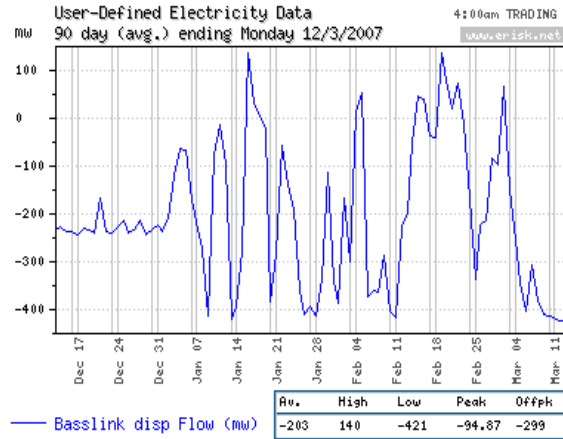


## Basslink flows, 90 days

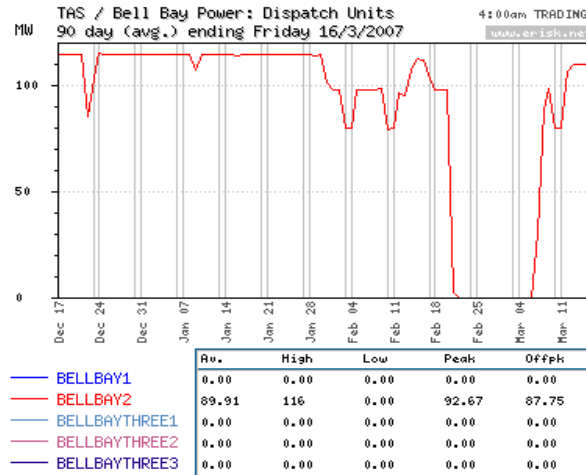


## Shift Hydro Tasmania debt to Transend; purchase Basslink, then convert to regulated link, and add to consumer bills?

1

The Parliament of Tasmania, House of Assembly, *Government Businesses Scrutiny Committee*, on Tuesday 6 March showed the Government owners and managers of the Tasmania electricity system tongue-tied by apparent sets of commercial-in-confidence agreements, related to sales and asset transfers, as they tried to avoid answering question from irritated Opposition committee members.

## 4 Bell Bay units un-used



**Bell Bay gas turbine-use questioned:** In late 2006, Opposition parties had opposed the purchase by Hydro Tasmania, of second hand gas turbines. The committee was told the Hydro has since, set a zero book value on the turbines.

**The committee questions showed the:**

- purchased turbines were seldom used, since purchase last year; but
- costs had exposed HydroTasmania in ways it was not keen to discuss.

**Tasmanian options:** One of the possible solution to Hydro Tasmania's liabilities was to load Transend with Hydro Tasmania debt.

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# Top price for NEM week 430: Snowy-NSW at \$59.61

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TAS			
Generator	Income (\$)	Output (MWh)	Av Price (/MWh)
Liap/Way/Cat	\$473,832	9,435	\$50.22
Bell Bay Power	\$340,162	6,853	\$49.64
John Butters	\$322,155	6,542	\$49.24
Tungatinah	\$171,717	3,409	\$50.37
Poatina	\$816,179	16,361	\$49.89
Tarraleah	\$423,780	8,611	\$49.22
Reece	\$45,850	1,117	\$41.07
Cethana	\$43	1	\$51.83
Tribute	\$21	0	\$51.63
Lemonthyme/Wilmot	\$99,041	1,876	\$52.80
Trevallyn	\$262,525	5,136	\$51.12
Mackintosh	\$100,434	2,065	\$48.63
Bastyan	\$95,495	1,948	\$49.03
Woolnorth Wind	-	-	-
Gordon	\$2,655,093	53,407	\$49.71
Vic->Tas	\$3,008,450	60,602	\$49.64
Devils Gate	\$43	1	\$51.83
Fisher	\$42,609	830	\$51.35
Meadowbank	66339.76	1344	\$49.36
Lake Echo	130732.9936	2663.89	\$49.08
Repulse	-	-	-
Palooka	-	-	-
Cluny	-	-	-

Aurora managers had said its balance sheet could take no more debt. Transend, however, could take \$200 million. Hydro Tasmania said its privatised Roaring Forties subsidiary, of which it owned 40 per cent (the balance was owned by CLP Power Asia Limited) would, in the future, counter-balance its home-state debts. It operated the Woolnorth Wind Farm in Tasmania's far northwest and projects in China ,these projects were eligible for Kyoto credits.

**Basslink purchase possible:** Minister for Energy David Llewellyn, said: "all options are still on the table and the parties directly

SA			
Generator	Income (\$)	Output (MWh)	Av Price (/MWh)
North'n Power	\$3,118,213	88,810	\$35.11
Ladbroke	\$126,020	2,571	\$49.01
Osborne	\$880,610	24,399	\$36.09
Pelican Pt	\$2,463,413	67,473	\$36.51
Torrens Is. B	\$1,452,760	37,611	\$38.63
Vic->SA	\$415,429	11,520	\$36.06
MLink->SA	\$6,640	175	\$38.04
Torrens Is. A	\$384,070	10,626	\$36.15
Mintaro	-	-	-
Dry Creek	\$501	13	\$37.57
Playford	\$735,305	20,702	\$35.52
Snuggery	-	-	-
Pt Lincoln	-	-	-
Quarantine	-	-	-
Angaston Power	-	-	-
Hallett Power	\$17,917	347	-
Lonsdale	-	-	-
Terminal Storage	-	-	-
Lake Bonney Wind	-	-	-

VIC			
Generator	Income (\$)	Output (MWh)	Av Price (/MWh)
Loy Yang A	\$12,571,569	352,940	\$35.62
Loy Yang B	\$6,239,117	176,151	\$35.42
Hazelwood	\$7,879,433	223,621	\$35.24
Yallourn	\$7,163,956	205,373	\$34.88
Anglesea	\$869,249	24,391	\$35.64
Energy Brix	\$788,016	22,391	\$35.19
Newport	\$562,834	14,285	\$39.40
MLink->Vic	\$182,541	4,310	\$42.35
SA->Vic	\$234,852	5,311	\$44.22
Snowy->Vic	\$1,014,071	20,779	\$48.80
Tas->Vic	\$32,457	689	\$47.08
Jeeralang	\$6,028	197	\$30.65
West Kiewa	\$13,006	289	\$44.99
Bairnsdale	\$220,986	4,512	\$48.98
Dartmouth	-	-	-
Eildon	\$28,707	654	\$43.88
Hume Vic	-	-	-
McKay Power	-	-	-
Clover	-	-	-
Valley Power	\$819,852	18,309	\$44.78
Rubicon	-	-	-
Laverton North	519953.2352	13534.115	-
Somerton Power	83867.0103	1462.9	-
Sunshine Energy	-	-	-
Longford	-	-	-

NSW			
Generator	Income (\$)	Output (MWh)	Av Price (/MWh)
Bayswater	\$13,094,130	341,245	\$38.37
Liddell	\$7,310,492	202,310	\$36.14
Mt Piper	\$6,744,680	168,211	\$40.10
Wallerawang	\$3,269,492	85,942	\$38.04
Vales Point	\$3,875,990	104,934	\$36.94
Munmorah	\$2,214,652	62,994	\$35.16
Eraring	\$13,666,793	355,553	\$38.44
Redbank	\$582,914	17,999	\$32.39
Smithfield	\$750,063	19,925	\$37.64
Snowy->NSW	\$2,996,440	50,270	\$59.61
Shoalhaven	\$365,979	10,036	\$36.47
Hunter Valley	\$482	10	\$46.17
Hume Hydro	-	-	-
Blowering	-	-	-
Northern Gas	-	-	-
Burrinjuck	-	-	-
Brown Mountain	-	-	-
Keepit	-	-	-
Broken Hill	-	-	-
Ergon Energy	-	-	-
DL Q->N	\$493,183	12,907	\$38.21
QLD->NSW	\$3,400,464	86,280	\$39.41
Pindari Hydro	-	-	-
West Nowra	-	-	-
Country En (NSW)	-	-	-

QLD			
Generator	Income (\$)	Output (MWh)	Av Price (/MWh)
Tarong	\$8,859,187	259,315	\$34.16
Millmerran	\$4,567,110	134,084	\$34.06
Swanbank	\$1,518,848	42,280	\$35.92
Stanwell	\$6,889,195	193,766	\$35.55
Callide B	\$3,567,393	102,799	\$34.70
Callide Power	\$4,249,602	117,585	\$36.14
Townsville	\$1,261,595	36,604	\$34.47
Gladstone	\$6,586,388	181,233	\$36.34
Collinsville	\$527,690	14,851	\$35.53
Swanbank C. D. E	\$1,718,924	47,028	\$36.55
Barcaldine	\$120,464	2,999	\$40.17
Callide A	-	-	-
Kareeya	\$502,588	14,752	\$34.07
Barron Gorge	\$206,850	5,377	\$38.47
Mt Stuart	\$65,943	1,574	\$41.89
Wivenhoe	\$289,212	9,255	\$31.25
Braemar Power	\$1,407,743	31,800	\$44.27
Mackay	-	-	-
Roma	\$2,087	52	\$39.93
Oakey	\$733	16	\$46.82
DL N->Q	-	-	-
NSW->QLD	-	-	-
Rocky Point	-	-	-
Tableland	-	-	-
Stapylton	-	-	-

involved in this issue are National Grid and Hydro Tasmania ... I am not ruling in or out any other questions and indeed, I do not think it is appropriate that I answer any further questions on it".

**All roads point to Transend:** The committee discussed the Hydro's \$300 million debt. The transcript showed Transend was the only one of the three state entities with the ability to cover the Hydro debt. The other matter was the possibility of the purchase of Basslink and whether or not, after purchase, the new owner would apply to make Basslink a regulated link, and thus transfer the \$100 million a year fee away from the owner and onto Tasmanian consumers, billed by regulated fees included users' Transmission Use billion that case, consumers would pay \$100 million more a year, a cost now a carried by Hydro Tasmania. The Regulator would set new tariffs to cover the Basslink costs.

**Is Transend a Basslink buyer?** Asked: "Have there been any discussions within the Transend boardroom as to whether or not Transend might be the vehicle used to purchase that asset? David Llewellyn, Minister for Energy replied: "... National Grid, after a very short period of time, are now offering the link for sale and ... (the) ... Hydro do have contractual arrangements with National Grid and obviously they have been discussing the matter and all options associated have been canvassed".

**Secret negotiations:** The Minister said: "I do not want to reopen the debate on that. It is a sensitive matter that is being undertaken right

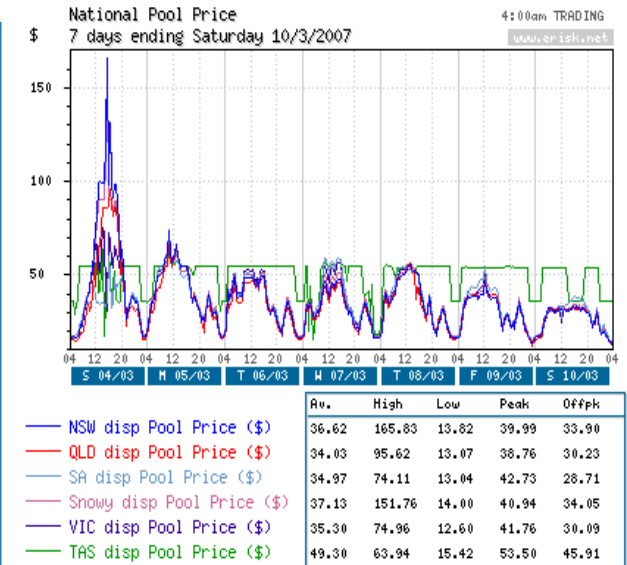
## the week in detail

- **NSW:** Average price \$36.62/MWh, down 32 per cent on the spike-affected \$54.13/MWh the previous week, up 46 per cent on the \$25.00/MWh of the comparable week last year; maximum price \$165.83/MWh for the 30-minute trading interval ended 1600EST on Sunday. Average demand 8848MW, down 4.0 per cent on the previous week, up 0.8 per cent on a year ago; maximum demand 11,228MW in the 1600EST Sunday interval, down 1.5 per cent on the 11,402MW the previous week.

- **Victoria:** Average price \$35.30/MWh, down 32 per cent on the spike-affected \$51.68/MWh the previous week, up 46 per cent on the \$24.20/MWh of the comparable week last year; maximum price \$74.96/MWh for the 30-minute trading interval ended 1430EST Sunday. Average demand 5747MW, down 4.2 per cent on the previous week, down 0.5 per cent on a year ago; maximum demand 7483MW in the 1530EST Wednesday interval, down 2.4 per cent on the 7665MW the previous week.

- **South Australia:** Average price \$34.97/MWh down 24 per cent on the spike-affected \$46.16/MWh the previous week, up 28 per cent on the \$27.41/MWh of the comparable week last year; maximum price \$74.11/MWh for the 30-minute trading interval ended 1100EST Monday. Average demand 1511MW, down 10.8 per cent on the previous week, down 2.4 per cent on a year ago; maximum demand 2027MW for the 1630EST Saturday interval, down 26.7 per cent on the 2766MW the previous week.

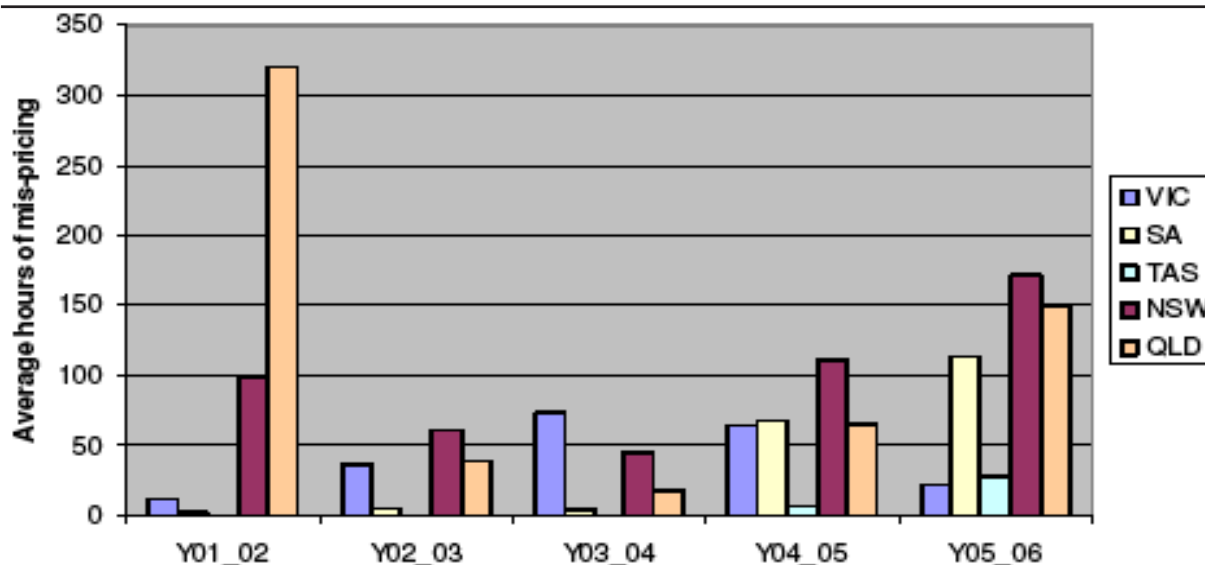
- **Queensland:** Average price \$34.03, down 21 per cent on the spike-affected \$43.11/MWh the previous week, up 29 per cent on the spike-affected \$26.22/MWh of the comparable week last year; maximum price \$95.62/MWh for the trading interval ended 1700EST Sunday. Average demand 6455MW, up 0.4 per cent on the previous week, up 6.0 per cent on a year ago; maximum demand



8139MW for the 1630EST Monday interval, up 2.6 per cent on the 7933MW the previous week.

- **Tasmania:** Average price \$49.30/MWh, up 9 per cent on the spike-affected \$45.30/MWh the previous week, up 88 per cent on the \$26.25/MWh of the comparable week last year; maximum price \$63.94/MWh for the trading interval ended 1300EST on Friday. Average demand 1080MW, down 1.6 per cent on the previous week, up 4.5 per cent on a year ago; maximum demand 1347MW for the 0700EST Friday interval, up 5.9 per cent on the 1272MW the previous week.

## Average mis-priced duration by region



**Drought impact:** There were increasing instances of binding for constraints associated with transfer from Snowy to Victoria in 2005/06 due to higher power transfers into Victoria. It is likely that this increase is due, at least in part, to the impact of the drought on Victorian hydro generation.

**Yallourn W unit 1 down:** Yallourn W unit 1 supplied more power to the 500 kV network in 2004/05 compared with 2001/02 to 2003/04 where the power supplied remained reasonably constant. Yallourn W unit 1 supply to the 500 kV network fell again in 2005/06. Yallourn W unit 1 supply into the 500 kV network results in increased flow across the transformers.

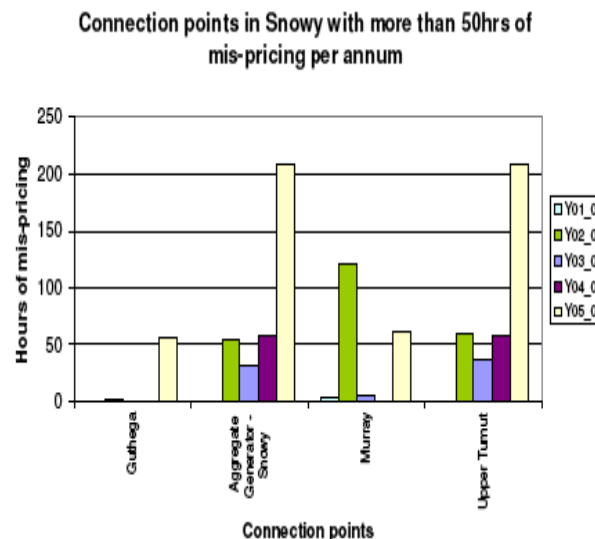
**Hazelwood bus constraint:** A 638 MVA short-term rating was made available for the HWTS transformers in July 2004. Before this time a 600 MVA rating was used. The V>V\_NIL\_4 constraint bound for 1100 dispatch intervals in 2005/06 but did not bind in any of the years before then. This constraint ensures the output of HWPS units 3, 4 and 5 does not exceed the 600 MVA continuous

rating of the HWTS No. 1 transformer. It has only been required since the commissioning of the fourth 500 kV line between the Latrobe Valley and Melbourne metropolitan area in August 2005. Following the commissioning of this line the Hazelwood power station buses were reconfigured such that these three units are now connected to the power system radially through the No. 1 transformer.

The constraint only binds when output from the units exceeds the registered capacity of the transformer. VENCORP is planning to complete work at Hazelwood power station by December 2008 which will result in an improved bus arrangement and alleviate the HWTS transformer loading issues.

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## Snowy distortions increase



Connection points in Snowy where the total duration of mis-pricing is more than 50 hours in at least one year in the study period. Most of the mis-pricing is when the regional reference price is less than \$300/MWh.

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at the moment and it would be wrong to send signals, particularly if there were assumptions made or hypothetical situations put forward ... that give the wrong sorts of messages on this issue. I realise that Transend are obviously as aware of the situation as anyone else in the community and, no doubt, from the board's point of view, they talk about these matters. But I am not going to expand any further and I think that it would be inappropriate for us to do

so. At this stage, we do not want to rule anything in or out and that is what we said when National Grid made this statement initially. We will work through those proposals”.

**ABM Ambro advises Hydro:** “I know that Hydro have contacted bodies to give them advice on the issue and I would be surprised if Transend were not involved in the same sort of process, and I know that they have”.

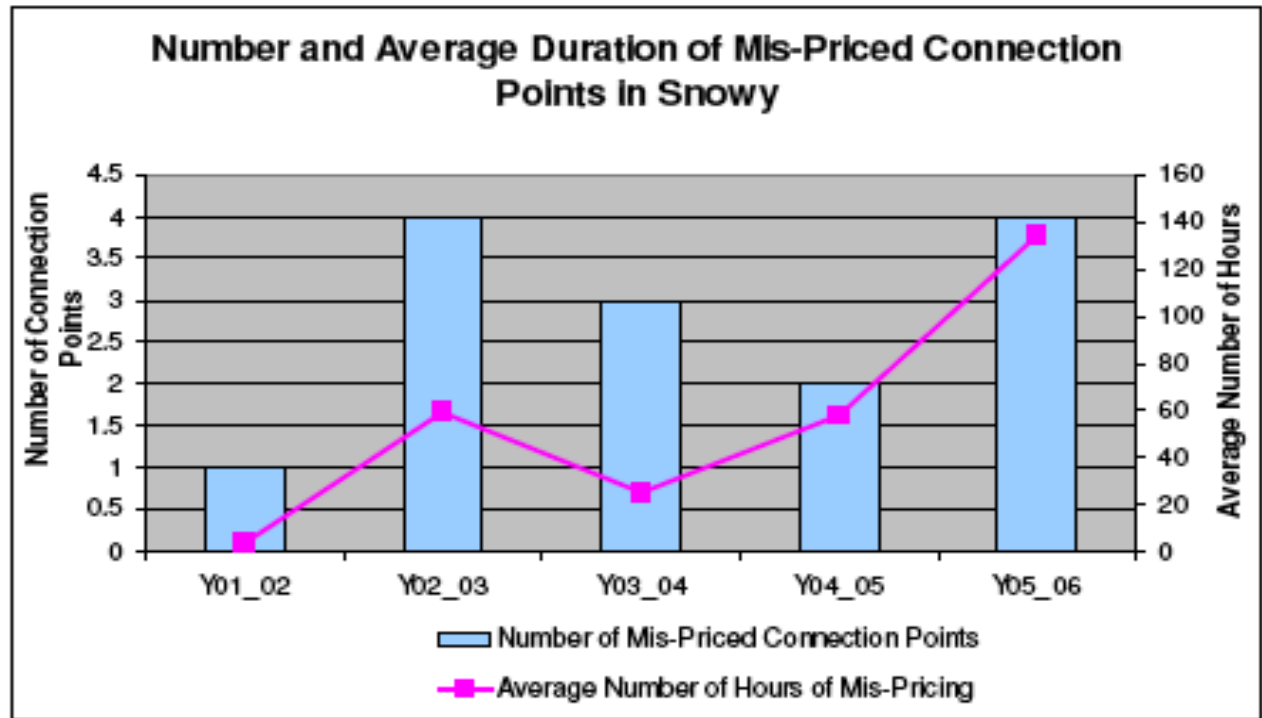
Reference: Parliament of Tasmania, House of Assembly, Government Businesses Scrutiny Committee, Tuesday 6 March 2007. Members: Mr Best (Chair); Mrs Butler, Mr Gutwein, Mr Hidding, Mr McKim and Mr Sturges (Deputy Chair); Substitute Members: Mr Booth, Mr Morris, Mr Will Hodgman and Mr Whiteley. In attendance: Hon. David Llewellyn, Minister for Energy and Ministerial Office Nick Wright, Adviser. Document is available at: <http://www.hansard.parliament.tas.gov.au/isysquery/iri1565b/1/doc>

## Qld water cutbacks ordered: Tarong suspends 2 x 350 units

By government order, electricity cutbacks were ordered at Queensland's 445MW Tarong North, from 1 April to August and through September at 480MW Swanbank B, *The Courier Mail* (9/3/07, p.5) reported.

5

**Compensation to be paid:** Swanbank was owned and Tarong partially owned by the State Government. Hansard debate recorded the plants would get compensation. Some reports said the cutbacks would run all year at 445MW Tarong North and through September at 480MW Swanbank B. Other reports said the order covered April 1 to August.



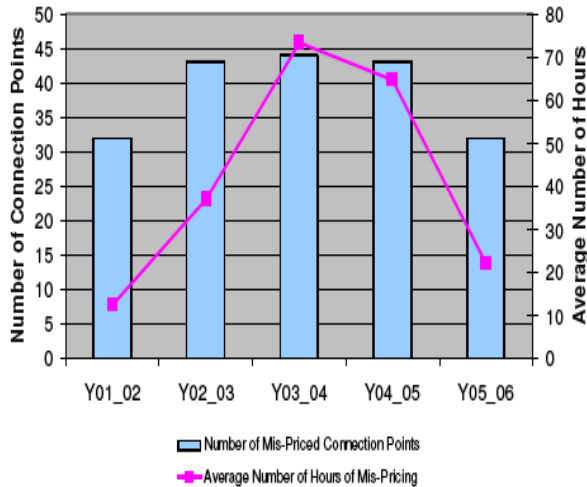
**Not by the NEMMCO rule book:** In the Snowy region the amount of mis-pricing increased moderately from 2003/04. There were only a few mis-pricing instances in the Snowy region in 2001/02. In June 2002 the Snowy transmission assets were transferred to TransGrid. In November 2002 the 15 minute ratings for the Murray Tumut lines were withdrawn resulting in a reduction in rating of up to 160 MVA. It is likely that this reduction contributed to the increase in binding dispatch intervals observed in 2002/03. The constraint equations managing the Murray Tumut line flows were formulated as option 1 types (generator terms only on the left hand side). Because these line flows are also strongly influenced by the Victoria Snowy and Snowy NSW interconnector flows this formulation did not provide sufficient control to maintain adequate system security. On-line staff was therefore required to invoke discretionary constraints to reduce Murray and/or Tumut power station outputs below that indicated by the constraint equations.

The lower ratings remained in place until July 2003 when 15 minute ratings were restored. However, the requirement to place discretionary constraints on the Murray and Tumut generators to maintain security continued until November 2003 when all of the Snowy constraint equations were converted to fully co-optimised formulations. The number of binding dispatch intervals remained relatively static between 2003/04 and 2004/05.

The CSP/CSC trial commenced in October 2005. Although there is an increase in mis-pricing in the 2005/06 period the market settlement impact was mitigated by the CSP/CSC financial arrangements.

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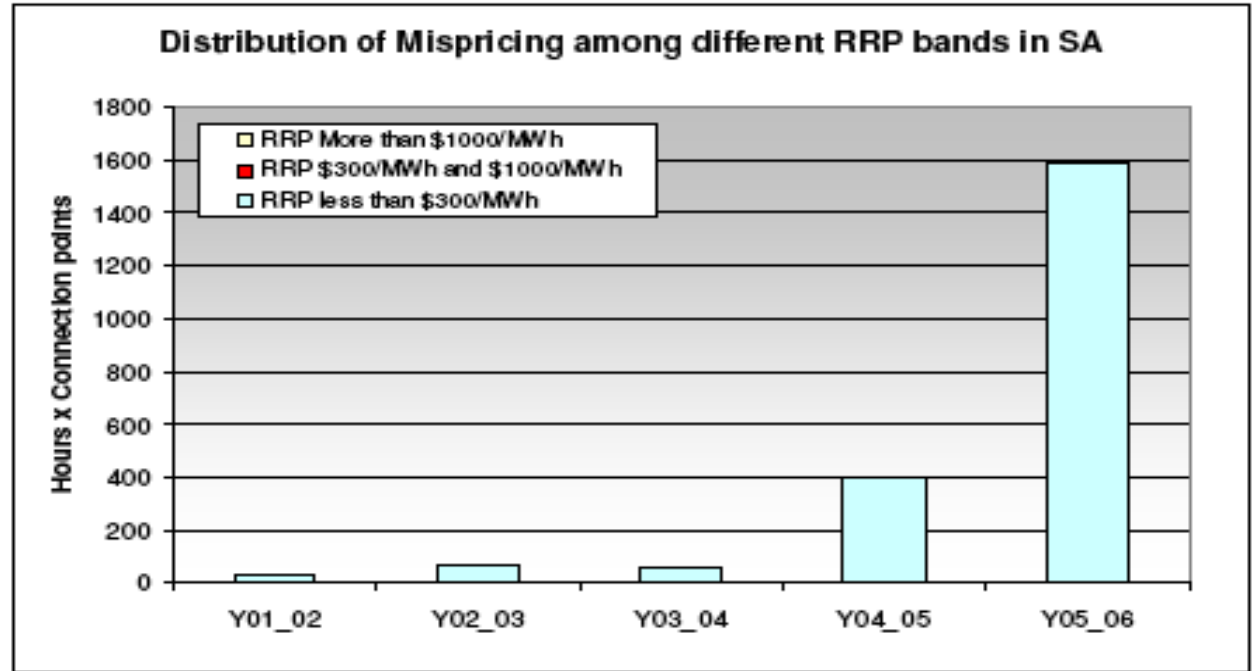
## Vic: Hazelwood-cuts impact



**How Hazelwood output triggers mis-pricing:** In Victoria the amount of mis-pricing peaked around 2003/04 year. There is a sharp reduction in the number of mis-priced nodes and average duration. The predominant binding constraints resulting in mis-pricing were those that manage flow across the Hazelwood Terminal Station (HWTS) 500/220 kV transformers. Between 2001/02 and 2003/04 the number of binding dispatch intervals for the V>V1NIL and V>V2NIL constraint equations, which manage flow across the HWTS No. 2, 3 and 4 transformers, increased from 178 to 1974 before reducing to 1206 in 2004/05 and 168 in 2005/06. There are a number of reasons for this variation including increased output from Hazelwood power station generators 1, 2, 6, 7 and 8 in 2002/03 and 2003/04 compared with 2001/02. Output decreased in 2004/05 and again in 2005/06. Higher outputs from these units result in increased flow across the transformers.

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## How SA price rises when NEMMCO closes Vic-SA lines



**May runout of water, anyhow:** Tarong North's Wivenhoe supply was drawn from a pipeline installed at Wivenhoe's 14 per cent capacity level. The Wivenhoe system as expected to be at about 20 per cent next month. Tarong draws its water from the Boondooma Dam, which was at 15 per cent capacity. A Wivenhoe Dam generator would not be able to produce electricity when dam levels reach 8 per cent of capacity. Tarong Energy chief executive, Helen Gluer, said the state-owned power station would significantly reduce generation from March 30 to conserve water in Boondooma

South Australia mis-pricing distribution on regional reference price. Most of the mis-pricing is when the regional reference price is less than \$300/MWh.

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Dam. Tarong had already reduced generation by 25 per cent since the beginning of the year. It would now reduce generation by another 45 per cent of full load, with two of the four 350 megawatt generators being suspended. One unit would remain on standby and could return to service on 36 hours' notice. "This will mean

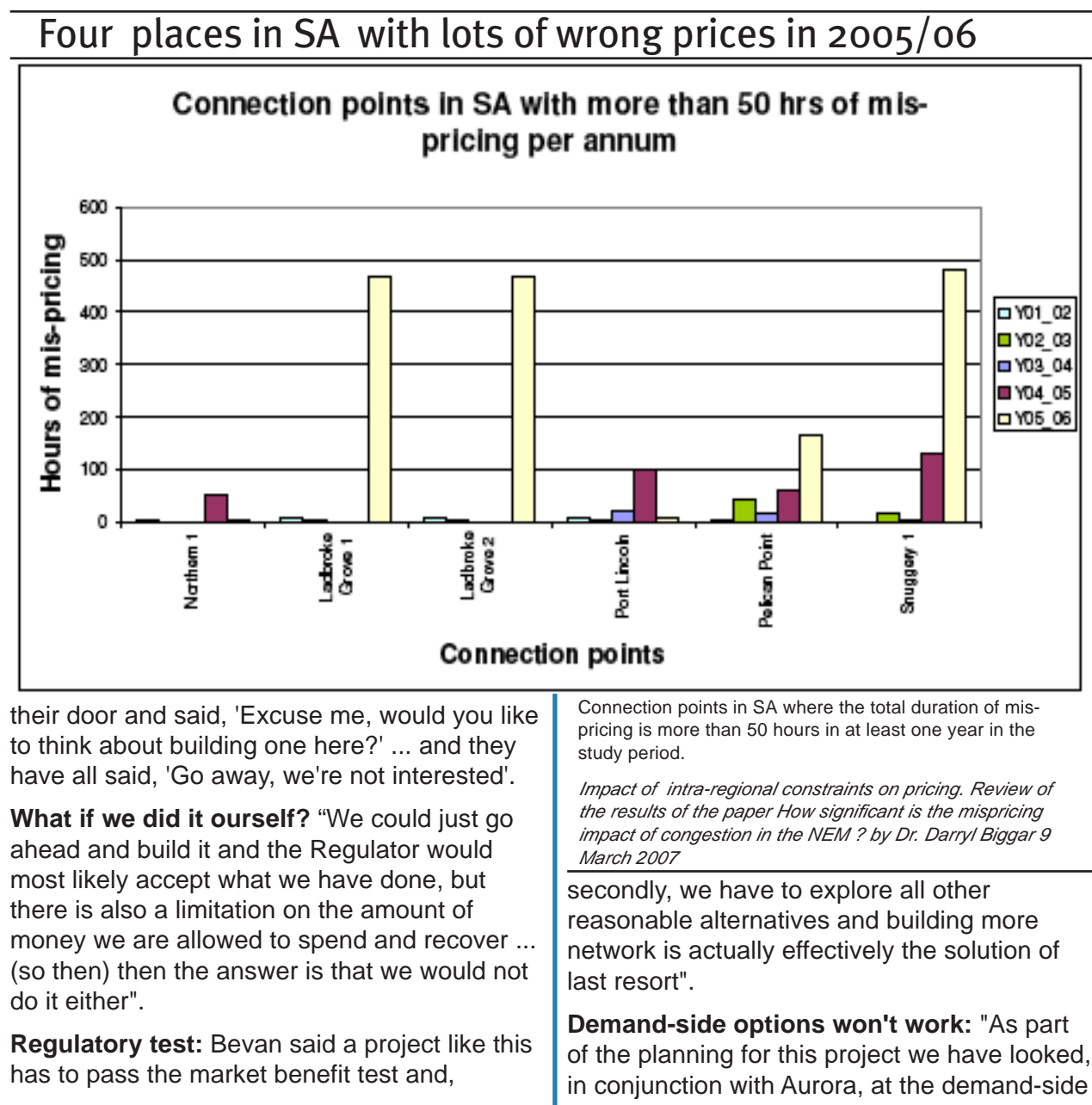
an overall reduction of 70 per cent from full load," Tarong CEO, Gluer said. "There will be no Tarong Energy job losses as a result of the reduced generation and there will be no impact on the major outage schedules." The reduction at Tarong will save about 22,000 megalitres of water over 15 months.

## Southern Tasmania power supply hangs on Gordon; 200MW gas plant wish-list for southern Tasmania

**T**ransend Networks Pty Ltd CEO, Richard Bevan, told the Parliament of Tasmania: *Government Businesses Scrutiny Committee* on 6 March 2007 that under peak conditions the Gordon Power Station was required to be in service to supply enough power. Transend planners said the south needed a gas plant, but no-one was interested

**No interest in power station:** John Lord, chair of Transend, said: "What we have to do is to propose the technically feasible least-cost solution to deliver the outcome the community needs, and in this case we would advertise and say we are going to do it but also ask if someone else has a better idea".

**Knock-backs from investors:** "For example, is someone planning to build a gas-fired power station in southern Tasmania? We have actually gone to the marketplace of companies who build these power stations, knocked on



their door and said, 'Excuse me, would you like to think about building one here?' ... and they have all said, 'Go away, we're not interested'.

**What if we did it ourselves?** "We could just go ahead and build it and the Regulator would most likely accept what we have done, but there is also a limitation on the amount of money we are allowed to spend and recover ... (so then) then the answer is that we would not do it either".

**Regulatory test:** Bevan said a project like this has to pass the market benefit test and,

Connection points in SA where the total duration of mispricing is more than 50 hours in at least one year in the study period.

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secondly, we have to explore all other reasonable alternatives and building more network is actually effectively the solution of last resort".

**Demand-side options won't work:** "As part of the planning for this project we have looked, in conjunction with Aurora, at the demand-side

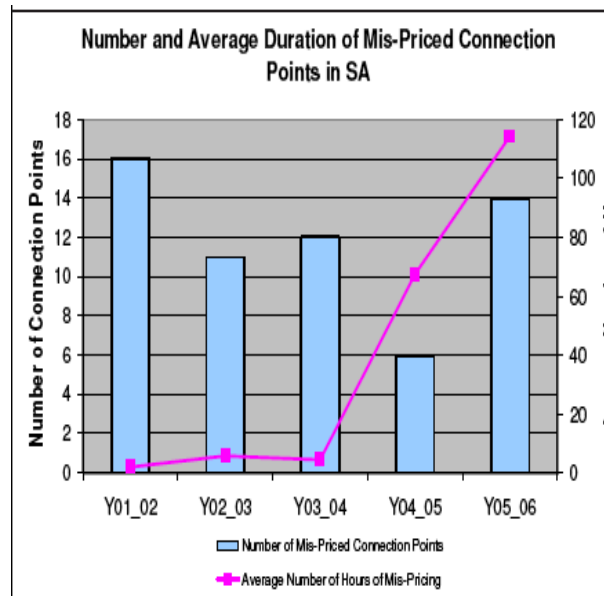
management alternatives – for example, controls on hot-water cylinders as happens in Queensland where they can shift people over by switching hot-water services. The reality is that for the size of the issue we are trying to manage in southern Tasmania, which has not had any significant augmentation for about 40 years in terms of transmission capacity into the south of the State, demand-side options do not come anywhere near the amount of support that we now need to bring into southern Tasmania".

**We need 200 MW in the south:** We need to make a step increment in capacity and the sort of capacity we would be talking about on this line would be 200 megawatts worth of capacity injection into the south of the State".

**Single-point vulnerability:** "The other reason that we came to bring this line into the south of the State is that at the moment we only have a single 220kV injection point in the south of the State at Chapel Street substation in Glenorchy and basically the whole of southern Tasmania – about 80 per cent of the 500 megawatt load – hangs off that substation. So we have a single-point vulnerability that we are keen to diversify so that if something happens to go thump in the night we have an alternative method of keeping the supply in southern Tasmania secure".

**Gordon in peak conditions:** "There are some system security issues as well as just getting energy for the south of the State. We clearly have enough capacity at the moment to serve Hobart – the lights are on, which is a

## Pelican Point goes missing from SA grid, too often?



Year	System Normal	Non conformance	NSA/Direction	N-2	Outage	Disconnected from network
01/02	0	183	0	0	0	72
02/03	0	0	131	464	0	0
03/04	0	0	94	169	183	141
04/05	0	0	2194	0	0	1409
05/06	5511	0	0	0	1804	0

Summary of binding dispatch intervals resulting in mis-pricing based on the analysis of the top 5 constraint equations binding each financial year. The N-2 column refers to constraints binding due to the loss of more than one transmission line or the loss of Pelican Point PS being declared credible. Most of the N-2 binding instances are due to the latter condition.

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**Haystack of scripts:** Binding dispatch intervals began to contribute to the incidences of mis-pricing resulting in the significant increase in 2005/06 compared to 2004/05. There was fewer incidence of mis-pricing in the initial years because many of the SA constraints were formulated as option 8 constraints (interconnector terms only on the LHS). The increase in mis-pricing in 2004/05 was due primarily to a significant increase in NSA/Direction constraints binding on the Snuggery and Port Lincoln units to manage line loading.

The number of instances of Snuggery generation being constrained on dropped considerably in 2005/06, due to the adoption of a higher 15-min rating on the Keith Snuggery line in December 2004 and reduction in line flows due to increasing generation from the Lake Bonney and Canunda wind farms.

Constraining on Port Lincoln through NSA/Direction also reduced in 2005/06, probably due to output from the Cathedral Rocks wind farm, which commenced generation in June 2005. SA constraint equations were progressively converted to fully co-optimised formulations (generator and interconnector terms on the left hand side) commencing July 2005.

Combined with this work ElectraNet SA also updated a number of limit equations to include the impact of the Lake Bonney and Canunda wind farms. The revised formulations and increased output from the wind farms resulted in the system normal transient stability equation producing a much lower limit than had previously been the case.

The V::S\_NIL constraint equation consequently bound for 4700 dispatch intervals in 2005/06. A number of other equations that had been converted to fully co-optimised formulations continued to bind for a similar number of dispatch intervals as in previous years.

However, because of the conversion to fully co-optimised formulations these binding dispatch intervals began to contribute to the incidences of mis-pricing resulting in the significant increase in 2005/06 compared to 2004/05.

great news story. We have a winter peak in Tasmania and we do have a situation at the moment where there are actually two issues:

- where the energy is coming from; and
- which power stations are generating.

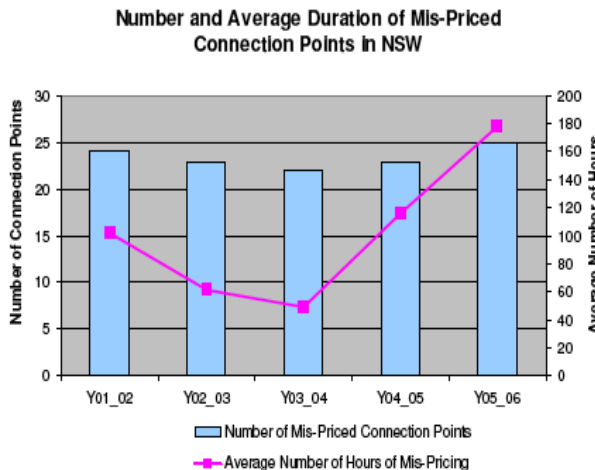
We do have a situation in the south at the moment that under peak conditions we must have Gordon Power Station in service. A competitive marketplace puts a different complexion on that aspect. The other issue we are trying to manage in southern Tasmania is voltage support because everybody expects to have 240 volts at their power point. Keeping the voltage within the tolerances is an important part of our business, and under peak load conditions we do have a problem on occasions in keeping the voltage at an adequate level. Currently we are purchasing what is called network support, keeping the voltage up from Hydro Tasmania through Gordon Power Station, because we do not have enough capacity within the network itself to provide that under peak load conditions".

Reference: Parliament of Tasmania, House of Assembly, Government Businesses Scrutiny Committee, Tuesday 6 March 2007.

## 9 Superconductors could increase grid flows, 5pc

**R**ichard Bevan, chief executive officer of Transend Networks Pty Ltd told the Parliament of Tasmania, House of Assembly, *Government Businesses Scrutiny*

## More bad prices in NSW



Year	System Normal	Non conformance	NSA/Direction	N-2	Outage	Disconnected from network
01/02	205	383	0	0	172	0
02/03	953	600	0	0	0	0
03/04	1974	129	0	0	138	0
04/05	1329	0	0	0	103	0
05/06	1318	0	0	0	227	0

*Committee*, Tuesday 6 March 2007 that all transmission businesses were looking at the "carbon footprint of the transmission business". He said: "For any power system, about 5 per cent of the power generated was lost as energy losses, primarily heat line losses, "so if we had a situation where we could reduce those losses to zero it would in fact reduce the amount of generation required by 5 per cent of the country, and, given that a fair proportion of Australia is thermally generated, that would result in a direct saving of greenhouse gases".

**High Munmorah, low constraint:** In NSW the amount of mis-pricing bottomed around 2003/04 year. There is a trend to increase the number of nodes and average duration of mis-pricing. The binding dispatch intervals in the 2001/02 period were dominated by constraints managing the flow on the Vales Pt - Munmorah (23) line during system normal and outage conditions. There is some binding on this line during outages in 02/03 and 03/04 as well, but no binding from then on.

Other than transmission outages one of the main influences on the binding of this constraint is the output from Munmorah power station which varied as follows (average output over year):

- The higher the output from Munmorah the less power would flow across the 23 line and the less likely it would be to bind.
- The 23 line sustained emergency rating also increased in late 2004 from 1370 MVA to 1429 MVA which would have contributed to a reduction in binding instances.

Between 2003/04 and 2005/06 constraints managing flow on the 82 line (and to a lesser extent the 81 line) dominated. The majority of binding dispatch intervals occurred during network outages. The main drivers in this case were increasing flow on QNI towards NSW and increasing output from Bayswater and Liddell.

**Superconductors close to zero losses:** He said: "That then brings us to opportunities like, for example, superconductors. There is a technological development under way at the moment which has been for some years – it hasn't quite got to a commercial stage yet – where you are running conductors that effectively have very close to zero losses, so again, there are technological opportunities for us to reduce our greenhouse footprint.

**Sulphur hexafluoride gas:** He said: "sulphur hexafluoride gas, oil management and transformers, fleet management, making sure

that we have fit-for-purpose vehicles would minimise the environmental footprint.”

**Reference:** Parliament of Tasmania, House of Assembly, Government Businesses Scrutiny Committee, Tuesday 6 March 2007

## PM’s 542 wind turbines

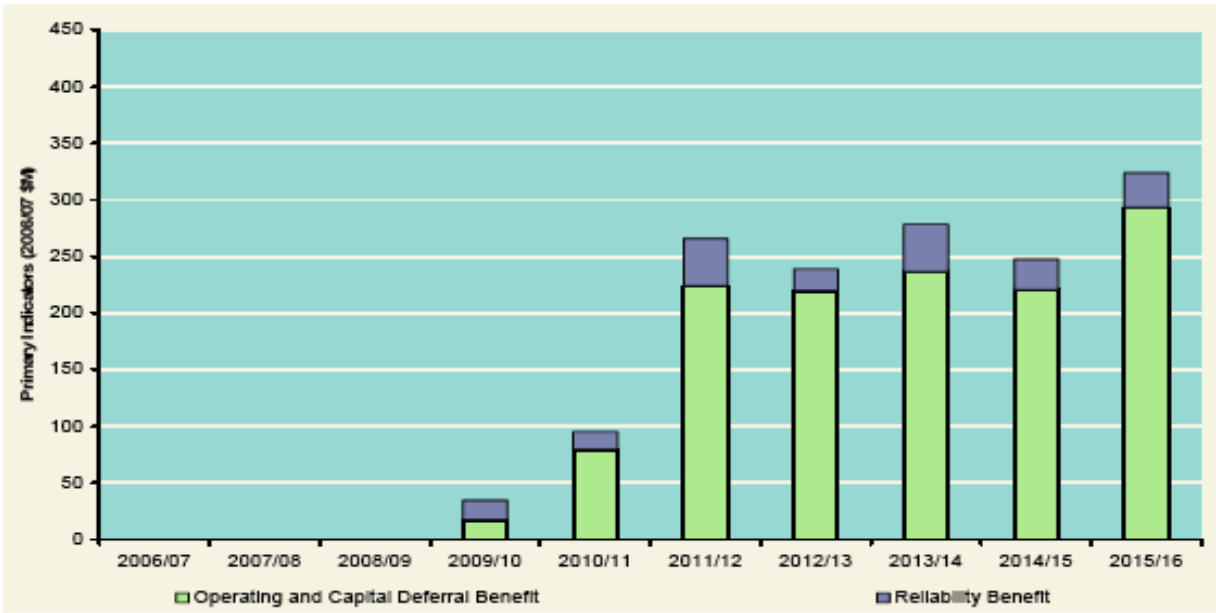
Australia currently has 542 wind turbines. Another 119 are under construction and an additional 426 have been approved for construction. Approximately another 220 are expected to be built in New South Wales, and others have been proposed in Victoria. Mark Hordon Baker, of Liberal Party representing Braddon, Tasmania, told the Federal House of Representatives the Howard government’s programs and policies had directly supported or generated investment in renewables in excess of \$312 billion.

**Reference:** House of Representatives, Votes and Proceedings, Hansard, Thursday, 1 March 2007.  
**Website:** <http://www.aph.gov.au/hansard/reps/latesthansard/rhansard.pdf> Energy efficiency workshops for mid-year; 13 Communities of Practice formed

## Feds Energy Efficiency program forms 13 groups

The manager of the mandatory Federal Energy Efficiency program plans June/ July Workshops to communicate early learnings from 13 Communities of Practice. Leaders for these groups would be announced soon.

## No mis pricing at all argues AEMC



According to the AEMC “there is no clear evidence before the Commission that mispricing due to system normal constraints is material or is having a significant adverse effect on dispatch efficiency”. The chart shows NEMMCOs calculated total market benefits for each year, broken down by reliability benefits and the combined benefits of capital deferral and operational cost savings. NEMMCO estimated the value of all congestion in the NEM (from 2009/10) onwards at \$2.2bn. The Commission understands that this does not account for any network investment beyond October 2010, even though such additional investment is likely to occur. This means that the information has limited usefulness to parties wishing to understand future likely levels or costs of congestion. It also has limited usefulness to the Commission in terms of indicating the magnitude of the likely future physical and financial trading risks associated with congestion. NEMMCO assumes that the market benefits will arise from 2009/2010 onwards as this would be the first year that any NTFP augmentation could be completed due to approval

and construction lead times. The significant increase from 2010/11 to 2011/12 is because 2011/12 is assumed to be the first year that benefits from deferring generation projects can be realised.

*Data source: NEMMCO, Statement of Opportunities 2005, Figure 8.2, section 8-13*

*AEMC 2007, Directions Paper, Congestion Management Review, 12 March 2007, Sydney*

*12 March 2007 Submissions should be received no later than 13 April 2007.*

*Submission can be sent electronically to [submissions@aemc.gov.au](mailto:submissions@aemc.gov.au) or by mail to: Australian Energy Market Commission PO Box H166 Australia Square NSW 1215 T: (02) 8296 7800 F: (02) 8296 7899. <http://www.aemc>.*

**Energy data managers:** The newsletter said these workshops were for corporate or central office staff responsible for establishing internal systems and preparing corporate information for the program. Workshops were planned for Brisbane, Sydney, Melbourne, Adelaide and Perth.

**Communities of Practice topics were:**

- Energy Efficiency Opportunities for Mobile Equipment;
- Systems Analysis Fluid & Energy (SAFE);
- Tracking energy efficiency projects and reporting;
- Representational assessments;
- Onsite generation, co-generation, and utilisation of waste streams;
- Energy conservation through control;
- New design assessment;
- Hunter energy efficiency group;
- Mobile mining equipment Queensland;
- Sugar milling;
- Regional Queensland Energy Efficiency Opportunities participants;
- Meat Industry; and
- Data capture and analysis techniques.

A total of 471 people attended the two-day assessment workshops held in November and December last year. One-day workshops will be offered June and July to help complete assessments and reporting schedules and

meet the public reporting requirements of the program, due to start 1 July.

**Contact:** Dianne Vivian, ph: 1300 799 186, email: [dianne.vivian@industry.gov.au](mailto:dianne.vivian@industry.gov.au). **Reference:** Energy Efficiency Opportunities, Newsletter No.7, website: <http://www.energyefficiencyopportunities.gov.au>

## Monday, 12 March: Qld demand record: \$2231 spike

Queensland recorded spikes of between \$114.51/MWh and \$2231.58/MWh in 13 30-minute trading intervals between 1100EST and 1700EST on Monday, 12 March.

**Record broken by 211MW:** The spikes came as the Queensland demand record was smashed by 211MW (2.5 per cent), reaching 8589MW, compared to the previous record of 8378MW on 29 January this year.

**37 degrees in Brisbane:** Brisbane continued to have extremely hot weather with a top temperature of 37 degrees, following 38 on Sunday.

**How prices moved:** The following table shows how prices moved in the spike intervals:

Trading Interval	Price
1100EST	\$114.51/MWh
1130EST	\$263.98/MWh
1200EST	\$1046.82/MWh
1230EST	\$289.79/MWh
1300EST	\$2231.58/MWh
1330EST	\$834.11/MWh
1400EST	\$127.47/MWh
1430EST	\$266.02/MWh
1500EST	\$293.91/MWh
1530EST	\$265.24/MWh
1600EST	\$265.23/MWh
1630EST	\$890.62/MWh
1700EST	\$120.96/MWh

## AER blames transmission outages

	Total Cost of Constraints (TCC)	Outage Cost of Constraints (OCC)	OCC as % TCC	TCC Index (2003/04=100)	OCC Index (2003/04=100)
2003/04	\$36m	\$9m	25%	100	100
2004/05	\$45m	\$16m	35%	125	178
2005/06	\$66m	\$27m	41%	183	300

The AER reported that the number of network constraints significantly affecting interconnector flows has increased from 5 in 2003/04 to 32 in 2005/06, while the number of constraints that affected market outcomes within regions on the mainland has also increased from 5 to 9 over the previous three years. The AER indicators and shows that dispatch costs have been increasing over the three year period and that an increasingly significant proportion of the costs is related to transmission outages. The AER has indicated that the majority of the Total Cost of Constraints (TCC) occurs on a few days of the year. For 2005/06, 66 per cent of the TCC occurred on just 10 days. For 2004/05, 70 per cent of the TCC was accumulated on just 7 days. For 2003/04, 60 per cent occurred on just 9 days of the year.

*Data source: AER Indicators of the market impact of transmission congestion, Report for 2003/04, 9 June 2006; Report for 2004/05, 10 October 2006, and Report for 2005/06, February 2007.*

*AEMC 2007, Directions Paper, Congestion Management Review, 12 March 2007, Sydney 12 March 2007. Submissions should be received no later than 13 April 2007. Submission can be sent electronically to [submissions@aemc.gov.au](mailto:submissions@aemc.gov.au) or by mail to: Australian Energy Market Commission PO Box H166 Australia Square NSW 1215 T: (02) 8296 7800 F: (02) 8296 7899. <http://www.aemc>.*

**Reference: National Price for Queensland for one day, Monday 12 March, in Price/Demand section of Erisk Net – Realtime NEM Data. <http://www.erisk.net>**

## Transmission congestion, creates volatility of wholesale prices in spot market: Productivity Commission

What needed to be addressed, were “impediments to efficient transmission investment that existed in the regulatory arrangements governing network operation and investment”, as congestion in the transmission system, both within states and especially between them, exacerbated the volatility of wholesale prices in the spot market, the Productivity Commission said in its report on *Potential benefits of the National Reform Agenda (NRA)*.

**Reference: Report by Productivity Commission on “Potential benefits of the National Reform Agenda (NRA)”. 28 February 2007. Address: Level 3, Nature Conservation House, Corner Emu Bank and Benjamin Way, Belconnen. ACT. 2617. PO Box 80, Belconnen, ACT 2616. Phone: (02) 6240 3200. Fax: (02) 6240 3399. <http://www.pc.gov.au>**

## Overview of 2005/2006: no generation constraint, AEMC

The Reliability Panel of AEMC reported four significant power system events in 2005/2006, but said all were multiple contingent events where many network elements were simultaneously unavailable to transport energy.

**All well on the generation front:** Although these events resulted in unserved energy they were not due to a lack of reliability as defined under the reliability standard which is concerned with a lack of generation capacity.

**No reliability event during 2005/2006:** No strictly reliability events occurred during 2005/2006. The Reliability Panel acknowledged that consumers were unlikely to differentiate between the causes of unserved energy in this technical way.

**They were as follows:**

- **1.267MW under voltage shedding in Tasmania:** On 25th November 2005, an electrical storm resulted in both Sheffield to Georgetown 220kV circuits and the Sheffield 220kV bus tripping. Around 267MW of automatic under-voltage load shedding occurred in Tasmania as a result.
- **Cyclone Larry disrupts network, loss of consumer load:** On 20th March 2006, Cyclone Larry resulted in multiple (12) unplanned outages of the 132kV transmission lines and numerous outages of the distribution network resulting in significant losses of customer load in Queensland.
- **Fault on Boyne island to Gladstone line:** On 21st April 2006, the near simultaneous trip of Boyne Island number 2 potline, number 2 and number 6, 132kV buses at Boyne Island substation, and the Gladstone number 3 generator occurred

## Nodal prices good for Qld: IES

Scenario	Dispatch Cost Savings	Generation Capital Cost Saving	Transmission Investment Savings	Total Cost Savings
Locational pricing	-58.06	130.8	121.91	194.5
Locational pricing with congestion levy	-365.52	464.06	123.98	222.5

IES found that the nodal pricing option for Queensland would result in generation replacing transmission upgrades. Results from IES modelling on the comparison of total savings of introducing locational pricing and congestion levies, Queensland region (\$m NPV for 2006/07 to 2020/21) The study estimated an overall benefit \$194.65m (net present value (NPV)) in efficiency savings from introducing nodal pricing to the Queensland region of the NEM. Although the results for scenario (a) show an increase in the overall dispatch costs caused by increased generation from relatively more expansive plant, this was more than offset by significant reductions in transmission and generation capital costs. IES estimates that benefit, based on only the changes to pricing in Queensland, would increase to \$222m (NPV) with the addition of congestion levies on new generation.

Who says so: 22 December 2006, the LATIN Group presented a report entitled Modelling of Transmission Pricing and Congestion Management Regime, prepared by Intelligent Energy Systems (IES)

*AEMC 2007, Directions Paper, Congestion Management Review, 12 March 2007, Sydney 12 March 2007. Submissions should be received no later than 13 April 2007. Submission can be sent electronically to [submissions@aemc.gov.au](mailto:submissions@aemc.gov.au) or by mail to: Australian Energy Market Commission PO Box H166 Australia Square NSW 1215 T: (02) 8296 7800 F: (02) 8296 7899. <http://www.aemc>.*

following a fault on the Boyne Island to Gladstone 132kV transmission line in Queensland.

• **Butlers Gorge and Bastyan power stations disconnected:** On 23rd May 2006, disconnection of the Butlers Gorge and Bastyan power stations, generating unit number 2 at Gordon power station and generating units numbers 1, 2 and 3 at Wayatinah power station, the initial runback and subsequent increase of output at the Tungatinah power station and the shedding of 240MW of load following the initiation of Under Frequency Load Shedding (UFLS).

Reference: National Electricity Market Management Company Limited, Minutes of National Electricity Market Information Forum - No. 75, 25 October 2006, p. 4. This document is available at <http://www.nemmco.com.au/nemgeneral/057-0322.pdf>

## Transfers of small SA electricity customers down 769 (4.5pc) in February

**T**ransfers of small South Australia electricity customers to market contracts dropped 769 (4.5 per cent) in February to 16,275 on January's 17,044, according to the latest National Electricity Market Management Company (NEMMCO) figures.

**Replacement for ESCOSA figures:** The NEMMCO figures, which use national meter identified (NMI) totals, replaced the figures previous put out by the Essential Services Commission (ESCOSA) until September 2006.

**January total highest since NEMMCO took over:** The NEMMCO figures show that 16,275 small customers were transferred in February, compared to January's 17,044 which was the highest total since NEMMCO began issuing the figures.

**467,741 small customer transfers:** The February transfers took the total of small electricity customers transferred to 467,741.

**Big drop in transfers of large customers:** The 35 transfers of large electricity customers in February was down 124 (78.0 per cent) on the 159 in January. At the end of February the total of large electricity customers transferred was 3120.

**Combined total now 470,861:** The combined total of small and large electricity customers at the end of February 2007 was 470,861, compared to 454,551 at the end of December.

**Same definition of small customer:** While both NEMMCO and ESCOSA defined a small electricity customer as using less than 160MWh a year, the ESCOSA figures referred to the number of completed small customer transfers to a market contract for electricity either with AGL SA or an alternative retailer for each month.

**NEMMCO figures include large electricity customers:** Another difference in the two sets of figures is that NEMMCO estimates transfers of large electricity customers on a monthly basis while ESCOSA did not provide these figures.

**How customers are classified:** NEMMCO said the transfers represented the total for both small and large national meter identifier (NMI) figures. A small NMI was classified as having less than 160MWh of consumption a year while a large NMI was a customer having more than 160MWh consumption a year.

**Breakdown of transfers:** The following table shows the latest figures supplied for small and large electricity customer transfers by NEMMCO for South Australia.

Month	Small customer transfers	Progressive	Large customer transfers	Progressive	Total all customers
September 2006	-	386,813	-	-	389,645
October 2006	15,396	402,209	24	2856	405,065
November 2006	16,458	418,667	36	2892	421,559
December 2006	15,755	434,422	34	2926	437,348
January 2007	17,044	451,466	159	3085	454,551
February 2007	16,275	467,741	35	3120	470,861

Reference: National Electricity Market Management Company (NEMMCO) MSATS (market settlement and transfer solutions) retail transfer statistical data for customers in South Australia for February 2007, 6 March 2007. Address: Level 16, 461 Bourke Street, Melbourne, Vic 3000. Ph: (03) 9648 8777. Fax: (03) 9648 8778. <http://www.nemmco.com.au>

## Vic transfers of small electricity customers continue upward trend: 54,664 in Feb

**T**he 54,664 Victorian transfers of small electricity customers in February 2007 were up 1263 (3.4 per cent) on the

53,401 in January, according to the latest National Electricity Market Management Company (NEMMCO) transfer figures.

**Higher than any month in 2006:** Like January 2007, the February total was higher than any month in 2006, when the highest monthly total was October's 51,046.

**13,522 more than February 2006:** The February 2007 transfers to market contracts were up 13,522 (32.9 per cent) on the 41,142 in February 2006.

**Small customer transfers now 1,825,760:** February's transfers took the total of small electricity customer transfers to 1,825,760 compared to 1,771,096 at the end of January and 1,241,589 at the end of February. (See Note at end of table).

**Large customer transfers continue to fall:** Transfers of large electricity customers continued to fall in February with the total of 119 being down 217 (64.6 per cent) on the 336 in January. They were up 18 (17.8 per cent) on the 101 in February 2006.

**Large transfers now total 22,217:** The January transfers of large customers took the total to 22,217, compared to 22,098 at the end of January. Transfers of large electricity customers at the end of February 2006 totalled 18,251.

**Combined total at 1,847,977:** The combined total of transfers of small and large electricity customers at the end of February was 1,847,977 compared to 1,793,194, at the end of January.

**How customers are classified:** NEMMCO said the transfers represented the total for both small and large national meter identifier (NMI) figures. A small NMI was classified as having less than 160MWh of consumption a year while a large NMI was a customer having more than 160MWh consumption a year.

**Breakdown of transfers:** The following table shows total transfers of large and small customers for January and February 2007 with the 12 months in 2006 given for comparison purposes.

Time	Small Customers	Progressive	Large customers	Progressive	Total all customers
January 2006	37,890	1,200,447	217	18,150	1,218,597
February 2006	41,142	1,241,589	101	18,251	1,259,840
March 2006	46,444	1,288,033	101	18,352	1,306,385
April 2006:	39,408	1,327,441	86	18,438	1,345,879
May 2006:	50,892	1,378,333	110	18,548	1,396,881
June 2006:	44,941	1,423,274	110	18,658	1,441,932
July 2006	45,909	1,469,183	927	19,585	1,488,768
August 2006	48,103	1,517,286	240	19,825	1,537,111
September 2006	49,857	1,567,143*	167	19,992	1,587,135
October 2006	51,046	1,618,189*	169	20,161	1,638,350*
November 2006	48,884	1,667,073	170	20,331	1,687,404
December 2006	50,622	1,717,695	1431	21,762	1,739,457
January 2007	53,401	1,771,096	336	22,098	1,793,194
February 2007	54,664	1,825,760	119	22,217	1,847,977

Note: The figures have been adjusted for errors in the NEMMCO totals that began with wrong additions in September October and have not been corrected in this data.

**Reference:** National Electricity Market Management Company (NEMMCO) MSATS (market settlement and transfer solutions) retail transfer statistical data for customers in Victoria for February 2007. 6 March 2007. Address: Level 16, 461 Bourke Street, Melbourne. Vic. 3000. Phone: (03) 9648 8777. Fax: (03) 9648 8778. <http://www.nemmco.com.au>

## 33,286 transfers of small NSW electricity customers higher than any month in 2006

**T**ransfers of small electricity customers jumped sharply in February, rising 4436 (15.4 per cent) to 33,286 compared to 28,850 in January, NEMMCO figures showed.

**Highest month in 2006 was May's 32,564:** The February total of 33,286 was higher than any month in 2006, with May's 32,564 being the top month.

**Up 9602 on February 2006:** The 2007 February transfers were up 9602 (40.5 per cent) on the 23,684 transfers in February 2006.

**Total small customer transfers at 880,127:** Total small customer transfers at the end of February was 913,413, compared to 880,127 at the end of January and 565,137 at the end of February 2006.

**Transfers of large customers plunge:** Transfers of large electricity customers plunged 591 (88.1 per cent) to 80 in February, compared to 671 in January. February's transfers's were down 6 (7.0 per cent) on the 86 in February 2006.

**Total for large customers now 22,911:** The transfers in January 2007 took the total of large customer transfers to 22,911.

**Combined transfers now 936,324:** The combined total of small and large customer

transfers at the end of February was 936,324, compared to 902, 958 at the end of January and 585,333 at the end of February 2006.

**How customers are classified:** NEMMCO said the transfers represented the total for both small and large national meter identifier (NMI) figures. A small NMI was classified as having less than 160MWh of consumption a year while a large NMI was a customer having more than 160MWh consumption a year.

**Breakdown of transfers:** The following table shows transfers of large and small customers for January and February 2007 and all 12 months in 2006 for comparison purposes.

Time	Small Customers	Progressive	Large customers	Progressive	Total all customers
31 December 2005	20,352	519,571	136	19,399	538,970
31 January 2006	21,882	541,453	711	20,110	561,563
28 February 2006	23,684	565,137	86	20,196	585,333
31 March 2006	27,031	592,168	63	20,259	612,427
30 April 2006	22,262	614,430	77	20,336	634,766
31 May 2006:	32,564	646,994	75	20,411	667,405
30 June 2006:	28,377	675,371	67	20,478	695,849
July 2006	28,267	703,638	868	21,346	724,984
August 2006	29,742	733,380	197	21,543	754,923
September 2006	28,460	761,840	131	21,674	783,514
October 2006	31,682	793,522	187	21,861	815,383
November 2006	31,421	824,943	126	21,987	846,930
December 2006	26,334	851,277	173	22,160	873,437
January 2007	28,850	880,127	671	22,831	902,958
February 2007	33,286	913,413	80	22,911	936,324

**Reference: National Electricity Market Management Company (NEMMCO) MSATS (market settlement and transfer solutions) retail transfer statistical data for customers in NSW for February 2007. 6 March 2007. Address: Level 16, 461 Bourke Street, Melbourne. Vic. 3000. Phone: (03) 9648 8777. Fax: (03) 9648 8778. <http://www.nemmco.com.au>**

## 3202 futures contracts traded in week to 5 March, d-cypha Trade summary shows

**A** total of 3202 contracts were traded in the week to Monday, 5 March, the d-cypha Trade/Sydney Futures Exchange (SFE) weekly summary shows.

**Up 86.1 per cent on previous week:** This was up 1481 (86.1 per cent) on the 1721 the previous week, but below the record of 4366 contracts traded in the week ending 22 January, 2007.

**Types of contracts:** The summary shows the 3202 contracts were made up 2832 base futures, 215 peak futures and 155 caps.

**Open interest records:** It said open interest (including caps and options) continued to set records with 30,026 (60,052 buy and sell sides) at the close of business on 5 March involving a total of 68.1 megawatt hours (MWh).

**Statistics for the week:** The summary showed:

- 3202 futures contracts were traded.
- 55 calendar options were traded.
- 0 quarterly options were traded.
- 0 volume of exchange for physicals (EFP).
- 1635 volume of block trades.
- Total MWh traded for week of 7,236,195.

- Open interest (including caps and options) of 30,026 at close of business on Monday, 5 March, involving about 68.1 million MWh.

**February statistics:** The summary said futures and options volumes in February 2007 were equivalent to 131 per cent of NEM system demand (NSW, Victoria, South Australia and Queensland).

**Reference: Trading summary for week to 5 March for electricity futures operated by d-cypha Trade. Address: Level 32, ABN AMRO Tower. 88 Phillip Street. Sydney. NSW. 2000. Phone: (02) 8211 0615. Fax: (02) 8211 0640. <http://www.d-cypha.com.au>**

## Electricity tariffs in Aust jurisdictions range from \$65 to \$147/MWh, Productivity Commission report shows

**E**lectricity tariffs in 2004/05 and 2005/06 varied from \$65 to \$147 a megawatt hour (MWh), the Productivity Commission showed in its report on "Potential benefits of the National Reform Agenda (NRA)".

**How the table was compiled:** In a table in the report on average electricity tariffs, cost components and shares, 2004/05 and 2005/06, the Productivity Commission said its material on tariff by component and using region was based on extrapolation of 2003/04 tariff data from the Electricity Supply

Association of Australia (ESAA) to the reference period using ABS electricity consumer and producer price indexes.

**Tasmania the lowest, NT the highest:** The table showed the various total tariffs as:

- Tasmania, \$65/MWh;
- NSW \$86/MWh;
- Queensland, \$88/MWh;
- Victoria, \$102/MWh,
- Australian Capital Territory, \$106/MWh;
- Western Australia, \$116/MWh;
- South Australia, \$138/MWh; and
- Northern Territory, \$147/MWh.

**Australian average at \$95/MWh:** The Australian average weighted by the quantities of electricity consumption in the individual jurisdictions was \$95/MWh.

**Breakdown of costs into components:** The table showed the components of the total tariff by generation, transmission and distribution, and retail. Transmission was given separately for the NEM regions but not for the other jurisdictions and in the following table all are included as distribution.

State	Generation (\$/MWh)	Distribution (\$/MWh)	Retail (\$/MWh)
NSW	\$44	\$37	\$5
Victoria	\$39	\$52	\$11
Queensland	\$40	\$42	\$6
South Australia	\$49	\$76	\$13
Western Australia	\$68	\$36	\$13
Tasmania	\$29	\$30	\$6
Northern Territory	\$96	\$46	\$6
Australian Capital Territory	\$49	\$48	\$10
Australia	\$44	\$44	\$8

Reference: Report by Productivity Commission on “Potential benefits of the National Reform Agenda (NRA)”, 28 February 2007. Address: Level 3, Nature Conservation House, Corner Emu Bank and Benjamin Way, Belconnen, ACT 2617; PO Box 80, Belconnen, ACT 2616. Phone: (02) 6240 3200. Fax: (02) 6240 3399. <http://www.pc.gov.au>