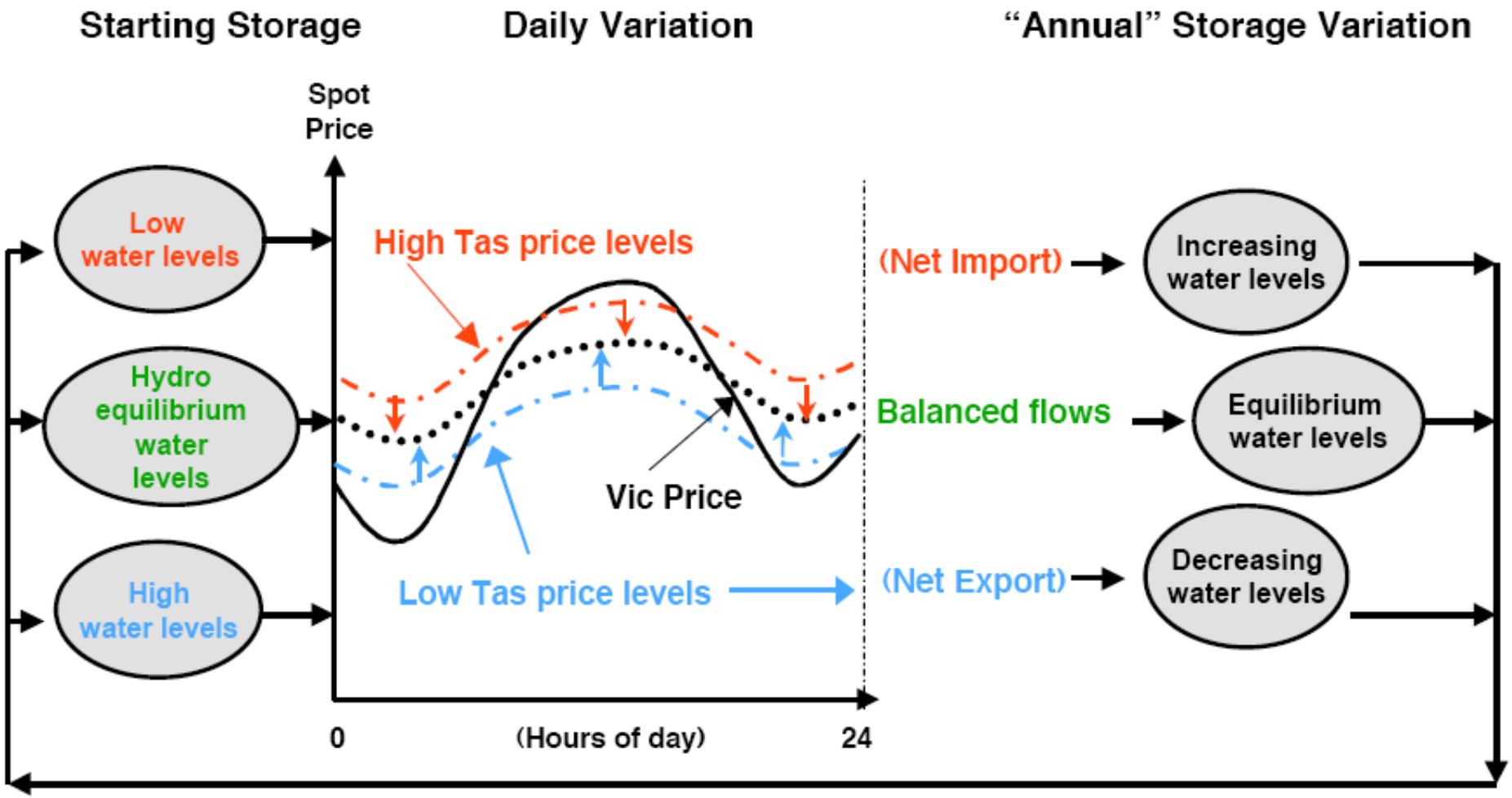


Spot price scenarios (Tas Govt, 2000)



Hydro Tasmania, as the dominant Tasmanian generator, may try to control Tasmanian region price to achieve its preferred Basslink operating strategy

Expected storage level - price relationship (Tas Govt, 2004)



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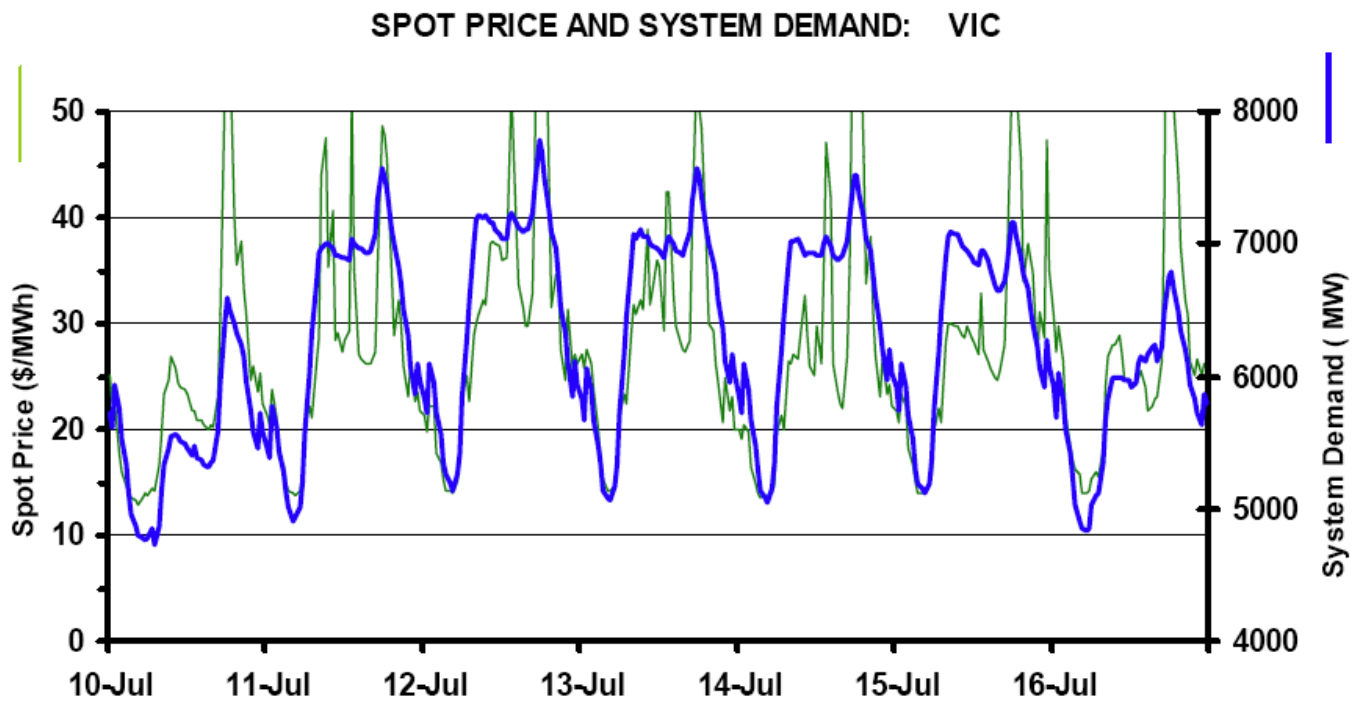
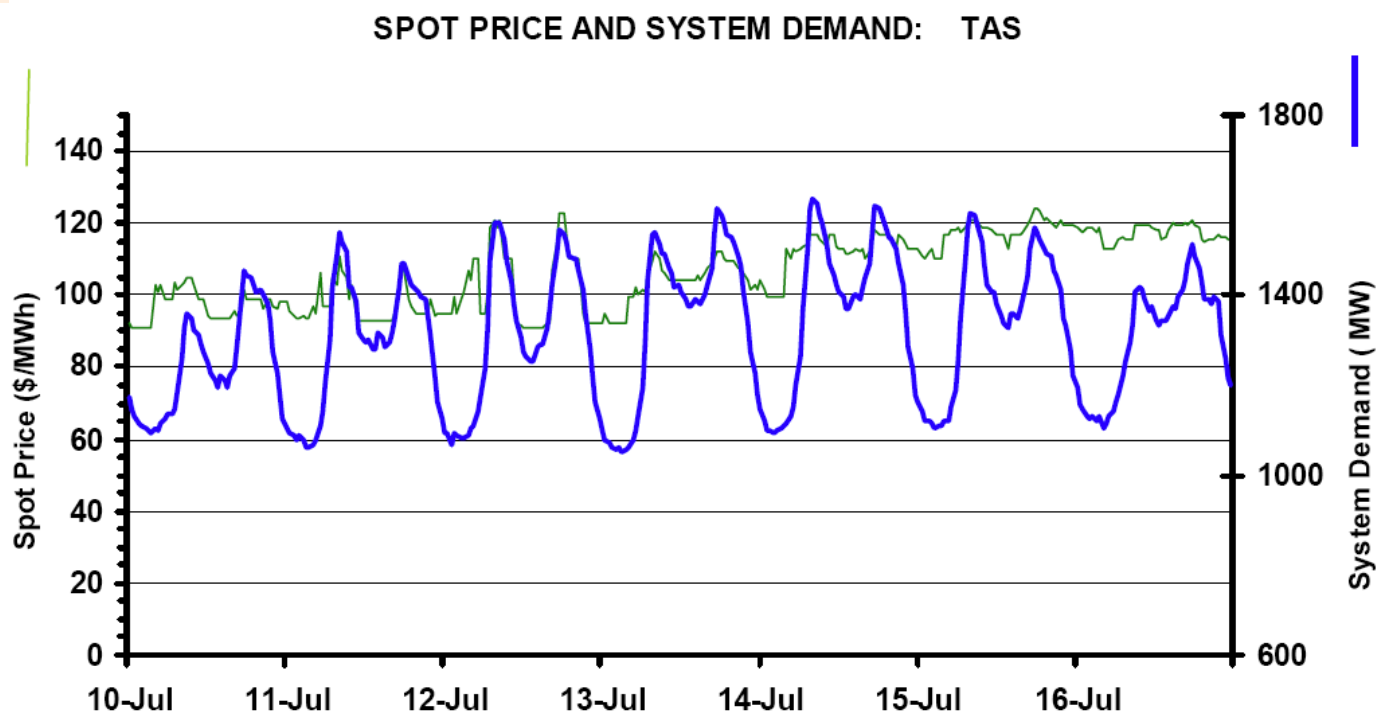
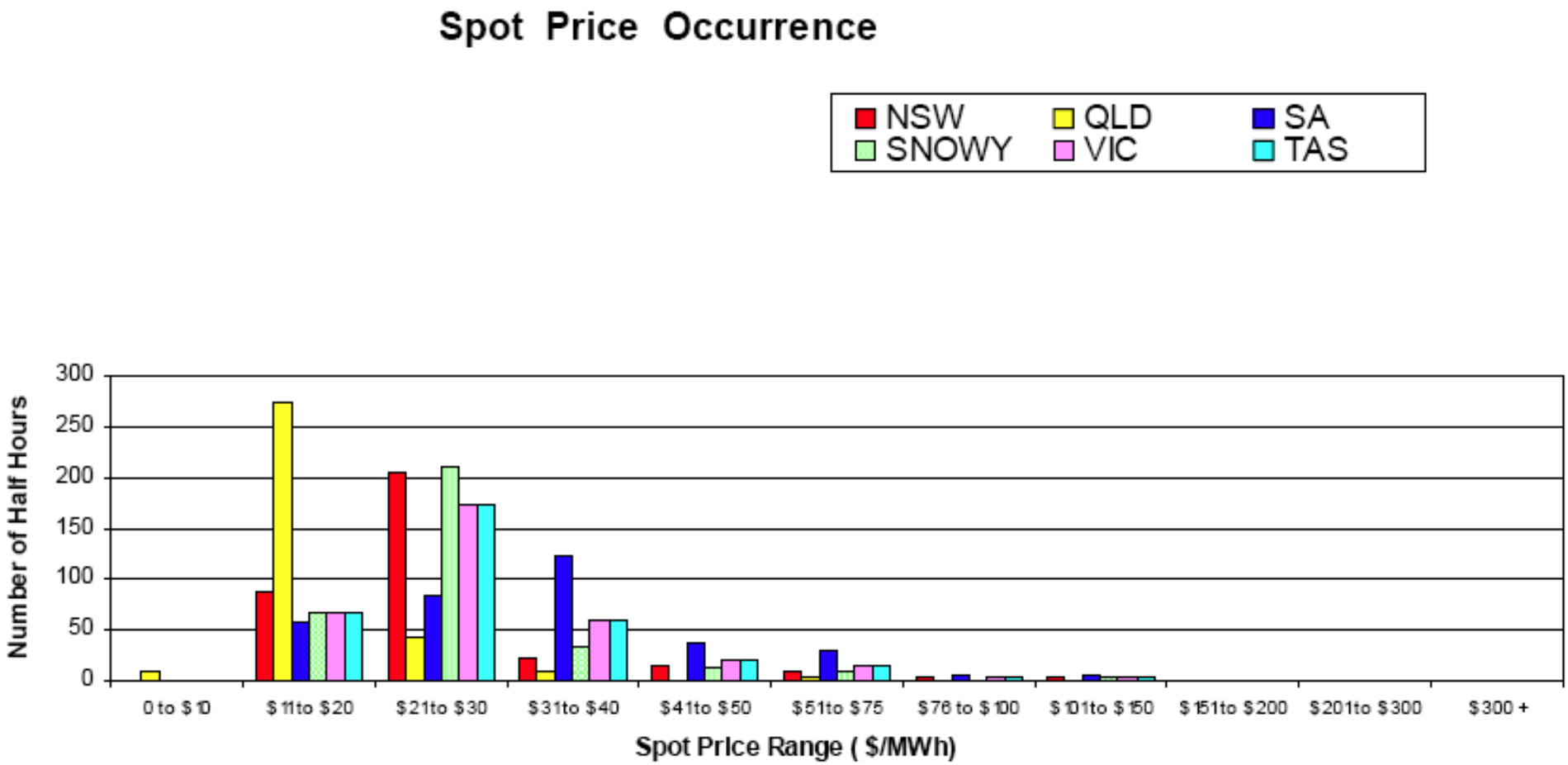
Victoria & Tasmania RRPs, 10-17/7/05

(www.nemmco.com.au)





NEM RRPs, 10-17/7/05 (www.nemmco.com.au)



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Victoria & Tasmania RRPs, 18-25/9/05

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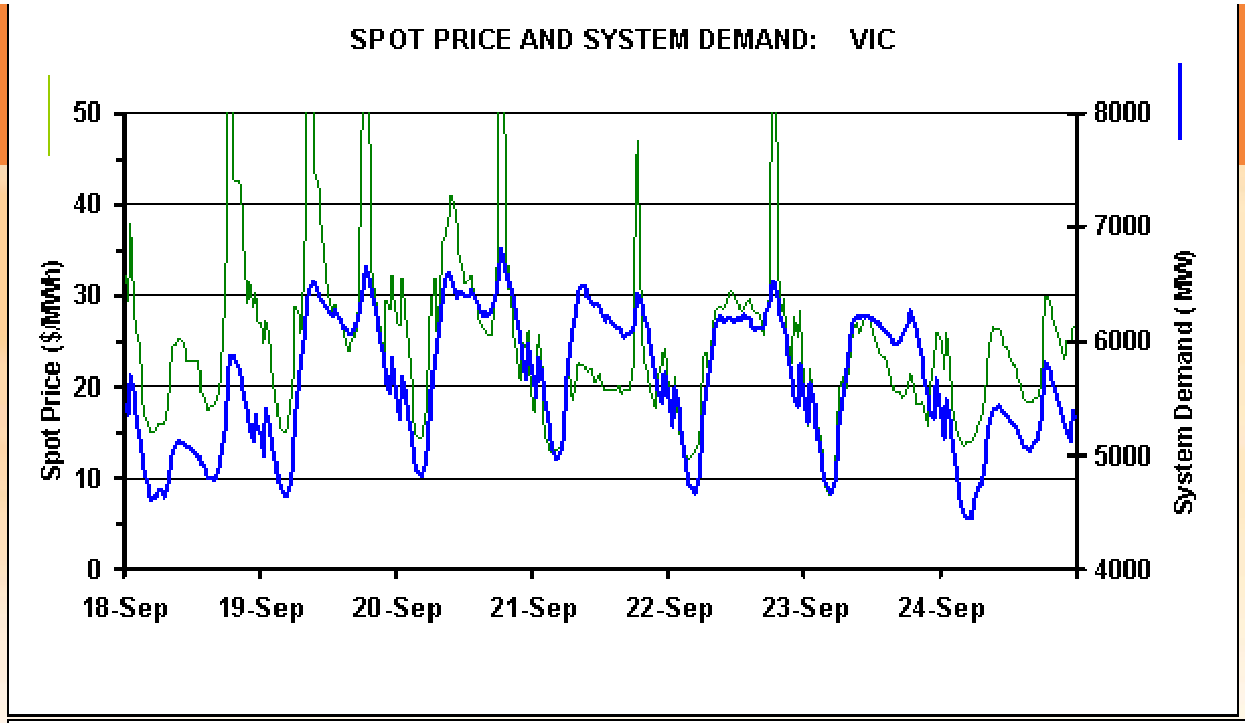

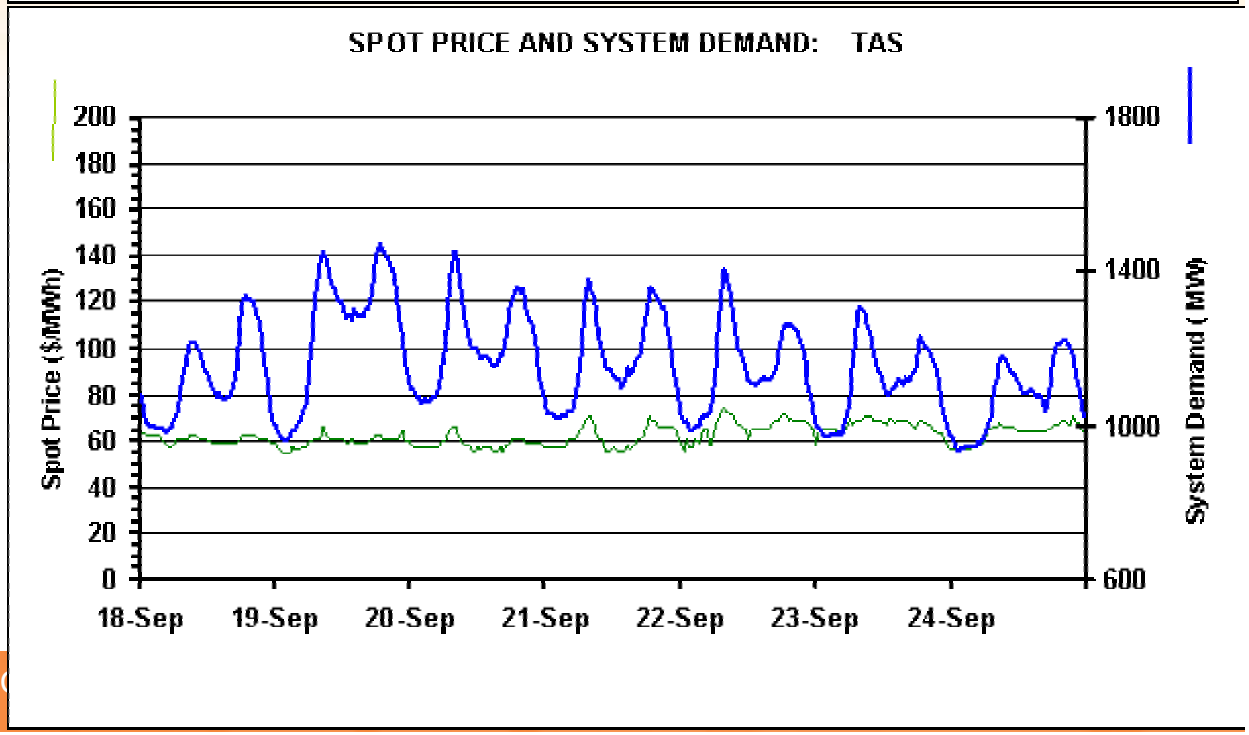

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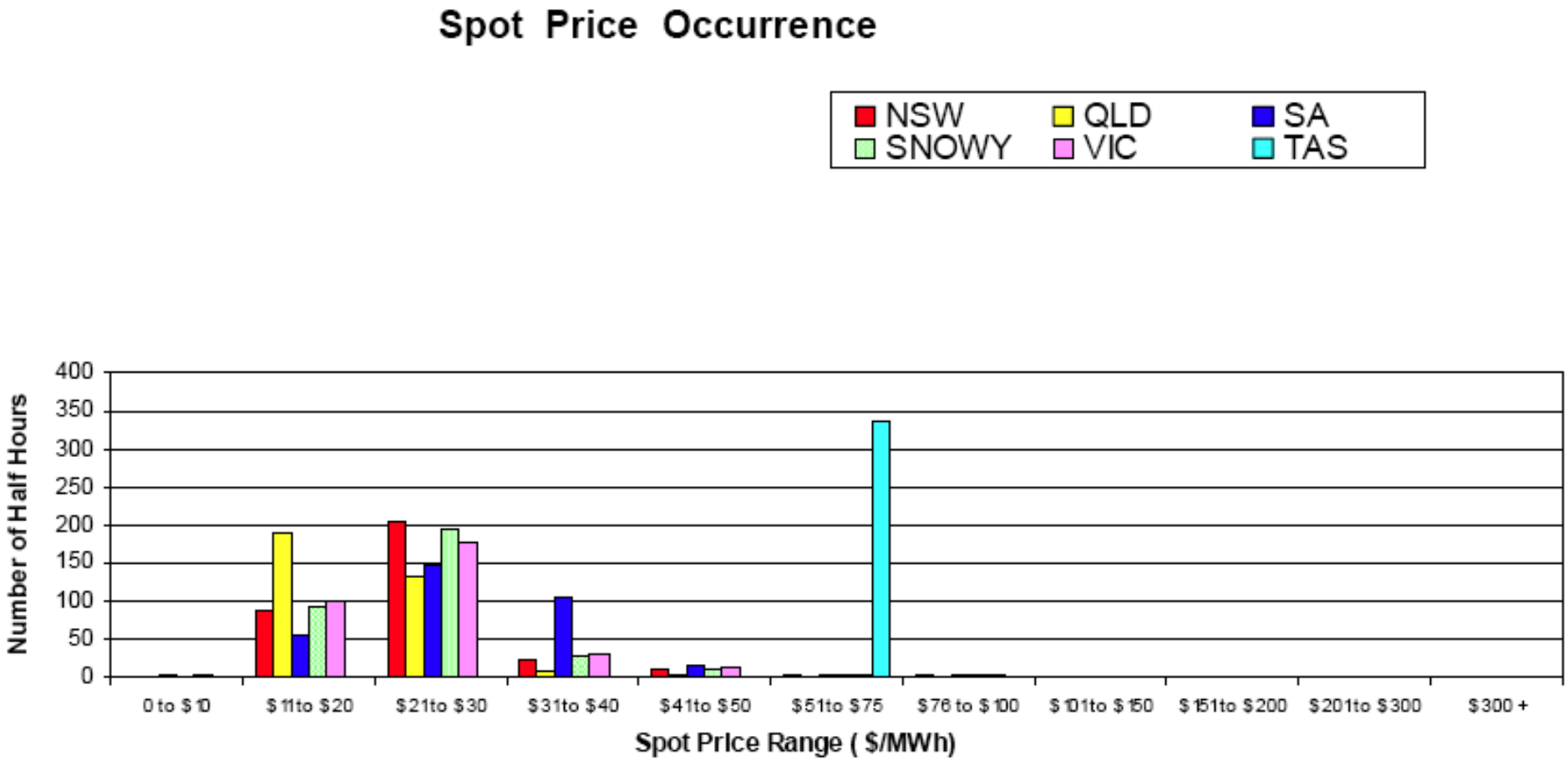
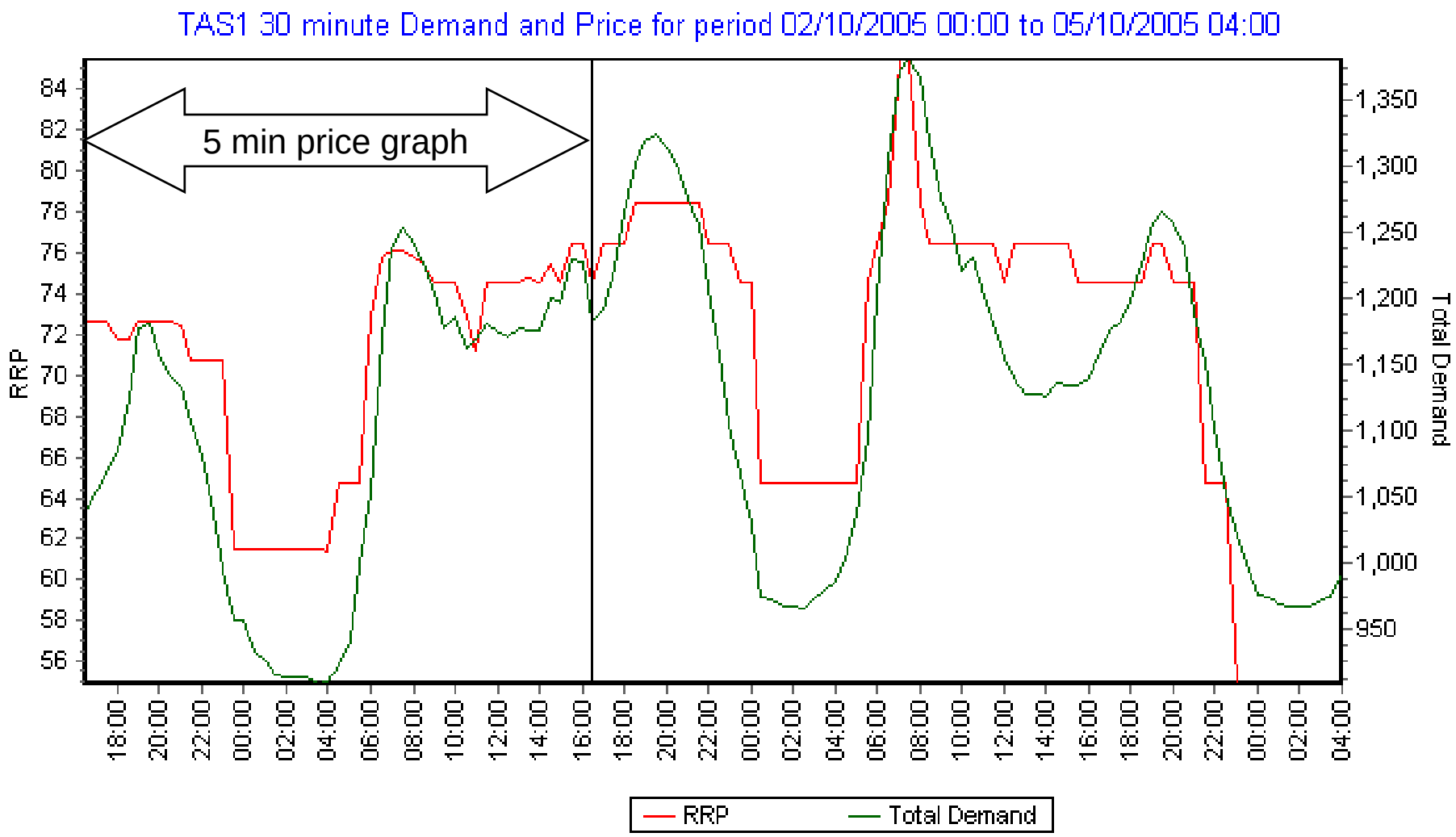


NEM Tasmania RRP (www.nemmco.com.au)



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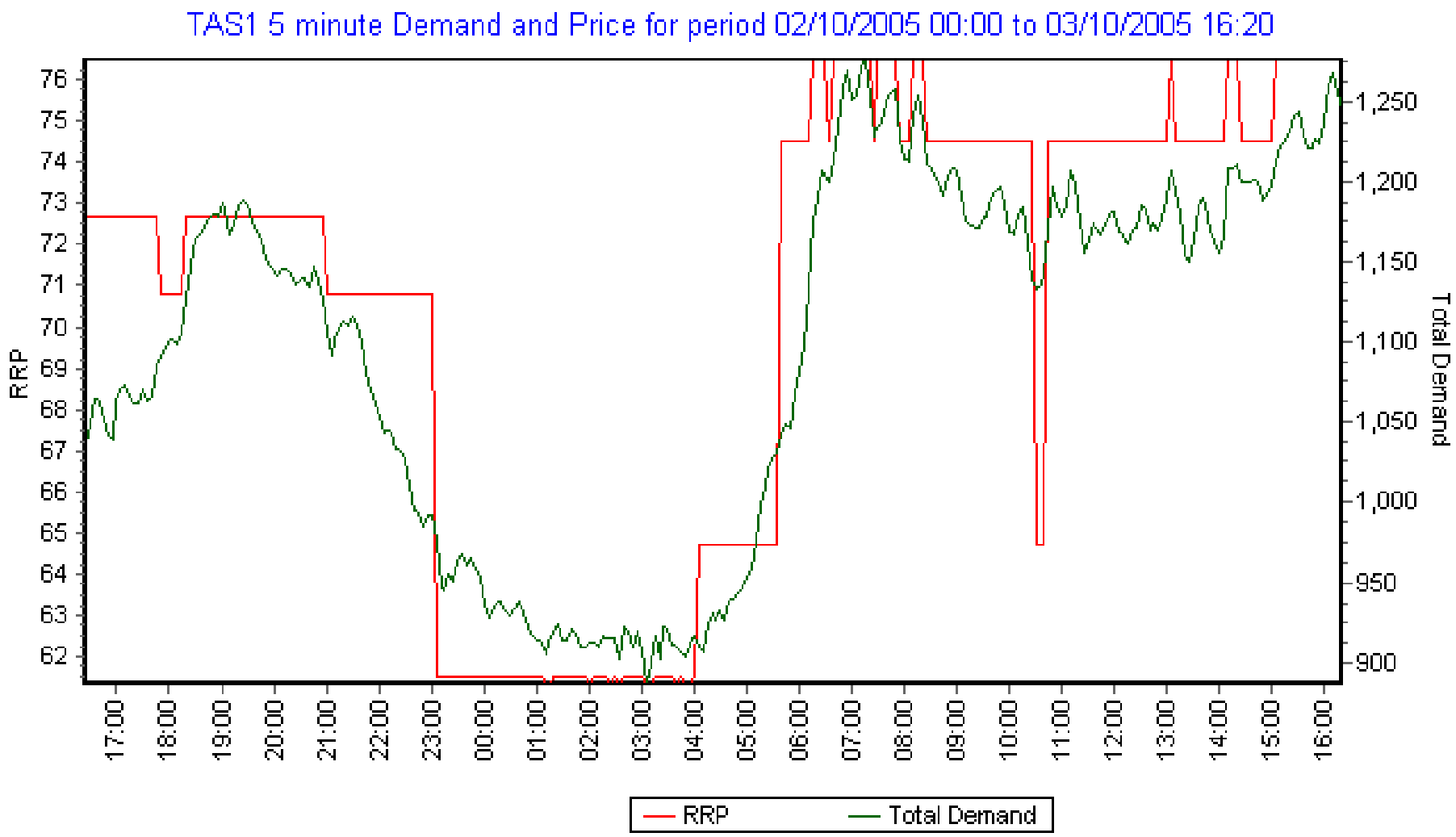
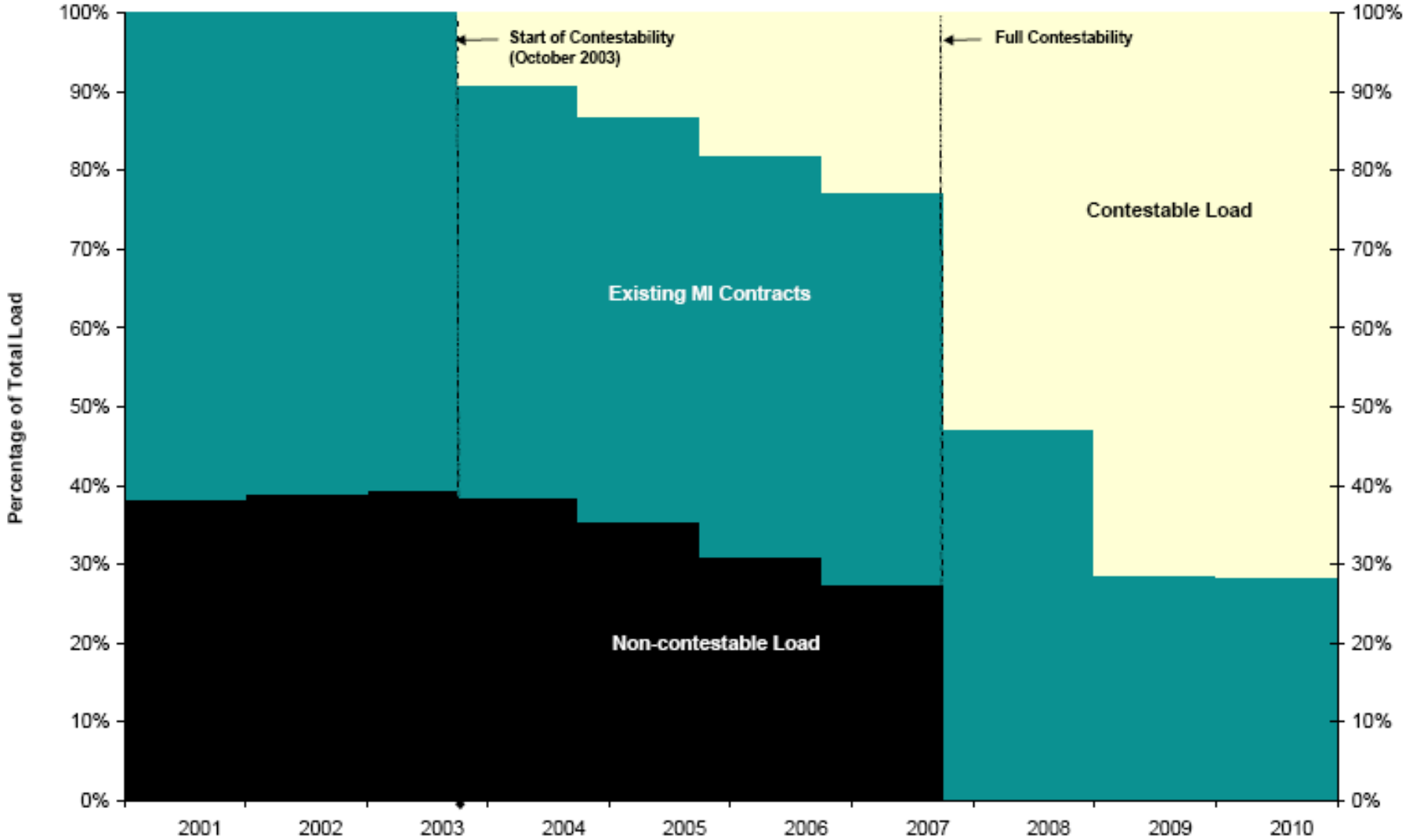


Anticipated increase in contestability
(Tas Govt, 2000)



Issues for Tasmania

- Primary energy resource issues:
  - Hydro & wind energy:- resource uncertainty
  - Basslink & gas pipeline:- cost recovery
- End-use issues:
  - Electricity-intensive industry; retail contestability
- Electricity network issues:
  - Basslink & network within Tasmania
- Electricity market issues:
  - Competition in wholesale & retail markets
- Regulatory framework

Primary energy resource issues

- Hydro energy:
  - Excellent resource but unsuited to competition:
    - Inter-temporal & catchment links in generation
    - Uncertainty in inflow correlated between catchments
- Wind energy:
  - Large resource; potential entry barriers including MRET, network augmentation, planning
  - Implications for system operation:
    - Added uncertainty in power flows, displacing high-inertia hydro
- Basslink & gas pipeline:
  - Unsuited to competition in first decade after construction:
    - Capital cost recovery takes precedence
  - Basslink reliability?

Gas market issues

- Gas important for Tasmania:
  - Direct end use & electricity generation
  - More cost-effective energy transport than Basslink?
    - Gas ~ 1 $/GJ (3.6 $/MWH); Basslink ~ $20-25 $/MWH
- How competitive will Tasmanian gas market be?
  - Pipeline access terms; wholesale market rules
    - Minimise barriers to entry, manage peaks efficiently

End-use issues

- Energy-intensive industry (Major Industrial):
  - Large volumes; sold at prices lower than NEM?
- Potential future role of gas in end-use & improvements in end-use efficiency:
  - What impact on electricity sales?
- Potential entry of independent retailers:
  - Hedging contracts for Tasmania RRP?
    - How efficient will SRA auctions be?
    - How reliable will Basslink be?
  - Traditional role of Tasmania's state-owned enterprise

Electricity prices for aluminium smelters

"Drawing on an extensive range of sources, this paper concludes that smelters in Australia pay, on average, around $21 per megawatt-hour (MWH) of electricity. The notable exceptions are Portland and Point Henry in Victoria, where the smelters pay closer to $14 per MWH. For other smelters, the best estimates are that Bell Bay pays at most $23 per MWh, Tomago $22 and Kurri Kurri closer to $27."

H Turton, "The Aluminium Industry", The Australia Institute, Report No. 44, January 2002

Electricity network issues

- Basslink:
  - Will be discussed next
- Network issues within Tasmania:
  - Flow constraints on existing network
  - Connection costs for wind farms
  - Technical requirements for wind farms
  - Who will determine & pay for network augmentation?

Basslink

- Basslink article in *The Mercury*, 2/5/01:
  - "Unlikely to lead to increased competition" (attributed to Roger Oakley, Loy Yang Power)
    - This comment is "outrageous, naïve and ill-informed" (attributed to Tony Warnock, Hydro Tasmania)
- Key issues in resolving this argument:
  - Equality of access to Basslink by all participants
  - Extent of competition in Tasmanian wholesale & retail electricity markets
  - Who will pay for return on investment for Basslink?
    - 2-2.5 c/kWh appears to be required

Equality of access to Basslink

- Basslink services agreement (BSA):
  - Hydro Tasmania pays fee to owner, NGIL
  - HT receives inter-regional revenue for 25 years
  - Basslink to bid at zero unless requested by HT
- Apparent implications:
  - HT gains full control over Basslink operation
  - HT to sell southward IRR
    - But as a monopolist & dominant Tasmanian generator
- Conclusion:
  - This doesn't look like equal access

Generation competition in Tasmanian wholesale electricity market

- HT to be retained as a single entity:
  - Independent consultant recommended two?
  - 2260 MW capacity, 1150 MW long term ave:
    - *Assume 150 MW ave flow north over Basslink and thus 1000 MW ave in Tasmania*
- New entrants:
  - Bell Bay JV (234-365 MW, *say 200 MW ave*)
  - Basslink (300 south, *say 100 MW ave south*)
  - Bell Bay Govt (114 MW, *say 50 MW ave*)
  - Others (~100 MW, *say 50 MW ave*)

Tasmanian retail electricity market

- Single incumbent retailer:
  - Risky choice?
  - Implications of BSA & MI vesting contracts?
- Desirable to separate distribution & retailing:
  - Reduce barriers to entry for new retailers
  - Allow more equal treatment of distributed resources
  - Separate quality and availability of supply & distribution pricing from energy pricing

Tasmania's regulatory framework

- Particularly important given small market size and emerging role of gas & "new" renewables
- Important to achieve consistency between:
  - Electricity and gas
  - Economic and technical regulation
  - Industry regulation & social policy
- Limits to regulation:
  - Competition preferable to regulation
  - Supervised negotiation when insufficient competition

The effects of restructuring in Tasmania

- Electricity market issues:
  - Will there be adequate competition in wholesale & retail markets? *Possibly not*
  - Will full retail competition in electricity & gas be politically acceptable? *Electricity prices may rise*
- Gas market issues:
  - Should Tasmania adopt the Vencorp gas market design? *Deserves careful consideration*
- Regulatory issues:
  - Will there be adequate regulatory independence? *Essential to achieving good social outcomes*