

Retailers risk bill of \$10 billion, p3

High-price risk forecast for Qld, Vic, SA, p13

Ministers plan intervention in Snowy Hydro, p5

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THE ENERGY RETAILER'S POOR HOUSE...



April pool price up 150 to 280 per cent - if rise sustained - retailer-insolvencies, ahead

Energy Australia would not be able to pay its bills, and would go into receivership, said Sean Kelly of AGL, if the 2007 - 2010 price-rises were sustained. Integral Energy was also exposed to the same risk.

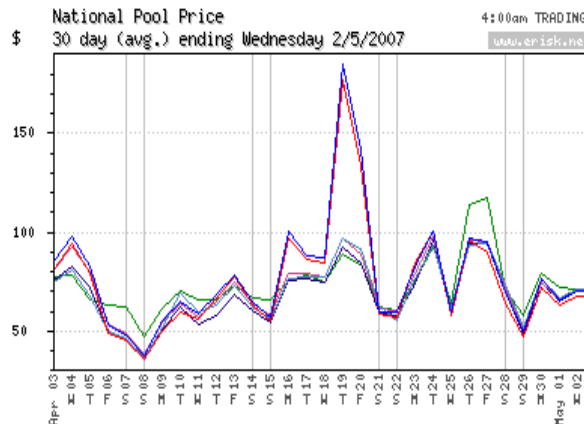
California crisis recalled: California came to mind, as the 2007 Q1 spike in prices, recorded an April 2007 pool price up 150 to 280 per cent on April 2006. (*see details, inside*) Similar price

rises in California pushed three retailers and the market operator, into insolvency.

AGL says retailers will go bust: Sean Kelly of AGL – in his case for higher NSW tariffs and fees for retailers – told IPART of a fundamental shift in the wholesale market across the NEM. “It’s not just a shift in the New South Wales market”, he said:

- current flat swaps in Queensland, for example, as at '07-08 had increased by 100 per cent in 20 the last three months;

April price up 150 to 280pc



	Avg.	High	Low	Peak	Offpk
NSW disp Pool Price (\$)	78.19	185.44	37.91	99.63	61.58
QLD disp Pool Price (\$)	75.13	177.02	35.39	96.26	58.75
SA disp Pool Price (\$)	69.76	96.67	36.82	81.78	60.99
Snowy disp Pool Price (\$)	71.37	98.36	38.14	83.73	62.56
VIC disp Pool Price (\$)	68.05	96.40	35.69	80.53	58.73
TAS disp Pool Price (\$)	73.66	117.93	47.68	81.88	68.64

contents

- 3 Retailers risk bill of \$10 billion
- 4 Snowy Hydro claims Tumut 3 pumping enables Snowy to meet electricity contracts
- 5 Water force majeure, stage 2: Ministers plan intervention in Snowy Hydro arrangements
- 5 Strategic water reserve for 2007-08 dry scenario
- 7 Water force majeure crisis
- 8 NEM price rocket: April 2007 up 150 to 280 per cent
- 9 Force majeure for Murray Darling Basin and Snowy Hydro water contracts
- 10 Lowest April 2007 average price of \$67.77/MWh is \$9.38 over previous high (in 1999)
- 11 Spikes on 26 of 30 days in April, with all six regions affected for record 12 straight days, analysis shows

Find out more at the subscriber section of www.erisk.net

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Top generator average price for NEM week, Mackay, Qld \$135.22

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TAS			
Generator	Income (\$)	Output (MWh)	Av Price (/MWh)
Liap/Way/Cat	\$1,015,517	11,382	\$89.22
Bell Bay Power	\$1,540,292	18,551	\$83.03
John Butters	\$1,206,047	11,894	\$101.40
Tungatinah	\$720,221	7,321	\$98.38
Poatina	\$2,837,330	26,354	\$107.66
Tarraleah	\$693,804	8,119	\$85.45
Reece	\$956,846	8,922	\$107.25
Cethana	\$191,084	1,377	\$138.74
Tribute	\$235,915	1,936	\$121.87
Lemonthyme/Wilmot	\$188,711	1,586	\$118.99
Trevallyn	\$358,126	3,743	\$95.69
Mackintosh	\$297,804	3,095	\$96.23
Bastyan	\$308,485	3,131	\$98.51
Woolnorth Wind	-	-	-
Gordon	\$4,920,204	56,260	\$87.46
Vic->Tas	\$1,944,966	31,169	\$62.40
Devils Gate	-	-	-
Fisher	\$7,773	85	\$91.09
Meadowbank	149613.603	1864.57	\$80.24
Lake Echo	335577.1046	3914.155	\$85.73
Repulse	-	-	-
Paloona	-	-	-
Cluny	-	-	-

- increases in the hedging contract prices were not just for '07-08, but through '08-09 and '09-10.

Case to make small users pay more: Kelly said the AGL energy trading trader had told him flat swaps for New South Wales in 2009-10 were sitting at \$50 per megawatt hour. Under the proposed (IPART) tariff for 2009-10, the price that's actually quoted as the market base price was actually only:

- 20 cents higher than the long-run marginal cost for Integral Energy;

SA			
Generator	Income (\$)	Output (MWh)	Av Price (/MWh)
North'n Power	\$6,622,175	88,080	\$75.18
Ladbroke	\$189,261	1,885	\$100.39
Osborne	\$2,202,117	28,835	\$76.37
Pelican Pt	-	-	-
Torrens Is. B	\$5,078,155	62,872	\$80.77
Vic->SA	\$670,565	10,495	\$63.89
MLink->SA	\$5,932	84	\$71.03
Torrens Is. A	\$1,379,773	15,757	\$87.57
Mintaro	\$303,881	2,947	\$103.11
Dry Creek	\$136,081	1,289	\$105.61
Playford	\$1,113,061	14,738	\$75.52
Snuggery	-	-	-
Pt Lincoln	-	-	-
Quarantine	\$31,532	323	\$97.76
Angaston Power	-	-	-
Hallett Power	\$1,067,646	11,513	-
Lonsdale	-	-	-
Terminal Storage	-	-	-
Lake Bonney Wind	-	-	-

VIC			
Generator	Income (\$)	Output (MWh)	Av Price (/MWh)
Loy Yang A	\$15,283,065	208,532	\$73.29
Loy Yang B	\$13,244,734	176,355	\$75.10
Hazelwood	\$16,858,925	224,171	\$75.21
Yallourn	\$13,982,757	186,178	\$75.10
Anglesea	\$1,889,644	25,172	\$75.07
Energy Brix	\$1,641,011	21,757	\$75.43
Newport	\$4,708,404	59,847	\$78.67
MLink->Vic	\$286,662	3,310	\$86.61
SA->Vic	\$830,010	8,396	\$98.86
Snowy->Vic	\$719,818	7,794	\$92.36
Tas->Vic	\$921,127	8,684	\$106.08
Jeeralang	\$263,297	2,472	\$106.50
West Kiewa	\$55,043	561	\$98.09
Bairnsdale	\$1,032,377	13,652	\$75.62
Dartmouth	-	-	-
Eildon	\$158,621	1,832	\$86.59
Hume Vic	-	-	-
McKay Power	\$11,594	126	\$91.70
Clover	-	-	-
Valley Power	\$885,763	8,800	\$100.66
Rubicon	-	-	-
Laverton North	2434607.805	28698.415	-
Somerton Power	814295.5835	8363.845	-
Sunshine Energy	-	-	-
Longford	-	-	-

NSW			
Generator	Income (\$)	Output (MWh)	Av Price (/MWh)
Bayswater	\$15,276,784	190,889	\$80.03
Liddell	\$21,437,094	271,633	\$78.92
Mt Piper	\$15,533,992	194,257	\$79.97
Wallerawang	\$8,472,851	109,278	\$77.53
Vales Point	\$8,110,955	103,823	\$78.12
Munmorrah	\$1,892,793	27,057	\$69.96
Eraring	\$25,377,669	323,633	\$78.41
Redbank	\$1,627,479	19,146	\$85.00
Smithfield	\$1,622,943	18,856	\$86.07
Snowy->NSW	\$8,912,614	87,501	\$101.86
Shoalhaven	\$852,140	12,631	\$67.46
Hunter Valley	\$1,378	14	\$99.03
Hume Hydro	-	-	-
Blowering	-	-	-
Northern Gas	-	-	-
Burrinjuck	-	-	-
Brown Mountain	-	-	-
Keepit	-	-	-
Broken Hill	-	-	-
Ergon Energy	-	-	-
DL Q->N	\$734,517	9,671	\$75.95
QLD->NSW	\$4,873,490	63,741	\$76.46
Pindari Hydro	-	-	-
West Nowra	-	-	-
Country En (NSW)	-	-	-

QLD			
Generator	Income (\$)	Output (MWh)	Av Price (/MWh)
Tarong	\$9,847,415	127,669	\$77.13
Millmerran	\$10,893,546	143,546	\$75.89
Swanbank	\$3,486,738	43,539	\$80.08
Stanwell	\$15,439,366	200,478	\$77.01
Callide B	\$5,333,516	75,835	\$70.33
Callide Power	\$11,134,094	146,170	\$76.17
Townsville	\$2,288,817	29,199	\$78.39
Gladstone	\$13,956,893	169,928	\$82.13
Collinsville	\$1,680,422	19,960	\$84.19
Swanbank C_D_E	\$1,590,463	16,882	\$94.21
Barcaldine	\$264,052	2,343	\$112.68
Callide A	-	-	-
Kareeya	\$1,101,056	14,576	\$75.54
Barron Gorge	\$198,963	2,384	\$83.44
Mt Stuart	-	-	-
Wivenhoe	\$1,732,706	24,185	\$71.64
Braemar Power	\$3,904,469	47,256	\$82.62
Mackay	\$3,032	22	\$135.22
Roma	\$298,519	2,696	\$110.71
Oakey	\$4,062	34	\$117.92
DL N->Q	-	-	-
NSW->QLD	\$37,059	337	\$109.81
Rocky Point	-	-	-
Tableland	-	-	-
Stapylton	-	-	-

2

- actually 34 – 30 cents lower than the long-run marginal cost for Energy Australia.

Unprecedented drought spike:

Unprecedented pool and contract price rises across the National Electricity Markets meant “California comes to mind”, Tony Steinke, Frontier Economics, told an NSW conference on electricity price rules. Steinke said “changes in the contract prices that we have seen in the market ... are probably unprecedented in terms of the NEM and in the world we have not seen price increases of this magnitude happening very often”.

Small consumers must pay more - retailers:

The comments were made in the context of the NSW regulators plan to raise NSW small user electricity prices by 20 per cent or more and pass through pool prices as a “volatility” fee.

Demand down everywhere but Tas: Average demand in April dropped between 112MW and 651MW (5.1 per cent to 9.7 per cent) in mainland regions and rose 27MW (2.5 per cent) in Tasmania.

Huge increases in April 2006: Average prices were up \$39.78/MWh to \$57.61/MWh (150 to 280 per cent) on April 2006 when they were between \$20.60-\$33.33/MWh.

Retailers risk bill of \$10 billion

Participants are required to top up their credit to NEMMCO to stay under their Trading Limit to avoid receiving a Call

3

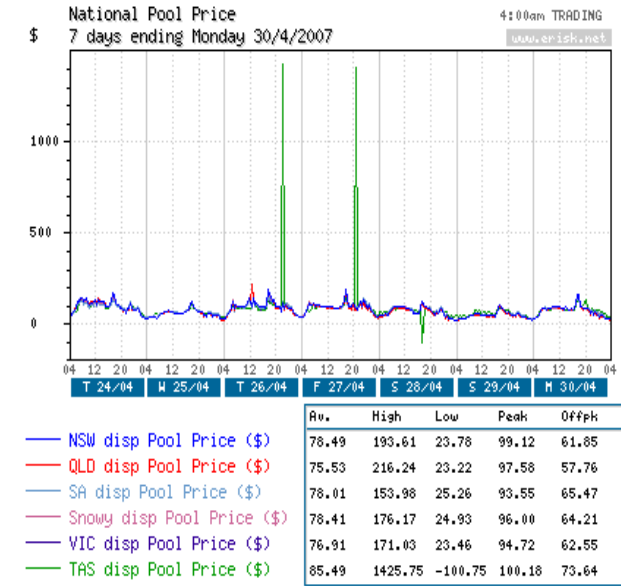
the week in detail

• **NSW:** Average price \$80.73/MWh down 22 per cent on the spike-affected \$102.89/MWh the previous week, up 277 per cent on the \$21.39/MWh of the comparable week last year; maximum price \$218.07/MWh for the 30-minute trading interval ended 1800EST Monday. Average demand 8315MW, down 9MW on the previous week, up 1.0 per cent on a year ago; maximum demand 10,252MW in the 1800EST Friday interval, up 2.7 per cent on the 9980MW the previous week.

• **Victoria:** Average price \$78.03/MWh up 5 per cent on the spike-affected \$74.02/MWh the previous week, up 258 per cent on the \$21.89/MWh of the comparable week last year; maximum price \$171.03/MWh for the 30-minute trading interval ended 1800EST Friday. Average demand 5475MW, down 2.9 per cent on the previous week, down 3.4 per cent on a year ago; maximum demand 6715MW for the 1830EST Monday interval, up 0.5 per cent on the 6682MW the previous week.

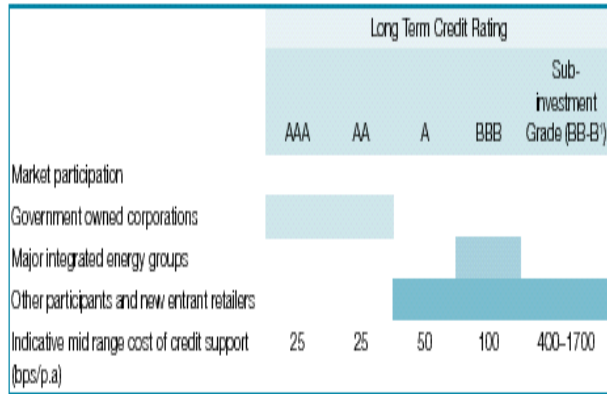
• **South Australia:** Average price \$78.54/MWh, up 2 per cent on the spike-affected \$77.04/MWh the previous week, up 208 per cent on the \$25.51/MWh the comparable week last year, maximum price \$153.98/MWh for the trading interval ended 1800EST Thursday. Average demand 1354MW, down 6.9 per cent on the previous week, up 1.0 per cent on a year ago; maximum demand 1802MW for the 190EST Thursday interval, up 1.7 per cent on the 1772MW the previous week.

• **Queensland:** Average price \$78.70/MWh, down 21 per cent on the spike-affected \$99.14/MWh the previous week, up 315 per cent on the \$18.95/MWh of the comparable week last year; maximum price \$237.02/MWh for the trading interval ended 1800EST Monday. Average demand 5740MW down 1.6 per cent on the previous week, up 3.3 per cent on a year ago; maximum demand 6882MW for the 1800EST Monday interval, down 0.9 per cent on the 6945MW the previous week.



• **Tasmania:** Average price \$85.40/MWh, up 13 per cent on the spike-affected \$75.89/MWh the previous week, up 219 per cent on the \$26.81/MWh of the comparable week last year; maximum price \$1425.75/MWh for the trading interval ended 2230EST Thursday. Average demand 11488MW, up 4.6 per cent on the previous week, up 8MW on a year ago; maximum demand 1453MW for the 0830EST Tuesday interval, up 4.5 per cent on the 1390MW the previous week.

Cost of NEM risk, by rating



Source: NEMMCO submission, KPMG analysis

Notice. Participants need to have credit support accessible in addition to their existing arrangements should the market cap price of \$10,000/MWh be reached for an extended period and a call notice received. Theoretically, the maximum possible increase in exposure in a day would be about...

- \forall LL x NEM max energy in 7.5 hours;
- $\$10,000 \times 7.5 \times 32,000\text{MW} = \$2.4 \text{ billion};$
- limited to about 7.5 hours of \forall LL due to the operation of the Cumulative Price Threshold (CPT).

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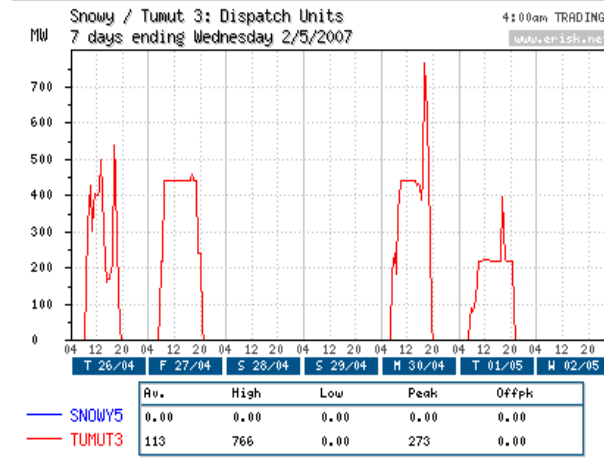
As the CPT is a seven day assessment, over four weeks this could conceivably rise to nearly \$10 billion until a party were able to collect on its contract payments to offset the NEMMCO call. While NEMMCO has not issued a call notice since December 2001, parties need to be prepared to manage a call notice, or a requirement to maintain trading

amounts under trading limits within a very short time frame.

Snowy Hydro claims Tumut 3 pumping enables Snowy to meet electricity contracts

Terry Charlton, Managing Director, Snowy Hydro Limited said Snowy could “recycle of water through Tumut 3 Power Station without losing the water in the Scheme and the use of our gas fired generation in Victoria to further enable conservation of water”.

Can meet all water, electricity contracts: Snowy Hydro reiterated that it is confident that even if the current drought continues it will be able to at least meet its electricity and water commitments this winter and into next summer. Mr Charlton said: Unfounded speculation that Snowy Hydro will need to shut



Churn to October 2006

State	Cumulative number of small customer transfers to October 2006	Transfers as a percentage of total customers
Victoria	1,618,259	69%
NSW	793,522	25%
SA	402,209	53%
Queensland	5,619	Less than 1%

Source: NEMMCO 2006

Cumulative transfers in Vic, NSW, Qld and SA: Electricity and gas retail markets in some jurisdictions within Australia can be very competitive. The evidence for this is the number of entries and exits from the sector, the extension of retail activities by many businesses across more than one jurisdiction, and the proportion of customers changing retail contracts. In order to show the number of customers actually changing retailers, ERIG notes that the ‘churn’ data should be disaggregated between customers moving to market contracts with the same retailer and those customers changing retailers. Clearly, gross retail customer ‘churn’ rates are much higher in Victoria and South Australia than in NSW and Queensland. ERIG finds that the retail segment of the energy industry is generally highly contestable in jurisdictions where private ownership is a feature of the market. ERIG concludes that mergers between retailers that have been allowed to date do not raise competition concerns in such markets at the present time.

down its generators if Snowy Scheme storages reach 9% of capacity is totally incorrect. In fact, we are operating our generating plant quite comfortably at around that water storage level now and can continue generating at even lower levels.

- 600MWs of gas fired generation plant in Victoria;

- recycling of water through our largest power station Tumut 3; and
- winter cloud seeding program to increase water inflows from increased snowfalls.

Water force majeure, stage 2: Ministers plan intervention in Snowy Hydro arrangements

Ministers planned intervention in Snowy Hydro Ltd commercial arrangements "Consideration is being given to the role of the Snowy Hydro in 2007-08 and further advice will be provided in later reports. A communication strategy to inform stakeholders is being developed".

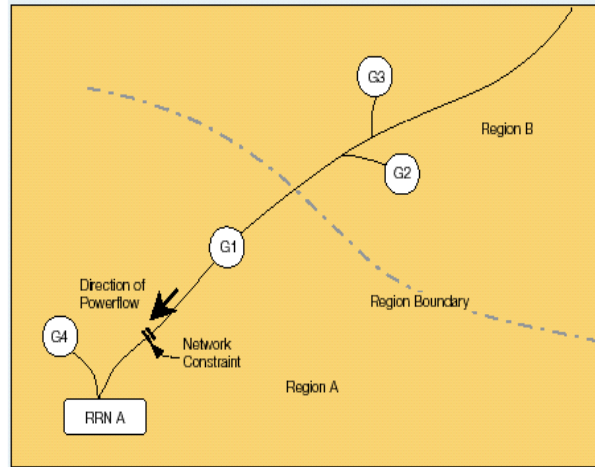
Water rules suspended: "Any action to allocate water through normal processes before the inflow situation becomes apparent could compromise the ability to provide water supplies for critical uses in 2007-08 if dry conditions continue through 2007".

Emergency actions start: A number of measures implemented over recent months,

- additional pumping from (SA) Mount Lofty storages from the River Murray to ensure water supply for Adelaide;
- disconnection of wetlands;
- lowering the target end of season reserve in Lake Victoria; and
- implementing reduced minimum flow targets,

New gas turbines in Wagga not good for the NEM?

12 Generation location and region boundaries



Its 2005 APR, TransGrid states: "At times when NSW is a heavy importer of power from the south the line ratings within the Snowy system and immediately north of Snowy may impose a limitation. The development of any generation in the south west of NSW (such as gas turbines in the Wagga area) will impose greater competition for the limited power transfer capability to the north. Such generation does not provide an effective increase to the net NSW generation at times where the transmission system is limiting." Despite this, a major new power station was proposed.

When the NEM deos not work in consumer interest: The diagram shows:

- a generator G1, in region A, located strategically on the network such that it effectively is on the interconnector between Region A and Region B.
- The actual constraint in this example is between generator G1 and its regional reference node (RRN A), rather than at the regional boundary.
- Whenever generator G1 wishes to generate it can bid low and effectively block out any competition from generators G2 and G3 on the same transmission line. This situation, and a number of similar but more complex situations, currently exists in a number of locations in the national market.

Not a good look for the NEM: The current arrangements not only affect short term market efficiency and equitable competition between participants but have the potential to incentivise new generation investment to identify and locate within similar network conditions.

Anti-competitive strategic advantage: A number of new generation investments draw commercial advantage from building at such a situation. ERIG is aware of one proposed generation investment where the proposed location would have induced network congestion. The proposed generator would hold a strategic advantage as a result. In this case a relatively small change in the proposed location would have removed the risk of such congestion, but the incentives on the proponent were the opposite.

A report to the Council of Australian Governments by the Energy Reform Implementation Group January 2007. Produced by the Energy Reform Implementation Group Contact: erig@industry.gov.au http://www.erig.gov.au

Murray-Darling Basin Dry Inflow Contingency Planning, Overview Report to First Ministers. (Reference: Murray-Darling Basin Dry Inflow Contingency Planning, Overview Report to First Ministers, April 2007 website: <http://www.environment.gov.au/water/publications/mdb/dry-inflow-planning.html>)

Strategic water reserve for 2007-08 dry scenario

A strategic reserve is being progressed as part of contingency planning to ensure critical urban water supplies in the event that a dry scenario eventuates in 2007-08.

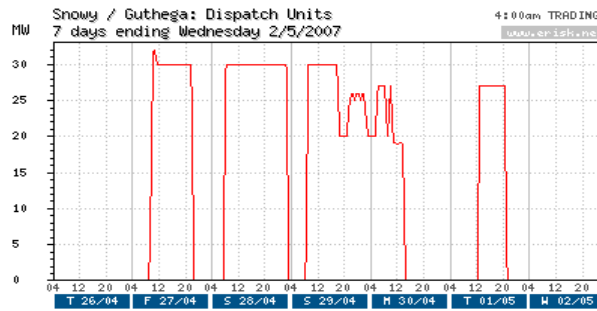
Guess - Snowy's - tactics-page

Snowy Mountains Scheme

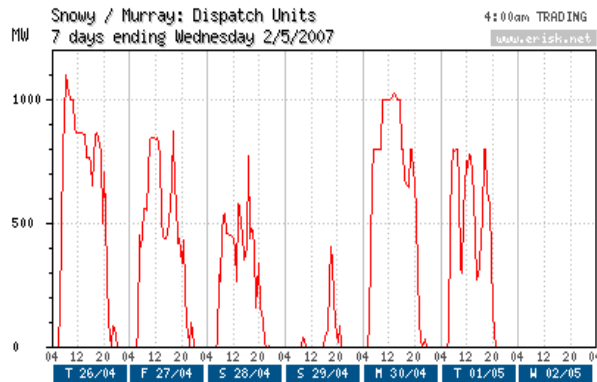
Snowy diversions for week ending 24-Apr-2007

Storage	Active storage (GL)	Weekly change (GL)	Diversion (GL)	This week	From 1 May 2006
Lake Eucumbene - Total	234	-38	Snowy-Murray	+31	925
Snowy-Murray Component	173	-30	Tooma-Tumut	+0	66
Target Storage	1 340		Nett Diversion	30.9	859
			Murray 1 Release	+37	1 049

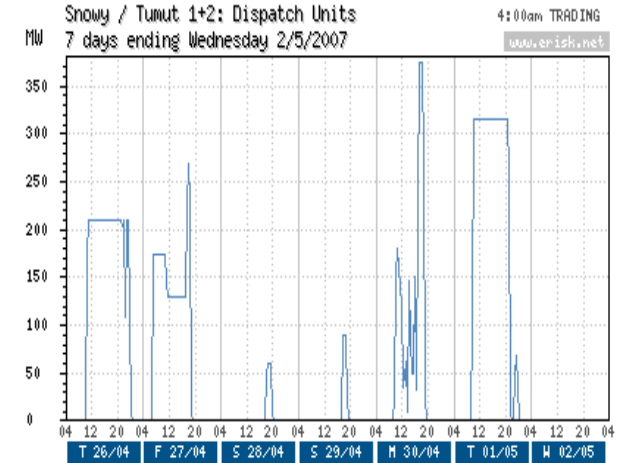
New South Wales	This week	From 1 July 2006
Murray Irrig. Ltd (Net)	.0	328.3
Wakool System loss	1.5	67.6
Western Murray Irrig.	0.3	23.0
Licensed Pumps	1.7	167.8
Lower Darling	0.1	18.2
TOTAL	3.6	604.9



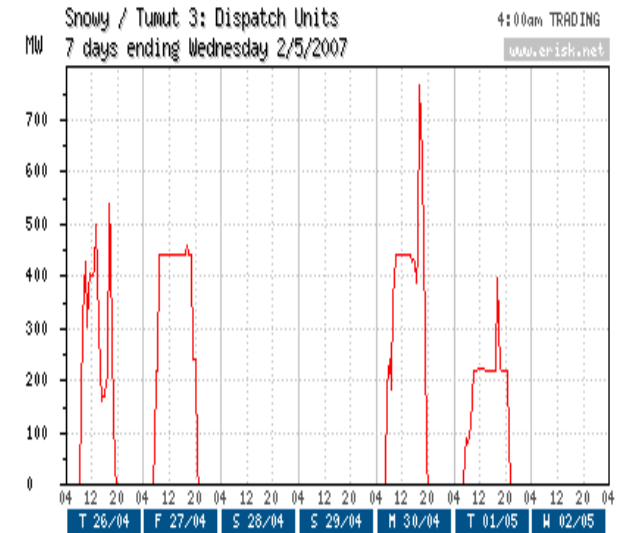
	Av.	High	Low	Peak	Offpk
— SNOWY1	0.00	0.00	0.00	0.00	0.00
— GUTHEGA	13.12	32.00	0.00	12.38	13.65



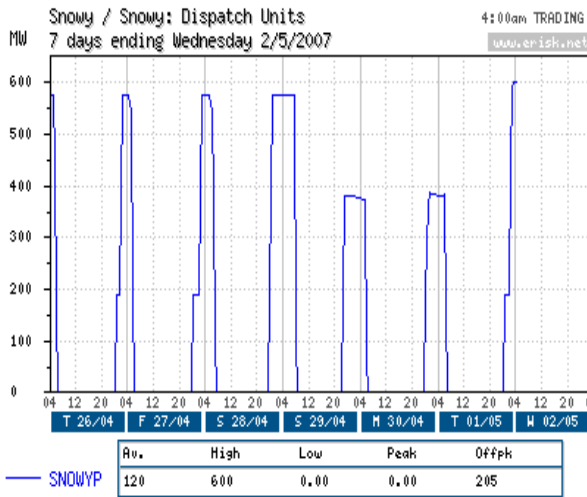
	Av.	High	Low	Peak	Offpk
— SNOWY2	0.00	0.00	0.00	0.00	0.00
— MURRAY	329	1100	0.00	671	86.07



	Av.	High	Low	Peak	Offpk
— SNOWY4	0.00	0.00	0.00	0.00	0.00
— SNOWY3	0.00	0.00	0.00	0.00	0.00
— UPPTUMUT	69.13	375	0.00	155	8.23



	Av.	High	Low	Peak	Offpk
— SNOWY5	0.00	0.00	0.00	0.00	0.00
— TUMUT3	113	766	0.00	273	0.00

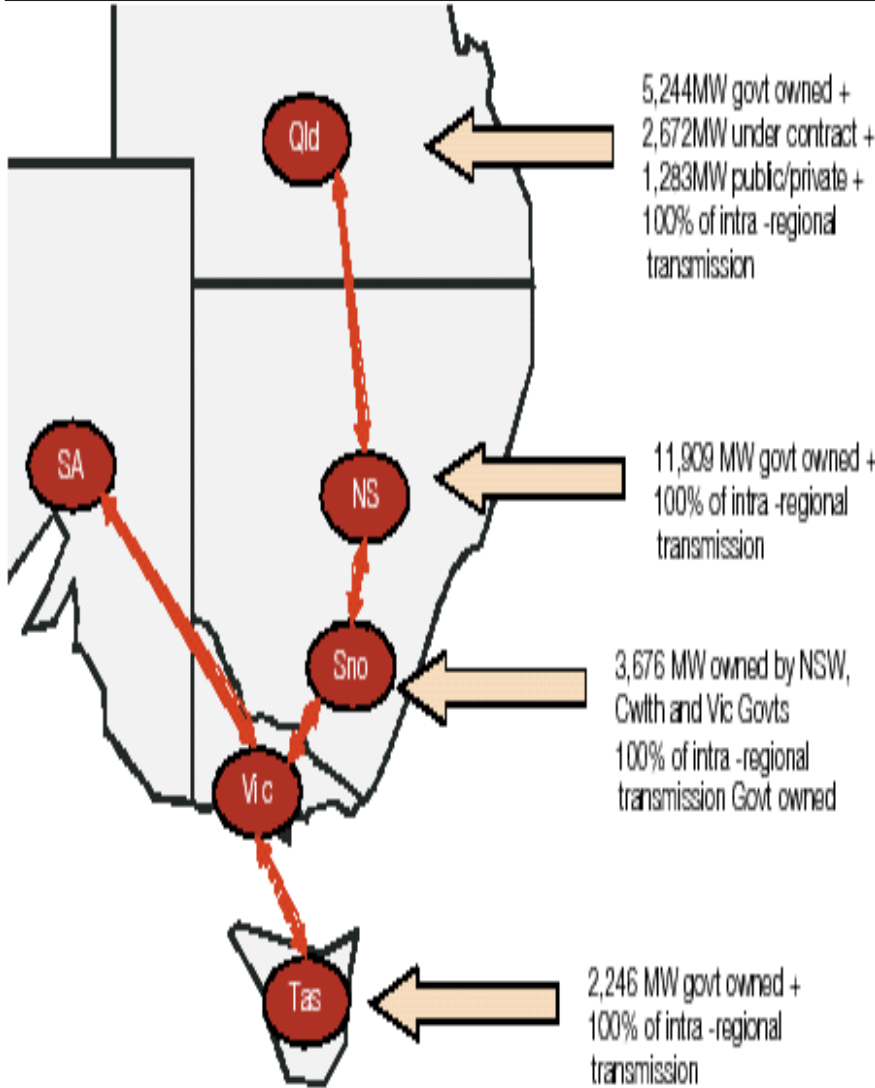


	Av.	High	Low	Peak	Offpk
— SNOWYP	120	600	0.00	0.00	205

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6

NSW, QLD told to sell more assets, remove conflicts of interest



Sovereign risk issue: ERIG noted many submissions identified government ownership of both transmission and generation as a significant sovereign risk issue. ERIG agrees "significant cross-ownership of generation and transmission creates the perception by private investors of a conflict of interest. Concerns related to the

- pursuit of policy rather than transparent commercial agendas; or

- conflict arising from transmission and generation having the same owner.

MCE policy plan: The MCE legislative amendments would structurally separate ownership of generation and transmission at a participant and shareholder level. ERIG understands that while these provisions will apply to government owned entities, not ownership by the crown.

Regulation not enough: Constraints, either through the imposition of a revenue cap or the application of the Regulatory Test, are not effective in reducing that perception. Bad regulation makes it worse: Current arrangements in jurisdictions where the investment decision is made by the owner of the asset do not provide the appropriate incentives on the owner to invest in a timely and efficient manner.

Source: Frecone report to ERIG 2006

Waiting for winter flows: The *Murray-Darling Basin Dry Inflow Contingency Planning, Overview Report to First Ministers* said "Usually, substantial inflows to the major storages in the southern Murray-Darling Basin do not occur until late in winter and into spring. Until that time, governments will not know which inflow scenario is likely to eventuate."

Water force majeure crisis

Ministers called a water force majeure crisis for NSW, Qld, Victoria. NSW, Qld, Victoria Ministers, in a statement said "To enable critical domestic demand to be met effectively, the current water sharing provisions of the Murray-Darling Basin Agreement must be temporarily suspended".

Worst case scenarios: Under the worst case scenario used in the analysis for the Murray-Darling Basin Dry Inflow Contingency Planning, Overview Report to First Ministers, water use is expected to be around 300GL. This compares to a total permitted use under the cap for the southern Murray-Darling Basin of around 4300GL.

Force majeure action: A proposed exchange of letters between First Ministers would include; commitment on the part of the State Contracting Governments to take such complementary action under State law as may be necessary to implement the proposed limitations on allocations and prohibitions on uses.

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7

NEM price rocket: April 2007 up 150 to 280 per cent

Average prices rose \$14.45/MWh to \$27.49/MWh (31 to 58 per cent) in spike-hit April compared to March to a range of \$67.77-\$78.21/MWh, an analysis of average price and demand figures shows.

Demand down everywhere but Tas: Average demand in April dropped between 112MW and 651MW (5.1 per cent to 9.7 per cent) in mainland regions and rose 27MW (2.5 per cent) in Tasmania.

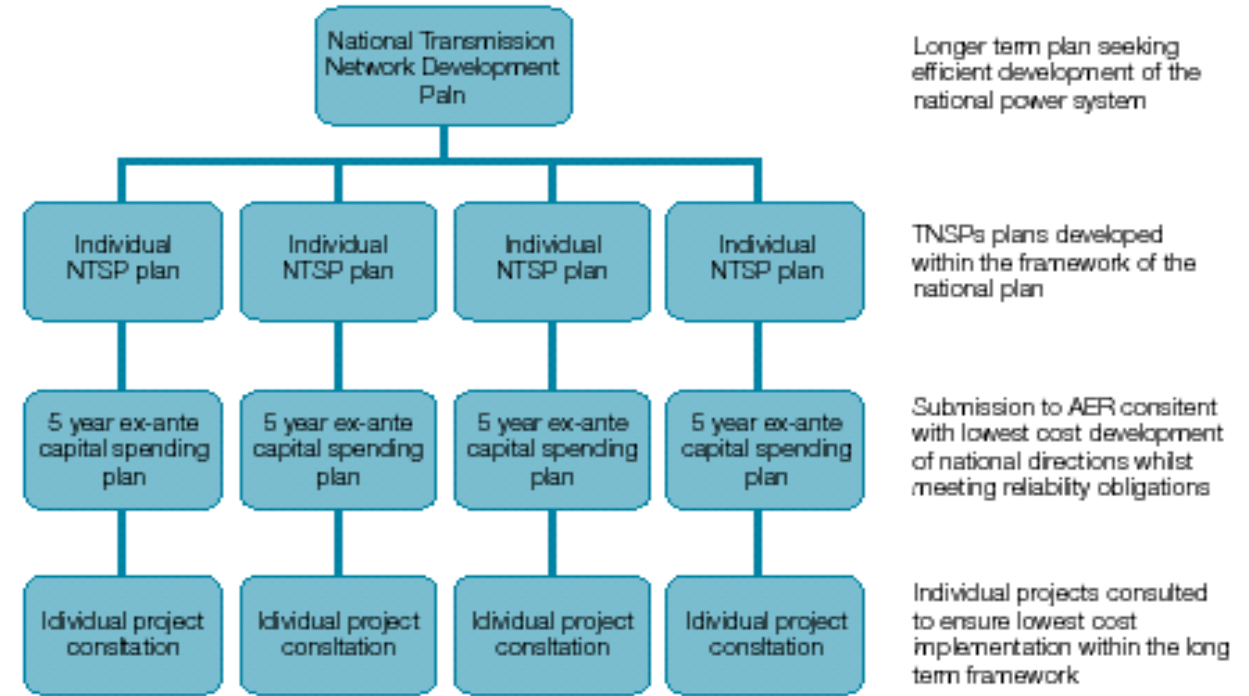
Huge increases in April 2006: Average prices were up \$39.78/MWh to \$57.61/MWh (150 to 280 per cent) on April 2006 when they were between \$20.60-\$33.33/MWh.

Easter in April in both years: Easter was not a factor in the large differential, because the Easter period in both 2006 and 2007 was fully in April.

Mixed demand comparison with 2006: Average demand in 2007 was up between 22MW and 113MW (0.4 per cent to 8.6 per cent) on April 2006 in NSW, South Australia and Queensland and down 1MW to 64MW (0-1.2 per cent) in Victoria and Tasmania.

Comparison of average prices and demand: The following compares average prices and average demand for April 2007, March 2007 and April 2006.

NEM rules allow new network plans, too obscure to assess



ABOVE: ERiG proposal: Information provided to ERIG on a confidential basis makes the case that it is not possible, from the information presented in new network asset application notices (required under the transmission consultation process), to properly assess the impact a proposed new network investment would have. In many cases it was considered that alternative options have not been adequately presented or assessed. New generators were not given a clear picture of network capability across the NEM. The National Generators Forum (NGF) submission to the Energy Reform Group (ERiG) Issues Paper notes that information provision has improved said generators needed...

- power injection capability data at major potential connection points. This data would provide new generators with some idea of potential congestion when deciding on locational options for new plant.

- If new arrangements were implemented to explicitly price intra-regional congestion or to provide improved access certainty for generators then the additional relevant data could also be included in the Annual Transmission Planning Statement (ANTS).

ANTS also needs congestion analysis: On balance ERiG considers that the current ANTS does not provide optimum arrangements for information transparency particularly in the depth of scrutiny or level of disclosure it gives to the capability of the network. The model relies on incentives within the regulatory regime to operate and invest efficiently and minimise the costs of meeting these defined obligations. As a result it also requires links to information generated by a congestion management regime.
www.erig.gov.au

April 2007 in detail:

- **NSW:** Average price \$78.21/MWh, up \$26.88/MWh (52 per cent) on the average \$51.33/MWh in March, up \$57.61/MWh (280 per cent) on the average \$20.60/MWh of April 2006. Average demand 8194MW, down 651MW (7.4 per cent) on the 8845MW of March, up 25MW (0.3 per cent) on the 8169 of April 2006.
- **Victoria:** Average price \$67.77/MWh, up \$16.45/MWh (31 per cent) on the average \$53.32/MWh in March, up \$45.21/MWh (200 per cent) on the average \$22.56/MWh of April 2006. Average demand 5491MW, down 295MW (5.1 per cent) on the 5786MW of March, down 64MW (1.2 per cent) on the 5555 of April 2006.
- **South Australia:** Average price \$69.58/MWh, up \$20.92/MWh (43 per cent) on the average \$48.66/MWh in March, up \$27.49/MWh (150 per cent) on the average \$27.87/MWh of April 2006. Average demand 1427MW, down 112MW (7.3 per cent) on the 1539MW of March, up 113MW (8.6 per cent) on the 1314MW of April 2006.
- **Queensland:** Average price \$75.11/MWh, up \$27.49/MWh (58 per cent) on the average \$47.62/MWh in March, up \$53.48/MWh (247 per cent) on the average \$21.63/MWh of April 2006. Average demand 5708MW, down 613MW (9.7 per cent) on the 6321MW of March, up 22MW (0.4 per cent) on the 5686MW of April 2006.

- **Tasmania:** Average price \$73.11/MWh, up \$22.23/MWh (44 per cent) on the average \$50.88/MWh in March, up \$39.78/MWh (119 per cent) on the average \$33.33/MWh of April 2006. Average demand 1115MW, up 27MW (2.5 per cent) on the 1088MW of March, down 1MW on the 1116MW of April 2006.

Reference: Average National Price and National Demand figures for April 2007, March 2007 and April 2006 for NSW, Victoria, South Australia, Queensland and Tasmania in Price/Demand section of Erisk Net – Realtime NEM Data. Website: <http://www.erisk.net>

Force majeure for Murray Darling Basin and Snowy Hydro water contracts

A Senior Officials' Group made thirteen recommendations to First Ministers, as noted in the Murray-Darling Basin Dry Inflow Contingency Planning, Overview Report to First Ministers.

Recommendations: These were to:

1. Agree the water supply situation in the Murray-Darling Basin remains critical and contingency planning should continue;
2. Agree that the quantities of water currently in storage and estimated to be available in 2007-08 based on the minimum inflow scenario (Scenario A), be
 - first allocated for critical human water consumption needs, estimated for 2007-08 to be;

- 141 GL for South Australia (requiring 487 GL as a cross border flow, subject to salinity issues that may emerge);
 - 75 GL for New South Wales; and
 - 53 GL for Victoria;
3. Agree that the quantities of water required for critical human water consumption needs, taking account of the need to maintain potable water quality, should be kept under ongoing review and reported back to First Ministers in mid-May;
 4. Agree, to enable the allocations at recommendation (2) to be made:
 - a. not to undertake measures that would further reduce reserves or inflows;
 - b. that the provisions of the Murray-Darling Basin Agreement that require minimum monthly quantities of River Murray water for dilution and losses, should not be applied by the Murray-Darling Basin Commission after 31 May 2007, until further notice; and
 - c. to introduce and seek to pass appropriate legislation to amend the Murray-Darling Basin Agreement to this effect by 1 July 2007;
 - d. that each government will indemnify the President, Deputy President, Commissioners, Deputy Commissioners and officers of the Commission for any losses or costs incurred by all or any of

them in the bona fide execution of the direction set out in this recommendation, in the manner set out in clause 38 of the Agreement.

5. Note that unless there are very substantial inflows prior to mid May 2007, there will be insufficient water available (including of high security water and water carried over from 2006-07) to allow any allocation for irrigation, the environment or any purpose other than meeting critical urban supplies at the normal commencement of the 2007-08 irrigation season;
6. Agree to coordinate efforts to ensure farmers have access to information about water supplies and their implications for allocation decisions at critical decision making times for business planning;
7. Agree that officials will keep allocation decisions under review and provide timely advice to Ministers to ensure that the impacts on the irrigation sector are minimised given the likelihood that allocations in 2007-08 will not be sufficient to avoid losses of income and assets;
8. Agree that options for allocation between States of quantities of water over and above the amounts required for critical human water consumption needs be developed as a matter of priority and recommended to First Ministers in mid May;

9. Agree that, unless there are significant inflows to the storages, all outside water use for domestic purposes and dependent on southern Murray-Darling Basin supplies should be prohibited from 1 July 2007, and that industrial water users Overview Contingency Planning Report – April 2007 Page 6 of 17 should be required to adopt stringent water saving measures, and that major users should be required to develop water efficiency plans incorporating industry best practice water efficiency targets from 1 July 2007;
10. Agree South Australia should continue with preparations for a temporary weir near Wellington, and supply all necessary information as soon as possible to the Commonwealth to enable decisions to be made under the EPBC Act;
11. Agree further on-site assessment be conducted of each of the eight wetlands identified as having high evaporative savings potential before the commencement of construction;
12. Agree a comprehensive communications strategy should be agreed as soon as possible; and
13. Agree a joint statement be released to inform stakeholders of current circumstances, key actions and further work.

Reference: Murray-Darling Basin Dry Inflow Contingency Planning, Overview Report to First Ministers, April 2007 website: <http://www.environment.gov.au/water/publications/mdb/dry-inflow-planning.html>

Lowest April 2007 average price of \$67.77/MWh is \$9.38 over previous high (in 1999)

The lowest average price in April 2007 of \$67.77/MWh in Victoria is \$9.38/MWh more than the previous highest April total of \$58.39/MWh in South Australia in the first year of the National Electricity Market (NEM), an analysis shows.

Only once above \$50 before 2007: Until April 2007, that was the only time an average price in the month exceeded \$50.

Seven Easters in nine Aprils: In the nine Aprils since the NEM started in December 1998, Easter has been fully in April in seven of these years. Easter was in March in 2002 and 2005.

Average prices in April since NEM start: The following table shows the average prices for the regions from 1999 to 2007:

Year	NSW	Victoria	South Australia	Queensland	Tasmania*
1999	\$21.28/MWh	\$20.61/MWh	\$58.39/MWh	\$29.41/MWh	-
2000	\$20.11/MWh	\$18.07/MWh	\$37.76/MWh	\$35.14/MWh	-
2001	\$29.96/MWh	\$28.56/MWh	\$33.46/MWh	\$28.84/MWh	-
2002	\$26.65/MWh	\$26.90/MWh	\$28.79/MWh	\$25.44/MWh	-
2003	\$15.58/MWh	\$14.68/MWh	\$20.85/MWh	\$14.81/MWh	-
2004	\$30.29/MWh	\$29.51/MWh	\$31.56/MWh	\$28.26/MWh	-
2005	\$29.90/MWh	\$30.63/MWh	\$35.39/MWh	\$23.77/MWh	-
2006	\$20.60/MWh	\$22.56/MWh	\$27.87/MWh	\$21.63/MWh	\$33.33/MWh
2007	\$78.21/MWh	\$67.77/MWh	\$69.78/MWh	\$75.11/MWh	\$73.11/MWh

* Tasmania did not join the NEM until the end of May 2005.

Average April demand since NEM start: The April 2007 average demand figures are much less dramatic than average prices when compared since the NEM start, as the following table shows:

Year	NSW	Victoria	South Australia	Queensland	Tasmania
1999	7253MW	4418MW	1276MW	4392MW	-
2000	7272MW	4923MW	1296MW	4923MW	-
2001	7399MW	5135MW	1359MW	4842MW	-
2002	7697MW	5193MW	1388MW	5102MW	-
2003	7713MW	5292MW	1355MW	5245MW	-
2004	7862MW	5400MW	1384MW	5398MW	-
2005	8170MW	5486MW	1421MW	5660MW	-
2006	8169MW	5555MW	1314MW	5686MW	1116MW
2007	8194MW	5491MW	1427MW	5708MW	1115MW

Reference: Average National Price and National Demand for April from 1999 to 2007 in Price/Demand section of Erisk Net – Realtime NEM Data. Website: <http://www.erisk.net>

Spikes on 26 of 30 days in April, with all six regions affected for record 12 straight days, analysis shows

The 26 spike days in April 2007 involved a total of 137 spike days for the six National Electricity Market (NEM)

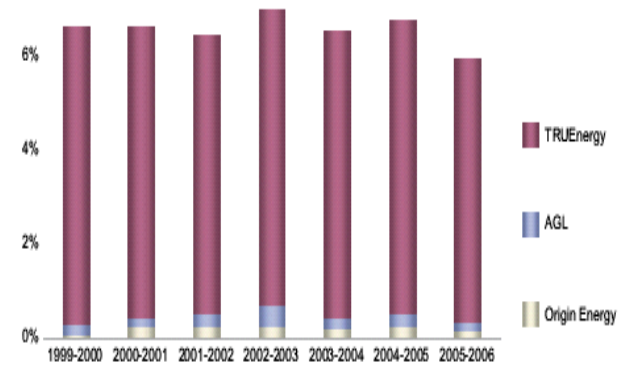
regions, with prices ranging from \$100.74/MWh to \$1425.75/MWh, an analysis of the month shows.

Maximum of 180 spike days possible: In a 30-day month, the maximum total of spike days for the six regions would be 180, with a spike defined as a top price exceeding \$100.00/MWh.

Spike days v total number of spikes: This analysis shows only the number of spike days and not the total number of spikes. For example, on Thursday 19 April, NSW had prices above \$100.00/MWh in 37 of the 48 30-minute trading intervals, but only the top price of that day is recorded for NSW in the monthly spike tally.

16 days in month with spikes in all regions: April was unusual in having 16 of the 26 spike days involving all six regions. There were 12 successive days from 16 April to 27 April inclusive when all six regions had spikes.

4-6 to own all gen and retail



Proportion of energy generated by vertically integrated entities in the NEM shown in table. It is considered that if the market were to evolve, as expected by many participants, to 4-6 major players owning both generation and retail, financial market liquidity would be reduced. The formation of this view has been assisted by observations of the UK market where the market has consolidated to six vertically integrated players and financial market liquidity has declined. However ETEF (NSW State vesting contracts) could be regarded as de facto vertical integration. If the effect of ETEF were included, the level of effective 'vertical integration' would be higher.

Region	April 2007 spike days and range	March 2007 spike days and range	April 2006 spike days and range
NSW	26 - \$109.68-\$1161.42/MWh	7 - \$114.61-\$3104.14/MWh	0 - 0
Victoria	22 - \$102.00-\$230.08/MWh	6 - \$151.45-\$2702.50/MWh 27.12-\$7416.16/MWh	1 - \$1593.14/MWh
South Australia	22 - \$100.74-\$222.68/MWh	5 - \$147.44-\$2494.39/MWh	3 - \$100.33-\$1734.09/MWh
Queensland	25 - \$103.69-\$1109.52/MWh	6 - \$173.23-\$2231.58/MWh	2 - \$108.3-\$5133.82/MWh
Snowy	25 - \$105.20-\$228.00/MWh	6 - \$150.29-\$2502.96/MWh	0 - 0
Tasmania	17 - \$103.43-\$1425.75/MWh	3 - \$106.07-\$135.34/MWh	2 - \$126.09-\$3365.17/MWh
Total	137 - \$100.74-\$1425.75/MWh	33 - \$106.07-\$3104.14/MWh	8 - \$100.33-\$3365.17/MWh

Breakdown for other 10 days: In the other 10 spike days, five regions were involved on five days, four regions on two days, three regions on two days and two regions on one day.

Most spike days in NSW: NSW led the total of spike days with 26, followed by Queensland and Snowy with 25 each, Victoria and South Australia with 22 each and Tasmania with 17.

Way up on March: In March 2007, there were spikes on nine of the 31 days, involving a total of 33 spike days for the regions, with seven in NSW, six in Victoria, Queensland and Snowy, five in South Australia and three in Tasmania. Prices on these 33 spike days in the regions ranged from \$106.07/MWh to \$3104.14/MWh.

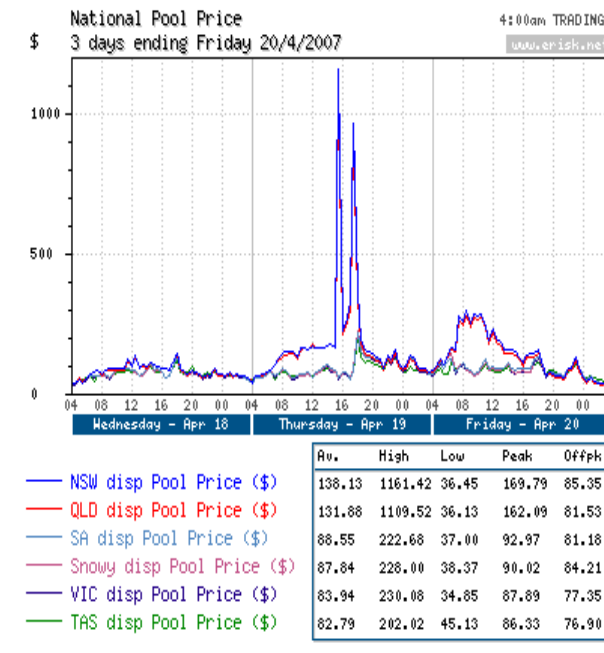
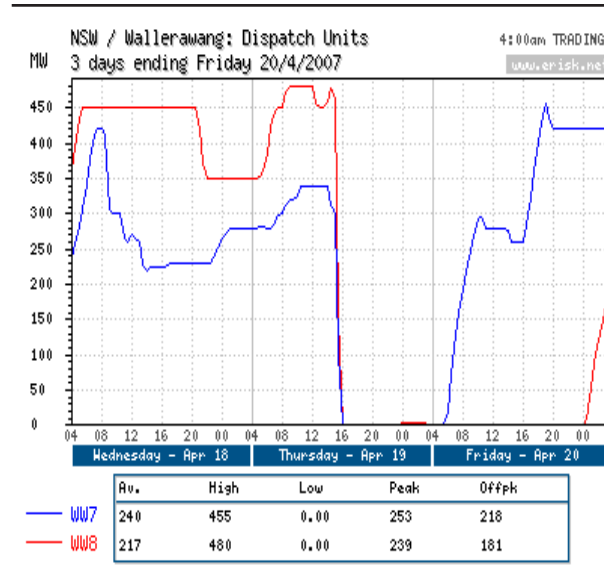
Few spikes in April 2006: Spikes occurred on six days in April 2006, involving eight spike days for the six regions, with three in South Australia, two in Queensland and Tasmania and one in South Australia. The range of these spikes was \$100.53/MWh to \$3365.17/MWh.

Comparison of spike days: The following table shows the spike days in the NEM regions in April 2007, March 2007 and April 2006 and the range of the spikes on these days:

12

Dual Delta 500MW crash cause of 19 April super spikes

The simultaneous trips of Delta Electricity's two 500MW capacity Wallerawang units at 1540EST on Thursday, 19 April resulted in high prices in



both NSW and Queensland on the Thursday and Friday, the Australian Energy Regulator (AER) said in its market analysis for the week from Sunday, 15 April to Saturday, 21 April.

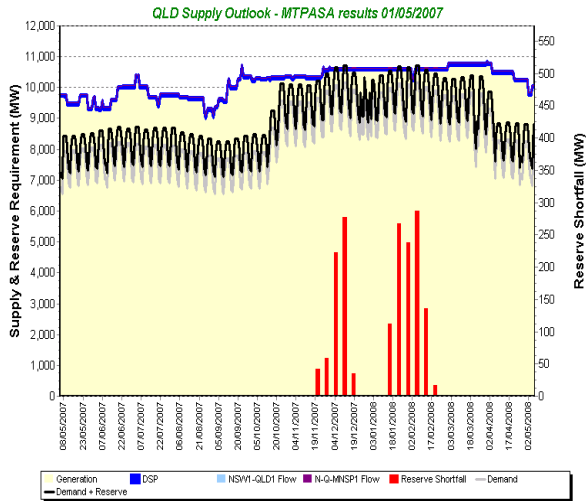
High spikes continue the following day: NSW and Queensland had maximum prices of \$1161.42/MWh and \$1109.52/MWh respectively on Thursday and maximum prices of \$304.01/MWh and \$286.34/MWh on Friday when the two generators were still offline.

Generators back on Saturday: The generators returned to service on the Saturday. The AER analysis showed spot prices for the week averaged \$109/MWh in NSW, \$105/MWh in Queensland, \$79/MWh in South Australia and \$76/MWh in Victoria. The previous week the highest average spot prices were between \$57/MWh in Victoria and \$65/MWh in Tasmania.

Significant errors with forecast prices: The analysis said significant variations between actual prices and those forecast four and 12 hours ahead occurred in 195 (58.0 per cent) of the 336 30-minute trading intervals.

Variations in demand forecasts: Demand forecasts produced four and 12 hours ahead varied from actual by more than 5 per cent in 20 per cent of all trading intervals across the market. These variations were most frequent in South Australia and Tasmania, occurring in a half and one-third all trading intervals respectively.

Reference: Australian Energy Regulator (AER) market analysis for week Sunday, 15 April to



Saturday, 21 April. 27 April, 2007. Address: Level 11, The Tower, 360 Elizabeth Street, Melbourne Central. Melbourne. Vic. 3000. GPO Box 520, Melbourne. Vic. 3001. Phone: (03) 9290 1444. Fax: (03) 9290 1457. Website: <http://www.aer.gov.au>

New high-price risk forecast for Qld, Vic, SA, Nov-Dec, 2007

NEMMCO made three changes to the medium-term projected assessment of system adequacy (MT PASA) issued at 0949EST on Tuesday, 1 May to that issued on Tuesday, 24 April. The changes are:

- the omission for a forecast low reserve condition (LRC) of December for NSW in 2008; and
- the omission of February and April for NSW in 2009;

Settlement residues: \$417m morem paid out, than received

Year	Premium (Auction proceeds) \$m	Spot (Settlement residue) \$m	Excess of spot over premium \$m	Excess of spot over premium %
1999/2000	41	60	19	46
2000/2001	64	105	41	64
2001/2002	87	98	11	13
2002/2003	62	120	58	94
2003/2004	81	141	60	74
2004/2005	105	230	125	119
2005/2006	118	220	102	86
Total	558	974	417	75

Settlement residues have exceeded the premium collected by around 75 per cent on average since 1999/00. Some \$417 million has been paid out more than has been received. Essentially this sum represents a risk premium. Results of settlement residue auctions and the premium collected versus the settlement residues over time are shown in the Table. Under the current NEM rules, settlement residue cash-flows are auctioned by unit in quarterly tranches 1 year in advance. This is known as the settlement residue auction (SRA). NEMMCO is responsible for administering the SRA process. The cash-flow proceeds from the SRAs (the auction premium) are deducted from the Transmission Use of System (TUOS) charges which customers pay in each region, so customers receive the benefits of the auction proceeds in

addition to the benefits of competition from inter-regional trading. The rights to the cash-flows for the settlement residue (spot) go to the successful bidder at each quarterly SRA. The successful bidder receives the cash-flow proceeds of the settlement residues. The rights to the settlement residue cash-flows are the property of TUOS customers until they are auctioned. From this perspective, the cash-flows from the settlement residues are an asset of the customers who are levied TUOS charges. It was envisaged that the cash-flows from spot settlement residues would provide a hedge for trading across inter-regional links and therefore enhance inter-regional trade. This has occurred.

- addition of November for a forecast low reserve condition (LRC) for Queensland in November 2007; and
- the omission of December in 2008 for South Australia and Victoria+South Australia.

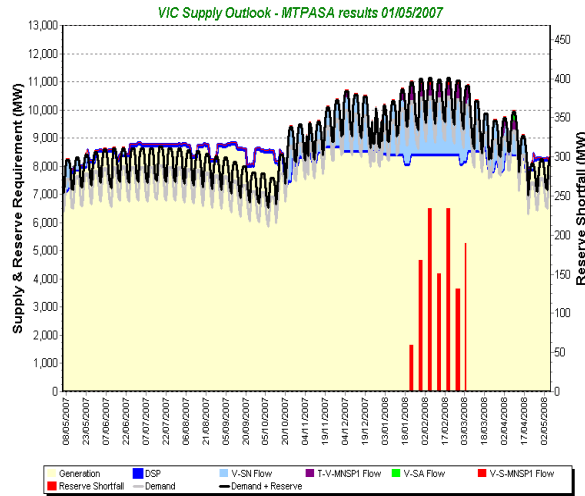
LRC forecasts for week days: In the 1 May MT PASA, NEMMCO said the reliability results forecast low reserve condition (LRC) for a number of week days in the following months:

2007

- Queensland: November and December; and
- South Australia: December

2008

- Queensland: January, February, October, November and December;
- NSW: April;



- South Australia: January, February and March;
- Victoria+South Australia: January, February and March.

2009

- Queensland: February and March.
- South Australia: January and February; and
- Victoria + South Australia: January, February and March.

New interconnector headroom constraints:

In order to remain consistent with the calculation of the new minimum reserve levels, the following new interconnector headroom constraints for MTPASA were implemented from 24 October 2006:

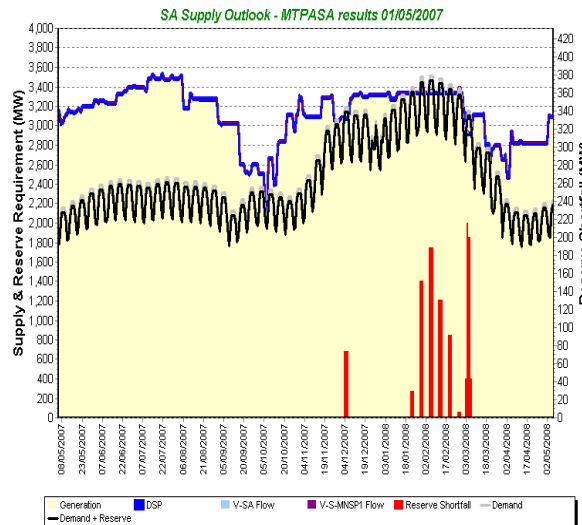
- The Queensland minimum reserve level (MRL) was assessed with 0MW transfer

A return of 66 per cent

Link	Premium (Auction Proceeds) \$M	Spot (Settlement Residue) \$M	Excess of Spot over Premium) \$M	Excess of Spot over Premium) %
Snowy Region Links	58.7	97.2	38.5	66
Vic-SA	14.9	18.3	3.4	23
QLD-NSW	15.0	38.0	23.0	153

The risk premium for the Snowy region averaged \$38.5 million per year since 2001–02 or a return of 66 per cent. Inter-Regional Settlement Residue is the difference between the value of energy in one region and the value of that energy once it has been transferred to another region. These are traded in Settlement Residue Auctions as SRAs. SRA risk premiums are borne by customers of the NEM. In addition, competition in interstate trade is less than it would be if these risk premiums were lower. Since market start the significant \$251 million risk premium on the Snowy-NSW interconnector was less related to transmission factors and more explained by the incentives the Snowy regional design creates for Snowy bidding behaviour. The \$47 million SRA risk premium on the VIC-Snowy inter-connector was related to these incentives. The Snowy region comprised 63 per cent of the settlement residues and 60 per cent of the risk premium.

- the \$30 million risk premium on the VIC-SA inter-connector can be largely explained by transmission factors across the inter-connector and intra-regional congestion.
- the link between Queensland and New South Wales had the second highest (dollar) risk premium. The risk premium averaged \$23 million per year since 2001–02 or a return of 153 per cent; and
- the link between Victoria and South Australia had the lowest (dollar) risk premium. The risk premium averaged \$3.4 million per year since 2001–02 or a return of 23 per cent.
- since 2000–01 when Queensland was connected to New South Wales, a total of \$128 million has been accrued and the risk premium on the QLD-NSW inter-connector can be mainly explained by transmission constraints in northern New South Wales.



into the region because it was a local requirement.

- The NSW MRL was assessed with a net import limit into NSW of 1878MW for 2006/07 and 1946 MW for 2007/08.
- The Victorian MRL was assessed with a net import limit into Victoria of 2510MW.
- The South Australian MRL was assessed with 0MW transfer into the region because it is a local requirement.

Revision of summer demand side response: Results of a recent survey by NEMMCO of energy retailers had led to the

revision of the amount of demand side response (DSP) available for this summer.

New figures were: NSW 8MW (previously 21MW), Queensland 77MW (previously 96MW), Victoria+South Australia 78MW (previously 283MW) and Tasmania 0MW (unchanged).

Summary of results for next 12 months: NEMMCO said the results for the next 12 months were summarised at <http://www.nemmco.com.au/data/mtoutlook.htm>. NEMMCO had also published a guide to the MT PASA reserve forecasts at <http://www.nemmco.com.au/dispatch> and pricing/556.htm#MTPASA.

Reference: Market Notice 16891 in NEM Market Notices (single day) for Tuesday, 1 May in Erisk Net News Service. Website: <http://www.erisk.net>

New energy reform to cut GDP by around 0.04 per cent, or around \$400 million per year

The electricity market reform 'shock' applied by the Productivity Commission included the impact of;

- reducing the cost of supplying electricity from the generation sector by approximately \$200 million per year;
- and associated lower energy prices to consumers over the long-term.

Increase GDP \$400 million pa: Overall, the economy-wide benefits of the reforms presented in this report would increase real GDP by around 0.04 per cent, or around \$400 million per year. The Energy Reform Implementation Group had worked in cooperation with the Productivity Commission in quantifying the wider economic benefits of electricity market reform. ERIG used the Magasanik Associates (MMA) analysis to obtain:

- an approximate quantification of the initial electricity industry benefits (mainly cost savings); from
- an 'efficient development' scenario compared with a Business as usual (BAU) scenario.

In order to avoid duplication of modelling effort, ERIG did not undertake its own general equilibrium modelling of the economy-wide benefits of electricity market reform, noted the group's report.

Productivity Commission analyses data: Rather, it passed the MMA modelling results to the Productivity Commission, which has been working on modelling the 'outer envelope' benefits of the National Reform Agenda (NRA).

Shock analysis: The Productivity Commission used energy market reform 'shocks' based, on the electricity market reform results advised by ERIG to estimate the economy-wide benefits of MMA reform scenario, using a version of the Monash Multi-Regional Forecasting (MMRF) modelling framework updated specifically for

the Commission's NRA study. These benefits also included sustained price reductions to end-consumers of around 2 per cent to 3 per cent across the National Electricity Market (NEM) over the longer term

Reference: "Energy Reform, The way forward for Australia". A report to the Council of Australian Governments by the Energy Reform Implementation Group, January 2007. Contact: Energy Reform Implementation Group, GPO Box 9839, Canberra ACT 2601, website: <http://www.erig.gov.au>

Interval meters in Victoria to for all customers from 2008; NSW and QLD, stays voluntary

Cost reflective pricing provided the medium and longer term signal for customers in relation to their capital and usage decisions. Retail price controls impeded this activity and resulted in cross subsidies, where customers with expensive profiles to supply did not receive accurate pricing signals about the cost of using electricity, particularly at peak times, noted an Energy Reform Implementation Group.

Demand side response benefits: The benefits from having an effective demand side response in the market include:

- increased reliability;
- a move away from regulated reliability standards as the market will clearly identify and respond to the value of reliability;

- reduced ability of generators to exercise market power as extremely high prices are less likely; and
- reduced total energy costs because of the lower level of installed generation capacity required and deferral of network augmentation.

3000 MW of demand could turn into \$100M:

If 3000 MW of demand could be harnessed, benefits well in excess of \$100M in the medium to long term (in nominal terms) could be achieved in the generation sector with benefits also accruing in the networks. This is equivalent to approximately \$25 million per year in present value terms.

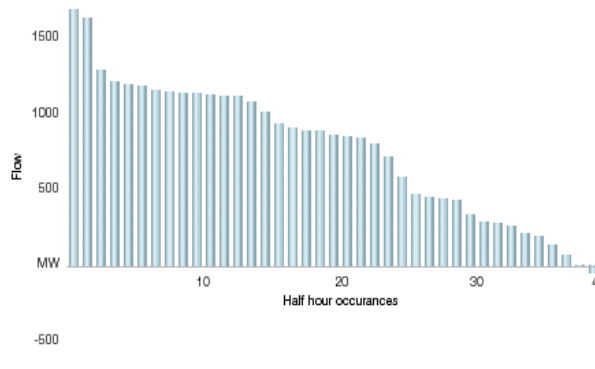
Smart meter rollout in 2007 on basis of assessments:

The Ministerial Council on Energy (MCE) is currently developing a demand side response program comprising a range of initiatives including a plan for the roll out of electricity smart meters in 2007 on the basis of positive cost-benefit assessments. Energy Reform Implementation Group (ERIG) also notes the decision by Victoria for interval meters to be rolled out for all customers from 2008, whilst interval meters for small users in NSW and QLD are voluntary; and interval meters will be installed on a new and replacement basis in the ACT.

Reference: "Energy Reform, The way forward for Australia". A report to the Council of Australian Governments by the Energy Reform Implementation Group, January 2007. Contact: Energy Reform Implementation Group, GPO Box 9839, Canberra ACT 2601, website: <http://www.erig.gov.au>

Snowy - VIC flows

27 Snowy-VIC flows when price separation greater than \$100/MWh



The volume of electricity flowing across the Snowy-VIC inter-connector when there is price separation between Snowy-VIC greater than \$100/MWh is shown in the Figure. This shows similar outcomes for flows against the rated capacity of the inter-connector of around 1600 MW when there is significant price separation between the regions.

Two plans for NEM clearing house: Both ASX/SFE and NEMMCO proposals to ERIG

Both the ASX/SFE and NEMMCO proposals would lead to the establishment of a voluntary clearing house noted a report from the Energy Reform Implementation Group. National Electricity Market (NEM) participants are able to offset their spot market obligations against future cash flows via NEMMCO.

To reduce cost of credit support: Referred to as settlement re-allocations, this mechanism is designed to reduce the amount and cost of

credit support required by market participants. The existing settlement reallocation mechanism has not been used extensively to date. Historically, reallocations account for less than 2 per cent of wholesale market settlements and do not appear to represent an efficient mechanism to manage credit risk except in the case of vertically integrated energy groups and smaller retailers.

Reasons for lack of usage: A study of the settlement reallocation process commissioned by NEMMCO in 2005 attributed the low utilisation to:

- confidentiality concerns over centralisation of financial information (with NEMMCO);
- lack of a financial incentive for generators to participate, as they would suffer a loss of credit standing of their receivables;
- ready or implied access to state treasury arrangements for some government owned retailers;
- lack of comprehension of the significant consequences of a participant default with its possible cascading effect; and
- the operation of government equalisation funds (e.g. Electricity Tariff Equalisation Fund).

Voluntary clearing houses: It has been brought to the attention of Energy Reform Implementation Group that market operators and clearing houses in other markets, including Nordpool, have reduced prudential risks by reducing the length of their settlement

cycles and introducing central counterparty clearing services.

Reference: "Energy Reform, The way forward for Australia". A report to the Council of Australian Governments by the Energy Reform Implementation Group, January 2007. Contact: Energy Reform Implementation Group, GPO Box 9839, Canberra ACT 2601, website: <http://www.erig.gov.au>

Fears sulphide sediment may corrode pipes, shut Newport

After 12 months of intense and regular closed-doors negotiations, power station operator Ecogen - a 500-megawatt station on the west bank of the Yarra River was close to reaching an agreement with the Port of Melbourne Corporation, reported *The Age* (24/4/2007, p.3), quoting Port corporation chief executive Stephen Bradford. Under the deal the port will cease dredging activity while the power station is operating. Ecogen had warned that if sediment contained high levels of sulphide it could corrode pipes in the power plant, forcing the station off-line, and could contaminate fish. A study by the port corporation had not identified risks to the operation of the power station, or to the environment. With public hearings for a second environmental effects statement to start in June.

Forced shut down risks: The power station's operators had warned that it could be forced to shut down during the proposed dredging project, leading to black-outs and/or massive

costs to the Government through buying alternative energy at short notice.

\$3.5 billion upgrade for WA's electricity network

The Carpenter Government will spend an unprecedented \$3.5 billion over the next four years to upgrade and expand Western Australia's main electricity network, according to a state government press release that announced the construction of 11 new substations and several transformers

\$93 million for underground power lines: Logan said \$93 million would be spent to put more power lines underground, reducing outages caused by falling trees or bad weather.

\$9.6 million to silicon coat pole-tops: Another \$9.6 million would be spent on silicon coating pole-top equipment over the next two years to reduce pole-top fires.

New Kewdale substation: \$8 million is for a new substation at Kewdale to improve reliability in the suburbs and to meet the expected load growth rate, particularly from industrial loads in Belmont and Welshpool.

Eastern suburbs upgrades: In the Eastern suburbs benefits include:

- \$3.7 million to install a third transformer at the Darlington substation to meet the growing demand for power in this area;

- \$4.7 million at Rivervale substation and \$2.8 million at Kalamunda substation to a install third transformer at each substation to improve reliability and the amount of power being delivered to these areas; and
- \$13.7 million to build a new substation at Henley Brook and \$3.3 million to install a second transformer, improving power reliability in Ellenbrook and Henley Brook.

Southern suburbs upgrades: Southern suburbs include:

- \$54.8 million to upgrade the Southern Terminal – including the installation of a third transformer – to improve capacity and reliability across the southern suburbs from Riverton and Canning Vale in the north to Cockburn Cement in the west and Armadale, Gosnells and Byford in the south.
- \$3.2 million to install a second transformer at the Murdoch substation to meet the growing demand for electricity in the suburbs surrounding the Murdoch University;
- \$2.8 million to install a third transformer at Byford to improve reliability and the amount of power delivered to this area; new substations at Thornlie (\$8 million), Willetton (\$6.6 million), Bibra Lake (\$10.9 million for new substation and \$3.5 million to install second transformer) and Bentley (\$15.6 million) to manage the increasing demand for power in these areas.

South-West upgrades: South-West include:

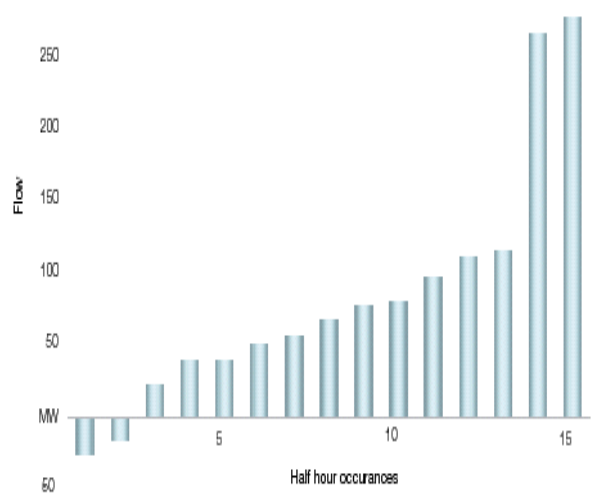
- \$24.9 million for a major upgrade of the transmission line that runs between Busselton and Margaret River and will supply power to the rapidly expanding Margaret River area, which will meet increased demand for power and improve reliability. A double circuit transmission line will replace the existing 66kV line. The last 1.4km of the line into the Margaret River townsite will be placed underground;
- \$4 million to install a new transformer at the Busselton substation, \$2.2 million for a second transformer at the Mt Barker substation to meet the increasing demand for power and improve reliability in these regions; and
- works to upgrade and increase capacities on the network in Harvey, Waroona and Dwellingup.

Northern suburbs upgrades: Northern suburbs include:

- \$39 million to build a new terminal substation at Neerabup to meet the demand for electricity from the growing northern suburbs.
- new substations at Joondanna (\$15.5 million), Warwick (\$15.2 million and \$3.8 million to acquire the land), Wangara (\$8.3 million) and Joondalup (\$7 million) to manage the increasing demand for electricity in these suburbs; and

VIC-Sno flow over \$100/MWh

29 Vic-Snowy flow when price separation greater than \$100/MWh



The volume of electricity flowing across the VIC-Snowy inter-connector when there is price separation between Snowy-VIC greater than \$100/MWh is shown in the Figure.

- \$4.1 million to install a third transformer at the Muchea substation, \$3.2 million for a third transformer at the Padbury substation and \$2.6 million for a second transformer at the Clarkson substation to meet the growing demand for power in these areas.