Independent Pricing and Regulatory Tribunal

IPART
New South Wales

Efficient Regulation of Energy Infrastructure

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ELECTRICITY GAS WATER TRANSPORT OTHER INDUSTRIES

Regulation and Economic Efficiency

- This paper reviews economic regulation of networks in NSW since the 1990s
- It presents information on the outcome in terms of pricing, costs, service quality
- I discuss the growth of capital expenditure on infrastructure that has occurred in recent years and the incentives that exist to invest in infrastructure
- Finally, I discuss the efforts DNSPs have made in recent years to manage growth in demand by price and non-price methods

Efficient regulation of Energy Infrastructure

Economic Efficiency

- Providing the services that people want at minimum sustainable cost
- Pricing to achieve an efficient allocation of resources
  - Best use of existing capacity
  - Incentives to undertake new investment
- Competition and innovation

1990s – restructuring and cost efficiencies, and lower prices

IPART's 10 Year Review in 2002 noted:

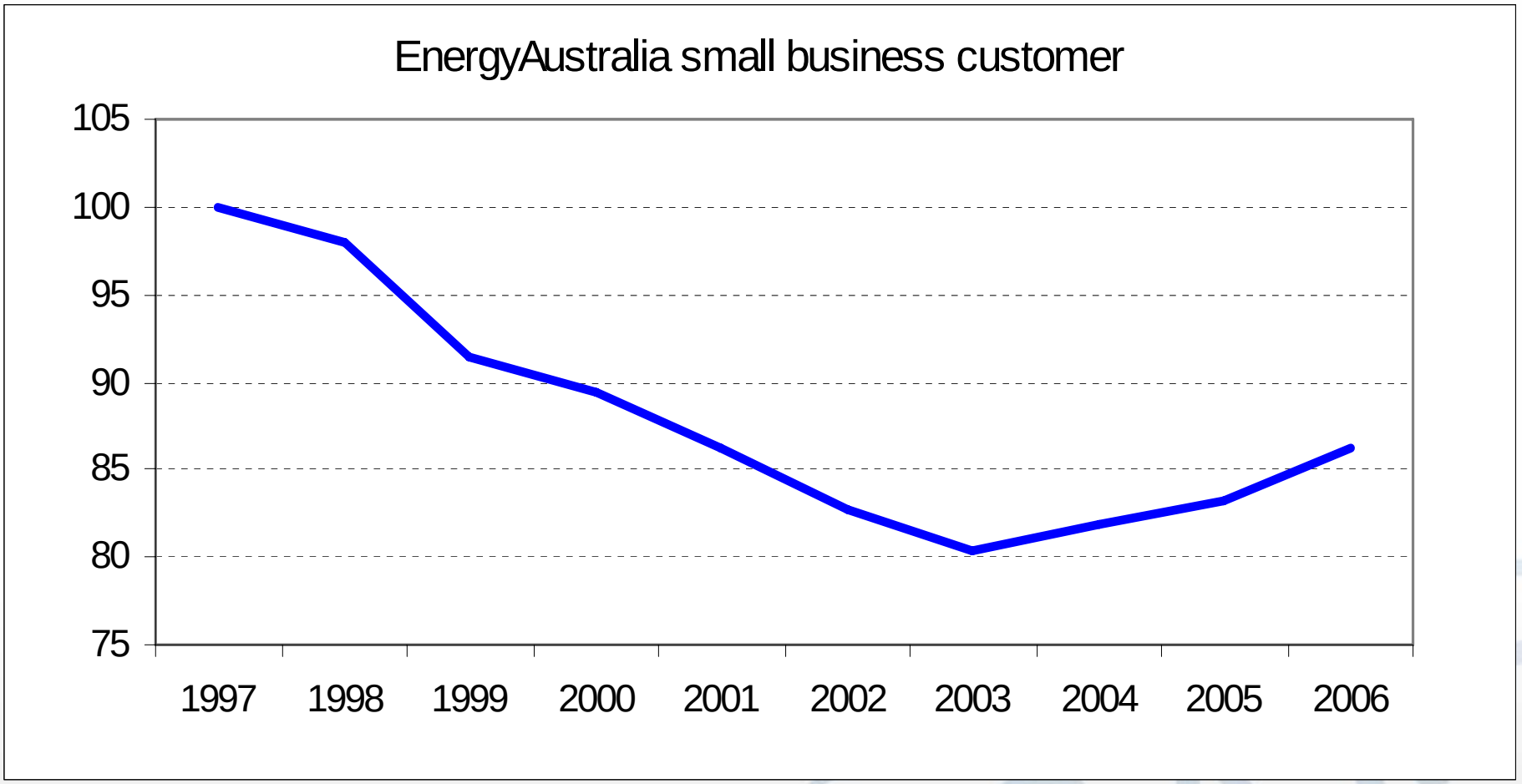
- Average residential electricity prices in NSW had fallen 11% in real terms (17% excluding effects of the ANTS (GST etc))
- Average non-residential prices had fallen 22%;
- Average electricity prices in NSW were among the lowest in Australia

2000s - capacity constraints, higher prices

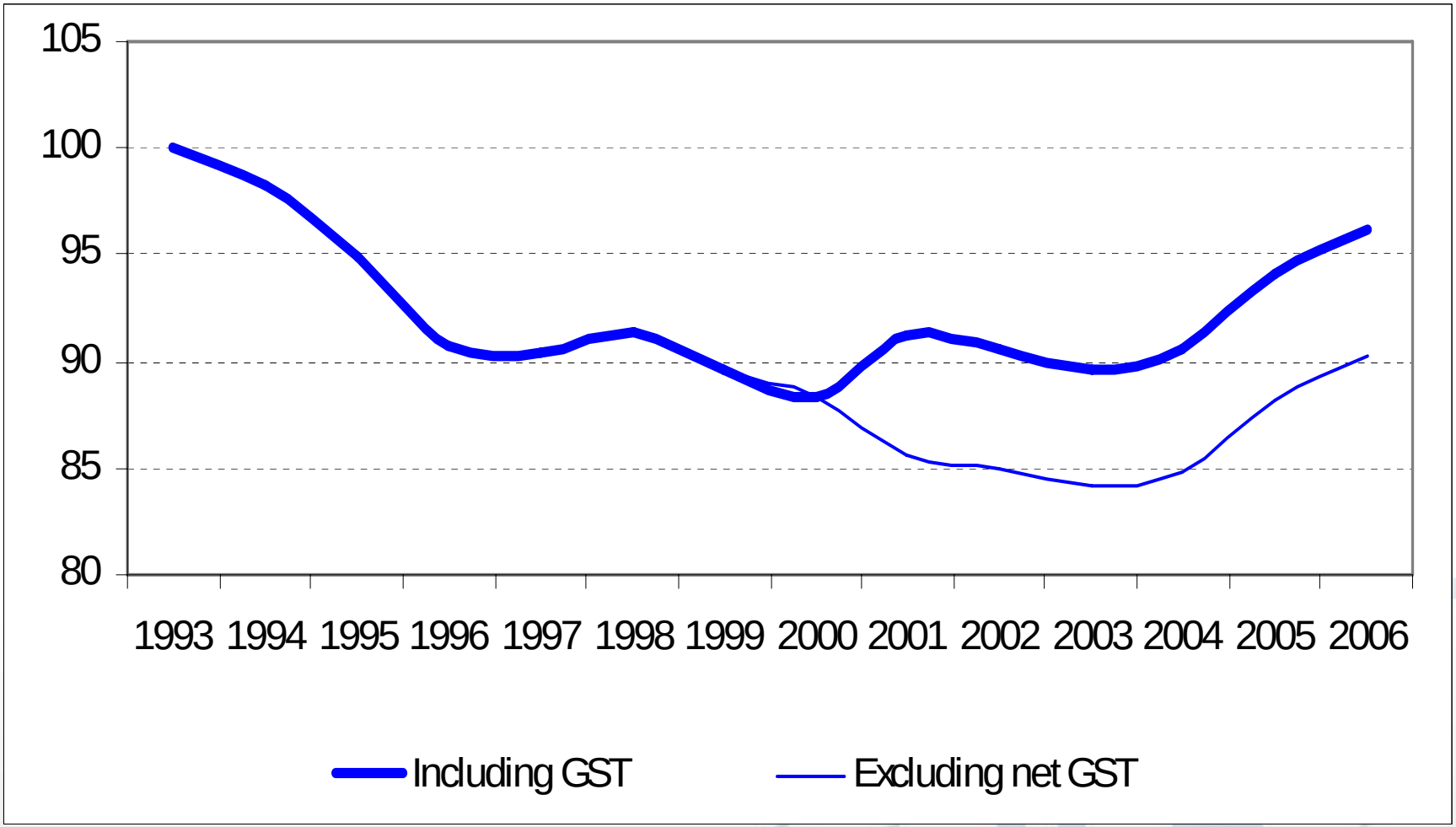
- Emphasis for pricing regulators shifted in early 2000s to 'sustainability' of supply whilst maintaining 'efficiency' in costs
- 2004 Network Determination represents a watershed
- 1. Tribunal recognised rising "peakiness" of demand as causing higher capex requirements

  2. allowed higher prices (with constraints) to reflect costs, fund capex

Index of selected business electricity charges (real terms excl. GST)

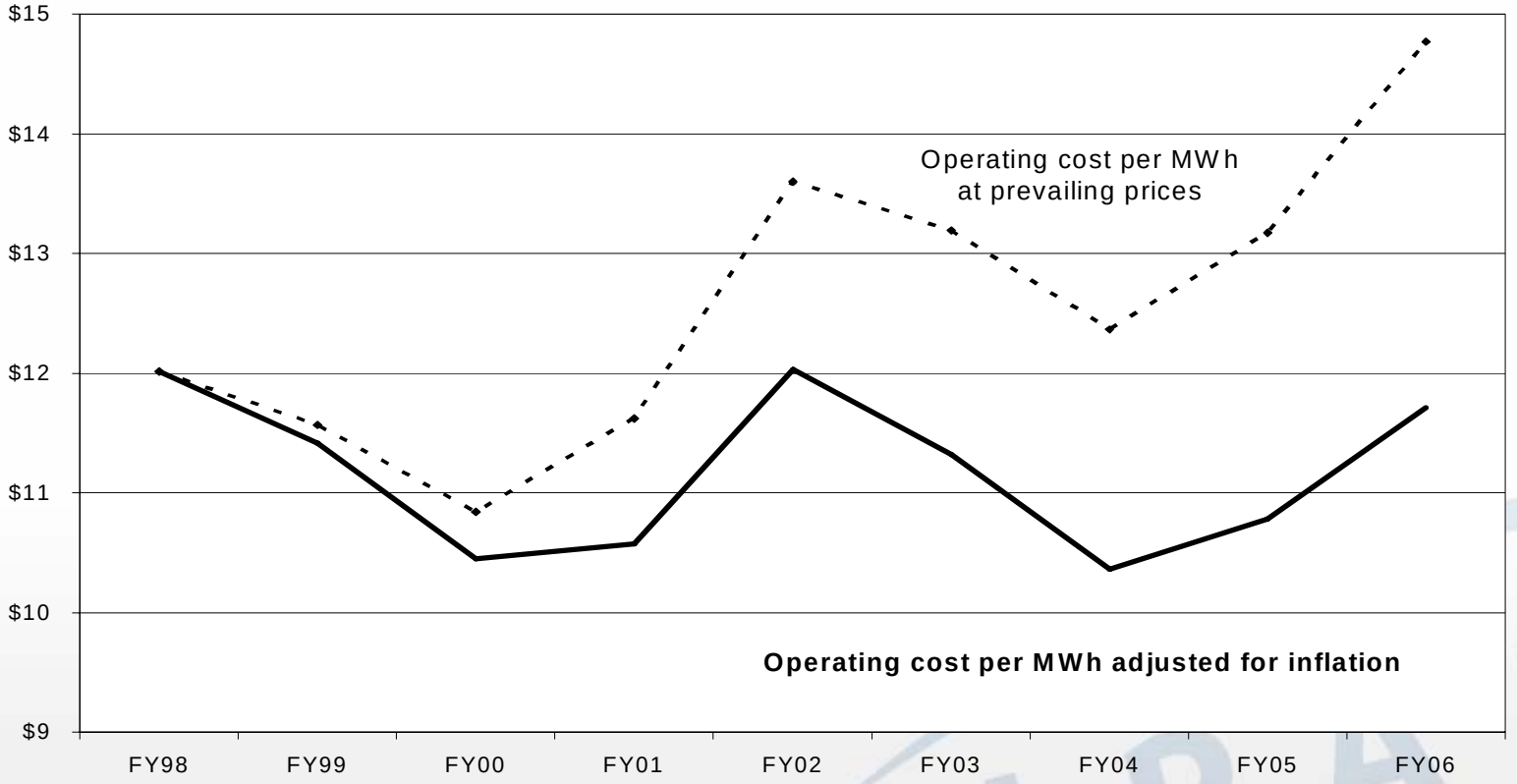


Index of household electricity charges (in real terms)

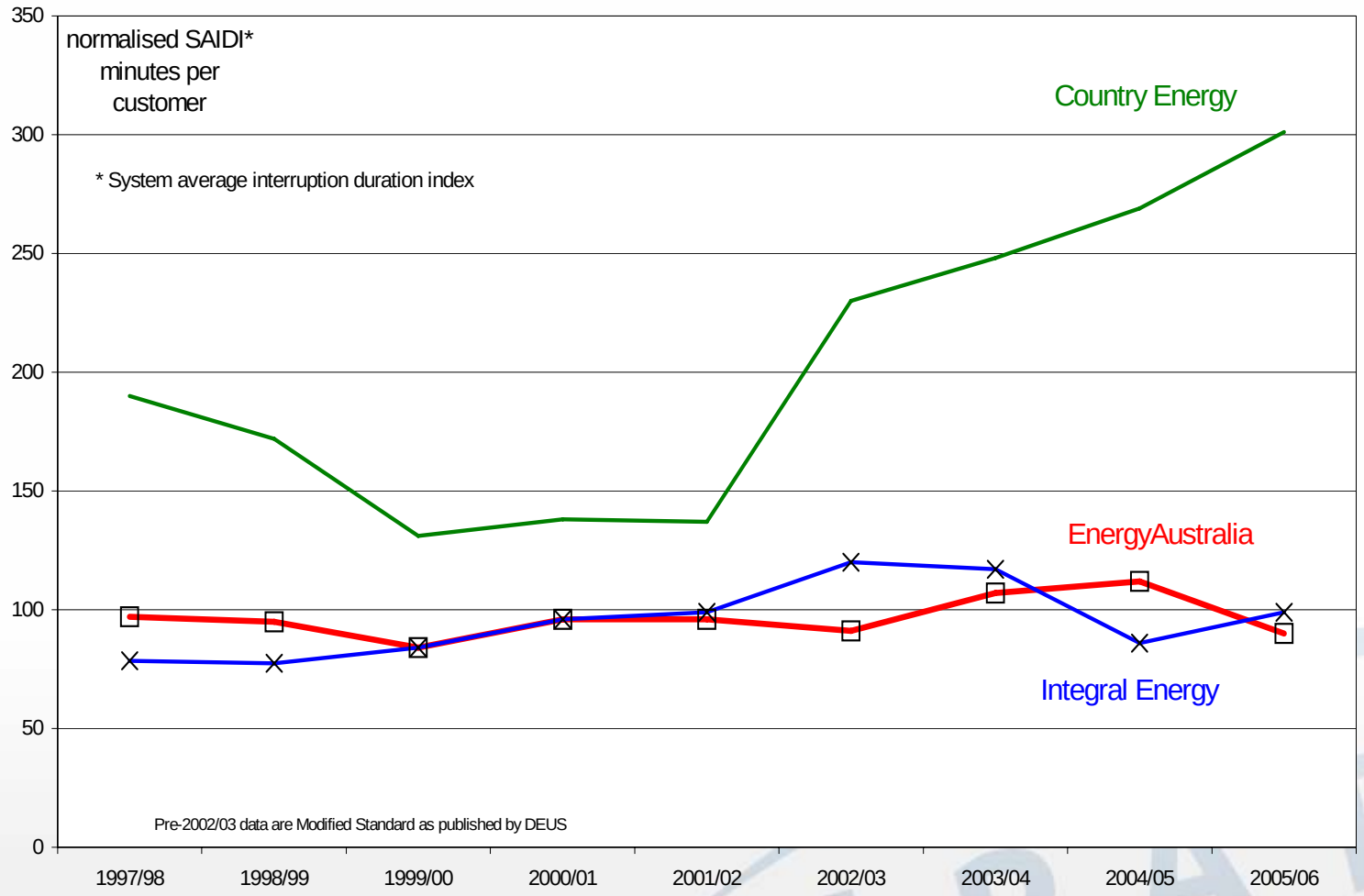


Falling prices in 1990s:

- were driven by rising cost efficiencies
- In distribution, real operating costs varied around $10-12 per MWh. Up 13% since 2003/04.



Service quality: trends in duration of interruptions per customer



Service Quality – number and duration of interruptions

Duration of interruptions per customer by location (normalised SAIDI)

	2002/03	2003/04	2004/05	2005/06
EnergyAustralia				
CBD	48	106	10	13
Urban	72	79	96	68
Rural - short	309	402	298	336
Rural - long	502	1,131	820	342
Overall	**91**	**107**	**112**	**90**
Integral Energy				
CBD	na	na	na	na
Urban	58	81	54	67
Rural - short	170	202	170	184
Rural - long	116	116	900	856
Overall	**120**	**117**	**86**	**99**
Country Energy				
CBD	na	na	na	na
Urban	82	97	106	103
Rural - short	236	249	276	304
Rural - long	482	599	635	609
Overall	**230**	**248**	**269**	**301**

Number of interruptions per customer by location (normalised SAIFI)

	2002/03	2003/04	2004/05	2005/06
EnergyAustralia				
CBD	0.16	0.17	0.10	0.20
Urban	0.97	1.09	1.14	0.96
Rural - short	3.73	4.06	3.16	3.32
Rural - long	5.30	9.18	6.22	3.30
Overall	**1.18**	**1.32**	**1.30**	**1.15**
Integral Energy				
CBD	na	na	na	na
Urban	0.87	1.1	0.83	0.99
Rural - short	1.22	2.19	2.13	2.18
Rural - long	0.99	0.82	4.34	5.85
Overall	**1.30**	**1.43**	**1.18**	**1.30**
Country Energy				
CBD	na	na	na	na
Urban	1.25	1.58	1.50	1.45
Rural - short	2.18	2.47	2.74	2.75
Rural - long	3.83	4.27	4.85	4.25
Overall	**2.16**	**2.39**	**2.60**	**2.67**

Incentives to Invest

The existing incentive structure is favourable to investment

- DNSPs know that they can recover the cost of investment once it is accepted into the RAB
- Asset stranding is unusual
- Commercial rate of return
- Cost pass through for government directives
- Priorities of government and broader community for safe, reliable infrastructure

Efficient Investment

- Regulators should encourage efficient investment
- Investment is most likely to be efficient when the price of a service equals the marginal cost of providing the service
- Cross-subsidies exist within electricity tariff structures because of averaging
  - For example consumers of electricity during off-peak periods subsidise consumers of electricity during peak periods
  - This pattern of pricing is likely to encourage consumption during peak periods, thus requiring more investment

Cross-subsidies within tariffs remain

Inclining Block Tariff from 1 July 2006	Tariff No.	Access Charge (per day)	Block 1* c/kWh	Block 2 c/kWh
EA Domestic	10	13.7631	4.7977	6.7310
EA LV Business non-ToU	50	41.0793	4.1704	5.8554
IE Domestic	N70	20.0000	5.6640	6.6840
IE General Supply Non-ToU	N90	20.0000	4.8120	5.5440

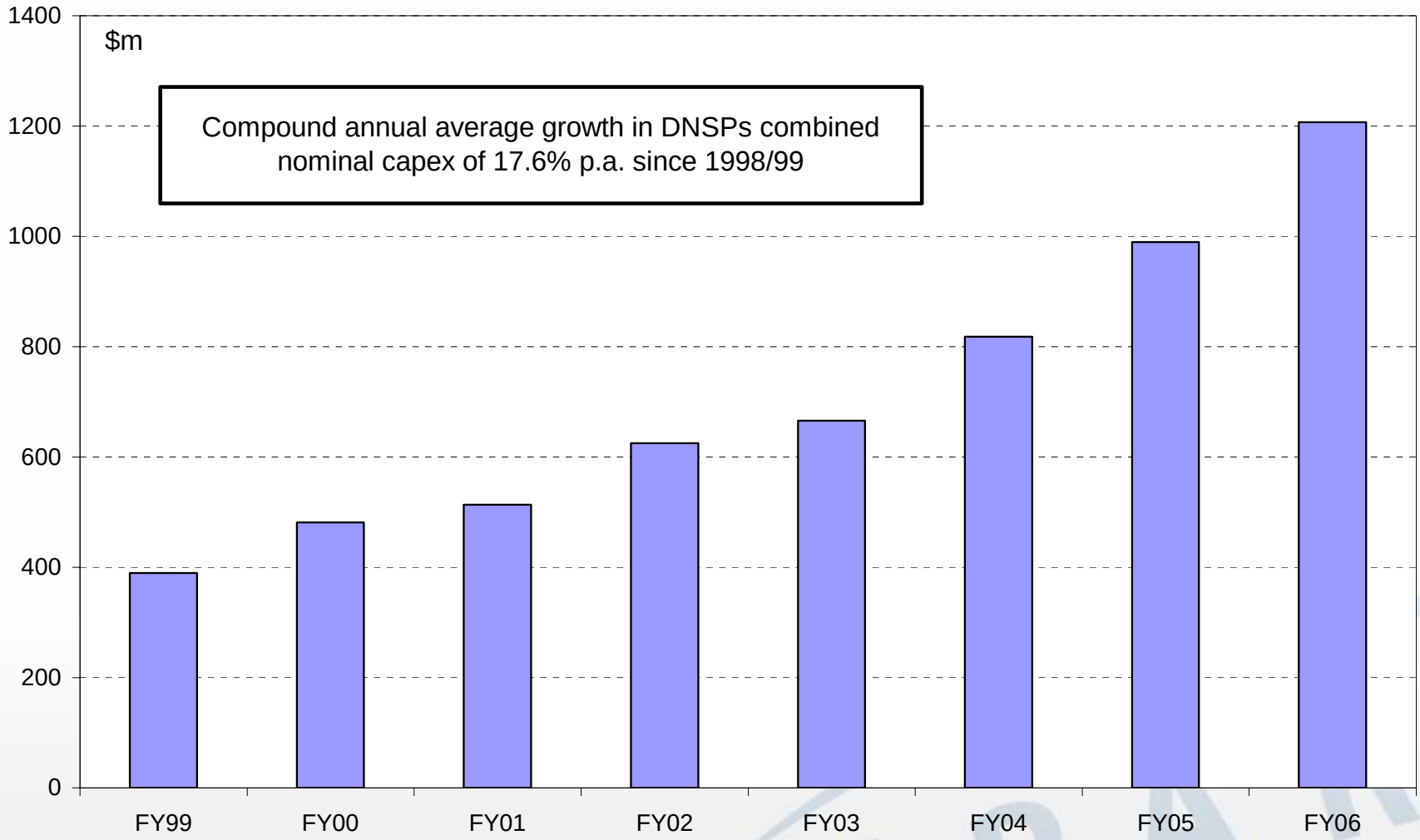
* Block 1 charged for first 1750kWh per quarter

- Inclining block tariffs require heavy users to pay extra
- But peak users remain subsidised by non-peak users
- (By contrast, EA ratio of ToU peak/shoulder prices is 5.13 times [domestic] and 1.99 [business])
- (IE equivalent ratios 1.33 and 1.24)

Cost pass-through

- Subsequent to 2004 Determination, NSW Government required DNSPs to meet higher planning and reliability standards
- Higher standards required substantially higher efficient costs
- Tribunal has already determined that it would allow cost pass-through for changes in regulatory obligations.
- The cost pass-through means that real network prices will rise by more than the WAPC set in the Determination

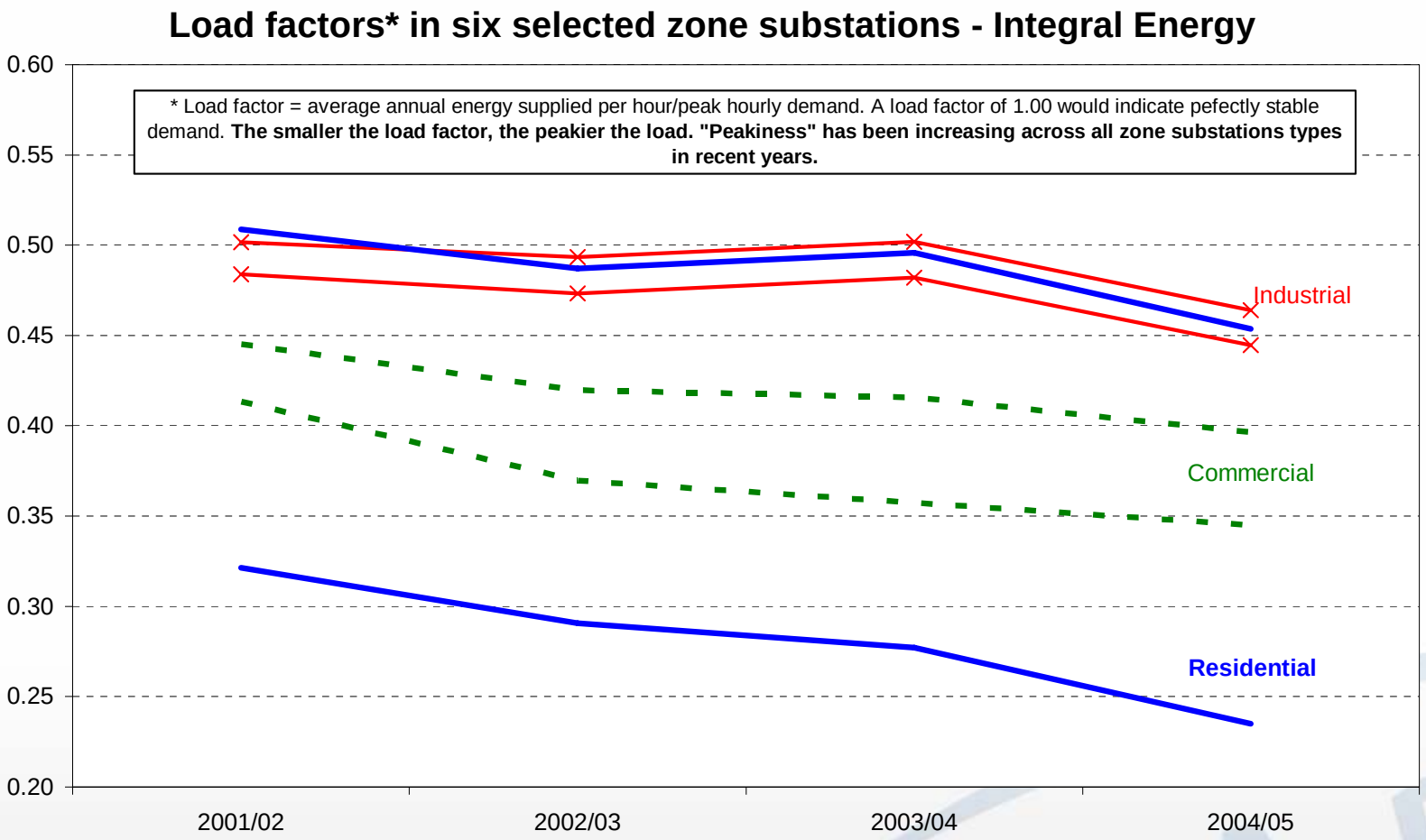
Strong capex growth by DNSPs …



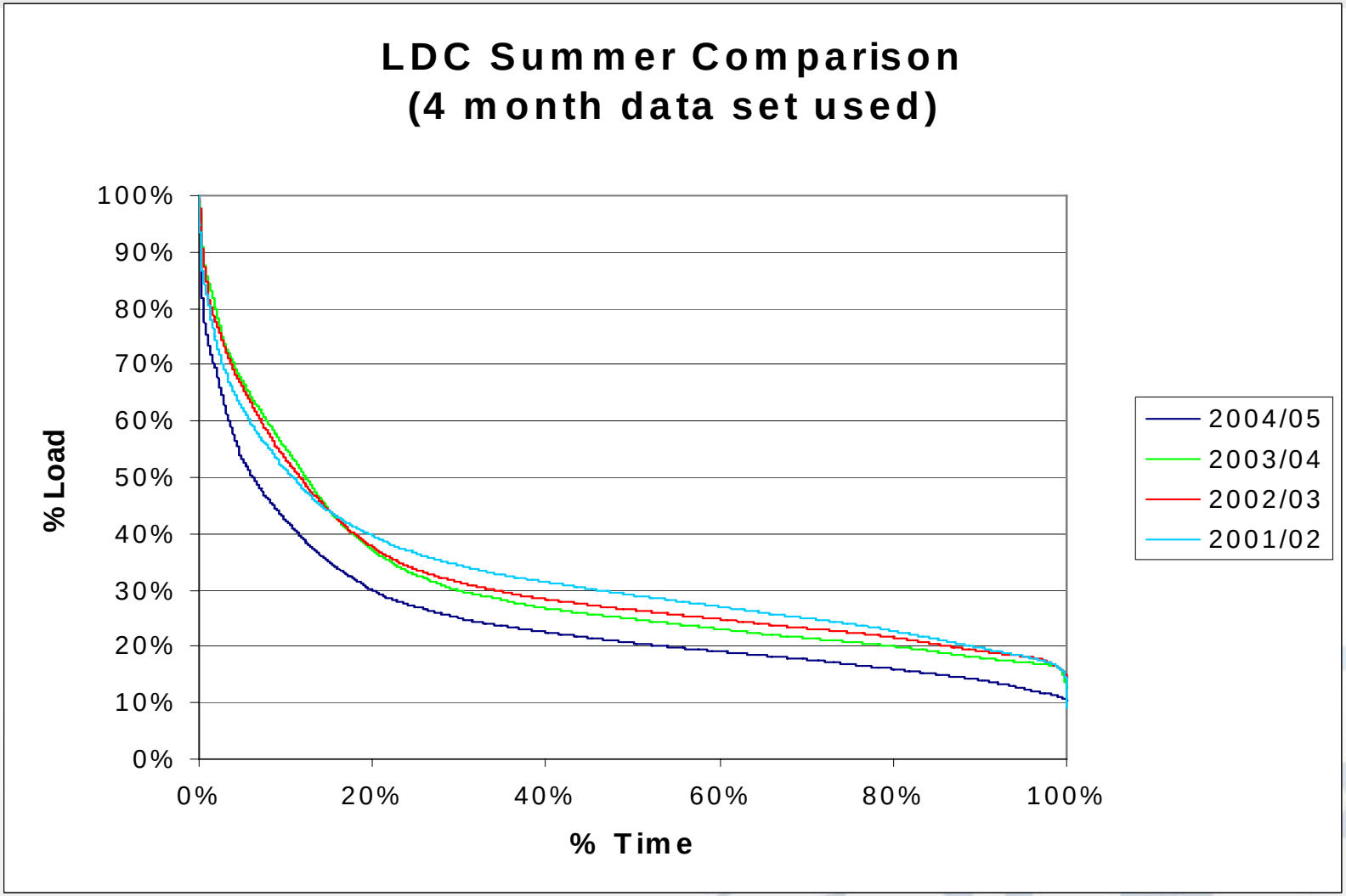
Capex: 2005 to 2009

- Expected increases in peak demands to require NSW network expenditures in 2005-09:
- ~$5bn on capex
- ~$3bn on opex.
- Average expected annual demand growth across NSW: 2%
- Average expected summer peak demand growth: >3% pa
- Average real increases in network prices over 5 years: up to 14%

… driven by demand growth and spikier peaks that caused lower asset utilisation



Load Duration in one residential zone substation (in Western Sydney)



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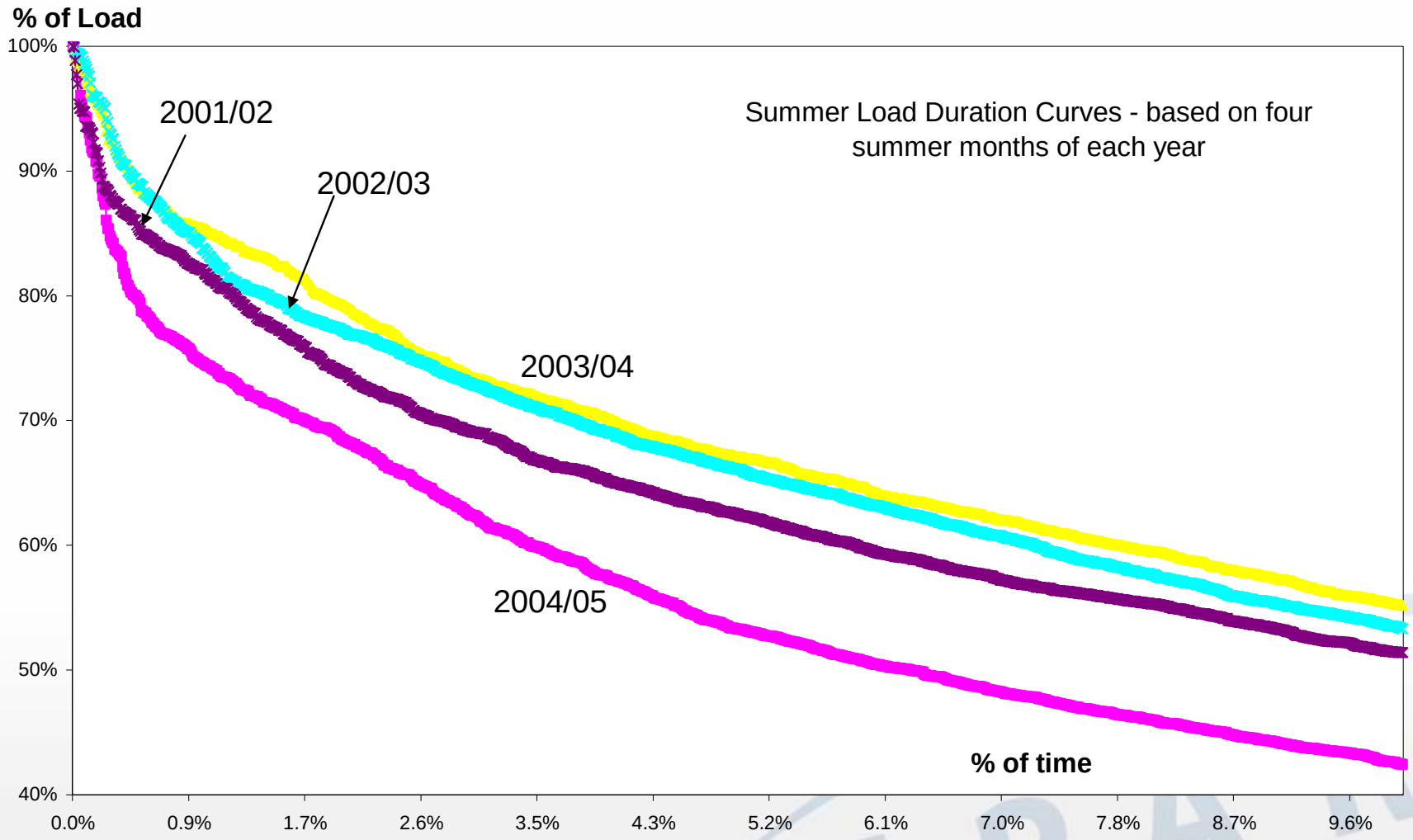

Controlling Demand

Regulators and DNSPs have tried to limit the growth of demand and investment by:

- Encouraging non-price demand management as an alternative to network investment
- Undertaking price reforms to better align prices with marginal costs

Demand Management (DM) measures

- In 1990s, little use of DM alternatives to network investment
- In 2000s, small but growing use of DM measures
- E.g. Tribunal allowed EA $2.2m of DM measures under the D-Factor mechanism in 2004/05 (DM saved $5.6m in opex & capex; foregone revenue $0.9m)

Demand Management by DNSPs

- D-factor in WAPC allows DNSPs to apply annually for recovery of demand management (DM) costs and foregone revenue
- DNSPs retain benefits of deferred network expenditures created through DM - which provides incentive to do DM
- Recovery of foregone revenue associated with specific DM projects neutralises 'sell' incentive of WAPC
- Tariff-based DM projects re-couped through general prices

DNSPs' pricing initiatives

- IPART Determination requires DNSPs to implement own network pricing strategies. Pricing signals to customers encouraged.
- DNSPs are responding with:
- 1. Inclining block tariffs, with a steepening incline
- Example: between 2003/04 and 2005/06, ratio of Block 2 price to Block 1 price has increased:

  - from 1.20 to 1.40 for EA

  - from 1.04 to 1.17 for IE

DNSPs' pricing (cont.)

- **2.** Increased use of ToU meters for larger residential customers and new customers
- Example – EA have moved 40,000 customers to ToU tariffs. EA aims to move another 84,000 by 2008/09 and to add 25,000 customers a year to ToU tariffs thereafter
- **3.** Increased use of capacity based charges and cost-reflective network pricing (CRNP)

Directions for pricing regulation

- Incentive regulation increasingly complex to administer eg. efficiency carryover, service quality, DM factors
- Regulators researching other forms such as Total Factor Productivity (TFP)
- Immediate focus: the national framework for regulation to promote:
- 1. Regulatory consistency across markets
- 2. Lower costs/barriers to competition
- 3. Improve planning, develop electricity transmission networks

National Energy Reform

- The two national bodies involved:
- **Australian Energy Market Commission** (AEMC) responsibility for rule making and market development
- **Australian Energy Regulator** (AER) responsible for electricity and gas transmission and to be responsible for distribution pricing.
- Current status:
- National Electricity Law and National Gas Law being finalised
- AER expected to take up its responsibilities for distribution pricing from 1 July 2007

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