

Section 4: Distribution

Table 4.1 Number of customers – at 30 June 2001

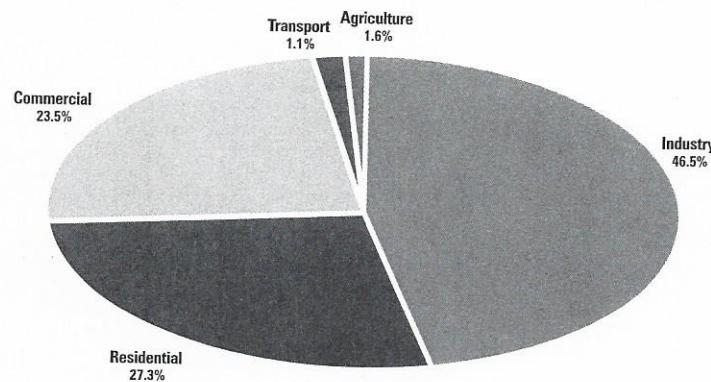
Classification of customers	NSW & ACT	VIC	QLD	SA
Residential	2,610,259	1,896,991	1,460,916	649,387
Business	337,054	265,878	162,095	66,672
Rural	128,706	47,133	31,760	28,069
Public lighting	378	8,710	736	included in business
Total	3,076,397	2,218,712	1,655,507	744,128
Total	% Inc	% Inc	% Inc	% Inc
1997	2,875,350	1.4	2,062,587	1.3
1998	2,947,013	2.5	2,088,051	1.2
1999	2,982,253	1.2	2,153,429	3.1
2000	3,015,336	1.1	2,156,391	0.1
2001	3,076,397	2.0	2,218,712	2.9
			1,655,507	1.6
				744,128

Table 4.2 Consumption – million kilowatt-hour (GWh) – 2000/01

Classification of customers	NSW & ACT	VIC	QLD	SA
Residential	19,649.306	10,125.269	10,175.621	4,175.000
Business	41,920.494	27,579.905	26,334.811	6,835.372
Rural	1,001.030	448.334	660.712	344.900
Public lighting	325.827	241.830	176.518	86.400
Total	62,896.657	38,395.338	37,347.662	11,441.672
Total	% Inc	% Inc	% Inc	% Inc
1997	55,980.227	4.2	33,915.453	3.1
1998	58,712.731	4.9	34,854.990	2.8
1999	59,544.039	1.4	36,313.740	4.2
2000	60,949.310	2.4	37,578.779	3.5
2001	62,896.657	3.2	38,395.338	2.2
			37,347.662	5.2
				11,441.672

Note: 1. Figures represent sales from Western Power Corporation only. Electricity consumption of industrial customers who purchased energy from non-grid IPPs is not included.

Chart 4.1 Final electricity consumption by sector 2000/01

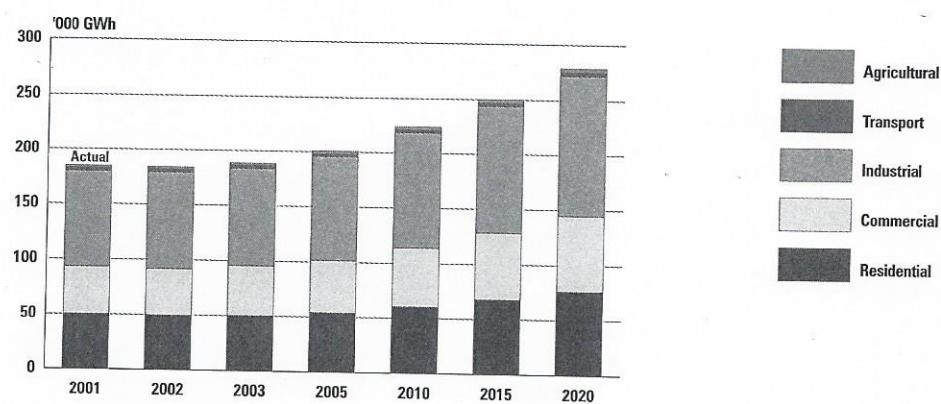


Source: ABARE

WA	TAS	NT	Total
722,853	207,336	54,748	7,602,490
87,715	38,935	10,762	1,222,888
included in business	1,530	6,625	under business
included in business	98	32	under business
810,568	247,899	72,167	8,825,378
% Inc.	% Inc	% Inc	% Inc
742,150	2.3	243,522	0.7
761,704	2.6	245,498	0.8
775,602	1.8	245,185	-0.1
794,746	2.5	248,260	1.3
810,568	2.0	247,899	-0.1
		72,167	3.3
			8,825,378
			2.0

WA¹	TAS	NT	Total
3,950.755	1,810.680	432.548	50,319.179
8,045.990	7,533.441	1,055.268	122,755.875
under business	75.741	61.500	under business
under business	27.802	under business	under business
11,996.745	9,447.664	1,549.316	173,075.054
% Inc	% Inc	% Inc	% Inc
10,799.232	-2.5	8,909.432	5.4
11,063.400	2.4	8,984.530	0.8
11,406.700	3.1	9,224.619	2.7
11,635.162	2.0	9,371.979	1.6
11,996.745	3.1	9,447.664	0.8
		1,549.316	0.0
			173,075.054
			3.2

Chart 4.2 Final electricity consumption 2001 to 2020



Source: ABARE

Section 4: Distribution

Table 4.1 Number of customers - at 30 June 2002

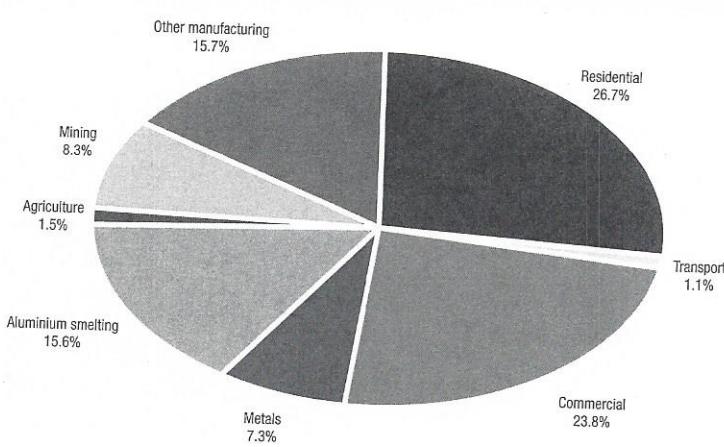
Classification of customers	NSW & ACT	VIC	QLD	SA
Residential	2,661,016	1,942,595	1,487,968	657,209
Business	319,964	268,453	164,248	67,743
Rural	132,603	48,222	31,824	26,850
Public lighting	286	9,196	448	included in business
Total	3,113,869	2,268,466	1,684,488	751,802
Total	% Inc.	% Inc.	% Inc.	% Inc.
1998	2,947,013	2.5	2,088,051	1.2
1999	2,982,253	1.2	2,153,429	3.1
2000	3,015,336	1.1	2,156,391	0.1
2001	3,076,397	2.0	2,218,712	2.9
2002	3,113,869	1.2	2,268,466	2.2

Table 4.2 Consumption - million kilowatt-hour (GWh) - 2001/02

Classification of customers	NSW & ACT	VIC	QLD	SA
Residential	20,103.026	10,214.052	10,670.138	3,921.608
Business	42,045.379	28,156.467	27,899.745	6,813.283
Rural	847.895	361.650	788.101	383.104
Public lighting	332.247	274.503	186.035	95.386
Total	63,328.547	39,006.672	39,544.019	11,213.381
Total	% Inc	% Inc	% Inc	% Inc
1998	58,712.731	4.9	34,854.990	2.8
1999	59,544.039	1.4	36,313.740	4.2
2000	60,949.310	2.4	37,578.779	3.5
2001	62,896.657	3.2	38,395.338	2.2
2002	63,137.547	0.4	39,006.672	1.6

Note: 1: Figures represent sales from Western Power Corporation only. Electricity consumption of industrial customers who purchased energy from non-grid IPPs is not included.

Chart 4.1 Final electricity consumption by sector 2001/02

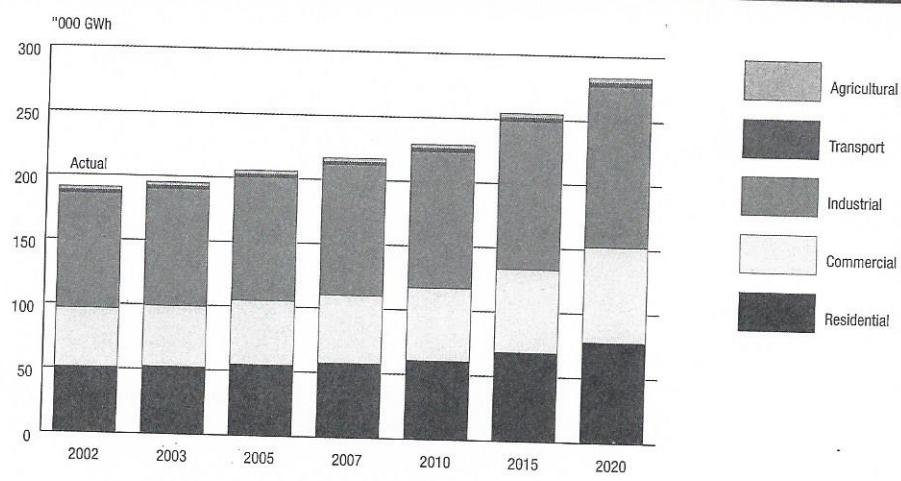


Source: ABARE

WA	TAS	NT	TOTAL
736,100	208,380	55,779	7,749,047
92,013	27,662	11,093	1,220,046
included in business	12,302	6,905	under business
included in business	200	34	under business
828,113	248,544	73,811	8,969,093
% Inc.	% Inc.	% Inc.	% Inc.
761,704	2.6	245,498	0.8
775,602	1.8	245,185	-0.1
794,746	2.5	248,260	1.3
810,568	2.0	247,899	-0.1
828,113	2.2	248,544	0.3
		73,811	2.3
			8,969,093
			1.6

WA ¹	TAS	NT	TOTAL
3,830,642	1,828,727	444,000	51,012,193
8,250,714	7,527,582	1,054,776	125,266,587
under business	166,804	59,873	under business
under business	23,043	under business	under business
12,081,356	9,546,156	1,558,649	176,278,780
% Inc	% Inc	% Inc	% Inc
11,063,400	2.4	8,984,530	0.8
11,406,700	3.1	9,224,619	2.7
11,635,162	2.0	9,371,979	1.6
11,996,745	3.1	9,447,664	0.8
12,081,356	0.7	9,546,156	1.0
		1,558,649	0.6
			176,278,780
			1.9

Chart 4.2 Final electricity consumption 2002-2020



Source: ABARE

Section 4: Distribution

Table 4.1 Number of customers - at 30 June 2003¹

Classification of customers	NSW & ACT	VIC	QLD
Residential	2,850,155	2,005,664	1,491,127
Business	319,156	301,925	195,682
Total	3,169,311	2,307,589	1,686,809
TOTAL		% Inc.	% Inc.
1998	2,947,013	2.5	2,088,051
1999	2,982,253	1.2	2,153,429
2000	3,015,336	1.1	2,156,391
2001	3,076,397	2.0	2,218,712
2002	3,113,869	1.2	2,268,466
2003	3,169,311	1.8	2,307,589
			% Inc.
			1,532,034
			2.4
			1,576,313
			2.9
			1,629,495
			3.4
			1,655,507
			1.6
			1,684,488
			1.8
			1,686,809
			0.1

Table 4.1 note:

1. Data on the number of rural customers was not available.

Table 4.2 Consumption - GWh - 2002/03¹

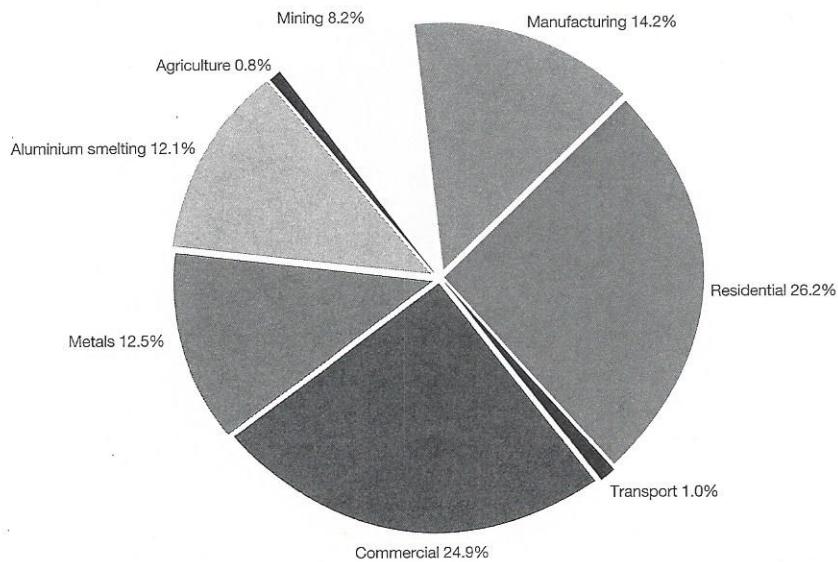
Classification of customers	NSW & ACT	VIC	QLD
Residential	20,899,331	10,921,481	10,571,281
Business	43,648,821	28,651,561	31,194,848
Public lighting	335,874	294,832	185,893
Total	64,884,026	39,867,873	41,952,022
TOTAL		% Inc.	% Inc.
1998	58,712,731	4.9	34,854,990
1999	59,544,039	1.4	36,313,740
2000	60,949,310	2.4	37,578,779
2001	62,896,657	3.2	38,395,338
2002	63,328,547	0.6	39,006,672
2003	64,884,026	2.5	39,867,873
			% Inc.
			32,210,378
			12.1
			33,267,744
			3.3
			35,505,409
			6.7
			37,347,662
			5.2
			39,544,019
			5.9
			41,952,022
			6.1

Table 4.2 notes:

1. Data on the number of rural customers was not available.

2. Figures represent sales from Western Power Corporation only. Electricity consumption of industrial customers who purchased energy from non-grid IPPs is not included.

Chart 4.1 Final electricity consumption by sector 2002/03

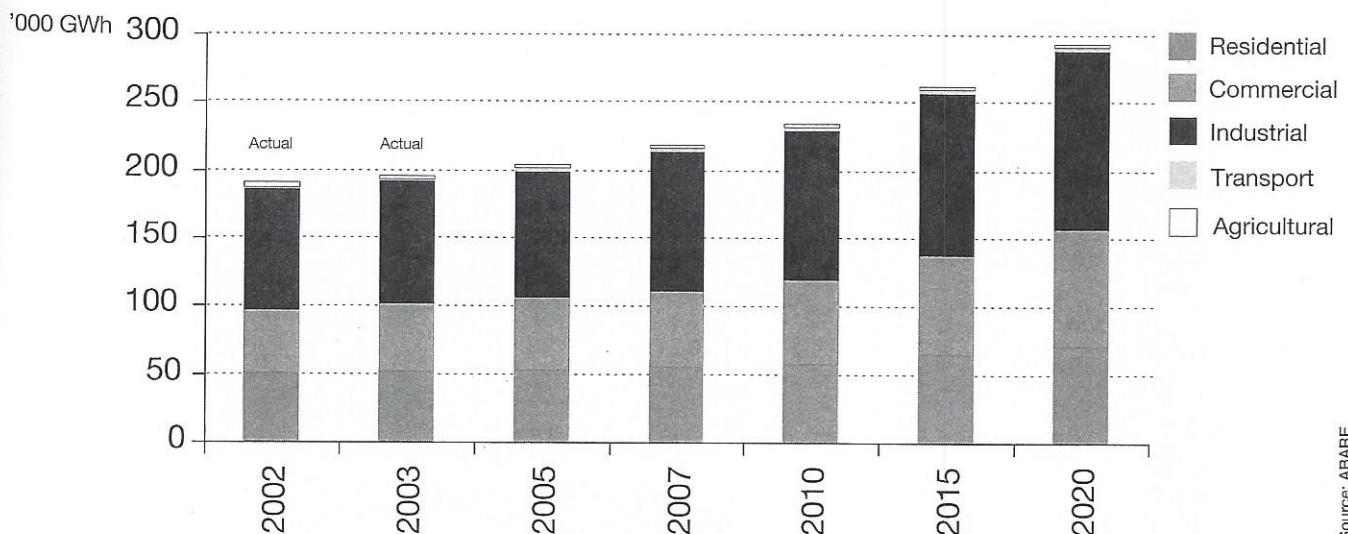


Source: ABARE

SA	WA	TAS	NT	TOTAL
660,926	742,270	208,795	62,317	8,021,254
95,061	104,788	42,098	12,664	1,071,374
755,987	847,058	250,893	74,981	9,092,628
% Inc.	% Inc.	% Inc.	% Inc.	% Inc.
724,531 1.6	761,704 2.6	245,498 0.8	66,126 4.1	8,364,957 2.1
733,783 1.3	775,602 1.8	245,185 -0.1	68,349 3.4	8,534,914 2.0
736,384 0.4	794,746 2.5	248,260 1.3	69,833 2.2	8,650,445 1.4
744,128 1.1	810,568 2.0	247,899 -0.1	72,167 3.3	8,825,378 2.0
751,802 1.0	828,113 2.2	248,544 0.3	73,811 2.3	8,969,093 1.6
755,987 0.6	847,058 2.3	250,893 0.9	74,981 1.6	9,092,628 1.4

SA	WA²	TAS	NT	TOTAL
4,012.000	4,113.695	1,902.904	481.698	52,902.389
7,672.904	8,361.550	7,823.954	1117.869	128,471.507
90.000	under business	23.043	15.577	N/A
11,774.904	12,475.245	9,749.901	1,615.144	182,319.115
% Inc.	% Inc.	% Inc.	% Inc.	% Inc.
9,939.221 4.7	11,063.400 2.4	8,984.530 0.8	1,525.004 9.7	157,290.254 5.4
10,456.000 5.2	11,406.700 3.1	9,224.619 2.7	1,549.070 1.6	161,761.912 2.8
11,045.250 5.6	11,635.162 2.0	9,371.979 1.6	1,549.514 0.0	167,635.403 3.6
11,441.672 3.6	11,996.745 3.1	9,447.664 0.8	1,549.316 0.0	173,075.054 3.2
11,213.381 -2.0	12,081.356 0.7	9,546.156 1.0	1,558.649 0.6	176,278.780 1.9
11,774.904 5.0	12,475.245 3.3	9,749.901 2.1	1,615.144 3.6	182,319.115 3.4

Chart 4.2 Electricity consumption by sector 2002-2020



Source: ABARE

Table 4.1 Number of customers at 30 June 2004

Classification of customers	NSW & ACT	VIC	QLD	SA ²	WA	TAS	NT	TOTAL
Residential	2,876,498	2,048,182	1,558,783	659,211	748,903	211,422	62,330	8,165,329
Business	337,501	303,481	192,454	95,626	118,164	42,100	13,066	1,102,392
TOTAL	3,213,999	2,351,663	1,751,237	754,837	867,067	253,522	75,396	9,267,721
	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2000	3,015,336	1.1	2,156,391	0.1	1,629,495	3.4	723,374	0.4
2001	3,076,397	2.0	2,218,712	2.9	1,655,507	1.6	730,981	1.1
2002	3,113,869	1.2	2,268,466	2.2	1,684,488	1.8	738,508	1.0
2003	3,169,311	1.8	2,307,589	1.7	1,686,809	0.1	746,856	0.6
2004	3,213,999	1.4	2,351,663	1.9	1,751,237	3.8	754,837	1.1

Source: esaa

Table 4.1 notes:

1. The South Australian customer number accounting basis was modified in 2004 in line with national practice and historical figures have been adjusted on the same basis.

Table 4.2 Consumption (GWh) 2003-04

Classification of customers	NSW & ACT ¹	VIC	QLD	SA	WA ^{2,3}	TAS	NT	TOTAL
Residential	21,535.54	11,350.09	11,406.46	4,008.70	-	2,079.51	502.47	-
Business	50,478.91	31,061.87	29,881.79	7,492.20	-	8,220.06	1,104.11	-
Public lighting	356.98	Under business	191.67	99.30	-	23.58	Under business	-
TOTAL ⁴	72,371.43	42,411.96	41,479.92	11,600.20	12,987.40	10,323.15	1,606.58	192,780.65
	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2000	-	37,578.78	3.5	35,505.41	6.7	11,045.25	5.6	11,635.16
2001	-	38,395.34	2.2	37,347.66	5.2	11,441.67	3.6	11,996.75
2002	-	39,006.67	1.6	39,544.02	5.9	11,213.38	-2.0	12,081.36
2003	-	39,867.87	2.2	39,486.75	-0.1	11,774.90	5.0	12,475.30
2004	72,371.43	-	42,411.96	6.4	41,479.92	5.0	11,600.20	-1.5

Source: esaa

Table 4.2 notes:

1. The basis for calculation of NSW data has changed in 2003-04, therefore figures in this year should not be compared to previous years.

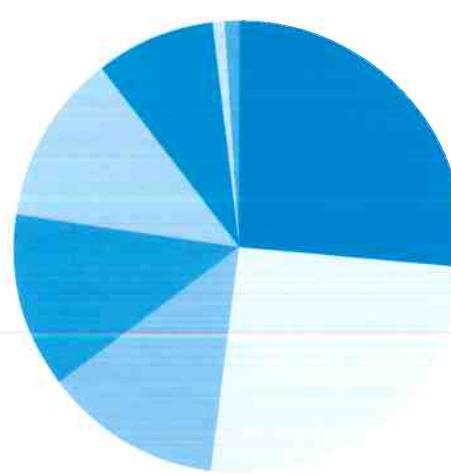
2. Figures represent sales from Western Power Corporation only. Electricity consumption of industrial customers who purchase energy from non-grid IPPs is not included.

3. A breakdown of consumption by classification of customers was not available for WA at time of publication.

4. Some historical figures have changed on the basis of new information.

Chart 4.1

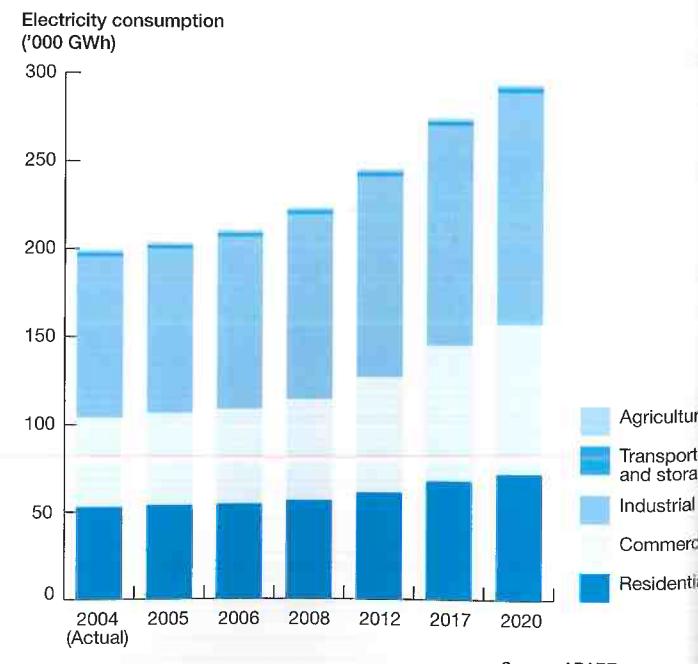
Final electricity consumption by sector 2003-04



Source: ABARE

Chart 4.2

Electricity consumption by sector 2004-2020



Source: ABARE

Table 4.3 Customers and sales of Green Power (MWh) at 30 June 2004¹

	NSW	VIC	QLD	SA	WA	ACT
Number of customers						
Residential	11,591	29,362	46,989	6,952	918	5,147
Business	2,548	1,548	471	22	310	122
Total customer numbers	14,139	30,910	47,460	6,974	1,228	5,269
MWh Sales						
2000	31,329	18,691	15,685	N/A	305	2,637
2001	20,193	19,742	14,880	225	566	3,706
2002	18,186	19,091	25,058	225	711	4,207
2003	14,896	30,000	34,700	395	827	4,661
2004	14,139	30,910	47,460	6,974	1,228	5,269

Source: SEDA, NSW.

Table 4.3 note:

1. This table shows electricity supply from accredited Green Power suppliers. Tasmania's power production is almost 100 per cent sourced from pre-1997 hydro plants, which are not included in the Green Power scheme. In 2003-04 the NT did not have Green Power accredited sales of renewable energy and is not included in this table.

Table 4.1 Number of customers at 30 June 2005

Classification of customers	NSW & ACT	VIC	QLD	SA ¹	WA	TAS	NT	TOTAL
Residential	2,919,583	2,097,560	1,574,167	670,743	820,703	213,832	61,222	8,357,810
Business	343,345	271,844	199,802	86,885	109,215	42,190	15,305	1,068,586
Total	3,262,928	2,369,404	1,773,969	757,628	929,918	256,022	76,527	9,426,396
TOTAL	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2001	3,076,397 2.0	2,218,712 2.9	1,655,507 1.6	730,981 1.1	810,568 2.0	247,899 -0.1	72,167 3.3	8,825,378 2.0
2002	3,113,869 1.2	2,268,466 2.2	1,684,488 1.8	738,508 1.0	828,113 2.2	248,544 0.3	73,811 2.3	8,969,093 1.6
2003	3,169,311 1.8	2,307,589 1.7	1,686,809 0.1	746,856 1.1	847,058 2.3	250,893 0.9	74,981 1.6	9,092,628 1.4
2004	3,213,999 1.4	2,351,663 1.9	1,751,237 3.8	754,837 1.1	867,067 2.4	253,522 1.0	75,396 0.6	9,267,721 1.9
2005	3,262,928 1.5	2,369,404 0.8	1,773,969 1.3	757,628 0.4	929,918 7.2	256,022 1.0	76,527 1.5	9,426,396 1.7

Source: esaa, company annual reports

Table 4.1 note:

1. The South Australian customer number accounting basis was modified in 2004 in line with national practice and historical figures have been adjusted on the same basis.

Table 4.2 Consumption (GWh) 2004-05

Classification of customers	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL
Residential	21,477.06	12,846.18	11,594.71	3,951.65	4,725.70	2,014.00	503.27	57,112.56
Business	45,326.78	33,123.64	31,889.19	7,618.30	8,974.40	8,001.00	1,115.31	136,678.09
Public lighting	395.66	Under business	123.92	97.78	Under business	Under business	12.11	Under business
Total	67,199.49	45,969.83	43,607.82	11,667.73	13,700.10	10,015.00	1,630.68	193,790.65
TOTAL ³	% Change	% Change	% Change					
2001	61,761.50 3.3	38,395.34 2.2	37,347.66 5.2	11,441.67 3.6	11,996.75 3.1	-	1,549.32 0.0	-
2002	62,162.49 0.6	39,006.67 1.6	39,544.02 5.9	11,213.38 -2.0	12,081.36 0.7	-	1,558.65 0.6	-
2003	63,781.00 2.6	39,867.87 2.2	41,952.02 6.1	11,774.90 5.0	12,475.30 3.3	-	1,615.14 3.6	-
2004	65,203.59 2.2	42,411.96 6.4	43,281.91 3.2	11,600.20 -1.5	12,987.40 4.1	10,065.71 -	1,606.58 -0.5	187,157.35 -
2005	67,199.49 3.1	45,969.83 8.4	43,607.82 0.8	11,667.73 0.6	13,700.10 5.5	10,015.00 -0.5	1,630.68 1.5	193,790.65 3.5

Source: esaa

Table 4.2 notes:

1. Figures represent sales from Western Power Corporation only (now Western Power and Horizon Power).

Electricity consumption of industrial customers who purchase energy from IPPs is not included.

2. The basis for calculation of Tasmanian data changed, therefore the figures shown in Table 4.2 should not be compared to previous years.

3. Some historical figures have changed on the basis of new information.

Chart 4.1

Final electricity consumption by sector 2004-05

Table 4.3 Personnel indicators: distribution

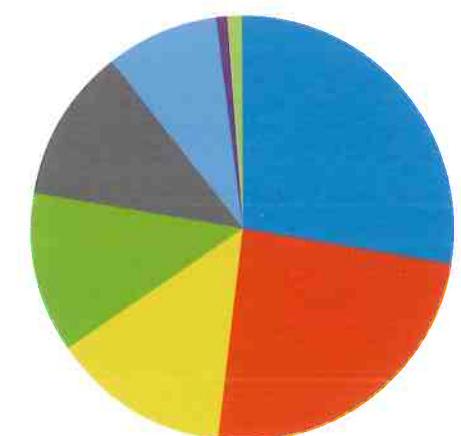
State	Days lost due to injury ¹		Lost time injury frequency ²	
	2003-04	2004-05	2003-04	2004-05
New South Wales & ACT	0.12	0.18	6.66	8.66
Victoria	0.23	0.19	2.40	5.22
Queensland	0.10	0.08	2.77	2.01
South Australia	0.01	0.01	0.39	0.75
Western Australia	0.15	0.63	6.00	9.51
Tasmania	1.77	0.35	22.73	5.70
Northern Territory	0.69	0.38	8.53	31.25
Australian weighted average	0.15	0.19	4.83	6.00

Source: esaa

Table 4.3 notes:

1. Measured as days per employee.

2. Measured as number of injuries per million hours (see Appendix 6 for definitions).



Source: ABARE, Australian energy national and state projections to 2029-30

Table 3.2 Number of customers at 30 June 2006

Classification of customers	NSW & ACT	VIC	QLD	SA ^{1,2}	WA ^{3,4}	TAS	NT ⁵	TOTAL
Residential	2,949,376	2,109,756	1,603,756	679,069	-	216,983	61,555	-
Business	348,482	311,820	205,283	97,425	-	42,147	12,078	-
Total	3,297,858	2,421,576	1,809,039	776,494	892,601	259,130	73,633	9,530,331
TOTAL								
	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2002	3,113,869	1.2	2,268,466	2.2	1,684,488	1.8	738,508	1.0
2003	3,169,311	1.8	2,307,589	1.7	1,686,809	0.1	746,856	1.1
2004	3,213,999	1.4	2,351,663	1.9	1,751,237	3.8	754,837	1.1
2005	3,262,928	1.5	2,369,404	0.8	1,773,969	1.3	757,628	0.4
2006	3,297,858	1.1	2,421,576	2.2	1,809,039	2.0	776,494	2.5

Source: esaa, company annual reports

Table 3.2 notes:

1. The South Australian customer number accounting basis was modified in 2004 in line with national practice and historical figures have been adjusted on the same basis.
2. Figures are preliminary figures only and may be subject to change.
3. A breakdown of customer connections for Western Australia was not available at the time of publication.
4. The basis for calculation of Western Australian connections changed, therefore the figures shown in this table should not be compared to previous years.
5. The basis for calculation of Northern Territory connections changed and historical figures have been adjusted on this basis.

Table 3.3 Consumption (GWh) 2005-06

Classification of customers	NSW & ACT	VIC	QLD	SA ¹	WA ^{2,3}	TAS ⁴	NT	TOTAL
Residential	22,123.89	12,638.58	12,456.92	4,200.32	-	2,014.34	529.21	-
Business	46,785.60	30,923.66	32,879.30	7,835.27	-	7,795.16	1,072.63	-
Public lighting	Under business	Under business	234.34	105.96	-	0.43	Under business	-
Total	68,909.50	43,562.24	45,570.56	12,141.55	14,351.97	9,809.92	1,601.84	195,947.58
TOTAL⁵								
	% Change	% Change	% Change	% Change				
2002	62,162.49	0.6	39,006.67	1.6	39,544.02	5.9	11,213.38	-2.0
2003	63,781.00	2.6	39,867.87	2.2	41,952.02	6.1	11,774.90	5.0
2004	65,203.59	2.2	42,411.96	6.4	43,281.91	3.2	11,600.20	-1.5
2005	67,199.49	3.1	42,573.41	0.4	43,607.82	0.8	11,667.73	0.6
2006	68,909.50	2.5	43,562.24	2.3	45,570.56	4.5	12,141.55	4.1

Source: esaa

Table 3.3 notes:

1. Figures for South Australia are preliminary figures only and may be subject to change.
2. Figures represent sales from Western Power and Horizon Power only. Electricity consumption of industrial customers who purchase energy from independent power producers is not included.
3. A breakdown of consumption by customer classification was not available at the time of publication.
4. The basis for calculation of Tasmanian data changed in 2003-04, therefore the figures shown in this table should not be compared to previous years.
5. Some historical figures have changed on the basis of new information.

Table 3.4a Maximum interconnector power transfer capabilities 2005-06

Interconnector	Forward capability (MW) ¹	Reverse capability (MW) ¹
New South Wales to Queensland (QNI)	589	1,078
New South Wales to Queensland ² (Directlink)	152	196
(Terranora)	30	234
Snowy to New South Wales	3,559	1,150
Victoria to Snowy	1,313	1,842
Victoria to South Australia (Heywood)	460	300
Victoria to South Australia (Murraylink)	220	214
Tasmania to Victoria (Basslink)	600	480

Table 3.4b Average recorded interconnector power transfer capabilities and number of hours constrained flow at times of high scheduled demand for 2005-06

Interconnector	Forward market flow direction ¹	Average limit when constrained (MW) ³	Hours of constrained flow	Reverse market flow direction ¹	Average limit when constrained (MW) ³	Hours of constrained flow
New South Wales to Queensland (QNI)	-	372	19	-	1037	162
New South Wales to Queensland ² (Directlink)	-25	-	285	-	104	139
(Terranora)	-81	-	28	-	186	19
Snowy to New South Wales	-	2,336	37	-	-195	24
Victoria to Snowy	-	772	8	-	1,314	50
Victoria to South Australia (Heywood)	-	451	273	-	291	12
Victoria to South Australia (Murraylink)	-	175	24	-6	-	21
Tasmania to Victoria (Basslink)	-118	-	52	-	-120	134

Source: NEMMCO Statement of Opportunities 2006

Table 3.4 notes:

1. Forward market flow refers to north-bound flow; that is, NSW to Queensland, Snowy to NSW, Victoria to Snowy, Victoria to South Australia and Tasmania to Victoria.
2. This interconnector's definition changed on 21 March 2006. The values for Directlink occurred prior to this date. The values for Terranora are from 21 March to the end of the financial year.
3. Average values can comprise a combination of negative and positive values.

Table 3.2 Number of customers at 30 June 2007

Classification of customers	NSW & ACT		VIC		QLD		SA		WA ¹		TAS		NT		TOTAL	
Residential	2,923,107		2,141,284		1,629,232				688,524		807,136		219,809		61,783	8,470,875
Business	410,577		313,330		216,421				97,980		117,977		43,102		13,499	1,212,886
Total	3,333,684		2,454,614		1,845,653				786,504		925,113		262,911		75,282	9,683,761
TOTAL		% Change		% Change		% Change			% Change		% Change		% Change		% Change	% Change
2003	3,169,311	1.8	2,307,589	1.7	1,686,809	0.1			746,856	1.1			250,893	0.9	67,413	0.8
2004	3,213,999	1.4	2,351,663	1.9	1,751,237	3.8			754,837	1.1			253,522	1.0	68,679	1.9
2005	3,262,928	1.5	2,369,404	0.8	1,773,969	1.3			757,628	0.4	861,754	-	256,022	1.0	69,709	1.5
2006	3,297,858	1.1	2,421,576	2.2	1,809,039	2.0			776,494	2.5	892,601	3.6	259,130	1.2	73,633	5.6
2007	3,333,684	1.1	2,454,614	1.4	1,845,653	2.0			786,504	1.3	925,113	3.6	262,911	1.5	75,282	2.2

Source: esaa, company annual reports

Table 3.2 note:

1. The basis for calculation of Western Australian connections changed in 2004-05, therefore the figures shown in this table should not be compared to previous years.

Table 3.3 Consumption (GWh) 2006-07

Classification of customers	NSW & ACT		VIC		QLD		SA		WA		TAS		NT		TOTAL	
Residential	21,862.5		12,595.4		12,250.1				4,253.0		4,973.9		2,178.9		552.0	58,665.8
Business	47,899.0		31,466.0		33,037.7				8,323.9		9,479.7		8,116.3		1,095.0	140,165.0
Unmetered	330.6		Under business		237.3				107.0		38.3		24.0		10.1	Under business
Total	70,092.2		44,061.4		45,525.0				12,683.9		14,492.0		10,319.2		1,657.1	198,830.8
TOTAL		% Change		% Change		% Change			% Change		% Change		% Change		% Change	% Change
2003	63,781.0	2.6	39,867.9	2.2	41,952.0	6.1			11,774.9	5.0	12,475.3	3.3	-	-	1,538.1	7.4
2004	65,203.6	2.2	42,412.0	6.4	43,281.9	3.2			11,600.2	-1.5	12,987.4	4.1	10,065.7	-	1,548.6	0.7
2005	67,199.5	3.1	42,573.4	0.4	43,607.8	0.8			11,667.7	0.6	13,700.1	5.5	10,015.0	-0.5	1,571.8	1.5
2006	68,909.5	2.5	43,562.2	2.3	45,570.6	4.5			12,141.6	4.1	14,352.0	4.8	9,809.9	-2.0	1,601.8	1.9
2007	70,092.2	1.7	44,061.4	1.1	45,525.0	-0.1			12,683.9	4.5	14,492.0	1.0	10,319.2	5.2	1,657.1	3.4

Source: esaa

Table 3.4a Maximum interconnector power transfer capabilities 2006-07¹

Interconnector		Forward capability (MW) ²	Reverse capability (MW) ²
New South Wales to Queensland	(QNI) (Terranora) ³	486	1,078
		105	234
Snowy to New South Wales		3,309	1,090
Victoria to Snowy		1,361	1,786
Victoria to South Australia	(Heywood) (Murraylink)	460	300
		220	220
Tasmania to Victoria	(Basslink)	594	469

Table 3.4b Average recorded interconnector power transfer capabilities and number of hours of constrained flow at times of high scheduled demand for 2006-07

Interconnector	Forward market flow direction ²		Reverse market flow direction ²		
	Average limit when constrained (MW) ^{4,5}	Hours of constrained flow ⁵	Average limit when constrained (MW) ^{4,5}	Hours of constrained flow ⁵	
New South Wales to Queensland	(QNI) (Terranora) ³	352	19	1,029	198
		-85	83	140	102
Snowy to New South Wales		2,607	14	309	32
Victoria to Snowy		475	114	968	33
Victoria to South Australia	(Heywood) (Murraylink)	455	82	26	82
		31	70	122	43
Tasmania to Victoria	(Basslink)	492	143	230	39

Source: NEMMCO Statement of Opportunities 2007

Table 3.4 notes:

- Figures presented are an approximation only, as they report target power flows rather than power transfer capabilities (i.e. the targets may have been higher in some periods had the market required it, and had the network power transfer capabilities been able to accommodate the dispatch).
- Forward market flow refers to north-bound flow; that is, NSW to Queensland, Snowy to NSW, Victoria to Snowy, Victoria to South Australia and Tasmania to Victoria. Reverse market flow is south-bound flow.
- Directlink converted to a regulated interconnector (the Terranora interconnector) on 21 March 2006.
- Average values can comprise a combination of negative and positive values.
- Constrained flows arising from Frequency Control Ancillary Services constraint equations are excluded.

Table 3.2 Number of customers at 30 June 2008

Classification of customers	NSW & ACT	VIC	QLD	SA	WA ¹	TAS	NT	TOTAL
Residential	2,977,603	2,164,899	1,670,789	697,518	883,932	220,148	63,800	8,678,689
Business	394,249	313,735	221,671	98,695	128,965	44,159	11,874	1,213,348
Total	3,371,852	2,478,634	1,892,460	796,213	1,012,897	264,307	75,674	9,892,037
TOTAL								
2004	3,213,999	1.4	2,351,663	1.9	1,751,237	3.8	754,837	1.1
2005	3,262,928	1.5	2,369,404	0.8	1,773,969	1.3	757,628	0.4
2006	3,297,858	1.1	2,421,576	2.2	1,809,039	2.0	776,494	2.5
2007	3,333,684	1.1	2,454,614	1.4	1,845,653	2.0	786,504	1.3
2008	3,371,852	1.1	2,478,634	1.0	1,892,460	2.5	796,213	1.2

Source: esaa, company annual reports

Table 3.2 note:

1. The basis for calculation of Western Australian connections changed in 2007-08, therefore the figures shown in this table should not be compared to previous years.

Table 3.3 Consumption (GWh) 2007-08

Classification of customers	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL
Residential	21,517.3	12,176.0	12,046.8	4,333.3	5,234.8	1,994.4	565.2	57,867.8
Business	49,504.6	31,593.0	33,389.5	8,248.4	9,662.1	8,466.3	1,192.5	143,439.0
Unmetered	547.8	452.1	221.0	108.9	Under business	42.3	10.5	Under business
Total	71,569.7	44,221.2	45,657.4	12,690.6	14,896.9	10,503.0	1,768.1	201,306.8
TOTAL								
2004	65,203.6	2.2	42,412.0	6.4	43,281.9	3.2	11,600.2	-1.5
2005	67,199.5	3.1	42,573.4	0.4	43,607.8	0.8	11,667.7	0.6
2006	68,909.5	2.5	43,562.2	2.3	45,570.6	4.5	12,141.6	4.1
2007	70,188.2 ¹	1.7	44,061.4	1.1	45,275.0 ¹	-0.1	12,683.9	4.5
2008	71,569.7	2.0	44,221.2	0.4	45,657.4	0.8	12,690.6	0.1

Source: esaa

Table 3.3 note:

1. The historical figure has changed on the basis of new information.

Table 3.4a Maximum interconnector power transfer capabilities 2007-08¹

Interconnector	Forward capability (MW) ²	Reverse capability (MW) ²
New South Wales to Queensland (QNI) (Terranora)	483 105	1,078 245
Snowy to New South Wales ³	3,114	1,134
Victoria to Snowy ³	1,274	1,780
Victoria to South Australia (Heywood) (Murraylink)	460 220	300 220
Tasmania to Victoria (Basslink)	594	478

Table 3.4b Average recorded interconnector power transfer capabilities and number of hours of constrained flow for 2007-08

Interconnector	Forward market flow direction ²		Reverse market flow direction ²	
	Average limit when constrained (MW) ^{4,5}	Hours of constrained flow ⁵	Average limit when constrained (MW) ^{4,5}	Hours of constrained flow ⁵
New South Wales to Queensland (QNI) (Terranora)	145 -11	301 342	1,038 148	430 88
Snowy to New South Wales ³	2,330	2	253	145
Victoria to Snowy ³	127	229	865	214
Victoria to South Australia (Heywood) (Murraylink)	318 -26	215 257	214 69	564 176
Tasmania to Victoria (Basslink)	-40	162	392	4,812 ⁶

Source: NEMMCO Statement of Opportunities 2008

Table 3.4 notes:

1. Figures represent power transfer dispatch targets as opposed to metered flow.
2. Forward market flow refers to north-bound flow; that is, NSW to Queensland, Snowy to NSW, Victoria to Snowy, Victoria to South Australia and Tasmania to Victoria.

Reverse market flow is south-bound flow.

3. Abolition of the Snowy region occurred on 1 July 2008.

4. Average values can comprise a combination of negative and positive values.

5. Significant differences between the 2007 and 2008 figures are due to interconnector power transfer capabilities and the hours of constrained flow (due to binding constraint equations) now being based on analysis of the whole year rather than the 10 per cent of periods with the highest demand.

6. The significant cause of hours of constrained power flow in the Victoria to Tasmania direction involved a limit associated with sufficient load being available for the Frequency Control Special Protection Scheme (FCSPS).

Table 3.2 Number of customers at 30 June 2009

Classification of customers	NSW & ACT	VIC	QLD	SA	WA ¹	TAS	NT ¹	TOTAL
Residential	3,000,551	2,190,588	1,697,545	708,242	909,680	-	60,805	-
Business	394,817	315,256	211,191	99,311	141,654	-	11,522	-
Total	3,395,368	2,505,844	1,908,736	807,553	1,051,334	269,556	72,327	10,010,718
TOTAL	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2005	3,262,928 1.5	2,369,404 0.8	1,773,969 1.3	757,628 -	256,022 1.0	-	-	-
2006	3,297,858 1.1	2,421,576 2.2	1,809,039 2.0	776,494 -	259,130 1.2	-	-	-
2007	3,333,684 1.1	2,454,614 1.4	1,845,653 2.0	786,504 -	262,911 1.5	-	-	-
2008	3,371,852 1.1	2,478,634 1.0	1,892,460 2.5	796,213 -	264,307 0.5	-	-	-
2009	3,395,368 0.7	2,505,844 1.1	1,908,736 0.9	807,553 1.4	1,051,334 -	269,556 2.0	72,327 -	10,010,718 -

Source: esaa, company annual reports, Tasmanian Energy Supply Industry Performance Report 2008-09.

Table 3.2 note:

1. The basis for calculation of Western Australian and Northern Territory connections changed in 2008-09, therefore the figures shown in this table should not be compared to previous years.

Table 3.3 Consumption (GWh) 2008-09

Classification of customers	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL
Residential	22,146.3	12,502.9	12,669.7	4,348.5	5,876.6	1,651.8	685.5	59,881.2
Business	49,148.1	31,334.8	34,440.6	8,418.1	9,622.4	9,056.7	1,153.9	143,174.6
Unmetered	380.2	376.4	304.2	111.6	33.7	25.4	13.3	1,244.9
Total	71,674.6	44,214.1	47,414.5	12,878.2	15,532.7	10,733.9	1,852.7	204,300.7
TOTAL	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2005	67,199.5 3.1	42,573.4 0.4	43,607.8 0.8	11,667.7 0.6	13,700.1 5.5	10,015.0 -0.5	1,571.8 1.5	190,335.3 1.7
2006	68,909.5 2.5	43,562.2 2.3	45,570.6 4.5	12,141.6 4.1	14,352.0 4.8	9,809.9 -2.0	1,601.8 1.9	195,947.6 2.9
2007	70,188.2 1.9 ¹	44,061.4 1.1	45,275.0 -0.6 ¹	12,683.9 4.5	14,492.0 1.0	10,319.2 5.2	1,657.1 3.4	198,830.8 1.5
2008	71,569.7 2.0	44,221.2 0.4	45,657.4 0.8	12,690.6 0.1	14,896.9 2.8	10,503.0 1.8	1,768.1 6.7	201,306.8 1.2
2009	71,674.6 0.1	44,214.1 -0.02²	47,414.5 3.8	12,878.2 1.5	15,532.7 4.3	10,733.9 2.2	1,852.7 4.8	204,300.7 1.5

Source: esaa

Table 3.3 notes:

1. The historical figure has been revised on the basis of new information.

2. Total electricity consumption decreased marginally within Victoria during 2008-09, largely due to a reduction in industrial load.

Table 3.4 Technical indicators: transmission

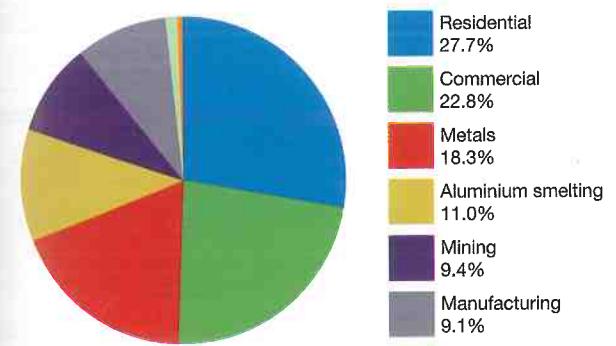
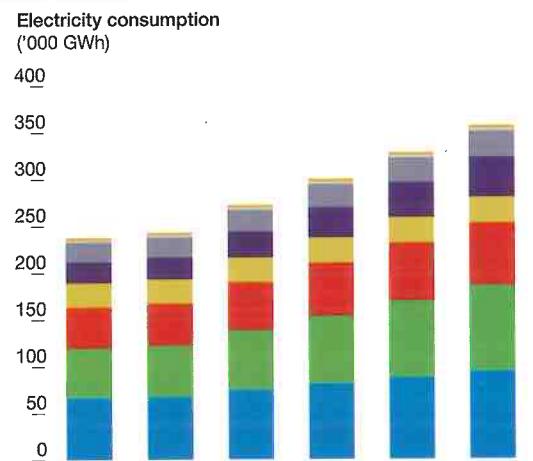
State	System minutes unsupplied (mins)		Energy delivered (GWh)		Circuit availability (%)	
	2007-08	2008-09	2007-08	2008-09	2007-08	2008-09
New South Wales & ACT	0.37	0.42	71,030	71,508	98.6	98.4
Victoria	0.73	7.46	50,426	50,042	99.1	99.1
Queensland	N/A	N/A	46,083	47,904	N/A	N/A
South Australia ¹	0.99	1.35	13,107	13,327	99.3	99.4
Western Australia ²	10.50	9.60	14,848	15,500	98.2	98.3
Tasmania	4.95	1.83	11,187	10,961	99.1	99.5
Australian total	-	-	206,681	209,241	-	-

Source: esaa, company annual reports

Table 3.4 notes:

1. South Australian performance indicators are based on the 2007 and 2008 calendar years. Energy delivered figures are based on years ending June.

2. Western Australian transmission indicators relate to the SWIS only.

Chart 3.1Final electricity consumption by sector 2008-09¹**Chart 3.2**Electricity consumption projection by sector 2009 to 2030¹

Source: ABARE, Australian energy national and state projections to 2029-30 (07.24)

Note:

1. Australian energy national and state projections to 2029-30 (07.24), released in December 2007, was the most recent source of information available at time of publication.

Source: ABARE, Australian energy national and state projections to 2029-30 (07.24)
Note:
1. Australian energy national and state projections to 2029-30 (07.24), released in December 2007, was the most recent source of information available at time of publication.

Table 3.2 Number of customers at 30 June 2010¹

Classification of customers	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL
Residential	3,058,479	2,248,207	1,742,545					
Business	371,501	313,895	204,783	717,813	928,654	229,420	62,522	8,987,640
Total	3,429,980	2,562,102	1,947,328	817,270	1,055,861	279,789	74,004	10,166,334
TOTAL	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2006	3,297,858 1.1	2,421,576 2.2	1,809,039 2.0	776,494 2.5	- -	259,130 1.2	- -	- -
2007	3,333,684 1.1	2,454,614 1.4	1,845,653 2.0	786,504 1.3	- -	262,911 1.5	- -	- -
2008	3,371,852 1.1	2,478,634 1.0	1,892,460 2.5	796,213 1.2	- -	264,307 0.5	- -	- -
2009	3,395,368 0.7	2,505,844 1.1	1,908,736 0.9	807,553 1.4	1,051,334 -	269,556 2.0	72,080 - ²	10,010,718 -
2010	3,429,980 1.0	2,562,102 2.2	1,947,328 2.0	817,270 1.2	1,055,861 0.4	279,789 3.8	74,004 2.7	10,166,334 1.6

Table 3.2 notes:

1. The number of customers is based on information provided by companies in the industry.

2. The 2008-09 figure has been revised on the basis of new information.

Source: esaa, company annual reports

Table 3.3 Consumption (GWh) 2009-10¹

Classification of customers	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL
Residential	21,332.9	12,661.3	13,633.6					
Business	49,227.5	30,640.6	33,685.7	4,512.4	5,569.4	2,077.4	599.2	60,386.2
Unmetered	450.6	376.4	154.1	8,270.9	11,329.8	8,260.8	1,207.6	142,622.8
Total	71,011.0	43,678.3	47,473.4	12,896.7	17,040.6	10,375.7	1,820.4	204,296.0
TOTAL	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2006	68,909.5 2.5	43,562.2 2.3	45,570.6 4.5	12,141.6 4.1	14,352.0 4.8	9,809.9 -2.0	1,601.8 1.9	195,947.6 2.9
2007	70,188.2 1.9	44,061.4 1.1	45,275.0 -0.6	12,683.9 4.5	14,492.0 1.0	10,319.2 5.2	1,657.1 3.4	198,676.7 1.4
2008	71,569.7 2.0	44,221.2 0.4	45,657.4 0.8	12,690.6 0.1	14,896.9 2.8	10,615.3 2.9 ²	1,768.1 6.7	201,419.1 1.4
2009	71,674.6 0.1	44,214.1 0.0	47,414.5 3.8	12,878.2 1.5	15,532.7 4.3	10,807.0 1.8 ²	1,761.6 -0.4 ²	204,282.7 1.4
2010	71,011.0 -0.9	43,678.3 -1.2	47,473.4 0.1	12,896.7 0.1	17,040.6 9.7	10,375.7 -4.0	1,820.4 3.3	204,296.0 0.0

Table 3.3 notes:

1. Total consumption and the classification of customers is based on information provided by companies in the industry.

2. The figure has been revised on the basis of new information.

Source: esaa, company annual reports

STATE LIBRARY OF NEW
17 AUG 2012
STATE LIBRARIES
LIBRARY

ELECTRICITY GAS AUSTRALIA 2012



CONTENTS

ACKNOWLEDGEMENTS

Produced and compiled by Sonja Lekovic and Panos Priftakis, with the assistance of Shaun Cole, Ben Pryor, Temay Rigzin and Karolina Simic.

Edited by Kieran Donoghue and Andrew McNamara
Design by CIOTOLA

Published by esaa, GPO Box 1823 Melbourne Vic 3001

Disclaimer

Electricity Gas Australia 2012 is a publication of the Energy Supply Association of Australia (esaa). Electricity Gas Australia 2012 and the accompanying CD ROM include materials, statistics and other information from a number of sources.

No responsibility is accepted by esaa, the editor, authors of any materials or suppliers of any statistics or other information for the accuracy of any information contained in Electricity Gas Australia 2012 and the CD ROM or the consequences of any person relying upon any information. The contents of Electricity Gas Australia 2012 and the CD ROM should not be relied upon as a substitute for professional advice.

Copyright

The contents of this document are copyright. Subject to the provisions of the Australian Copyright Act 1968, no part of this publication or its contents may be reproduced or copied in any form or by any means (electronic, graphic or mechanical including by photocopying, recording, taping, micro copying or otherwise) or reproduced, stored or used in conjunction with any information retrieval system or transmitted by any means, without the prior written permission of esaa.

OVERVIEW

ELECTRICITY AUSTRALIA 2012

Electricity highlights	1
Section 2: Generation	12
Section 3: Transmission and Distribution	19
Section 4: Australian Electricity Markets	41
	47

GAS AUSTRALIA 2012

Natural gas highlights	65
Section 5: Gas supply	66
	68

APPENDICES

Appendix 1 Power stations in Australia 2010-11	81
Appendix 2a Proposed new power stations and expansions	82
Appendix 2b Proposed major natural gas pipeline projects	98
Appendix 3a Ownership of major electricity companies in Australia at 31 March 2012	112
Appendix 3b Ownership of major natural gas companies in Australia at 31 March 2012	114
Appendix 4a State and Territory regulations having impact on electricity supply businesses	120
Appendix 4b State and Territory regulations impacting downstream natural gas supply businesses	122
Appendix 5 Electricity and downstream natural gas businesses mergers and acquisitions at 31 March 2012	126
Appendix 6a Glossary	130
Appendix 6b Definitions: performance indicators	134
Appendix 7 esaa member organisations at 15 April 2012	137
	140

Table 1.1 Energy supply structure¹

Electricity supply structure	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Electricity supply structure	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
Principal generators²																	
Acciona Energy																	
AGL Energy	APA Group ¹³	
Alcoa Australia	Ausgrid	
Alinta Energy ³	Basslink	
APA Group ⁴	ElectraNet	
Arrow Energy ⁵	Horizon Power ¹⁰	
Aurora Energy	Power and Water Corporation	
BHP Billiton Worsley Alumina	Powerlink	
CS Energy ⁶	SP AusNet	
Delta Electricity ⁷	Transend Networks	
Ecogen Energy	TransGrid	
Energy Brix Australia	Western Power	
Energy Developments	Distributors								
Eraring Energy ⁸	ActewAGL	
Ergon Energy	Aurora Energy	
ERM Power ^{3,5}	Ausgrid ^{14,15}	
Goldfields Power	CitiPower	
Griffin Energy	Endeavour Energy ^{15,16}	
Hazelwood Power Partnership ⁹	ENERGEX	
Horizon Power ¹⁰	Ergon Energy	
Hydro Tasmania	Essential Energy ^{15,17}	
Infigan Energy	ETSA Utilities	
Infratil Energy	Horizon Power ¹⁰	
InterGen (Australia)	Jemena	
IPR-GDF SUEZ ⁹	Power and Water Corporation	
IPR-GDF SUEZ and Mitsui & Co ⁹	Powercor Australia	
Loy Yang Power ¹¹	SP AusNet	
Macquarie Generation	United Energy Distribution	
Marubeni Corporation	Western Power	
Origin Energy ⁸	Licensed retailers¹⁸								
Osborne Cogeneration	ActewAGL	
Pacific Hydro	AGL Energy	
Perth Energy	Alinta Energy	
Perth Power Partnership	Aurora Energy	
Power and Water Corporation	Australian Power and Gas	
Queensland Gas Company	Clear Energy	
Redbank Energy ³	Click Energy	
Rio Tinto Alcan	Cogent Energy	
Snowy Hydro	COZero Retail ¹⁹	
Southern Cross Energy	CS Energy	
Stanwell Corporation ⁶	Delta Electricity	
TRUenergy ⁷	Diamond Energy	
TrustPower Australia	Dodo Power and Gas	
Verve Energy ¹²	EDL Pilbara	

Table 1.1 cont.

Electricity supply structure	NSW	VIC	QLD	SA	WA	TAS	NT	ACT		Natural gas supply structure	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
Energy Brix Australia										Transmission pipeliners								
Erating Energy	●									ActewAGL	●							
Ergon Energy	●			●						AGL Energy		●						
ERM Power	●	●	●	●	●	●				Alinta Energy ³		●						
Essential Energy ¹⁷						●				Anglo Coal		●						
Flinders Power				●	●					APA Group ¹³	●	●						
GridX ²⁰	●									Apache Energy		●						
Griffin Energy						●				Arrow Energy ⁵		●						
Horizon Power ¹⁰					●					ATCO Australia ²⁴		●						
Infigen Energy Markets ²¹	●									Australian Gasfields		●						
Landfill Gas & Power						●				BHP Billiton								
Lumo Energy ²²	●	●	●	●	●					Chevron Australia								
Metered Energy Holdings	●									ConocoPhillips Australasia								
Momentum Energy	●	●	●	●	●					Dampier Bunbury Pipeline (DBP)								
Neighbourhood Energy		●								Eni Australia								
Newmont Power					●					Envestra ¹⁷	●	●	●	●				
Origin Energy ^{16,17}	●	●	●	●	●					Epic Energy ¹³		●						
OzGen Retail		●	●	●						Ergon Energy		●						
Perth Energy					●					Esperance Pipeline Company								
Power and Water Corporation						●				Gas Pipelines Victoria								
Powerdirect	●	●	●	●	●					Jemena		●						
Premier Power Sales						●				Multinet Gas		●						
Progressive Green		●								Newmont Mining								
QEnergy			●							Nexus Energy								
Red Energy	●	●	●	●	●					NT Gas								
Sanctuary Energy	●	●	●	●	●					Origin Energy		●						
Simply Energy	●	●	●	●	●					Palisade Investment Partners ²⁵								
Southern Cross Energy						●				Robe River Iron Associates								
Stanwell Corporation	●				●					Santos								
Synergy ¹²						●				SEA Gas ²⁶								
TRUenergy ¹⁴	●	●	●	●	●					Tas Gas Networks								
TrustPower Australia						●				Woodside Energy								
WINenergy	●									Distribution pipeliners								
										ActewAGL								
										APA Group ¹³		●						
										ATCO Australia ²⁴								
										Envestra ¹⁷		●						
										Jemena		●						
										Multinet Gas		●						
										NT Gas								
										SP AusNet								
										Tas Gas Networks								
										Licensed retailers ¹⁸								
										ActewAGL								
										AGL Energy		●						



Table 1.1 cont.

Natural gas supply structure	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
Alinta Energy								
Aurora Energy		●						
Australian Power and Gas	●	●	●	●				
BHP Billiton	●	●						
COZero Retail ¹⁹								
Dodo Power and Gas	●	●	●	●				
Essential Energy ¹⁷						●		
Esso Australia Resources	●	●						
Lumo Energy ²²	●			●				
Momentum Energy	●			●				
NT Gas						●		
Origin Energy ^{16,17}	●	●	●	●				
Perth Energy					●			
Red Energy		●						
Santos Direct	●	●						
Simply Energy	●	●	●	●				
Synergy ^{12,23}					●			
Tas Gas Retail					●			
TRUenergy ¹⁴	●	●	●	●				
Wesfarmers Kleenheat Gas				●				
WorleyParsons Asset Management				●				

Table 1.1 notes:

1. Valid at 31 March 2012.
2. Includes electricity generators with semi-scheduled generation assets.
3. In March 2011, a group of lenders led by TPG Capital took ownership of most of Alinta Group's assets in a debt-to-equity swap. The remaining assets, the Redbank and the Oakey power stations, were put under the ownership of Redbank Energy Limited. Redbank Energy sold its remaining 50 per cent share in the Oakey power station to ERM Power in July 2011. Refer to Appendix 5 for more details.
4. In July 2011, APA Group acquired the Emu Downs wind farm in Western Australia from a joint venture between Griffin Energy and Stanwell Corporation. Refer to Appendix 5 for more details.
5. On 30 June 2011, Arrow Energy acquired ERM Power's 50 per cent share in the Braemar 2 power station and the Condamine to Braemar 2 gas pipeline in Queensland, increasing its share to 100 per cent. As part of the acquisition, Arrow Energy also obtained operational rights to the power station and the gas pipeline. Refer to Appendix 5 for more details.
6. On 1 July 2011, the Queensland Government restructured its electricity generation companies. CS Energy, Tarong Energy Corporation and Stanwell Corporation were restructured and merged into two companies - CS Energy and Stanwell Corporation. Refer to Appendix 5 for more details.
7. The NSW Government sold the output from Delta Electricity's Mt Piper and Wallerawang power stations to TRUenergy in December 2010 under a GenTrader agreement. Refer to Appendix 5 for more details.
8. The NSW Government sold the output from the Eraring power station to Origin Energy in December 2010 under a GenTrader agreement. Refer to Appendix 5 for more details.
9. International Power and GDF Suez merged operations in February 2011, forming IPR-GDF SUEZ. The company owns the majority share in the Hazelwood and Loy Yang B principal power stations in Victoria, as well as having full ownership in a number of principal power stations in South Australia. Refer to Appendix 5 for more details.
10. Horizon Power is a vertically integrated electricity company operating as a principal generator, transmitter, distributor and licensed retailer in regional Western Australia, outside of the South West Interconnected System (SWIS).
11. In March 2012, AGL Energy announced that it will acquire the remaining share of the Loy Yang A power station from Tepco, RATCH and remaining shareholders, during 2012. This acquisition will increase AGL Energy's ownership of the power station to 100 per cent, subject to regulatory approval.
12. At the time of publication, the Western Australian Government was proposing a merger between Verve Energy and the retailer Synergy.
13. In December 2011, APA Group proposed to acquire the remaining 78.9 per cent of Hastings Diversified Utilities Fund (owner of Epic Energy) during 2012. The acquisition would increase APA Group's ownership to 100 per cent, subject to regulatory approval. At the time of publication, the proposal was reviewed by the ACCC, which published a Statement of Issues on 30 March 2012, outlining preliminary competition concerns.
14. Energy Australia's retail arm became part of TRUenergy in December 2010. They operate under both the EnergyAustralia brand and the TRUenergy brand. The remaining business, which constitutes an electricity distribution network in NSW, was renamed AusGrid in March 2011. Refer to Appendix 5 for more details.
15. In March 2012, the NSW Government announced a restructure of the electricity distribution network in New South Wales, to be effective from mid-2012. A new State owned corporation (SOC) will be created to own and operate the electricity distribution network, while Ausgrid, Endeavour Energy and Essential Energy will provide operational services to the SOC under the current brands.

16. Integral Energy sold its retail arm to Origin Energy in December 2010. The remaining business, which constitutes an electricity distribution network in NSW, was renamed Endeavour Energy in March 2011. Refer to Appendix 5 for more details.
17. Country Energy sold its NSW gas network business to Envestra in October 2010 and its retail arm in New South Wales to Origin Energy in December 2010. The remaining business, which constitutes an electricity distribution network in New South Wales and retail businesses in the ACT and Tasmania, was renamed Essential Energy in March 2011. Refer to Appendix 5 for more details.
18. Includes all companies with retail licences.
19. In September 2011, Jackgreen (International) Pty Ltd was renamed COZero Retail.
20. GridX is licensed to sell electricity produced within the GridX embedded generation system.
21. Infigen Energy acquired Alinta Energy Services in March 2010, renaming the subsidiary to Infigen Energy Markets.
22. South Australia Electricity, New South Wales Electricity, Victoria Electricity and Queensland Electricity were each renamed Lumo Energy in July 2010.
23. Synergy is licensed to retail natural gas to customers consuming greater than 0.18 TJ per annum only.
24. In July 2011, ATCO Australia (Group) acquired WA Gas Networks (WAGN) from WestNet Infrastructure Group and DUET Group. Refer to Appendix 5 for more details.
25. In August 2011, Palisade Investment Partners acquired the Tasmanian Gas Pipeline from WestNet, which was owned by Brookfield Infrastructure Partners. Refer to Appendix 5 for more details.
26. In November 2010, International Power Australia sold its one third share in SEA Gas to the other two owners, APA Group and Retail Employees Superannuation Trust (REST). APA Group and REST each now own 50 per cent share in SEA Gas. Refer to Appendix 5 for more details.

Table 1.2 Total electricity supply
Australia 2010-11

Fuel consumed for principal generation

Black coal	1,140 PJ
Brown and other coal	721 PJ
Brown coal briquettes	2 PJ
Oil for steam raising	4 PJ
Oil for reciprocating engines	<0.5 PJ
Oil for gas turbines	1 PJ
Natural gas ¹	343 PJ
Biofuels ²	<0.5 PJ
LPG	<0.5 PJ
Total	2,211 PJ

Principal electricity generation by fuel type

Hydro	15,859 GWh
Biofuels ²	18 GWh
Black coal	115,577 GWh
Brown coal	55,195 GWh
Coal seam methane	9,768 GWh
Natural gas ¹	25,657 GWh
Oil products	147 GWh
Solar	<0.5 GWh
Wind ³	5,848 GWh
Total	228,067 GWh

Principal electricity generation by plant type

Hydro (excluding pump storage plants)	15,859 GWh
Steam	174,298 GWh
Gas turbine	11,105 GWh
Combined cycle	20,827 GWh
Reciprocating engine	131 GWh
Photovoltaic	<0.5 GWh
Wind ³	5,848 GWh
Total	228,067 GWh

Table 1.3 Total natural gas supply
Australia 2010-11

Primary gas consumption by sector

Electricity generation	343 PJ
Manufacturing	368 PJ
Mining	202 PJ
Residential	145 PJ
Commercial	48 PJ
Transport and storage	21 PJ
Agriculture	<0.5 PJ
Total	1,128 PJ

Table 1.2 notes:

1. Natural gas usage includes coal seam methane.
2. Includes biomass and landfill gas.
3. Includes semi-scheduled and large non-scheduled generating units.

Table 1.4 Electricity supply reliability 2010-11^{1,2}

	NSW & ACT	VIC	QLD ³	SA	WA	TAS	NT	Australian weighted average
SAIFI Average customer outage frequency (Interruptions / customer)	1.6	1.6	2.4	2.6	2.6	2.1	7.8	2.0
CAIDI Average customer outage time (Minutes / interruption)	134.3	114.0	461.7	141.7	145.6	137.0	67.7	203.3
SAIDI Average customer outage duration (Minutes / customer / annum)	212.1	177.4	1,100.6	371.8	381.3	289.0	529.1	408.0
SAIDI	2007	351.8	204.8	290.0	185.4	328.6	200.0	281.7
	2008	175.7	251.6	262.2	146.9	317.1	353.0	231.2
	2009	205.2	218.9	362.4	174.6	390.9	360.4	262.2
	2010	162.8	170.1	384.3	220.9	505.3	454.0	258.8
	2011	212.1	177.4	1,100.6	371.8	381.3	289.0	408.0

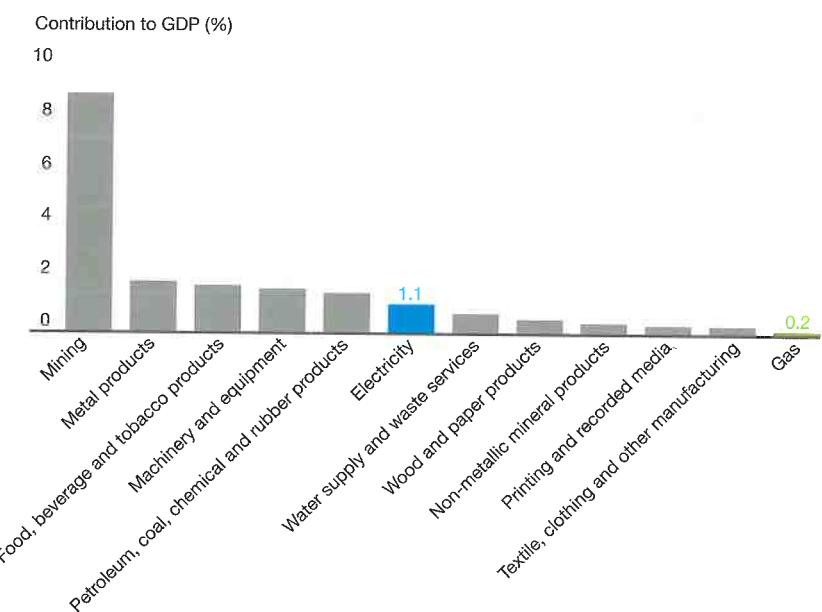
Table 1.4 notes:

1. Interruptions caused by all factors, including natural disasters, transmission failures and third-party induced interruptions.

For definitions, see Appendix 6b.

2. Includes distribution and transmission losses.

3. The 2010-11 supply reliability performance was impaired by severe weather conditions, including floods and cyclones, experienced across the majority of Queensland.

Chart 1.1Contribution to GDP by industry 2010-11
(mining, manufacturing and utilities)**Table 1.5** Personnel indicators: Australian weighted average¹

Sector	Lost time injury frequency rate ²		Lost time injury severity rate ³		Compensable claims frequency rate ⁴	
	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
Electricity Generation	4.2	3.4	40.0	31.5	1.7	2.0
Electricity Networks	3.5	3.4	67.6	45.9	5.2	5.5
Natural Gas Networks	4.9	2.2	56.5	17.9	3.1	2.3

Source: esaa, company annual reports

Table 1.5 notes:

1. Personnel indicators are representative of companies that participated in esaa's OH&S survey or whose data was publicly available at time of publication.

2. Measured as number of injuries per million hours worked.

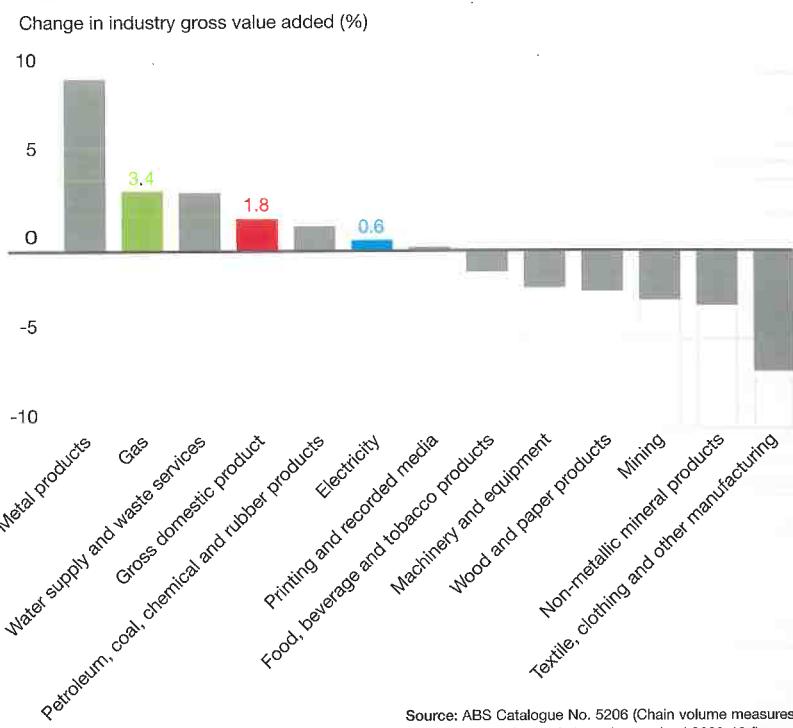
3. Measured as number of days lost per million hours worked.

4. Measured as a number of accepted employee workers compensation claims per 100 employees.

SECTION 2 • ELECTRICITY

Chart 1.2

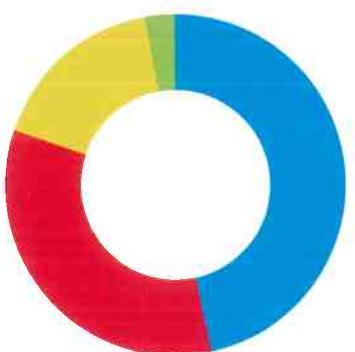
Change in industry gross value added 2009-10 to 2010-11
(mining, manufacturing and utilities)¹



Source: ABS Catalogue No. 5206 (Chain volume measures)
Note: 1. The percentage change is based on revised 2009-10 figures.

Chart 1.3

Employment in the electricity and downstream natural gas industries at 30 June 2011



Approximate total number of employees: 64,000

Electricity transmission and distribution	46.5%
Retailing, administration and call centre	33.7%
Electricity generation	17.0%
Natural gas networks	2.9%

Source: esaa, company annual reports



ELECTRICITY HIGHLIGHTS

GENERATION
E1

ELECTRICITY

Electricity Gas Australia 2012 reports energy supply industry data for the year ending 30 June 2011. However, where more recent information is available, particularly regarding mergers and acquisitions, such information has been included in written commentary, in order to present an as up-to-date summary of the state of the industry as possible.

In 2010-11, the electricity supply industry contributed \$14.5 billion to Australia's gross domestic product of \$1,307.3 billion. The gross value added by the industry increased by 0.6 per cent compared to 2009-10.

ELECTRICITY CONSUMPTION

Electricity consumption declined by a modest 0.6 per cent in 2010-11, falling for a second consecutive year. Consumption was growing at a steady rate of 1.4 per cent per annum for three years before 2009-10. Both business and residential consumption were down in 2010-11, decreasing by 0.7 and 0.4 per cent respectively. Business load accounted for 69.7 per cent of total electricity consumed during the year.

Electricity consumption in Western Australia grew at a solid rate of 8.3 per cent in 2010-11. New South Wales also saw an increase in electricity usage, albeit at a slower rate of 1.1 per cent. Consumption in South Australia and Tasmania grew at 0.8 and 0.5 per cent respectively, while Victoria and Northern Territory observed a decline in consumption, of modest proportion. The highest drop of 7.5 per cent was recorded in Queensland, where extreme weather and disastrous floods during the 2011 summer resulted in reduced output and consumption.

The total number of electricity customers increased to 10,267,985 during 2010-11, a rise of 1.0 per cent compared to 2009-10. Northern Territory recorded the highest annual growth of 3.5 per cent, followed by Queensland at 1.7 per cent. New South Wales and South Australia saw connections increase at 1 per cent each, and Victoria was close behind with 0.9 per cent. Growth in the number of customers in Western Australia was slower at 0.4 per cent, while there was a decline of 1.5 per cent in Tasmania.

ELECTRICITY SUPPLY

Principal installed capacity increased by 1.5 per cent in 2010-11, the slowest annual growth since 2005-06. Capacity increased by a total of 795 GW, 27 per cent of which represented upgrades to the coal fired Eraring and Loy Yang A power stations. Yarwun, Port Lincoln Stage 2 and Kwinana Swift gas fired power stations accounted for 38 per cent of new principal capacity. The remaining 282 GW of capacity installed during 2010-11 comes from wind power, with three new wind farms in South Australia, namely Waterloo, Hallett Stage 4 (North Brown Hill) and Lake Bonney Stage 3. As a result of this investment in new wind farms, total share of wind power in principal capacity (including semi-scheduled wind farms) has increased from 1.5 per cent to 2 per cent.

GENERATION
E2

E3
E4

GAS SUPPLY

APPENDICES

While black and brown coal power stations represent 55 per cent of total capacity installed, their output accounted for 74.9 per cent of total generation in 2010-11. This is a smaller proportion than the 77.8 per cent in the year prior, declining for a second consecutive year. Decreasing share of output from coal power station was balanced by an increase in the share of natural gas, wind and hydro. Natural gas, including coal seam methane, accounted for 15.5 per cent of generation, up from 14.2 per cent in 2009-10. Generation output from principal hydro plants represented 7 per cent of total output, increasing by 1.3 percentage points compared to the year prior. Wind – including semi-scheduled and large non-scheduled wind farms – accounted for 2.6 per cent of generation, increasing from 2.1 per cent year on year. Oil products, biomass and solar powered generation output accounted for less than 0.1 per cent during 2010-11.

As at March 2012, 343 MW of principal generation capacity had been commissioned in the period since June 2011. This includes 161 MW of new wind farm capacity, a 60 MW upgrade to Eraring and 122 MW upgrades to Channel Island and Owen Spring gas fired power stations in Northern Territory. A further 3,452 MW of capacity was under construction, predominantly comprising of wind projects (1,709 MW), gas fired power stations (1,291 MW) and black coal (330 MW). Some 2,584 MW of capacity was considered to be in advanced planning, with an additional 15,500 MW of proposed capacity with Government planning approval. More than half of the Government approved proposed capacity was for natural gas or coal seam gas power stations, with nearly a third representing wind farm projects. At the end of March 2012, there were 34,275 MW of proposed generation projects without current Government approval.

MERGER AND ACQUISITION ACTIVITY

The 2010-11 financial year was one of prominent merger and acquisition activity in the electricity supply industry, including the progressive privatisation of generators and retailers in New South Wales, the merger of International Power plc and GDF Suez, as well as the disaggregation of the Roaring 40s partnership. The partial privatisation of New South Wales electricity generation and electricity and gas retail businesses in December 2010 was highlighted in last year's publication. Please refer to Appendix 5 for full details.

In February 2011, International Power plc (parent company of International Power Australia) and French based GDF Suez announced a merger of operations. GDF Suez owned a 70 per cent stake in the new company, IP – GDF SUEZ, while International Power shareholders owned the rest. In April 2012, International Power approved an offer by GDF Suez to acquire the remaining 30 per cent share in the company by mid-2012.

In March 2011, a group of lenders led by TPG Capital took ownership of most of Alinta Group's assets in a debt-to-equity swap. As a result of the transaction, Alinta Energy has remained in the ownership of TPG Capital, operating nine power stations, including a subsidiary Flinders Power in South Australia, a share in the Goldfields Gas Pipeline and its electricity and gas retail business. Interests in the Redbank and Oakey power stations were divested from Alinta Group, and renamed Redbank Energy. In June 2011, Redbank Energy's 50 per cent share in Oakey power station was sold to ERM Power. In January 2012, ERM Power increased its share in the Oakey power station by acquiring a further 20.8 per cent from Contact Energy, gaining a controlling ownership share of 83.3 per cent, and obtaining operational rights to the power station.

The Roaring 40s was a 50:50 joint venture between Hydro Tasmania and TRUenergy, which owned and operated a number of wind farms and wind farm development sites. In June 2011, the two partner companies decided to disaggregate the joint venture. TRUenergy took ownership of the Waterloo wind farm, Robertstown and Stony Gap wind farm developments, and a 50 per cent share in the Cathedral Rocks wind farm (partnering with Acciona Energy). Hydro Tasmania took ownership of Sidonia Hills and Musselroe wind farm developments, as well as the Woolnorth (Bluff Point and Studland Bay) wind farms. However in February 2012, Hydro Tasmania sold a 75 per cent share in the Woolnorth wind farms to China's Shenhua Clean Energy Holdings.

Further in June 2011, Arrow Energy acquired the remaining 50 per cent share in the Braemar 2 power station and the associated gas pipeline, increasing its share to 100 per cent. As part of the acquisition, Arrow Energy also obtained operational rights to the power station and the gas pipeline.

Industry consolidation continued in the nine months after June 2011, including a number of significant merger and acquisition announcements. In July 2011, the Queensland Government restructured its electricity generation businesses, merging three enterprises, namely CS Energy, Tarong Energy and Stanwell Corporation, into two: CS Energy and Stanwell Corporation. CS Energy and Stanwell Corporation kept most of their existing assets, while Tarong Energy's assets were divided between the two companies.

In December 2011, APA Group proposed to acquire the remaining 78.9 per cent of Hastings Diversified Utilities Fund (owner of Epic Energy) during 2012. The acquisition would increase APA Group's ownership to 100 per cent, subject to regulatory approval. At the time of the publication, the proposal was being reviewed by the ACCC, which published a Statement of Issues on 30 March 2012, outlining preliminary competition concerns.

In March 2012, the NSW Government announced a restructure of the electricity distribution network in New South Wales, to be effective from mid-2012. A new State owned corporation (SOC) is to be created to own and operate the electricity distribution network, while Ausgrid, Endeavour Energy and Essential Energy will provide operational services to the SOC under the current brands. In the same month, the Western Australian Government announced plans to re-merge its electricity generation business Verve Energy with the retailer Synergy.

In March 2012, AGL Energy announced a plan to acquire of the remaining share of the Loy Yang A power station from Tepco, RATCH and other shareholders. The acquisition was approved by the ACCC in May 2012, giving AGL Energy full ownership of the power station from July 2012.

ELECTRICITY MARKET DEVELOPMENTS

Generation output decreased by a marginal 0.4 per cent during 2010-11, with the largest decline of 4.0 per cent observed in New South Wales, while generation output in Tasmania increased by 14.4 per cent. Not surprisingly, net imports to New South Wales increased by 30.9 per cent during the year, while net exports in Queensland and Victoria grew at 13.2 and 6.8 per cent respectively. South Australia recorded an 8.4 per cent fall in net imports in 2010-11, while Tasmania exported more electricity than it imported for the first time since the Basslink opened in 2005-06.

The maximum coincident summer trading demand of 34,887 MW across the NEM was reached on 2 February 2011 and the maximum coincident winter trading demand was 31,552 MW, occurring on 1 July 2010. Summer peak demand was higher than the 33,751 MW recorded in the year prior, while winter peak demand was lower than the previous year. Regional maximum demand reached new peaks in NSW, South Australia and Tasmania.

The Western Australian SWIS reached its maximum demand of 3,741 MW (sent-out) on 16 February 2011.

ELECTRICITY PRICES

The volume weighted average spot price decreased in four of the five regions in the NEM, increasing only in Tasmania by 2.3 per cent. The largest decrease was in South Australia, with the volume weighted average price down by 49.1 per cent during 2010-11. Victoria saw prices fall by 30.9 per cent, while in New South Wales and Queensland prices were down by 17.8 and 9.4 per cent respectively. New South Wales reported the highest volume weighted average spot price at \$43.09 per MWh during 2010-11, with the lowest average price of \$29.12 per MWh observed in Victoria.

SUPPLY RELIABILITY

System average minutes without supply (SAIDI) for electricity distribution increased during 2010-11. The Australian weighted average was 398.5 minutes, up from 247.4 minutes in 2009-10. Extreme weather conditions continued to cause major disruptions to electricity distribution in some regions, particularly extreme flooding in Queensland in the first few months of 2011. Queensland recorded the highest total of 1,090.4 minutes, up from 379 minutes the year prior. New South Wales and ACT had the lowest average of 206.7 minutes in 2010-11. Both New South Wales and Victoria experienced milder weather conditions during the year, improving supply reliability.

The Australian weighted average number of interruptions per customer (SAIFI) remained unchanged from 1.9 in 2009-10, with increases in Victoria, South Australia and Northern Territory offset by improvements in Western Australia, Tasmania and Queensland.

SECTION 2 : GENERATION

Table 2.1 Principal generation plant installed (MW) at 30 June 2011¹

Plant type	NSW & ACT ²	VIC ²	QLD ³	SA	WA ⁴	TAS	NT	Snowy ²	TOTAL										
Hydro	2,285.0	2,206.0 ⁵	144.0	0.0	0.0	2,282.7	0.0	-	6,917.7										
Pump storage	240.0	0.0	500.0	0.0	0.0	0.0	0.0	-	740.0										
Steam																			
Black coal	11,937.0	0.0	8,805.0	0.0	1,745.0	0.0	0.0	-	22,487.0										
Brown coal	0.0	6,630.0	0.0	780.0	0.0	0.0	0.0	-	7,410.0										
Natural gas	0.0	510.0	132.0	1,280.0	267.5	0.0	0.0	-	2,189.5										
Multi-fuel	0.0	0.0	0.0	0.0	640.0	0.0	0.0	-	640.0										
Gas turbine																			
Natural gas	1,332.0 ⁵	1,321.0	1,067.0	776.5 ⁵	1,771.0	283.0	322.3	-	6,872.8										
Coal seam methane	0.0	0.0	519.0	0.0	0.0	0.0	0.0	-	519.0										
Oil products	50.0	0.0	457.0	113.0	83.0	0.0	30.0	-	733.0										
Multi-fuel	0.0	0.0	0.0	0.0	586.0	0.0	0.0	-	586.0										
Combined cycle																			
Natural gas	595.0	0.0	215.0	663.0	800.0	208.0	130.8	-	2,611.8										
Coal seam methane	0.0	0.0	1,395.0	0.0	0.0	0.0	0.0	-	1,395.0										
Reciprocating engine	0.0	0.0	0.0	50.0	0.0	0.0	77.1	-	127.1										
Photovoltaic	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-	0.2										
Wind	0.0	0.0	0.0	763.6	191.1	139.8	0.0	-	1,094.5										
Total	16,439.0	10,667.0	13,234.0	4,426.1	6,083.6	2,913.5	560.5	-	54,323.6										
	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change										
Total ²	2007	12,289.0	0.5	8,912.0	3.7	10,916.0	4.8	3,491.0	0.6	4,713.5	-	2,759.1	7.0	471.7	-1.0	3,676.0	0.0	47,228.3	5.2
	2008	12,289.0	0.0	8,912.0	0.0	11,666.0	6.9	3,585.5	2.7	5,137.6	9.0	2,759.1	0.0	515.4	9.3	3,676.0	0.0	48,540.5	2.8
	2009	15,540.0	-	10,412.0	-	12,116.0	3.9	3,972.2	10.8	5,425.6	5.6	2,789.1	1.1	559.7	8.6	-	-	50,814.5	4.7
	2010	16,355.0	5.2	10,562.0	1.4	13,074.0	7.9	4,100.3	3.2	5,963.6	9.9	2,913.5	4.5	560.5	0.2	-	-	53,528.8	5.3
	2011	16,439.0	0.5	10,667.0	1.0	13,234.0	1.2	4,426.1	8.0	6,083.6	2.0	2,913.5	0.0	560.5	0.0	-	-	54,323.6	1.5

Table 2.1 notes:

- Figures represent commissioned scheduled and semi-scheduled generators only and exclude embedded, non-grid private generators and non-scheduled intermittent generators.
- The Snowy region was abolished on 1 July 2008. Generation plant previously included within the Snowy region have been reallocated to New South Wales and Victoria, therefore capacity figures presented for those regions should not be compared to earlier years.
- Queensland figures include generating capacity at Mt Isa.
- Due to the commencement of the Wholesale Electricity Market in WA in September 2006, for the 2006-07 reporting year onward, principal generation capacity includes all market generators in the SWIS with a capacity greater than 10 MW. Previous years' figures represent plants owned by Verve Energy (formerly Western Power Corporation) in the SWIS only, thus some plant represented in this table have been reclassified as principal.
- Figure includes correction of plant capacity.

Source: esaa, company annual reports, Clean Energy Council, AEMO, IMO, WA Public Utilities Office

Table 2.2

Capacity of embedded and non-grid generation (MW)

at 30 June 2011¹

Plant type	Fuel type	NSW & ACT	VIC	QLD	SA	WA ¹	TAS	NT	TOTAL
Hydro	Water	203.2	107.3	20.2	3.7	30.1	13.0	0.0	377.5
Steam	Black coal	11.0	0.0	70.0	0.0	0.0	10.7	0.0	91.7
	Coal waste methane	6.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
	Natural gas	0.0	19.2	54.5	8.0	219.5	0.0	0.0	301.2
	Oil products	0.0	0.0	0.0	0.0	20.0	4.0	133.0	157.0
	Waste gas	72.9	45.2	1.3	60.0	6.5	0.0	0.0	185.8
Gas turbine	Natural gas	47.9	106.7	45.4	17.1	1,543.8 ²	0.0	16.6	1,777.4
	Oil products	50.0	0.0	29.0	0.0	78.5 ²	10.0	0.0	167.5
Combined cycle	Natural gas	0.0	0.0	26.5	0.0	76.0	0.0	0.0	102.5
	Coal seam methane	0.0	0.0	33.0	0.0	0.0	0.0	0.0	33.0
Reciprocating engine	Natural gas	25.8	6.9	73.8	8.2	153.0 ²	0.0	0.0	267.7
	Oil products	28.8	0.0	63.2	59.4	216.5 ²	7.1	22.9	397.9
	Coal seam methane	0.0	0.0	45.0	0.0	0.0	0.0	0.0	45.0
	Coal waste methane	121.8	0.0	97.0	0.0	0.0	0.0	0.0	218.8
	LPG	0.1	0.6	0.8	0.1	0.0	0.0	0.0	1.5
Fuel cell	Natural gas	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Non-hydro renewable capacity ³	Various	366.5	552.3	442.3	408.1	49.1	8.0	1.5	1,827.7
Total		934.4	838.0	1,001.9	564.6	2,393.1	52.7	173.9	5,958.6

Table 2.2 notes:

1. Includes all generation capacity located outside the SWIS, market participating generation within the SWIS with a capacity less than 10 MW and all non-market participating generation.

2. Figure includes correction of plant capacity.

3. See Table 2.4 for a breakdown of renewable capacity by fuel type.

Source: esaa, company annual reports, Clean Energy Council, AEMO, IMO, WA Public Utilities Office

Table 2.3

Non-renewable cogeneration (MW) at 30 June 2011¹

Plant type	Fuel type	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL
Steam	Black coal	11.0	0.0	70.0	0.0	135.0	10.7	0.0	226.7
	Brown coal	0.0	195.0	0.0	0.0	0.0	0.0	0.0	195.0
	Natural gas	0.0	19.2	10.0	8.0	367.0	0.0	0.0	404.2
	Oil products	0.0	0.0	0.0	0.0	0.0	4.0	105.0	109.0
	Waste gas	72.9	45.2	1.3	0.0	6.5	0.0	0.0	125.8
Gas turbines	Natural gas	7.2	98.3	160.4	17.1	984.5	0.0	0.0	1,267.4
Combined cycle	Natural gas	160.0	0.0	0.0	185.0	196.0	0.0	0.0	541.0
	Coal seam methane	0.0	0.0	33.0	0.0	0.0	0.0	0.0	33.0
Reciprocating engine	Various	11.9	7.4	44.6	8.3	2.0	0.0	0.0	74.2
Fuel cell	Natural gas	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Total		263.3	365.1	319.2	218.4	1,691.0	14.7	105.0	2,976.7

Source: esaa, company annual reports, Clean Energy Council, AEMO, IMO, WA Public Utilities Office

Table 2.3 note:

1. Table 2.3 is a subset of tables 2.1 and 2.2; the cogeneration capacity shown in this table has been reported separately by plant and fuel type in tables 2.1 and 2.2.

Table 2.4

Capacity of renewable generation (MW) at 30 June 2011¹

Fuel type	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL
Hydro	2,488.2	2,313.3 ²	164.2	3.7	30.1	2,295.7	0.0	7,295.2
Bagasse	75.5	0.0	362.6	0.0	6.0	0.0	0.0	444.1
Biomass	4.4	0.2	38.0	0.0	1.0	0.0	0.0	43.6
Black liquor	20.0	54.5	2.0	0.0	0.0	0.0	0.0	76.5
Geothermal	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Landfill gas	66.1	46.8 ²	22.1	13.1 ²	25.2	4.9	1.1	179.3
Sewage gas	7.9	21.5	4.5	5.5	1.8	0.1	0.0	41.2
Solar ³	4.8	1.2	0.5	1.7	1.0	0.1	1.6	10.9
Wave	0.5	0.2	0.0	0.0	0.1	0.0	0.0	0.8
Wind	187.4	427.9	12.5	1,151.5	205.1	142.5	0.1	2,126.9
Total	2,854.7	2,865.5	606.5	1,175.4	270.4	2,443.4	2.8	10,218.7

Source: esaa, company annual reports, Clean Energy Council, AEMO, IMO, WA Public Utilities Office

Table 2.4 notes:

1. Table 2.4 is a subset of tables 2.1 and 2.2; with principal capacity shown in table 2.1 and non-principal renewable capacity shown in table 2.2.

2. Figure includes correction of plant capacity.

3. Solar capacity does not include solar hot water installations and rooftop solar.

year ending June 2011¹

Table 2.5 Principal electricity generation by plant type (GWh)

Plant type ²	NSW & ACT ³	VIC ³	QLD	SA	WA ⁴	TAS	NT	Snowy ³	TOTAL
Hydro (excluding pump storage plants)	2,278.0	3,287.6	961.2	0.0	0.0	9,331.8	0.0	-	15,858.6
Steam	60,712.9	51,218.0	46,183.3	6,605.0	9,578.6	0.0	0.0	-	174,297.7
Gas turbine	320.5	470.4	4,443.8	298.5	4,655.1	37.4	879.6	-	11,105.4
Combined cycle	3,754.7	0.0	7,958.7	3,980.8	3,091.5	1,470.7	570.4	-	20,826.7
Reciprocating engine	0.0	0.0	0.0	1.2	0.0	0.0	129.5	-	130.7
Photovoltaic	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-	0.1
Wind ⁵	491.9	1,137.4	0.0	3,042.5	704.2	472.1	0.0	-	5,848.1
Total generation	67,557.9	56,113.4	59,547.0	13,928.0	18,029.4	11,312.0	1,579.5	-	228,067.3
	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
Total generation⁵	2007	69,749.4	2.7	53,487.7	2.9	59,821.2	0.6	12,471.9	20.8
	2008	72,870.9	4.5	53,354.3	-0.2	58,654.2	-2.0	16,431.9	8.1
	2009	73,398.8	-3	56,177.6	-3	59,322.6	1.1	9,404.9	-10.8
	2010⁶	70,395.8	-4.1	56,161.8	0.0	60,013.7	1.2	1,439.7	5.4
	2011	67,557.9	-4.0	56,113.4	-0.1	59,547.0	-0.8	3,747.7	-27.5
Energy sent out	63,376.9	-4.1	51,915.3	0.0	55,823.0	-0.2	122,554.4	2.1	
Energy purchased⁷	6,208.8	8.4	1,250.4	4.2	1,644.6	-17.5	13,357.1	7.1	
Import	10,810.6	22.0	2,539.8	13.3	48.2	-12.7	16,245.6	-1.1	
Export	605.4	-43.2	6,654.2	9.2	6,493.3	12.9	8,763.5	-6.8	
Net imports⁸	10,205.2	30.9	-4,114.4	6.8	-6,445.1	13.2	14,327.3	7.3	
Trade losses ⁹	265.1	49.9	203.1	20.3	74.6	56.3	16,527.9	1.7	
Total available energy⁶	2007⁶	76,957.6	1.4	48,330.2	1.8	50,426.2	-0.1	9,477.5	-3.3
	2008⁶	77,493.1	0.7	49,193.2	1.8	50,541.9	0.2	1,524.7	3.3
	2009⁶	78,179.3	-3	49,202.2	-3	51,701.4	2.3	1,568.5	2.9
	2010⁶	79,457.7	1.6	49,090.6	-0.2	52,180.7	0.9	1,579.5	0.7
	2011	79,525.8	0.1	48,848.2	-0.5	50,947.9	-2.4	228,067.3	-0.4

Source: esaa, company annual reports, AEMO, IMO

Table 2.5 notes:

- This table represents generation for public consumption only and does not include generation for own use by private generators.
- Figures shown by plant type represent generation from scheduled, semi-scheduled and large non-scheduled intermittent generators only.
- The Snowy region was abolished on 1 July 2008. Generation plant previously included within the Snowy region have been reallocated to New South Wales and Victoria, therefore generation output figures presented for those regions should not be compared to previous years.
- Principal generation includes all energy entering the system from market generators in the SWIS with a capacity greater than 10 MW, with other purchases from independent power producers (IPPs) represented under the Energy Purchased category.
- Wind generation data after 2007-08 includes output from semi-scheduled and large non-scheduled generating units, therefore figures presented should not be compared to previous years.
- Some figures have been revised due to a calculation error in the previous year's publication.
- Energy purchased includes energy purchased from IPPs, non-grid and embedded generation for public consumption.
- Import and export of energy refers to interstate trading.
- Basslink is not a regulated interconnector, thus the regional proportioning factor is not available. Losses for this interconnector have therefore been apportioned equally between Tasmanian and Victorian regions.

Chart 2.1 Installed capacity by fuel type (MW)
at 30 June 2011¹

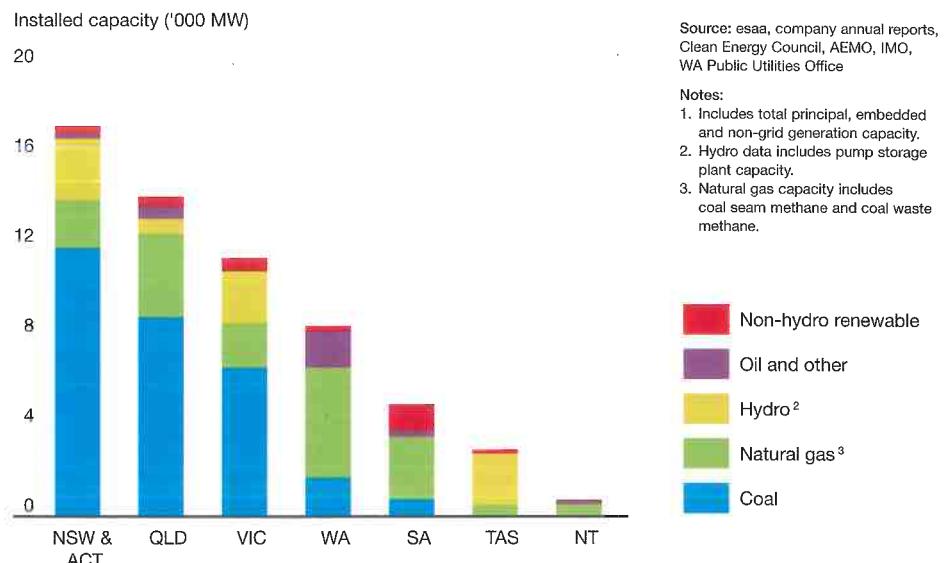
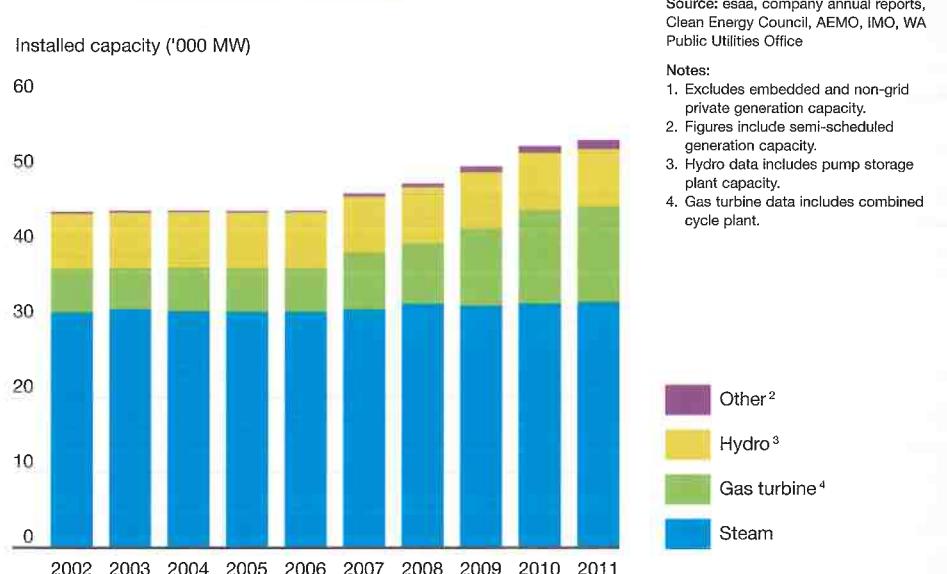


Chart 2.2 Principal generation capacity by plant type (MW)
- total years ending June 2002 to 2011¹



26

Chart 2.3 Forecast of principal generation capacity (MW)
- 2011 to 2021^{1,2}

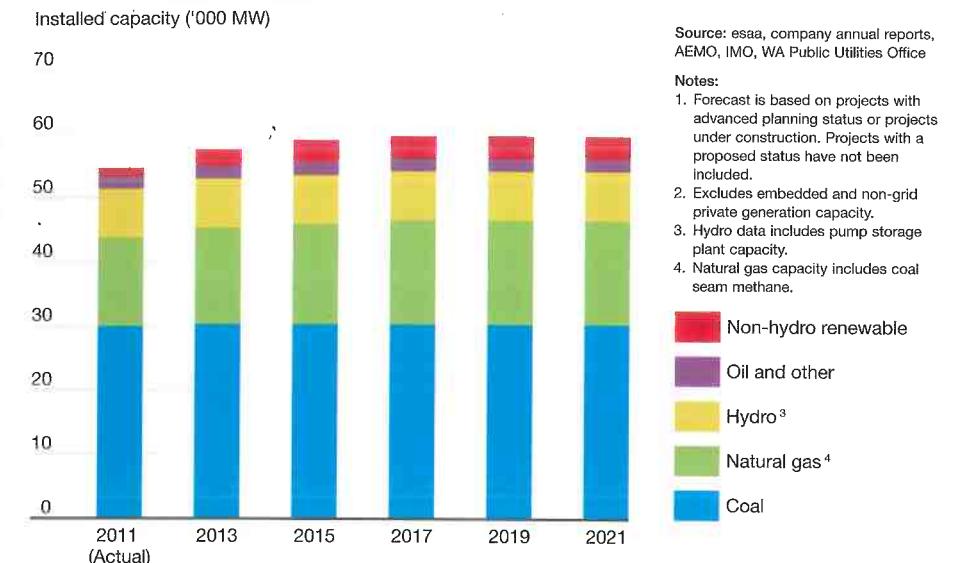


Chart 2.4 Principal generation by fuel type (GWh)
- years ending June 2002 to 2011^{1,2}

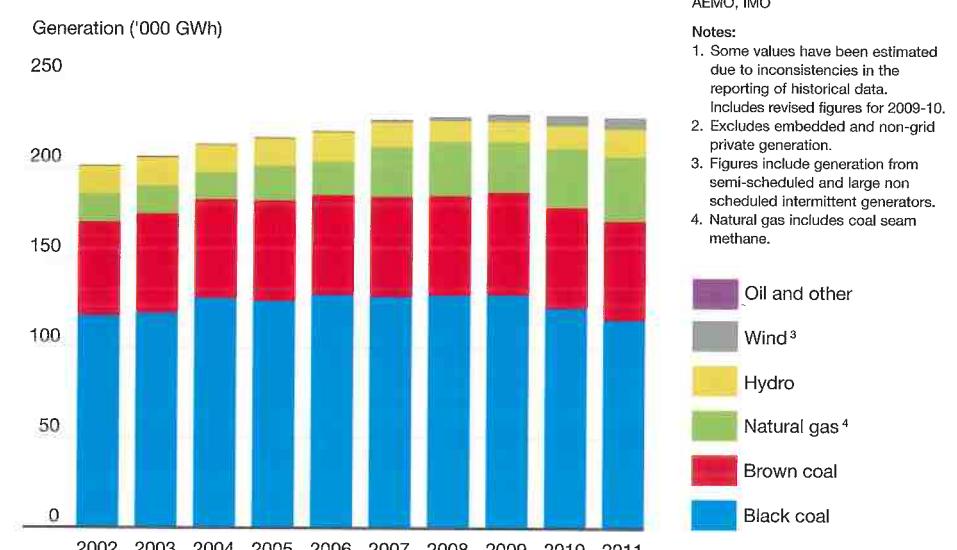


Table 2.6

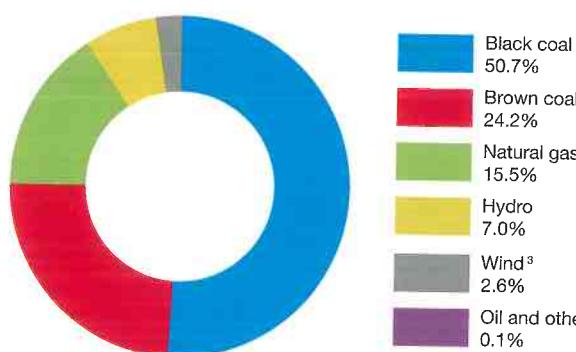
Principal electricity generation by fuel type (GWh)

Fuel type	NSW & ACT ²	VIC ²	QLD	SA	WA ³	TAS	NT	Snowy ²	year ending June 2011 ¹	TOTAL	
Hydro	2,278.0	3,287.6	961.2	0.0	0.0	9,331.8	0.0	-	15,858.6		
Biofuels ⁴	0.3	0.0	17.5	0.0	0.0	0.0	0.0	-	17.8		
Black coal	60,680.9	0.0	45,705.7	0.0	9,190.4	0.0	0.0	-	115,577.0		
Brown coal	0.0	50,976.0	0.0	4,218.7	0.0	0.0	0.0	-	55,194.8		
Coal seam methane	1.7	0.0	9,765.8	0.0	8,103.5	1,508.0	1,552.9	-	9,767.5		
Natural gas	4,073.3	712.2	3,060.7	6,646.3	31.3	0.1	26.5	-	25,656.9		
Oil products	32.0	0.1	36.0	20.5	0.0	0.0	0.1	-	0.1		
Solar	0.0	0.0	0.0	0.0	704.2	472.1	0.0	-	5,848.1		
Wind ⁵	491.9	1,137.4	0.0	3,042.5	18,029.4	11,312.0	1,579.5	-	228,067.3		
Total generation	67,557.9	56,113.4	59,547.0	13,928.0	18,029.4	11,312.0	1,579.5	-	228,067.3		
	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change	
Total ^{2,6}	2007	69,749.4	2.7	53,487.7	2.9	59,821.2	0.6	12,471.9	20.8	16,431.9	8.1
	2008	72,870.9	4.5	53,354.3	-0.2	58,654.2	-2.0	13,357.1	7.1	16,245.6	-1.1
	2009	73,398.8	-2	56,177.6	-2	59,322.6	1.1	14,327.3	7.3	16,527.9	1.7
	2010 ⁶	70,395.8	-4.1	56,161.8	0.0	60,013.7	1.2	13,620.8	-4.9	17,438.8	5.5
	2011	67,557.9	-4.0	56,113.4	-0.1	59,547.0	-0.8	13,928.0	2.3	18,029.4	3.4

Table 2.6 notes:

1. Table 2.6 represents scheduled and some semi-scheduled and non-scheduled generation for public consumption only and does not include generation for own use by private generators.
2. The Snowy region was abolished on 1 July 2008. Generation plant previously included within the Snowy region have been reallocated to New South Wales and Victoria, therefore generation output figures presented for those regions should not be compared to previous years.
3. Principal generation includes all energy entering the system from market generators in the SWIS with a capacity greater than 10 MW.
4. Includes biomass and landfill gas.
5. Wind generation data includes output from semi-scheduled and large non-scheduled generating units from 2008-09 onwards, therefore figures presented should not be compared to previous years.
6. Some figures have been revised due to a calculation error in the previous year's publication.

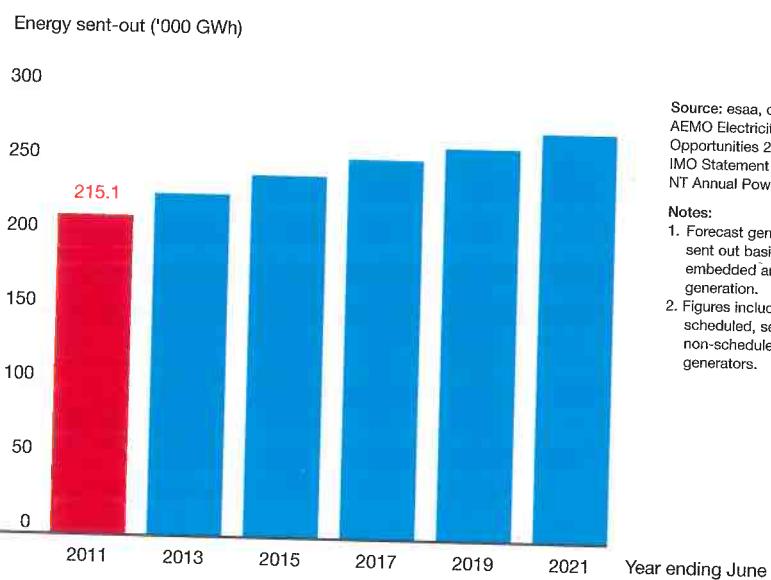
Source: esaa, company annual reports, AEMO, IMO

Chart 2.5 Principal electricity generation by fuel type 2010-11 ¹

Source: esaa, company annual reports, AEMO, IMO

Notes:

1. Excludes embedded and non-grid private generation.
2. Includes generation from coal seam methane.
3. Includes generation from semi-scheduled and large non-scheduled intermittent generators.

Chart 2.6 Forecast Australian electricity generation (GWh) ^{1,2}

Source: esaa, company annual reports, AEMO Electricity Statement of Opportunities 2011, IMO Statement of Opportunities 2011, NT Annual Power System Review 2012

Notes:

1. Forecast generation is on an energy sent out basis and excludes embedded and non-grid private generation.
2. Figures include generation from scheduled, semi-scheduled and large non-scheduled intermittent generators.

Table 2.7

Fuel consumed for principal generation¹

Fuel source	Year ended 30 June	NSW & ACT Energy content (TJ)	VIC Energy content (TJ)	QLD Energy content (TJ)	SA ² Energy content (TJ)	WA ^{3,4} Energy content (TJ)	TAS ^{5,6} Energy content (TJ)	NT Energy content (TJ)	TOTAL Energy content (TJ)
Black coal	2007	29,315,309	665,791	0	0	22,723,912	484,111	0	0
	2008	30,264,910	697,443	0	0	22,086,858	470,550	0	0
	2009	29,724,626	688,460	0	0	22,547,788	480,838	0	0
	2010	27,438,675	632,511	0	0	22,531,260	475,927	0	0
	2011	25,908,515	595,161	0	0	21,021,124	437,705	0	0
Brown and other coal	2007	0	64,583,545	656,741	0	0	0	0	0
	2008	0	65,361,700	663,150	0	0	0	0	0
	2009	0	66,809,165	677,094	0	0	0	0	0
	2010	0	66,752,138	672,861	0	0	0	0	0
	2011	0	66,738,775	670,473	0	0	0	0	0
Brown coal briquettes	2007	0	70,303	1,540	0	0	0	0	0
	2008	0	76,817	1,670	0	0	0	0	0
	2009	0	77,055	1,664	0	0	0	0	0
	2010	0	72,759	1,582	0	0	0	0	0
	2011	0	72,911	1,579	0	0	0	0	0
Oil for steam raising	2007	21,981	966	11,025	485	11,679	524	-	-
	2008	29,485	1,333	10,594	466	15,561	698	-	-
	2009	21,463	976	12,290	541	16,453	739	-	-
	2010	17,338	777	11,615	511	17,976	806	-	-
	2011	19,705	890	11,890	523	19,450	865	6,297	279
Oil for reciprocating engines	2007	0	0	0	0	0	0	1,268	57
	2008	0	0	0	0	0	0	695	31
	2009	0	0	0	0	0	0	610	27
	2010	0	0	0	0	0	0	155	7
	2011	0	0	0	0	0	0	379	17
Oil for gas turbines	2007	151	7	15	1	16,681	722	-	-
	2008	159	7	44	2	26,231	1,135	-	-
	2009	148	7	82	4	12,140	522	-	-
	2010	296	13	81	3	15,599	675	-	-
	2011	542	24	68	3	10,751	461	1,175	52
Natural gas ⁷	2007	-	8,837	-	28,680	-	67,824	-	-
	2008	-	8,603	-	28,309	-	70,959	-	-
	2009	-	16,581	-	20,799	-	71,199	-	-
	2010	-	31,714	-	13,771	-	100,229	-	-
	2011	-	32,455	-	8,216	-	121,170	-	-
Biofuels ⁸	2007	23,142	453	0	0	25,769	391	0	0
	2008	8,250	192	0	0	22,608	343	0	0
	2009	10,177	242	0	0	18,798	313	0	0
	2010	4,943	88	0	0	21,495	341	0	0
	2011	285	3	0	0	11,746	191	0	0
LPG	2007	0	0	310	16	0	0	0	0
	2008	0	0	533	27	0	0	0	0
	2009	0	0	246	13	0	0	0	0
	2010	0	0	275	14	0	0	0	0
	2011	0	0	277	14	0	0	0	0
Total energy content (TJ)	2007	-	676,054	-	687,463	-	553,572	-	17,194
	2008	-	707,577	-	693,625	-	543,686	-	16,858
	2009	-	706,266	-	700,114	-	553,611	-	17,656
	2010	-	665,104	-	688,742	-	577,977	-	2,269,168
	2011	-	628,534	-	680,808	-	560,391	-	2,210,523

Table 2.7 notes:

- This table represents fuel (including start-up fuel) used in scheduled generation for public consumption only and does not include fuel used in generation by private generators.
- The basis for estimating 'oil for steam raising' figures in South Australia changed in 2008-09, therefore figures presented should not be compared to previous years.
- Principal generation includes all energy entering the system from market generators in the South West Interconnected System (SWIS) with a capacity greater than 10 MW.

4. The basis for calculating fuel usage figures in Western Australia changed in 2008-09, therefore figures presented should not be compared to previous years.

5. Figures represent fuel used in generation for mainland Tasmania only.

6. 'Oil for gas turbines' totals for Tasmania were not available prior to 2009-10, therefore figures presented should not be compared to earlier years.

7. Natural gas usage includes coal seam methane.

8. Includes biomass and landfill gas.

Source: esaa, company annual reports

Table 2.8 Load forecast - 2010-11 to 2020-21^{1,2}

		NSW & ACT ³	VIC ³	QLD ³		SA ³	WA ⁴	TAS ³	NT ⁵	Australia
2010-11	System average load (MW)	8,370	5,434	5,628		1,583	2,047	1,250	171	-
	System peak load (MW) - summer	14,820	9,982	8,911		3,433	3,741	1,377	287	-
	System peak load (MW) - winter	13,433	8,197	7,483		2,538	N/A	1,770	N/A	-
	System energy (GWh)	73,317	47,598	49,303		13,868	17,929	10,949	1,494	214,458
2011-12	System average load (MW)	8,622	5,500	6,011		1,656	2,206	1,276	182	-
	System peak load (MW)	14,721	10,189	9,791		3,230	4,181	1,912	298	-
	System energy (GWh)	75,735	48,314	52,802		14,543	19,377	11,204	1,601	223,576
2012-13	System average load (MW)	8,850	5,681	6,376		1,694	2,222	1,306	188	-
	System peak load (MW)	14,975	10,534	10,392		3,290	4,340	1,940	308	-
	System energy (GWh)	77,527	49,766	55,854		14,839	19,468	11,443	1,648	230,545
2013-14	System average load (MW)	8,938	5,796	6,736		1,729	2,288	1,313	195	-
	System peak load (MW)	15,264	10,781	10,978		3,370	4,487	1,959	319	-
	System energy (GWh)	78,301	50,771	59,005		15,150	20,040	11,506	1,708	236,481
2014-15	System average load (MW)	9,042	5,818	7,153		1,736	2,573	1,319	202	-
	System peak load (MW)	15,565	10,979	11,670		3,420	4,889	1,973	331	-
	System energy (GWh)	79,212	50,964	62,659		15,204	22,537	11,556	1,769	243,901
2015-16	System average load (MW)	9,231	5,854	7,518		1,758	2,638	1,320	209	-
	System peak load (MW)	15,865	11,149	12,284		3,470	5,104	2,004	343	-
	System energy (GWh)	81,083	51,421	66,042		15,444	23,174	11,599	1,833	250,596
2016-17	System average load (MW)	9,392	5,989	7,784		1,802	2,684	1,345	217	-
	System peak load (MW)	16,184	11,354	12,751		3,530	5,264	2,026	355	-
	System energy (GWh)	82,271	52,468	68,187		15,783	23,515	11,778	1,899	255,901
2017-18	System average load (MW)	9,517	6,057	7,945		1,821	2,762	1,353	225	-
	System peak load (MW)	16,511	11,571	13,095		3,590	5,440	2,050	368	-
	System energy (GWh)	83,369	53,058	69,594		15,948	24,193	11,849	1,967	259,978
2018-19	System average load (MW)	9,649	6,135	8,147		1,862	2,794	1,361	233	-
	System peak load (MW)	16,851	11,823	13,492		3,670	5,584	2,080	381	-
	System energy (GWh)	84,528	53,743	71,370		16,309	24,477	11,923	2,038	264,388
2019-20	System average load (MW)	9,793	6,220	8,370		1,871	2,851	1,369	240	-
	System peak load (MW)	17,191	12,089	13,955		3,730	5,743	2,112	395	-
	System energy (GWh)	86,022	54,640	73,519		16,438	25,043	12,026	2,111	269,799
2020-21	System average load (MW)	10,017	6,362	8,638		1,906	2,897	1,385	250	-
	System peak load (MW)	17,524	12,356	14,301		3,770	5,889	2,160	409	-
	System energy (GWh)	87,745	55,732	75,667		16,694	25,379	12,135	2,186	275,538

Table 2.8 notes:

1. System peak load is based on generation terminal demand. System energy and average demand are calculated on a sent-out basis.
2. Forecasts include information provided in the Statement of Opportunities update published in March 2012.
3. System energy projections are inclusive of scheduled, semi-scheduled and significant non-scheduled generation.
4. Data represents the SWIS only.
5. Data represents the Darwin-Katherine regulated system only. In addition, 'system energy (GWh)' figures represent the best estimates available at the time of publication.

Source: esaa, AEMO Statement of Opportunities 2011, IMO Statement of Opportunities 2011, NT Annual Power System Review 2012

Table 2.9 Technical indicators: generation¹

State	System load factor ² (%)		Capacity factor ³ (%)		Reserve plant margin ⁴ (%)	
	2009-10 ⁵	2010-11	2009-10	2010-11	2009-10	2010-11
New South Wales & ACT	53.4	48.5	49.6	47.3	14.7	9.3
Victoria	53.0	53.4	59.5	58.8	4.4	6.9
Queensland	63.2	63.3	54.5 ⁵	53.4	38.6 ⁵	42.9
South Australia	43.2	42.9	35.1 ⁵	33.4	22.7	28.9
Western Australia ⁶	51.7	54.7	33.4	33.8	58.4	62.6
Tasmania ⁷	71.0	70.9	38.8	44.3	66.2	64.6
Northern Territory ⁸	64.9	62.8	39.6	39.7	67.3	60.6
Australian weighted average	55.7	54.6	49.7	48.3	27.3	28.0
	Equivalent availability factor ^{9,10} (%)	Forced outage factor ^{9,11} (%)	Planned outage factor ^{9,12} (%)	Thermal efficiency ¹³ (%)		
	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
New South Wales & ACT	85.7	85.7	4.9	4.1	9.4	10.2
Victoria	91.4	87.6	2.6	5.0	5.9	7.4
Queensland	87.1	86.3	4.3	5.5	8.6	8.1
South Australia	97.3	84.0	0.3	1.7	2.4	14.3
Western Australia ⁶	79.6	77.7	2.1	1.8	18.4	20.5
Tasmania	88.0	90.3	4.1	1.5	7.9	8.1
Northern Territory	82.9	87.7	10.0	5.2	7.1	7.1
					34.8 ⁵	34.9

Source: esaa, company annual reports, AEMO, IMO, Utilities Commission

Table 2.9 notes:

- Includes interconnected hydro capacity but excludes pump storage plant, stored plant and synchronous condenser.
- Ratio of total system energy to the theoretical maximum system energy achievable over the period. See Appendix 6b for further details.
- Percentage of total potential generation output that is actually generated. See Appendix 6b for further details.
- The amount of excess generation available within a given region. See Appendix 6b for further details.
- Historical figure has been revised on the basis of new information.
- Represents the SWIS only.
- Due to the prevalence of hydro plants in Tasmania, the capacity factor is subject to the availability of water, which has not been taken into account in the figures above. Tasmanian figures have been excluded from the Australian weighted average capacity factor calculation.
- For the regulated Darwin-Katherine, Alice Springs and Tennant Creek systems only.
- Indicators are representative of thermal power stations participating in esaa's generation benchmarking surveys only.
- Overall availability of installed generation plant when planned, maintenance and forced outages are taken into account. See Appendix 6b for further details.
- Percentage of total potential generation output that is lost due to forced outages. See Appendix 6b for further details.
- Percentage of total potential generation output that is lost due to planned and maintenance outages. See Appendix 6b for further details.
- All figures are based on energy sent out. The energy content for brown coal is based on gross wet specific energy value.

Table 2.10 Environmental indicators: generation^{1,2}

State	Carbon dioxide equivalent emissions (kg CO ₂ -e/MWh sent-out)		Nitrogen oxide emissions (kg NOx/MWh sent-out)		Sulfur dioxide emissions (kg SO ₂ /MWh sent-out)		Particulate emissions (kg PAREM/MWh sent-out)	
	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
New South Wales & ACT	916.6 ³	894.9	2.5	2.5	3.7	4.0	0.2	0.1
Victoria	1,307.9 ³	1,312.6	1.9	1.8	2.7	2.5	0.2	0.3
Queensland	893.8	830.0	1.7	1.9	2.6	2.5	0.1	0.3
South Australia	790.2 ³	748.8	1.9	1.8	1.2 ³	1.0	1.5 ³	1.8
Western Australia	895.2	884.7	2.0	1.9	4.7	4.6	0.1	0.2
Northern Territory	688.8	637.2	2.8	3.1	0.1	<0.05	0.2	0.1
	Water consumption (kL/MWh sent-out)	Percentage waste oil recycled	Percentage ash recycled					
	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
New South Wales & ACT	1.1	1.0	100.0	100.0	17.9	18.7		
Victoria	2.1	2.3	98.4	96.5	0.0	0.0		
Queensland	1.3	1.2	100.0	99.5	8.2	9.3		
South Australia	0.1	0.1	100.0	100.0	N/A	N/A		
Western Australia	1.8	2.0	100.0	100.0	16.4	17.3		
Northern Territory	N/A	N/A	N/A	N/A	N/A	N/A		

Source: esaa.

Table 2.10 notes:

- The indicators above represent thermal stations participating in esaa's generation benchmarking and eco-efficiency surveys only.
- Tasmania has been excluded from this table due to the dominance of hydro plants in that state.
- Historical figures have been updated on the basis of new information.

Table 2.11 Large-scale renewable energy generation certificates					returned for electricity generated in calendar year 2011 ^{1,2}				
Status	Fuel source	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	Total
Registered ³	Bagasse	115,711	0	490,845	0	0	0	0	606,556
	Biomass	102,503	455	45,231	0	0	0	0	148,189
	Black liquor	126,877	72,927	0	0	0	0	0	199,804
	Heat pump	1,138	30	3,426	427	678	110	0	5,809
	Landfill gas	295,370	143,286	105,859	13,430	123,638	30,401	7,633	719,617
	Sewage gas	11,768	68,013	0	0	0	0	0	79,781
	Solar ⁴	133,202	93,677	66,242	76,588	41,981	5,874	675	418,239
	Water	45,005	151,589	394,395	0	37,641	15,576	0	644,206
	Wind	520,307	1,303,462	24,904	2,972,337	968,475	427,748	0	6,217,233
	Sub-total	1,351,881	1,833,439	1,130,902	3,062,782	1,172,413	479,709	8,308	9,039,434
Pending registration	Biomass	74	0	0	0	0	0	0	74
	Landfill gas	0	16,427	0	3,879	0	0	0	20,306
	Sewage gas	34,488	0	0	0	0	544	0	35,032
	Solar ⁴	702	0	13	8	0	0	96	819
	Water	103,275	0	602	0	0	0	0	103,877
	Wind	3,554	45,520	0	0	3	51	0	49,128
Sub-total	142,093	61,947	615	3,887	3	595	96	209,236	
Invalid ⁵	Bagasse	5,155	0	6,837	0	0	0	0	11,992
	Biomass	4,999	0	15,113	0	0	0	0	20,112
	Landfill gas	948	3	116	0	0	0	0	1,067
	Sewage gas	0	20	0	0	0	0	0	20
	Solar ⁴	34	0	16	0	0	0	1	51
	Water	3,281	1,201	0	0	0	1	0	4,483
	Wind	163,067	784	0	12,451	0	2	0	176,304
Sub-total	177,484	2,008	22,082	12,451	0	3	1	1	214,029
Total		1,671,458	1,897,394	1,153,599	3,079,120	1,172,416	480,307	8,405	9,462,699

Table 2.11 notes:

- The totals shown may not be representative of total eligible renewable energy generation in calendar year 2011, as not all renewable energy certificates are returned in the same year as generation. Totals are recalculated daily, and this table is current as of 30 March 2012.
- One renewable energy certificate is equal to 1 MWh of generation above the power station baseline.
- Certificates with a "registered" status include those pending transfer and pending surrender.
- Solar includes renewable energy certificates returned for solar hot water.
- Invalid status includes "invalid due to audit" and "invalid due to voluntary surrender". Certificates with an "invalid" status are typically due to an administration error made in the application process, rather than ineligibility of the certificates.

Source: Office of the Renewable Energy Regulator - REC Registry

Table 2.12 Small-scale renewable energy generation certificates

Status	Fuel source	returned in calendar year 2011 ^{1,2}							
		NSW & ACT	VIC	QLD	SA	WA	TAS	NT	Total
Registered ³	Heat pump	57,681	20,995	196,872	38,484	33,015	7,629	3,848	358,524
	Solar ⁴	7,766,519	5,542,162	9,391,180	6,219,833	4,824,362	220,422	83,191	34,047,669
	Water	0	0	0	0	0	405	0	405
	Wind	1,727	38	0	19	27	0	0	1,811
	Sub-total	7,825,927	5,563,195	9,588,052	6,258,336	4,857,404	228,456	87,039	34,408,409
Pending registration	Heat pump	389	460	2,239	504	2,791	56	20	6,459
	Solar ⁴	83,727	69,907	121,984	170,573	31,022	3,378	2,208	482,799
	Wind	85	0	0	0	0	0	0	85
	Sub-total	84,201	70,367	124,223	171,077	33,813	3,434	2,228	489,343
Invalid ⁵	Heat pump	23,055	8,590	65,706	10,939	7,211	2,135	210	117,846
	Solar ⁴	7,994,207	3,002,283	5,996,024	3,153,034	3,438,676	127,576	21,652	23,733,452
	Water	142	43	0	0	0	0	0	185
	Wind	7,857	42	0	0	0	0	0	7,899
	Sub-total	8,025,261	3,010,958	6,061,730	3,163,973	3,445,887	129,711	21,862	23,859,382
Total		15,935,389	8,644,520	15,774,005	9,593,386	8,337,104	361,601	111,129	58,757,134

Table 2.12 notes:

1. Small-scale Technology Certificates (STCs) are created by eligible installations of Solar Water Heaters (SWH), Air Source Heat Pump Water Heaters and Small Generation Units (SGU) (small-scale solar photovoltaic panels, wind and hydro electricity systems). One renewable energy certificate is equal to 1 MWh of renewable electricity deemed to be generated by Small Generation Units (unless the Solar Credits REC multiplier applies) or 1 MWh of electricity deemed to be displaced by the installation of Solar Water Heaters.
2. The totals shown may not be representative of total eligible certificates in calendar year 2011, as not all renewable energy certificates are returned in the same year as installation of SGUs. Totals are recalculated daily, and this table is current as of 30 March 2012.
3. Certificates with a "registered" status include those pending transfer, pending surrender, pending conversion and pending clearing house sale.
4. Solar includes renewable energy certificates returned for solar hot water.
5. Invalid status includes "invalid due to audit" and "invalid due to voluntary surrender". Certificates with an "invalid" status are typically due to an administration error made in the application process, rather than ineligibility of the certificates.

Source: Office of the Renewable Energy Regulator - REC Registry

SECTION 3
TRANSMISSION AND DISTRIBUTION

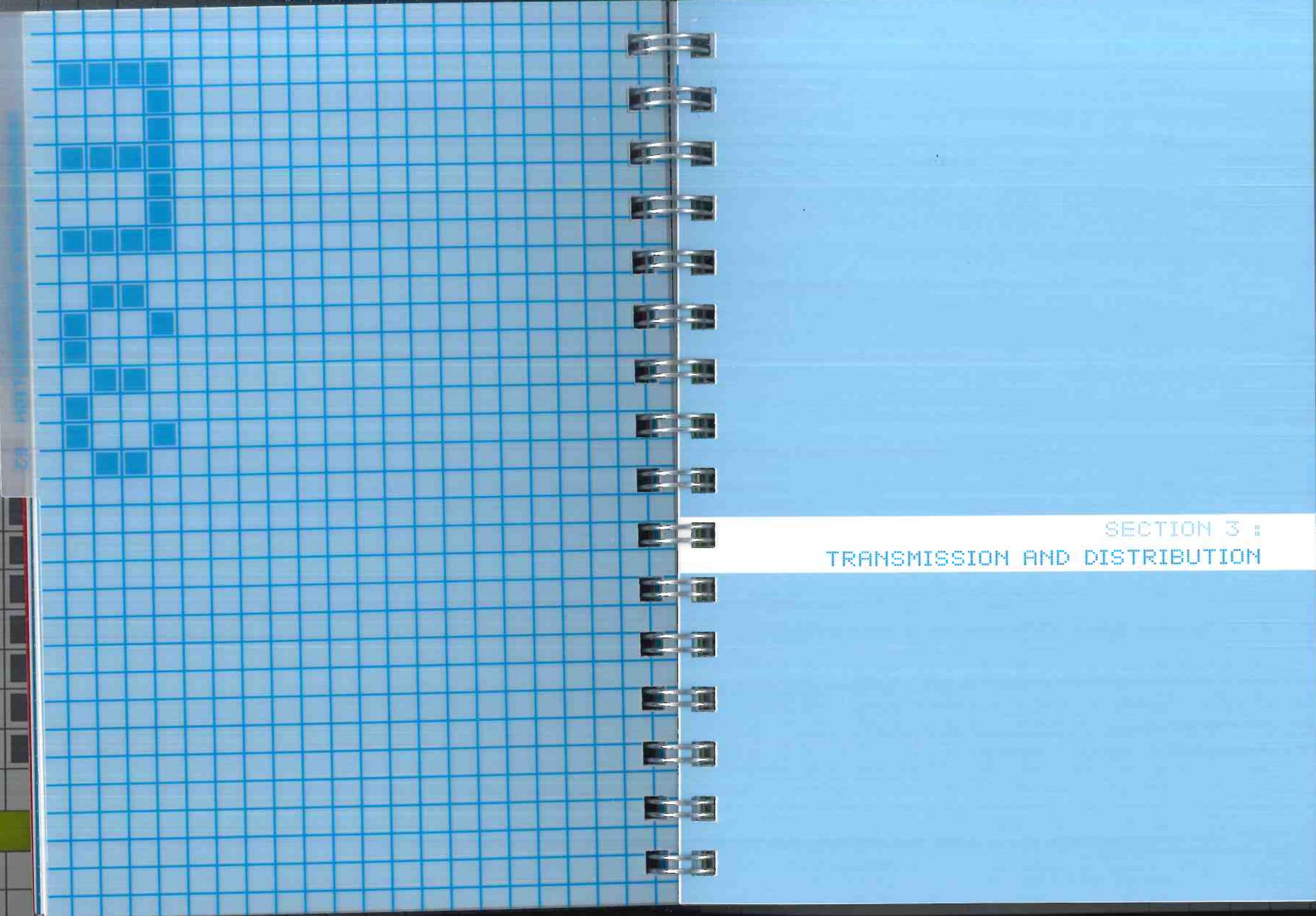


Table 3.1 Transmission and distribution systems at 30 June 2011¹

Overhead lines (Circuit kilometres) ²	500kV	330kV	275kV	220kV	132kV	110kV	66kV	44kV	33kV	22kV	11kV & below	SWER ³	Low voltage ⁴	Total
	500kV	330kV	275kV	220kV	132kV	110kV	66kV	44kV	33kV	22kV	11kV & below	SWER ³	Low voltage ⁴	Total
New South Wales & ACT	1,067	5,448	0	681	10,155	21	9,156	0	8,252	43,533	91,315	30,406	70,394	270,428
Victoria	1,521	739	157	4,014	0	0	6,904	0	0	60,864	1,568	28,212	26,523	130,502
Queensland	0	691	8,387	0	8,309	1,749	7,900	0	6,423	14,417	52,388	62,017	32,646	194,927
South Australia	0	0	2,575	0	3,003	0	1,447	0	3,917	0	17,667	29,035	19,051	76,695
Western Australia	0	1,103	0	851	4,389	0	1,181	0	7,967	12,731	1,303	42,035	10,020	81,581
Tasmania	0	0	0	1,670	0	1,810	0	47	89	11,452	2,951	509	7,139	25,666
Northern Territory	0	0	0	0	343	0	332	0	0	2,739	366	9	1,765	5,555
Total	2,588	7,981	11,119	7,217	26,200	3,581	26,919	47	26,648	145,737	167,557	192,224	167,538	785,355
Underground cables (Circuit kilometres)²	500kV	330kV	275kV	220kV	132kV	110kV	66kV	44kV	33kV	22kV	11kV & below	SWER³	Low voltage⁴	Total
New South Wales & ACT	0	47	0	0	608	0	30	0	1,048	579	13,895	25	21,918	38,149
Victoria	0	0	0	12	0	0	77	0	0	4,277	1,564	87	13,487	19,505
Queensland	0	0	10	0	13	130	20	0	1,179	576	7,043	11	15,011	23,994
South Australia	0	0	8	0	0	0	44	0	108	0	3,689	52	12,241	16,142
Western Australia	0	0	0	0	20	0	7	0	205	4,272	1,164	779	14,857	21,304
Tasmania	0	0	0	0	0	14	0	0	44	487	606	6	1,156	2,313
Northern Territory	0	0	0	0	0	0	34	0	0	47	587	0	1,909	2,577
Total	0	47	18	12	641	144	213	0	2,584	10,237	28,547	961	80,578	123,984
Nominal MVA capacity of transformers installed	500kV	330kV	275kV	220kV	132kV	110kV	66kV	44kV	33kV	22kV	11kV & below	SWER³	Total	
New South Wales & ACT	14,100	28,368	0	230	30,078	300	8,564	0	13,017	2,617	30,356	145	127,774	
Victoria	11,390	2,025	0	13,294	0	0	12,857	0	0	16,201	5,433	431	61,630	
Queensland	0	4,975	18,005	570	9,042	9,462	3,294	0	7,716	1,835	18,602	246	73,748	
South Australia	0	0	7,340	0	3,339	0	3,758	0	1,200	0	7,524	239	23,400	
Western Australia	0	8,452	0	1,032	10,183	0	1,883	0	381	5,882	2,111	428	30,351	
Tasmania	0	0	0	3,450	0	3,462	0	38	1	2,298	1,418	8	10,674	
Northern Territory	0	0	0	0	494	0	532	0	0	321	816	0	2,163	
Total	25,490	43,820	25,345	18,576	53,136	13,224	30,886	38	22,314	29,153	66,261	1,496	329,740	
Number of transformers installed	500kV	330kV	275kV	220kV	132kV	110kV	66kV	44kV	33kV	22kV	11kV & below	SWER³	Total	
New South Wales & ACT	10	108	0	3	505	3	558	0	2,102	34,508	156,457	9,245	203,499	
Victoria	15	7	0	102	0	0	504	0	0	121,429	8,277	30,686	161,020	
Queensland	0	5	69	10	162	153	324	0	1,523	14,928	101,966	19,034	138,174	
South Australia	0	0	44	0	114	0	274	0	1,749	0	51,436	19,241	72,858	
Western Australia	0	28	0	17	237	0	101	0	4,029	26,138	4,815	33,372	68,737	
Tasmania	0	0	0	18	0	95	0	7	4	21,986	9,582	388	32,080	
Northern Territory	0	0	0	0	8	0	46	0	0	1,923	2,048	0	4,025	
Total	25	148	113	150	1,026	251	1,807	7	9,407	220,912	334,581	111,966	680,393	

Table 3.1 notes:

1. The network data shown in this table provides only an approximate representation of total network assets based on current data.
2. Circuit kilometres represent the length of an overhead or underground feeder comprising a group of one or more conductors that form one electrical circuit.
3. SWER = Single wire earth return. Figures quoted include all voltages.
4. Low voltage = 640 volts and under.

Source: esaa

Table 3.2

Number of customers at 30 June 2011¹

Classification of customers	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL
Residential	3,089,086	2,269,037	1,767,850	725,439	946,513	228,128	64,854	9,090,907
Business	374,819	316,665	212,902	99,779	113,756	47,408	11,749	1,177,078
Total	3,463,905	2,585,702	1,980,752	825,218	1,060,269	275,536	76,603	10,267,985
TOTAL	% Change							
2007	3,333,684 1.1	2,454,614 1.4	1,845,653 2.0	786,504 1.3	262,911 1.5	- -	- -	- -
2008	3,371,852 1.1	2,478,634 1.0	1,892,460 2.5	796,213 1.2	264,307 0.5	- -	- -	- -
2009	3,395,368 0.7	2,505,844 1.1	1,908,736 0.9	807,553 1.4	1,051,334 -	269,556 2.0	72,080 -	10,010,718 -
2010	3,429,980 1.0	2,562,102 2.2	1,947,328 2.0	817,270 1.2	1,055,861 0.4	279,789 3.8	74,004 2.7	10,166,334 1.6
2011	3,463,905 1.0	2,585,702 0.9	1,980,752 1.7	825,218 1.0	1,060,269 0.4	275,536 -1.5	76,603 3.5	10,267,985 1.0

Table 3.2 note:

1. The number of customers is based on information provided by companies in the industry.

Source: esaa, company annual reports

Table 3.3

Consumption (GWh) 2010-11¹

Classification of customers	NSW & ACT	VIC	QLD ²	SA	WA	TAS	NT	TOTAL
Residential	21,376.3	12,710.8	13,099.3	4,431.1	5,827.1	2,129.0	579.6	60,153.2
Business	50,020.5	30,654.0	30,514.9	8,455.1	12,304.1	8,265.0	1,220.9	141,434.5
Unmetered	413.6	294.9	319.4	113.5	166.8	37.0	13.8	1,359.1
Total	71,810.5	43,659.7	43,933.6	12,999.7	18,298.0	10,431.0	1,814.3	202,946.9
TOTAL	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2007	70,188.2 1.9	44,061.4 1.1	45,275.0 -0.6	12,683.9 4.5	14,492.0 1.0	10,319.2 5.2	1,657.1 3.4	198,676.7 1.4
2008	71,569.7 2.0	44,221.2 0.4	45,657.4 0.8	12,690.6 0.1	14,896.9 2.8	10,615.3 2.9	1,768.1 6.7	201,419.1 1.4
2009	71,674.6 0.1	44,214.1 0.0	47,414.5 3.8	12,878.2 1.5	15,499.0 4.0 ³	10,807.0 1.8	1,761.6 -0.4	204,248.9 1.4 ³
2010	71,011.0 -0.9	43,678.3 -1.2	47,473.4 0.1	12,896.7 0.1	16,899.2 9.0 ³	10,375.7 -4.0	1,820.4 3.3	204,154.6 0.0 ³
2011	71,810.5 1.1	43,659.7 0.0	43,933.6 -7.5	12,999.7 0.8	18,298.0 8.3	10,431.0 0.5	1,814.3 -0.3	202,946.9 -0.6

Table 3.3 notes:

1. Total consumption and the classification of customers is based on information provided by companies in the industry.

2. In 2010-11 there were several natural disasters which impacted a large proportion of all Queensland networks.

This put a large section of the network out of service during what is normally a peak demand period.

3. The figure has been revised on the basis of new information.

Source: esaa

Table 3.4 Technical indicators: transmission

State	System minutes unsupplied (mins)		Energy delivered (GWh)		Circuit availability (%)	
	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
New South Wales & ACT	1.28	2.24	68,464	66,980	98.2	99.0
Victoria	1.20	0.20	50,617	50,790	99.1	99.1
Queensland	N/A	N/A	47,825	46,216	N/A	N/A
South Australia	3.15	2.46	13,266	13,362	99.8	99.8
Western Australia ¹	9.70	11.52	16,017	17,008	98.4	97.9
Tasmania	10.95	8.28	10,514	10,617	99.5	99.1
Australian total	-	-	206,704	204,973	-	-

Table 3.4 note:

1. Western Australian transmission indicators relate to the SWIS only.

Source: esaa, company annual reports

Table 3.5 Technical indicators: distribution

System reliability ¹	Outage duration SAIDI		Outage frequency SAIFI		Outage time CAIDI	
	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
New South Wales & ACT	160.1	206.7	1.5	1.5	108.8	135.0
Victoria	167.1	177.4	1.7	1.6	98.4	114.1
Queensland ²	379.0	1,090.4	2.5	2.3	149.2	479.3
South Australia	208.9	364.9	1.8	2.5	116.2	147.6
Western Australia ³	447.8	352.0	2.6	2.2	172.3	159.6
Tasmania	418.0	255.0	2.3	1.8	183.3	140.1
Northern Territory	360.7	466.9	4.2	5.4	85.6	87.2
Australian weighted average	247.4	398.5	1.9	1.9	128.4	212.4
Technical indicators	Distribution losses (%)		Distribution utilisation factor (%)		System load factor (%)	
	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
New South Wales & ACT	4.9	4.2	16.3	15.5	58.9	55.7
Victoria	4.4	5.5	16.7	16.5	47.4	47.5
Queensland ²	5.5	5.0	23.4	20.2	56.8	56.8
South Australia	5.6	5.6	N/A	15.0	44.0	43.6
Western Australia	3.7	5.3	N/A	N/A	N/A	N/A
Tasmania	5.0	4.8	28.0	28.0	49.2	49.3
Northern Territory ⁴	6.5	6.0	16.2	N/A	76.2	72.2
Australian weighted average⁵	4.8	4.9	-	-	54.6	53.2

Table 3.5 notes:

1. System reliability figures represent the total of all distribution planned and unplanned events, including significant events such as severe storms.
2. In 2010-11 there were several natural disasters which impacted a large proportion of all Queensland networks. This put a large section of the network out of service during a traditionally peak demand period.
3. Western Australian reliability figures relating to the SWIS exclude significant events, as per IEEE Std 1366.
4. Northern Territory technical indicators exclude Indigenous Essential Services.
5. The Australian weighted average for the system load factor excludes Western Australia.

SECTION 4

AUSTRALIAN ELECTRICITY MARKETS

Table 3.4 Technical indicators: transmission

State	System minutes unsupplied (mins)		Energy delivered (GW·h)		Circuit availability (%)	
	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
New South Wales & Victoria	1,281	2,240	68,584	65,960	96.2	96.0
Queensland	1,200	620	50,517	50,780	96.1	96.1
South Australia	N/A	N/A	47,025	46,216	N/A	N/A
Western Australia ¹	3,156	2,465	13,565	13,582	96.8	96.8
Territories	9,700	11,522	16,017	17,008	96.4	97.9
Australian total	10,407	8,088	10,512	10,612	96.5	96.1
Total	-	-	206,704	204,973	-	-

Source: AEMO, company annual reports.

Table 3.5 Technical indicators: distribution

System reliability ¹	Outage duration		Outage frequency		Outage time	
	SAIDI	SAIFI	SAIDI	SAIFI	CASDI	CASIFI
State	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
New South Wales	180.1	206.7	1.3	1.5	104.8	131.0
Queensland ²	367.1	377.1	1.4	1.2	91.4	111.1
South Australia	379.0	1,080.4	2.1	2.3	141.2	471.3
Western Australia ³	200.9	184.9	1.2	1.0	117.2	145.6
Territories	477.8	352.0	2.1	1.2	171.3	150.6
Hawke's Bay	418.0	255.0	2.0	1.8	165.3	149.1
Northern Territory	330.7	66.9	4.2	3.4	85.6	87.2
Australian weighted average	267.4	398.5	1.9	1.9	123.4	215.4

Table 3.6 Technical indicators

Technical indicators	Distribution losses (%)		Distribution utilisation factor (%)		System load factor (%)	
	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
New South Wales & ACT	4.9	4.2	16.1	17.5	55.9	56.7
Victoria	4.4	5.5	15.7	15.5	57.4	57.5
Queensland ⁴	5.5	5.0	23.4	20.2	59.8	59.8
South Australia	5.6	5.6	N/A	15.0	48.0	48.6
Western Australia	3.7	5.3	N/A	N/A	N/A	N/A
Territories	5.0	4.8	28.1	23.0	49.2	49.3
Northern Territory ⁵	6.5	6.0	16.2	N/A	70.2	71.2
Australian weighted average ⁶	5.8	4.9	21.5	21.5	54.9	54.9

1. System reliability figures represent the total of all distribution planned and unplanned events, including significant events such as severe storms.

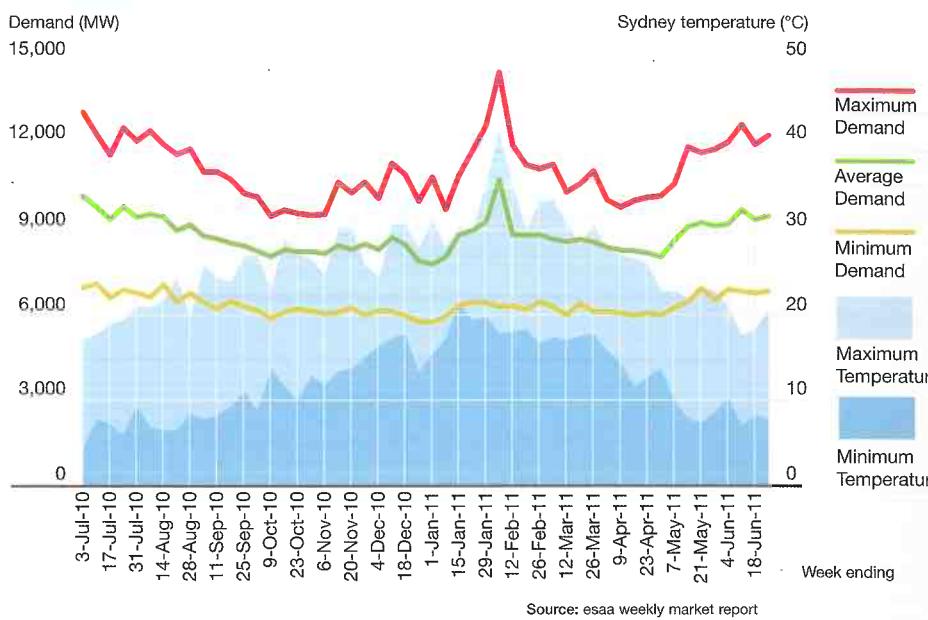
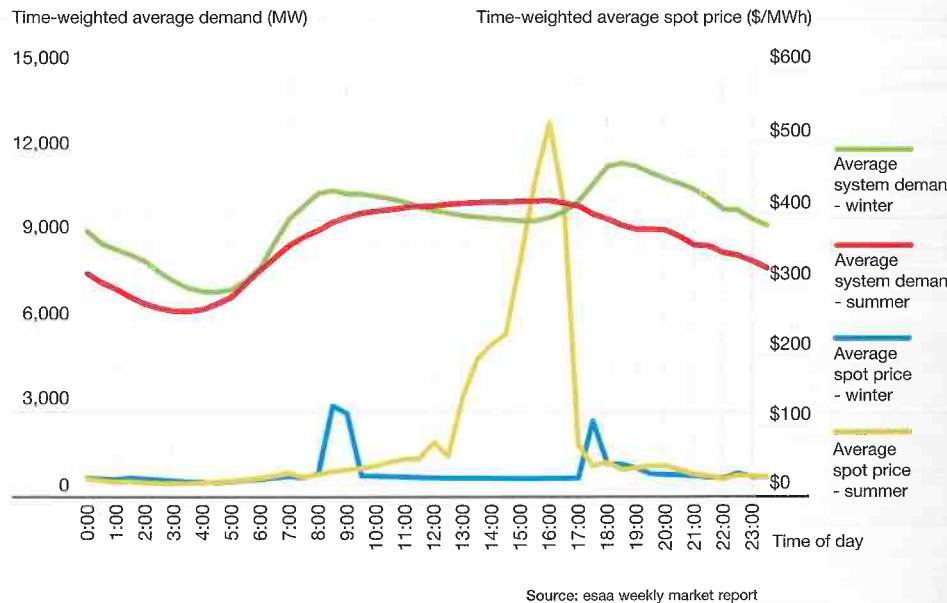
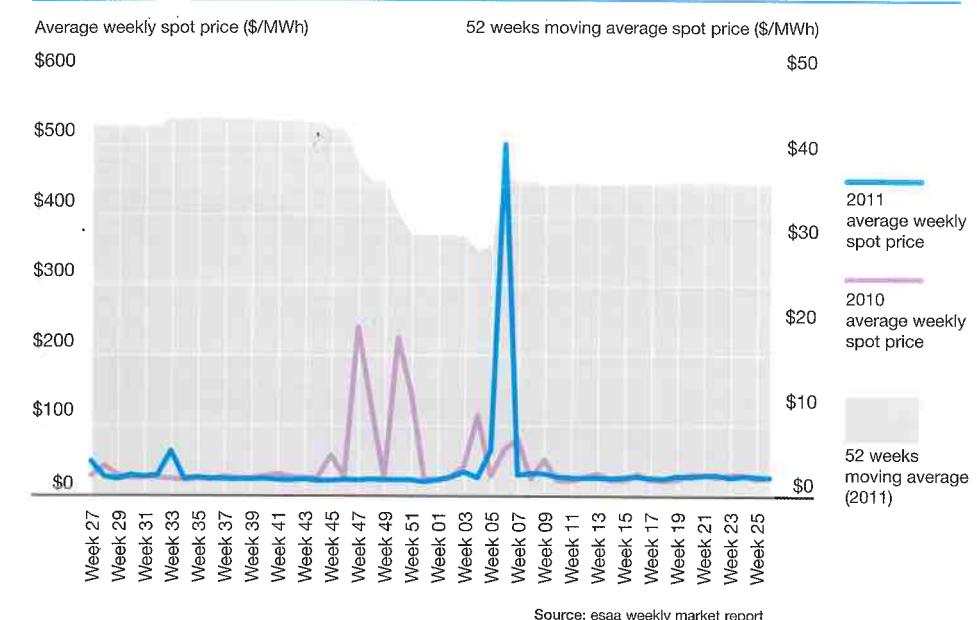
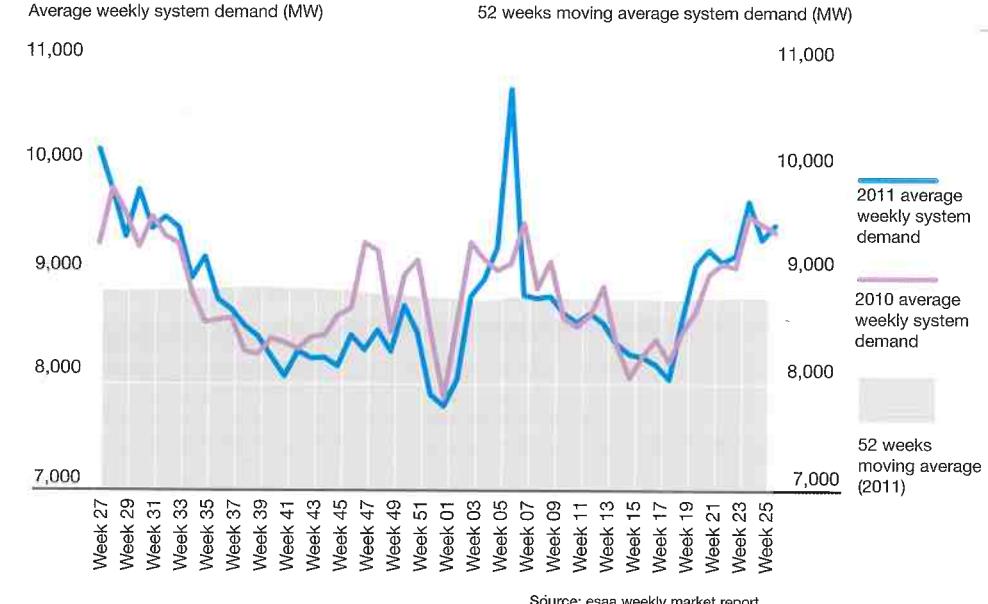
2. In 2010-11 there were several electrical disasters which impacted a large proportion of the Queensland network. This put a large section of the network out of service during a particularly peak demand period.

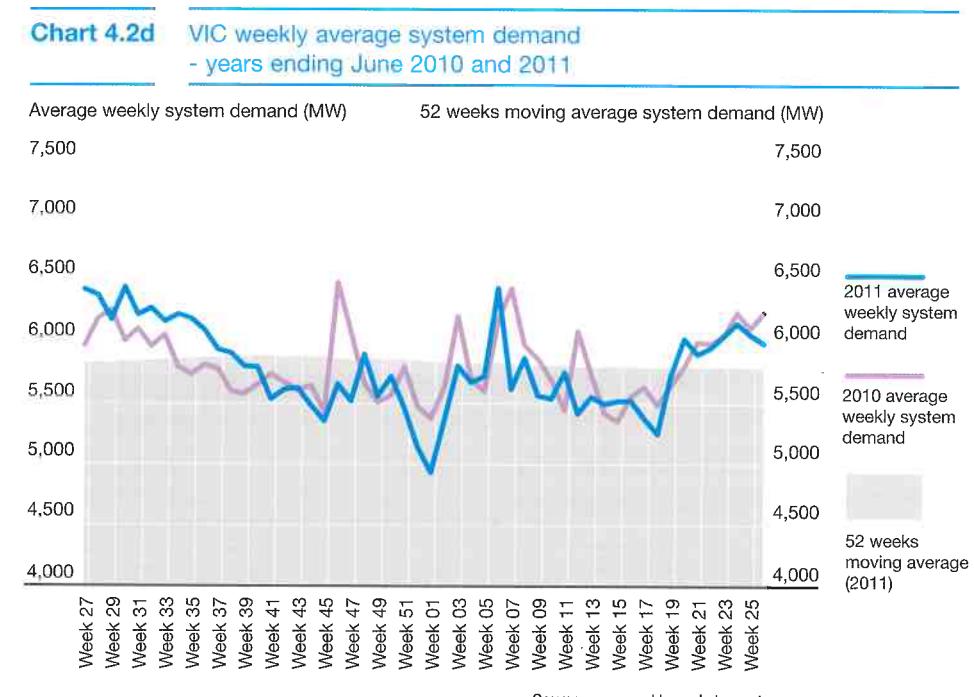
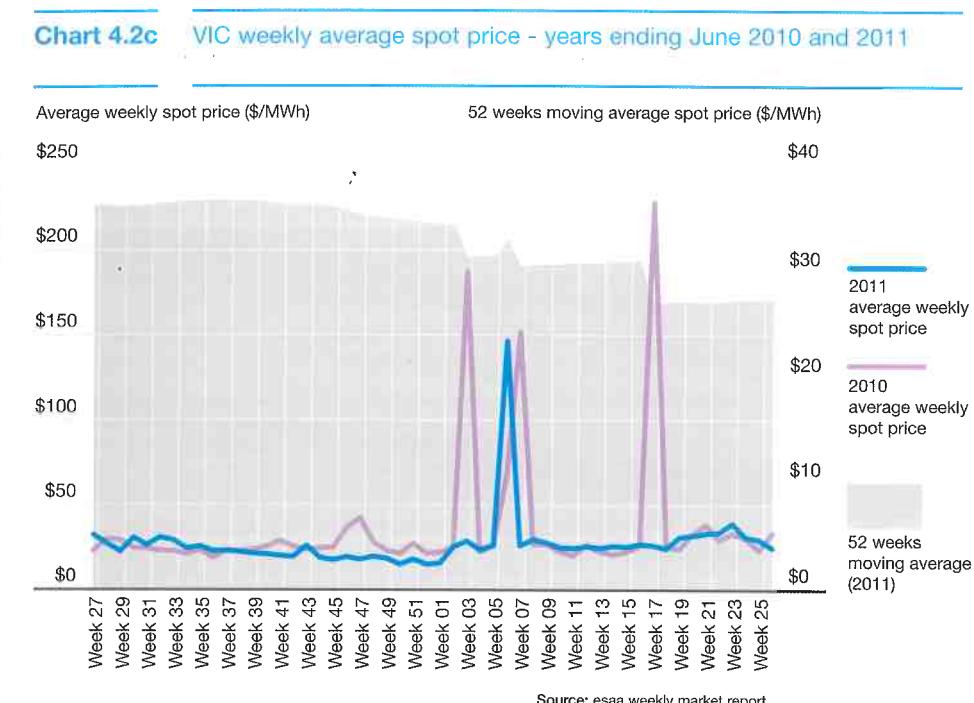
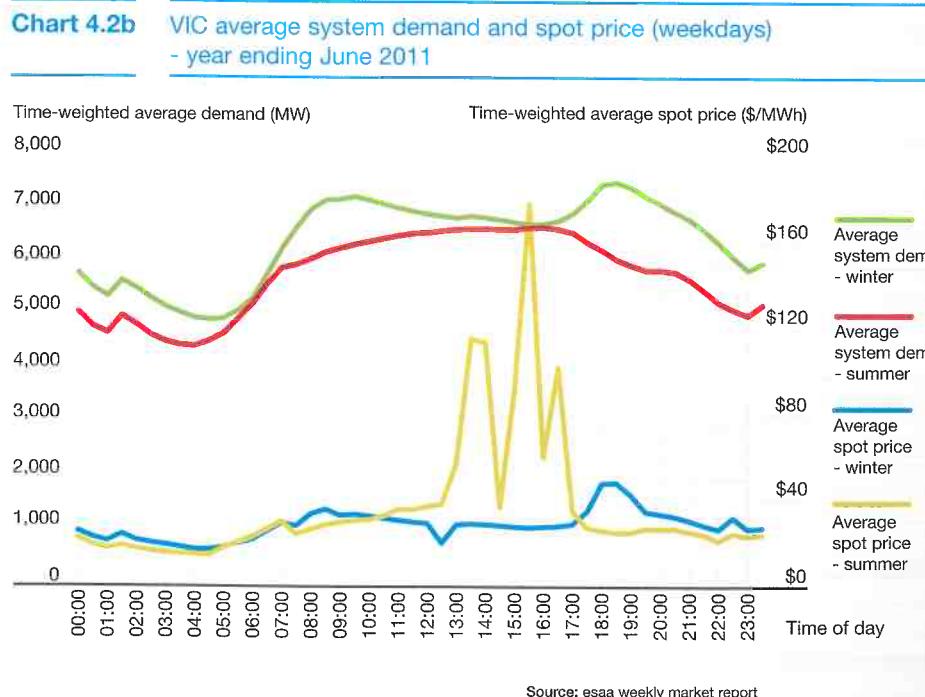
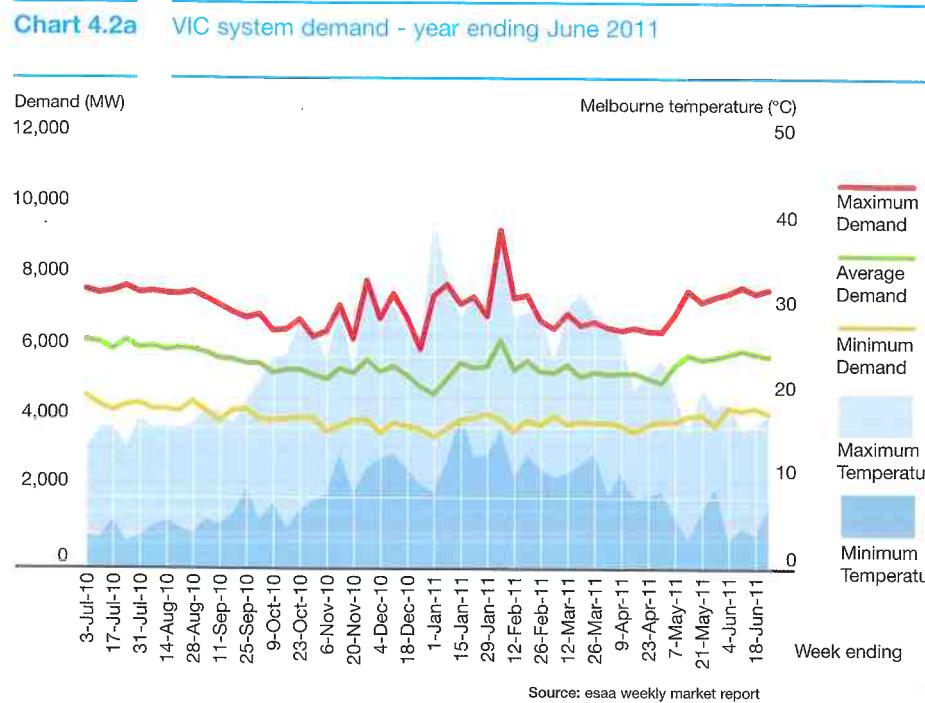
3. Western Australian reliability figures relating to the SWIS exclude significant events, as per IEEE Std 1366.

4. Hawke's Bay figures relate to the 2010-11 financial year.

5. The Australian weighted average for the system load factor excludes Western Australia.

6. Northern Territory figures relate to the 2010-11 financial year.

Chart 4.1a NSW system demand - year ending June 2011**Chart 4.1b** NSW average system demand and spot price (weekdays) - year ending June 2011**Chart 4.1c** NSW weekly average spot price - years ending June 2010 and 2011**Chart 4.1d** NSW weekly average system demand - years ending June 2010 and 2011



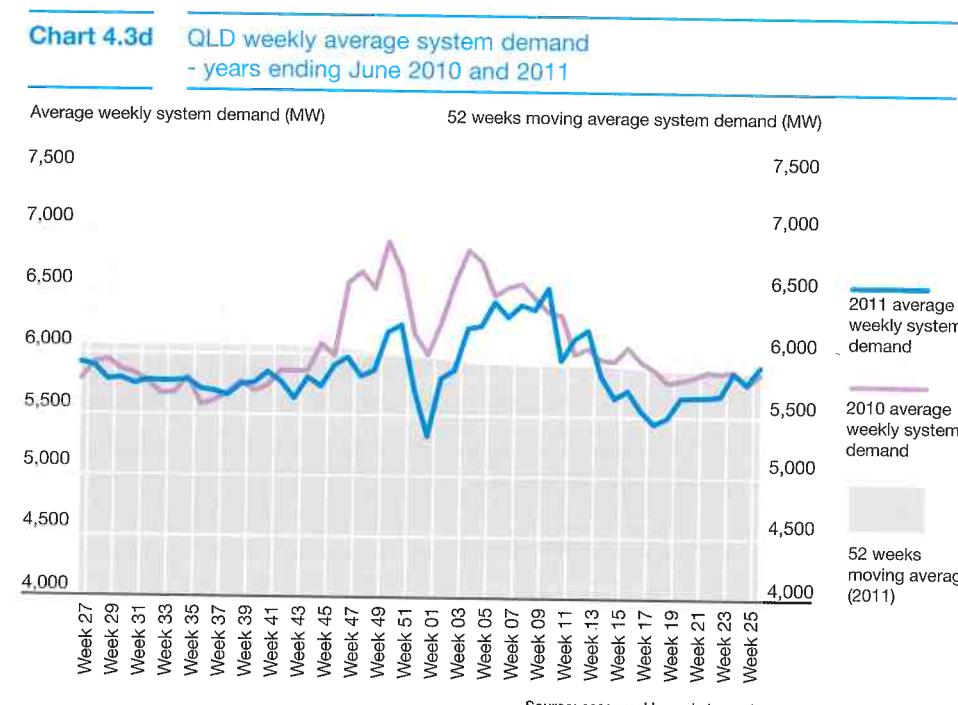
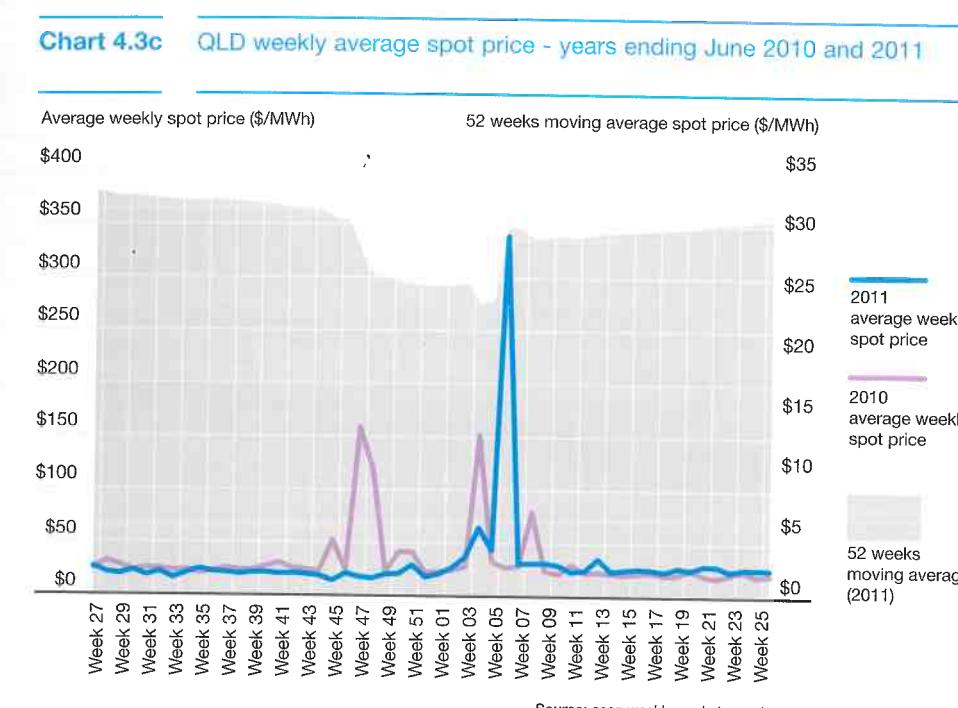
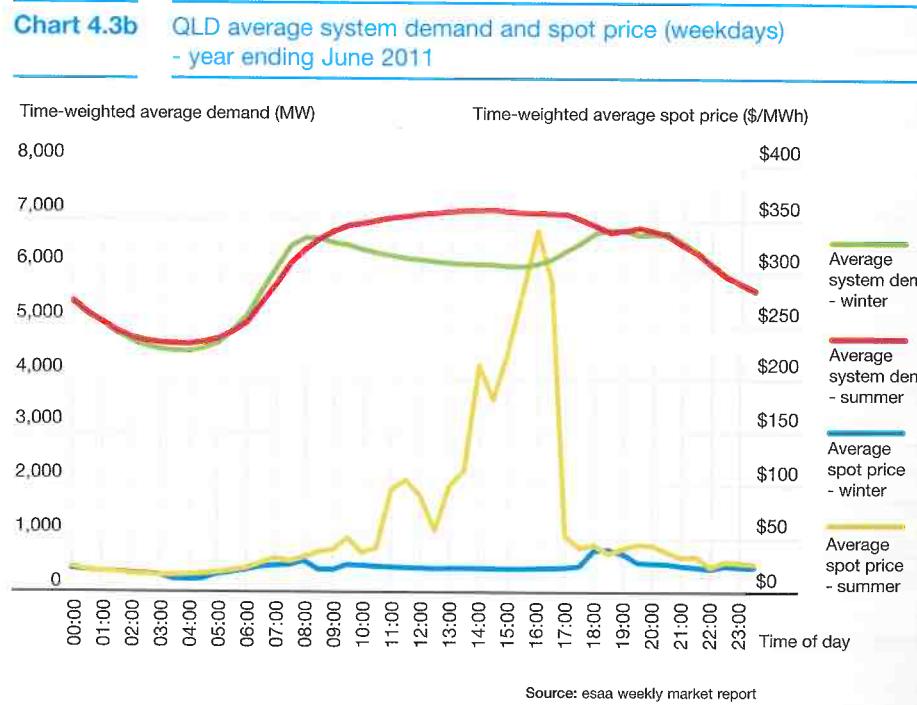
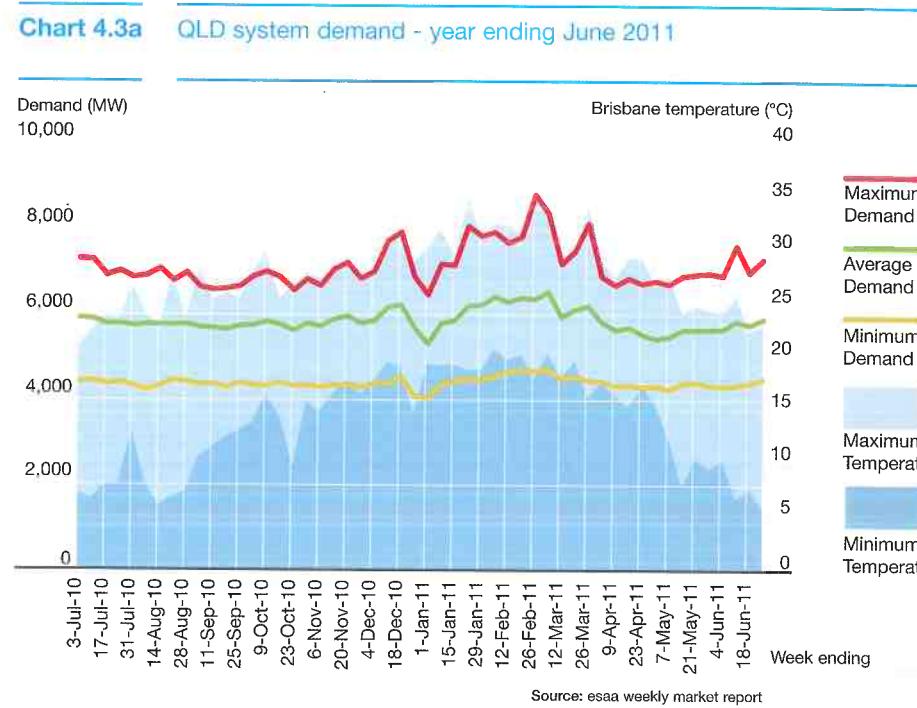


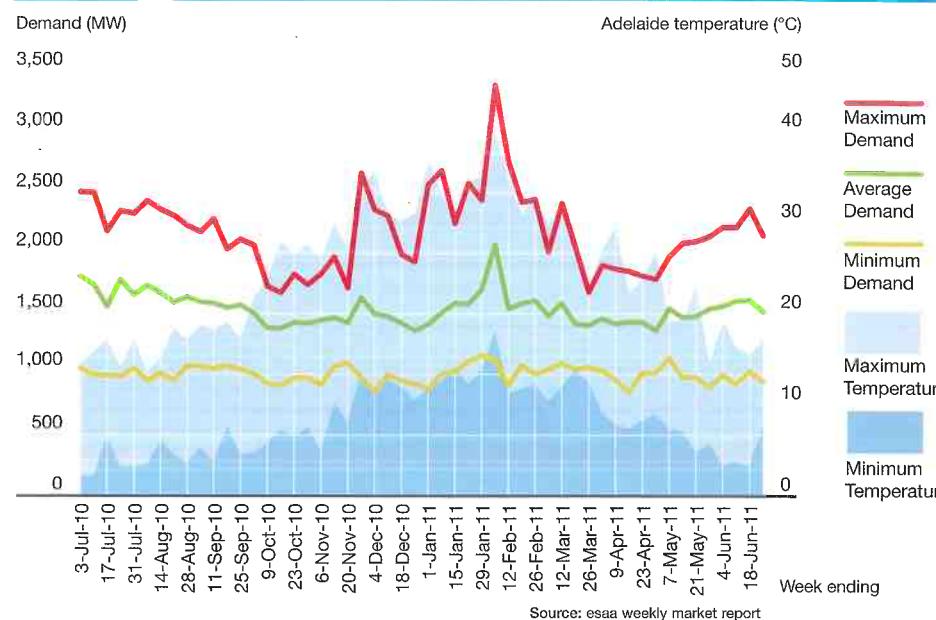
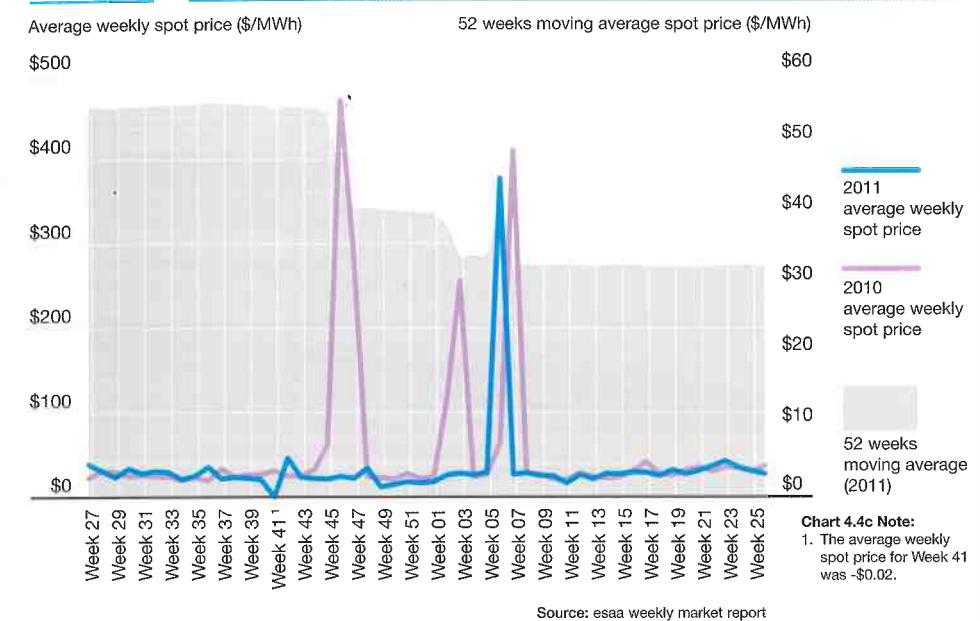
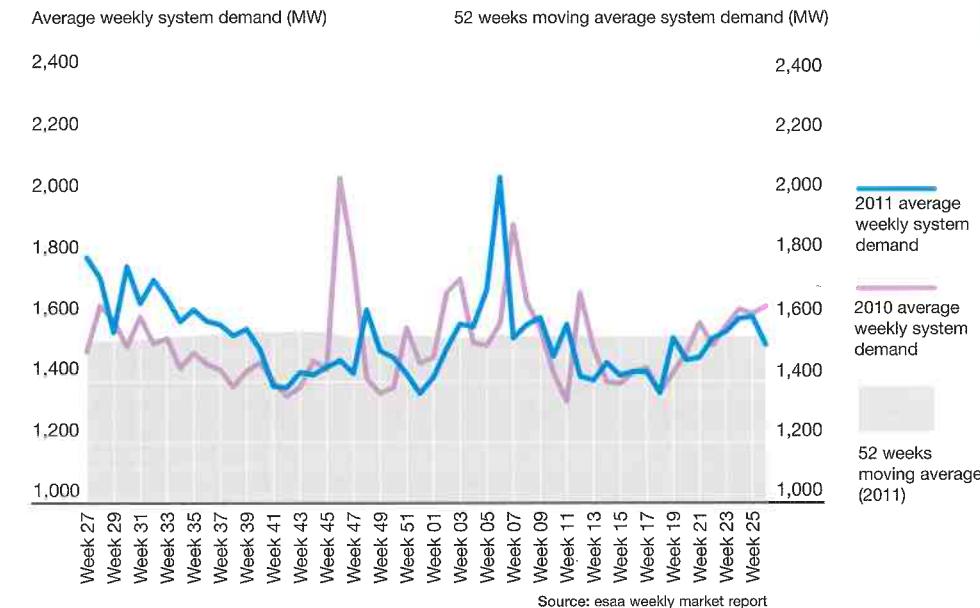
Chart 4.4a SA system demand - year ending June 2011**Chart 4.4b** SA average system demand and spot price (weekdays) - year ending June 2011**Chart 4.4c** SA weekly average spot price - years ending June 2010 and 2011**Chart 4.4d** SA weekly average system demand - years ending June 2010 and 2011

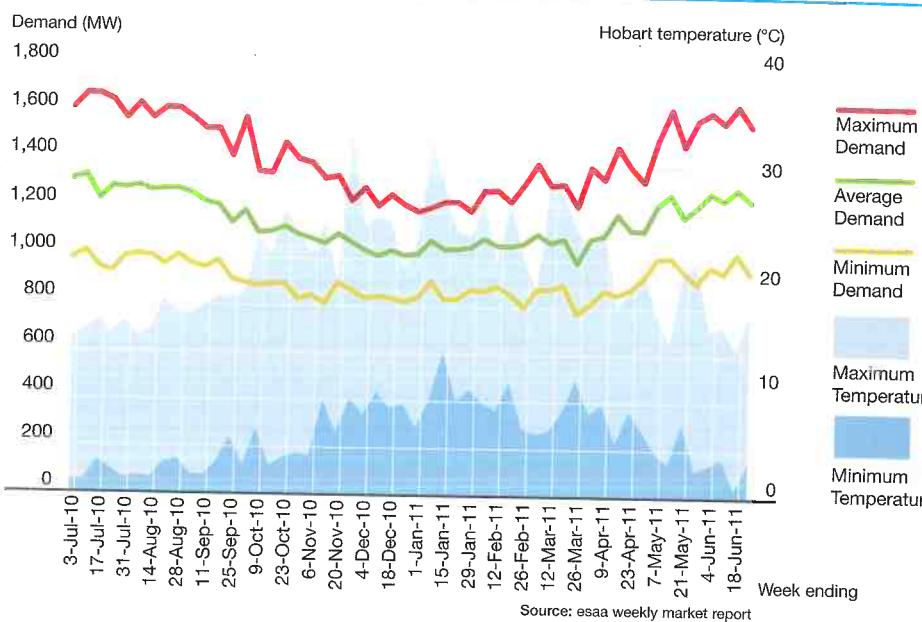
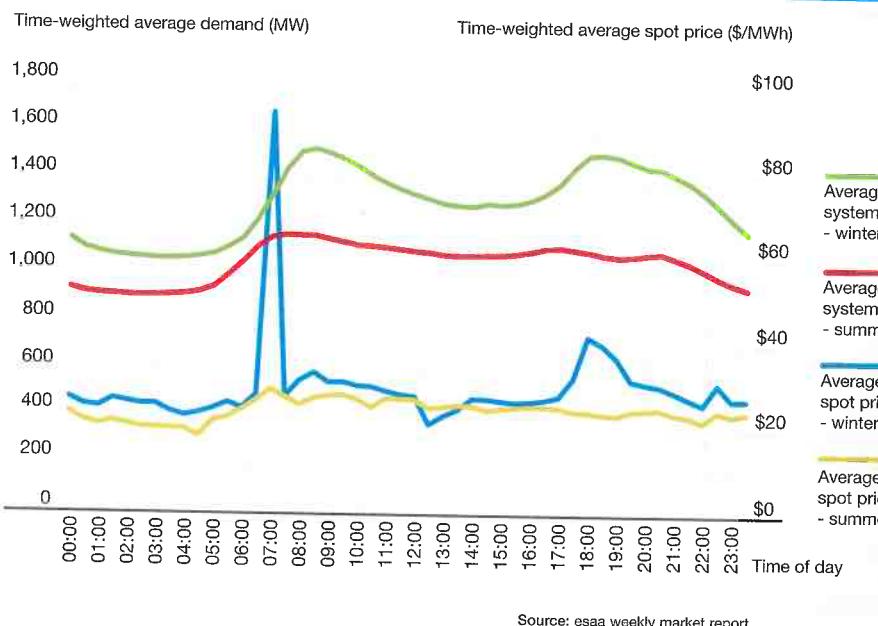
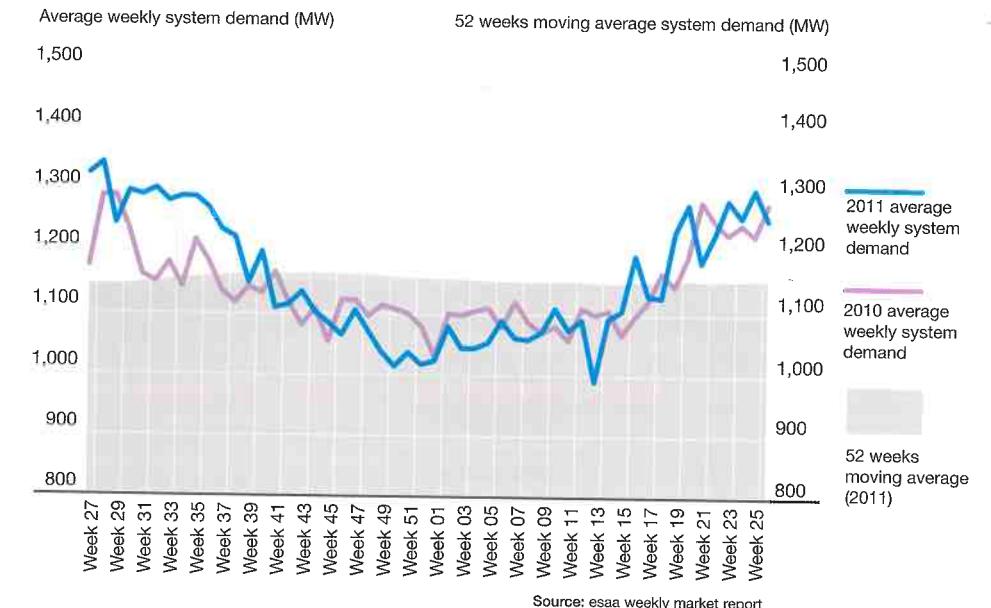
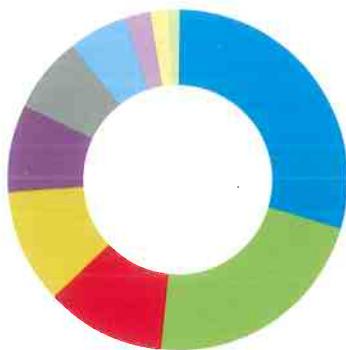
Chart 4.5a TAS system demand - year ending June 2011**Chart 4.5c** TAS weekly average spot price - years ending June 2010 and 2011**Chart 4.5b** TAS average system demand and spot price (weekdays) - year ending June 2011**Chart 4.5d** TAS weekly average system demand - years ending June 2010 and 2011

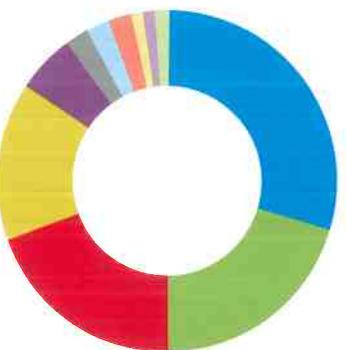
Chart 4.6 New South Wales generation market share - year ending June 2011¹

Macquarie Generation	29.3%
Delta Electricity ²	22.0%
Eraring Energy ³	11.3%
TRUenergy ²	10.9%
Import from QLD	8.3%
Origin Energy ³	7.3%
Import from VIC	5.5%
Snowy Hydro	2.7%
Redbank Energy ⁴	1.4%
Marubeni Corporation	1.3%
All others *	0.1%

Source: esaa weekly market report

- * All others - 0.1%
- Acciona Energy - 0.05%
- Infigen Energy - <0.05%

- Chart 4.6 notes:
- The portion of regional generation exported to other regions is not reflected in this chart.
 - The NSW Government sold the output from Delta Electricity's Mt Piper and Wallerawang power stations to TRUenergy in December 2010 under a GenTrader agreement. Refer to Appendix 5 for more details.
 - The NSW Government sold the output from the Eraring power station to Origin Energy in December 2010 under a GenTrader agreement. Refer to Appendix 5 for more details.
 - In March 2011, a group of lenders led by TPG Capital took ownership of most of Alinta Group's assets in a debt-to-equity swap. The remaining assets, the Redbank and the Oakey power stations, were put under the ownership of Redbank Energy Limited. Redbank Energy sold its remaining 50 per cent share in the Oakey power station to ERM Power in July 2011. Refer to Appendix 5 for more details.

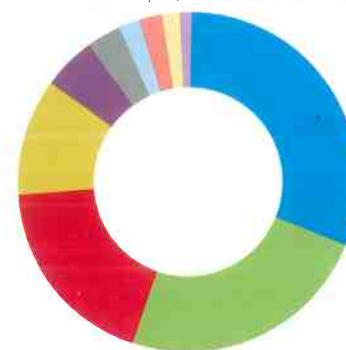
Chart 4.7 Victoria generation market share - year ending June 2011¹

Loy Yang Power	29.3%
TRUenergy	20.2%
Hazelwood Power Partnership ²	19.7%
IPR-GDF SUEZ and Mitsui & Co ²	14.9%
Snowy Hydro	5.4%
Import from TAS	2.3%
Alcoa	2.2%
Energy Brix	2.2%
Import from SA	1.2%
AGL Energy ³	1.1%
All others *	1.6%

Source: esaa weekly market report

- * All others - 1.6%
- Import from New South Wales - 0.9%
- Ecogen Energy - 0.48%
- Aurora Energy - 0.09%
- Eraring Energy - 0.06%

- Chart 4.7 notes:
- The portion of regional generation exported to other regions is not reflected in this chart.
 - International Power and GDF Suez merged operations in February 2011, forming IPR-GDF SUEZ. The company owns majority shares in the Hazelwood and the Loy Yang B power stations in Victoria. Refer to Appendix 5 for more details.
 - In March 2012, AGL Energy announced that it will acquire the remaining share of the Loy Yang A power station from Tepco, Ratch and remaining shareholders, during 2012. This acquisition will increase AGL Energy's ownership of the power station to 100 per cent, subject to regulatory approval.

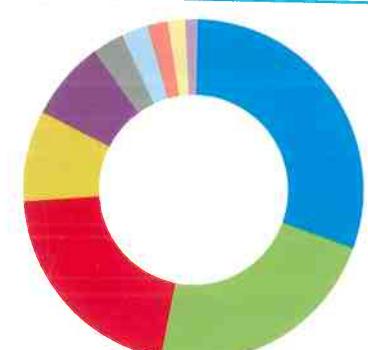
Chart 4.8 Queensland generation market share - year ending June 2011¹

CS Energy ²	30.6%
Stanwell Corporation ²	24.3%
Tarong Energy ²	18.7%
Intergen	11.0%
Origin Energy	5.2%
Alinta Energy ³	3.2%
ERM Power ⁴	2.1%
Rio Tinto Aluminium ⁵	2.1%
AGL Energy	1.6%
QLD Gas Company	1.2%
All others *	0.1%

Source: esaa weekly market report

- * All others - 0.1%
- Import from New South Wales - 0.08%
- Ergon Energy - <0.05%

- Chart 4.8 notes:
- The portion of regional generation exported to other regions is not reflected in this chart.
 - On 1 July 2011, the Queensland Government restructured its electricity generation companies. CS Energy, Tarong Energy Corporation and Stanwell Corporation were restructured and merged into two companies - CS Energy and Stanwell Corporation. Refer to Appendix 5 for more details.
 - In March 2011 a group of lenders lead by TPG Capital took ownership of most of Alinta Group's assets in a debt-to-equity swap. The remaining assets, the Redbank and the Oakey power stations, were put under the ownership of Redbank Energy Limited. Redbank Energy sold its remaining 50 per cent share in the Oakey power station to ERM Power in July 2011. Refer to Appendix 5 for more details.
 - On 30 June 2011, Arrow Energy acquired ERM Power's 50 per cent share in the Braemar 2 power station, increasing its share to 100 per cent. As part of the acquisition, Arrow Energy also obtained operational rights to the power station.
 - The Yarwun power station was commissioned in August 2010.

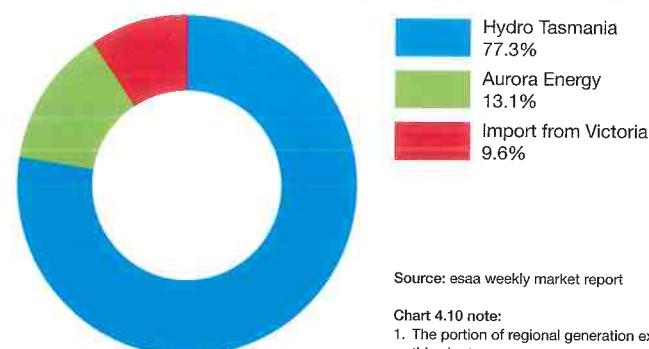
Chart 4.9 South Australia generation market share - year ending June 2011¹

Alinta Energy ²	30.0%
AGL Energy ³	22.7%
IPR-GDF SUEZ Australia	20.8%
Import from VIC	8.7%
Osborne Cogeneration	7.4%
Infigen Energy ⁴	3.1%
TrustPower	2.4%
Origin Energy	1.9%
TRUenergy ⁵	1.8%
Pacific Hydro	1.2%
Infratil Energy <0.05%	<0.05%

Source: esaa weekly market report

- Chart 4.9 notes:
- The portion of regional generation exported to other regions is not reflected in this chart.
 - The company name has been updated as Flinders Power is owned by Alinta Energy.
 - North Brown Hill (Hallett 4) wind farm was commissioned in June 2011.
 - Lake Bonney 3 wind farm was commissioned in August 2010.
 - Waterloo wind farm was commissioned in December 2010.

Chart 4.10 Tasmania generation market share - year ending June 2011¹

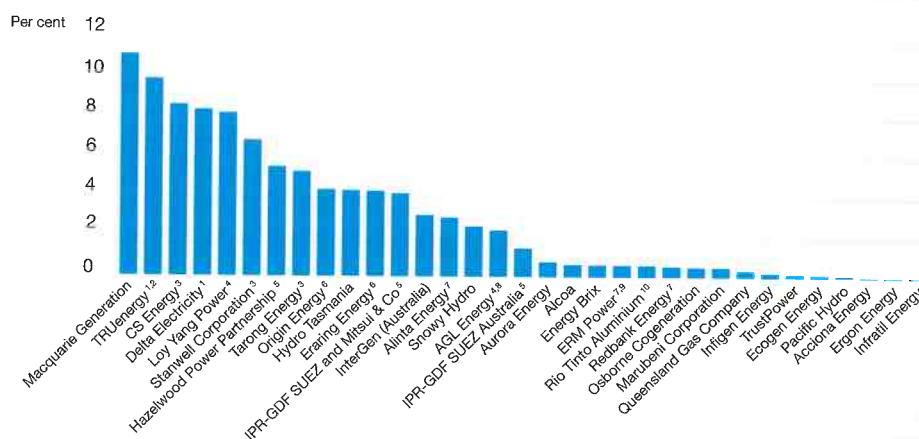


Source: esaa weekly market report

Chart 4.10 note:

- The portion of regional generation exported to other regions is not reflected in this chart.

Chart 4.11 NEM generation market share - year ending June 2011



Source: esaa weekly market report

Chart 4.11 notes:

- The NSW Government sold the output from Delta Electricity's Mt Piper and Wallerawang power stations to TRUenergy in December 2010 under a GenTrader agreement. Refer to Appendix 5 for more details.
- Waterford wind farm was commissioned in December 2010.
- On 1 July 2011, the Queensland Government restructured its electricity generation companies. CS Energy, Tarong Energy Corporation and Stanwell Corporation were restructured and merged into two companies - CS Energy and Stanwell Corporation. Refer to Appendix 5 for more details.
- In March 2012, AGL Energy announced that it will acquire the remaining 50 per cent share of Loy Yang A power station from Tepco, Ratch and remaining shareholders, during 2012. The acquisition will increase AGL Energy's ownership of the power station to 100 per cent, subject to regulatory approval.
- International Power and GDF Suez merged operations in February 2011, forming IPR-GDF SUEZ. The company owns and operates a number of power stations in South Australia, and owns majority share in the Hazelwood and Loy Yang B power stations. Refer to Appendix 5 for more details.
- The NSW Government sold the output from the Eraring power station to Origin Energy in December 2010 under a GenTrader agreement. Refer to Appendix 5 for more details.
- In March 2011, a group of lenders led by TPG Capital took ownership of most of Alinta Group's assets in a debt-to-equity swap. The remaining assets, the Redbank and the Oakey power stations, were put under the ownership of Redbank Energy Limited. Redbank Energy sold its remaining 50 per cent share in the Oakey power station to ERM Power in July 2011. Refer to Appendix 5 for more details.
- On 30 June 2011, Arrow Energy acquired ERM Power's 50 per cent share in the Braemar 2 power station, increasing its share to 100 per cent. As part of the acquisition, Arrow Energy also obtained operational rights to the power station.
- The Yarwun power station was commissioned in August 2010.

60

Chart 4.12a WA system demand - year ending June 2011

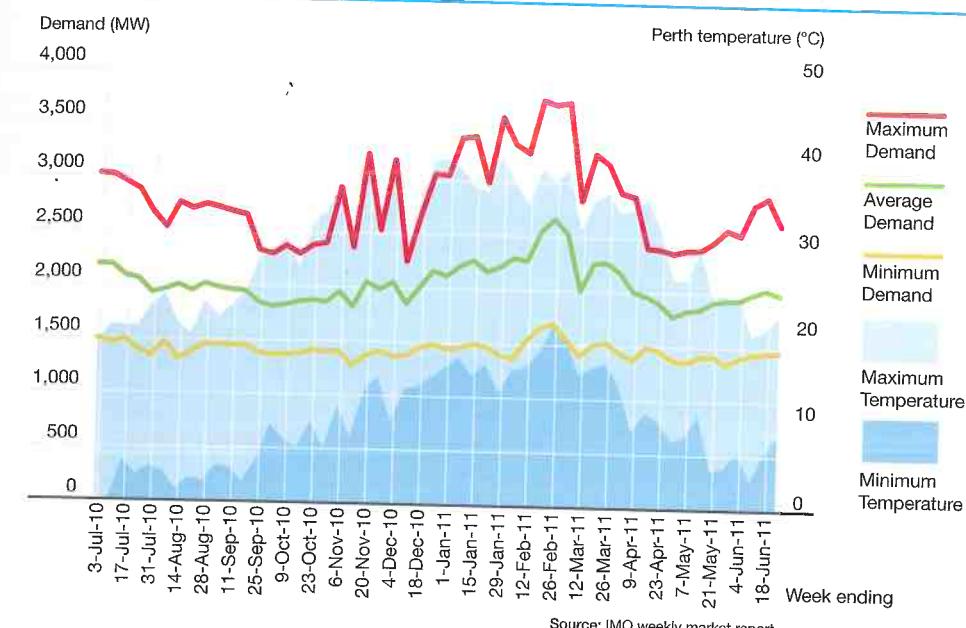


Chart 4.12b WA average daily system demand and energy prices (weekdays) - year ending June 2011

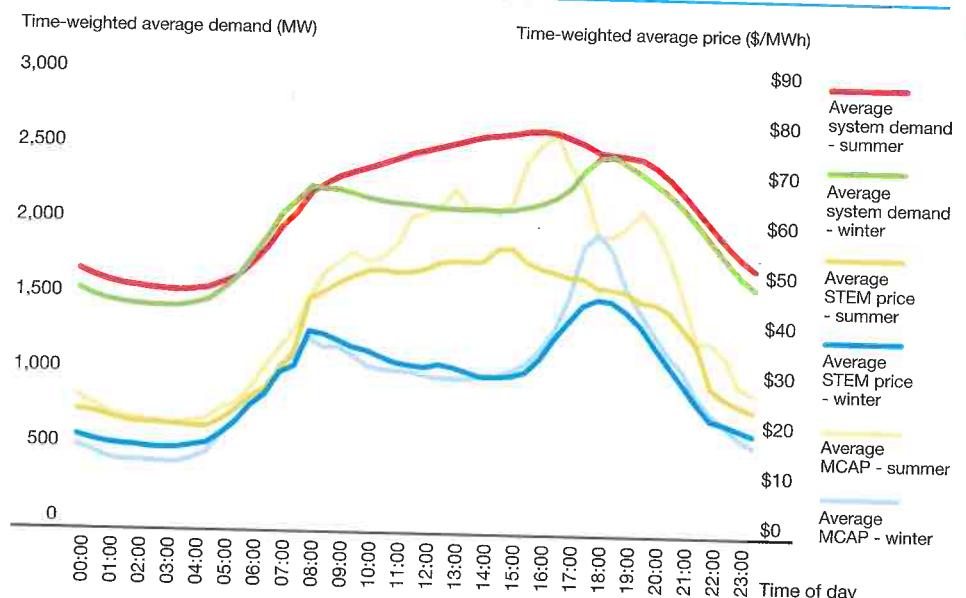


Chart 4.12c WA weekly trading summary - year ending June 2011

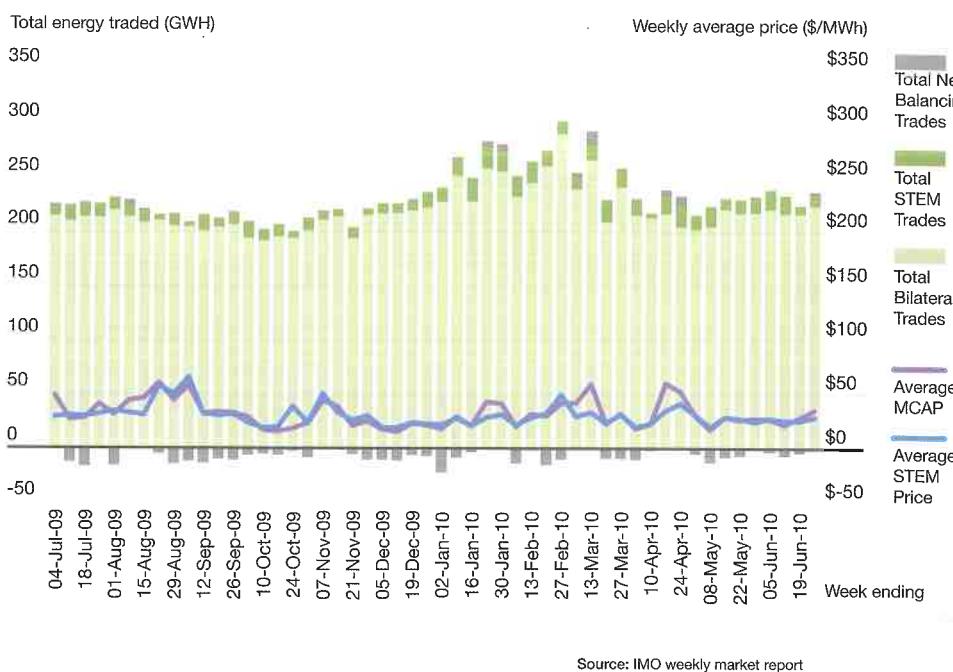


Chart 4.12d WA weekly average system demand and energy price (weekdays) - year ending June 2011

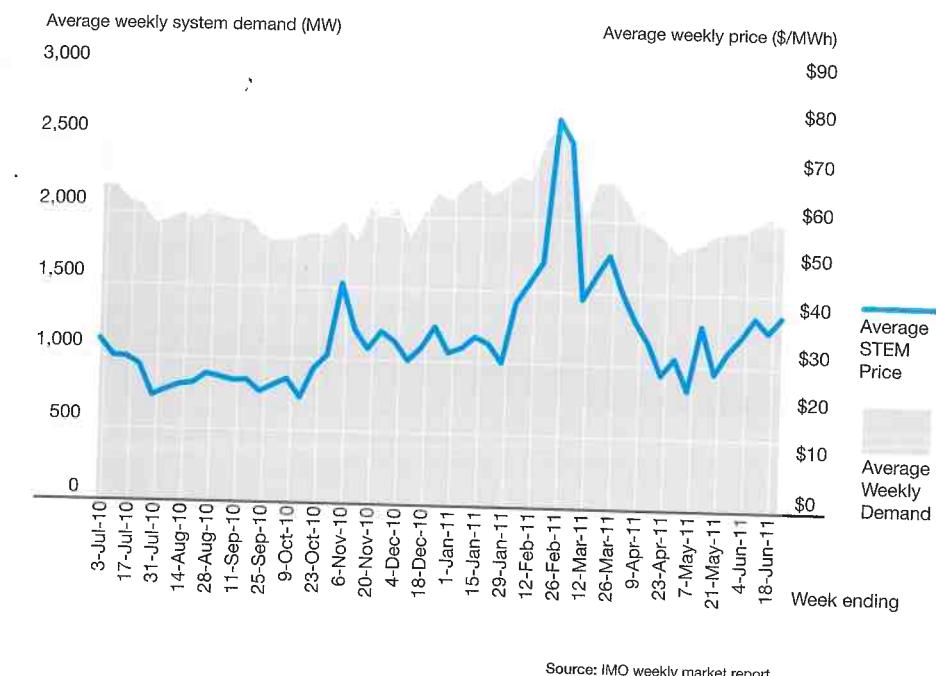


Table 4.1 National Electricity Market trading summary:

	New South Wales		Victoria	
	2009-10	2010-11	2009-10	2010-11
Total energy (GWh)	77,688	77,155	51,097	50,721
Energy value (\$ million)	4,070.08	3,324.34	2,152.24	1,476.76
Average demand (MW)	8,868	8,808	5,833	5,790
Maximum demand (MW)	13,765	14,580	9,858	9,570
Minimum demand (MW)	5,636	5,739	3,882	3,718
Maximum price (\$/MWh)	9,283.95	12,136.17	9,998.59	9,596.53
Minimum price (\$/MWh)	-264.31	-147.03	-217.69	-817.03
Average price - volume weighted (\$/MWh)	52.39	43.09	42.12	29.12
Average price - time weighted (\$/MWh)	44.19	36.75	36.28	27.09

Table 4.1 note:

1. Whole NEM energy value is a calculated based on the average price and usage every 30 minutes and therefore differs from the sum of energy value of all states.

years ending June 2010 and 2011

Queensland		South Australia		Tasmania		Whole NEM ¹	
2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
53,150	51,381	13,402	13,517	10,037	10,141	205,373	202,914
1,989.60	1,743.49	1,105.77	567.34	304.88	315.23	9,196.53	7,009.26
6,067	5,865	1,530	1,543	1,146	1,158	23,444	23,164
8,891	8,836	3,121	3,385	1,679	1,694	33,751	34,887
4,197	4,055	815	854	769	776	15,880	15,456
9,207.97	9,043.67	9,999.92	12,199.53	6,750.00	12,400.26	3,710.16	4,846.42
-167.43	-1,000.00	-530.13	-996.70	-999.64	-463.84	-142.28	-323.02
37.43	33.93	82.51	41.97	30.38	31.08	44.78	34.54
33.30	30.97	55.31	32.58	29.37	29.44	39.69	31.36

Source: esaa weekly market report

SECTION 5 : GAS SUPPLY

Table 4.2 Timetable for competitive retail trading

	Date for eligibility	Site thresholds
New South Wales	1 October 1996	≥ 40 GWh
	1 April 1997	≥ 4 GWh
	1 July 1997	≥ 750 MWh
	1 July 1998	≥ 160 MWh
	1 January 2001	≥ 100 MWh
	1 July 2001	≥ 40 MWh
	1 January 2002	All sites
Victoria	30 November 1994	≥ 5 MW
	1 July 1995	≥ 1 MW
	1 July 1996	≥ 750 MWh
	1 July 1998	≥ 160 MWh
	1 January 2001	≥ 40 MWh
	13 January 2002	All sites
Queensland	29 March 1998	≥ 40 GWh
	1 January 1999	≥ 4 GWh
	1 January 2000	≥ 200 MWh
	1 July 2004	≥ 100 MWh
	1 July 2007	All sites
Australian Capital Territory	1 October 1997	≥ 20 GWh
	1 March 1998	≥ 4 GWh
	1 May 1998	≥ 750 MWh
	1 July 1998	≥ 160 MWh
	1 July 2001	≥ 100 MWh
	1 July 2003	All sites
South Australia	20 December 1998	≥ 4 GWh
	1 July 1999	≥ 750 MWh
	1 January 2000	≥ 160 MWh
	1 January 2003	All sites
Western Australia ^{1,2}	1 July 1997	≥ 10 MW
	1 July 1998	≥ 5 MW
	1 January 2000	≥ 1 MW
	1 July 2001	≥ 230 kW
	1 January 2003	≥ 34 kW
	1 January 2005	≥ 50 MWh
Tasmania ³	1 July 2006	≥ 20 GWh
	1 July 2007	≥ 4 GWh
	1 July 2008	≥ 750 MWh
	1 July 2009	≥ 150 MWh
	1 July 2011	≥ 50 MWh
Northern Territory	1 April 2000	≥ 4 GWh
	1 October 2000	≥ 3 GWh
	1 April 2001	≥ 2 GWh
	1 April 2002	≥ 750 MWh
	1 April 2010	All sites

Table 4.2 notes:

1. Western Australian contestability tranches are based on the average yearly demand rather than total annual consumption as per other states.
2. At time of publication, the Western Australian Government's Strategic Energy Initiative process was considering issues related to full retail contestability for all sites.
3. The Tasmanian Government's Energy Policy Statement of December 2009 decided not to progress retail competition for all sites, but to continually review the costs and benefits of doing so.

SECTION 5 : GAS SUPPLY

Table 4.2 Timetable for competitive retail trading

	Date for eligibility	Site thresholds
New South Wales	1 October 1996	$\geq 40 \text{ GWh}$
	1 April 1997	$\geq 4 \text{ GWh}$
	1 July 1997	$\geq 750 \text{ MWh}$
	1 July 1998	$\geq 180 \text{ MWh}$
	1 January 2001	$\geq 100 \text{ MWh}$
	1 July 2001	$\geq 40 \text{ GWh}$
	1 January 2002	All sizes
Victoria	30 September 1996	$\geq 1 \text{ kW}$
	1 July 1997	$\geq 1 \text{ kW}$
	1 July 1998	$\geq 10 \text{ GWh}$
	1 January 1999	$\geq 10 \text{ MWh}$
	13 January 2002	All sizes
Queensland	29 March 1998	$\geq 40 \text{ GWh}$
	1 January 1999	$\geq 4 \text{ GWh}$
	1 January 2000	$\geq 20 \text{ MWh}$
	1 July 2001	$\geq 10 \text{ MWh}$
	1 July 2002	All sizes
Australian Capital Territory	1 October 1999	$\geq 20 \text{ GWh}$
	1 March 1998	$\geq 4 \text{ GWh}$
	1 June 1998	$\geq 750 \text{ MWh}$
	1 July 1998	$\geq 18 \text{ MWh}$
	1 July 2003	All sizes
South Australia	20 December 1998	$\geq 4 \text{ GWh}$
	1 July 1999	$\geq 750 \text{ MWh}$
	1 January 2000	$\geq 10 \text{ GWh}$
	1 January 2003	All sizes
Western Australia	1 July 1997	$\geq 10 \text{ MW}$
	1 June 1998	$\geq 5 \text{ MW}$
	1 January 2000	$\geq 1 \text{ kW}$
	1 July 2001	$\geq 250 \text{ MWh}$
	1 January 2003	$\geq 30 \text{ kW}$
Tasmania ^a	1 July 2006	$\geq 20 \text{ GWh}$
	1 April 2007	$\geq 1 \text{ GWh}$
	1 July 2008	$\geq 750 \text{ MWh}$
	1 July 2009	$\geq 10 \text{ GWh}$
	1 July 2011	$\geq 50 \text{ GWh}$
Northern Territory	1 April 2000	$\geq 4 \text{ GWh}$
	1 October 2000	$\geq 2 \text{ GWh}$
	1 April 2001	$\geq 2 \text{ MWh}$
	1 April 2002	$\geq 750 \text{ MWh}$
	1 April 2010	All sizes

Table 4.2 notes:

1. Australian competitive branches are based on the highest yearly demand either in their state or territory. This provides a more conservative estimate of potential sites.
2. The Tasmanian Government's Energy Policy Statement of December 2000 decided not to progress retail competition for all sites, but it is currently under review.
3. The Tasmanian Government's Energy Policy Statement of December 2000 decided not to progress retail competition for all sites, but it is currently under review.

NATURAL GAS

HIGHLIGHTS

Electricity Gas Australia 2012 reports energy supply industry data for the year ending 30 June 2011. However, where more recent information is available, particularly regarding mergers and acquisitions, such information has been included in written commentary, in order to present an as up-to-date summary of the state of the industry as possible.

NATURAL GAS SUPPLY

In 2010-11, the downstream gas industry contributed \$2.0 billion to Australia's gross domestic product of \$1,307.3 billion. The gross value added by the gas industry increased by 3.4 per cent compared to 2009-10. The Australian Energy Regulator (AER) reported that proved and probable natural gas reserves stood at around 115,000 petajoules (PJ) in August 2011 in its State of the Energy Market report. This constitutes an increase of approximately 8.5 per cent in 2010-11. According to the AER, Australia produced 2,030 PJ of natural gas in 2010-11, which included 53 per cent for the domestic market.

In 2010-11, there were approximately 114,500 kilometres of gas transmission and distribution pipelines in Australia. In addition, 1,045 kilometres of pipeline have been commissioned in the period since June 2011 and there were more than 5,100 kilometres of new pipeline infrastructure under development, with further pipeline projects proposed at the time of publication.

NATURAL GAS CONSUMPTION

According to statistics obtained from EnergyQuest, consumption was estimated at 1,128 PJ in 2010-11, and is projected to increase to 2,081 PJ by 2030-31. Natural gas is consumed widely in most jurisdictions for various purposes in Australia. The sectors which use most gas are manufacturing, which accounted for 32.7 per cent of total primary natural gas consumption, and electricity generation (30.4 per cent). Western Australia accounted for 30.8 per cent of total consumption in 2010-11, partly because it relies more on natural gas for electricity generation than most other states. Queensland comes in a distant second, accounting for 20.8 per cent of total natural gas consumption.

MERGER AND ACQUISITION ACTIVITY

On 29 July 2011, ATCO acquired WA Gas Networks (WAGN) from WestNet Infrastructure Group (74.1 per cent) and Diversified Utility and Energy Trusts (DUET) Group (25.9 per cent). WAGN owns and operates the natural gas distribution network that serves metropolitan Perth and surrounding regions, covering approximately 12,800km of pipelines. In July 2011, DUET increased its shareholding in Multinet to 100 per cent, and also increased its shareholding in the Dampier Bunbury Pipeline to 80 per cent.

Another significant transaction in the second half of 2011 was Santos acquiring 100 per cent of Eastern Star Gas (ESG) shares and subsequently selling a 20 per cent interest in ESG's permits in the Gunnedah Basin to TRUenergy. The transaction increases Santos's natural gas reserves in New South Wales. In August 2011, Palisade Investment Partners acquired the Tasmanian Gas Pipeline from Brookfield Infrastructure Partners. The Tasmanian Gas Pipeline consists of the 342 km pipeline from Longford to Bell Bay, a 180km pipeline from Port Latta to Rosevale and a 226 km pipeline from Bell Bay to Hobart. Finally, Arrow Energy took full ownership of Braemar 2 Power station and associated gas pipeline in June 2011.

SUPPLY RELIABILITY

The number of unplanned outages per 1,000 customers improved, decreasing from 0.11 outages in 2009-10 to 0.10 in 2010-11. The unaccounted for gas reported for 2010-11 decreased by 0.2 percentage points to 2.8 per cent of total gas injected.

Table 5.1**Primary natural gas consumption by state (PJ) 2010-11^{1,2,3}**

State	Consumption 2010-11 PJ
New South Wales & ACT	159.0
Victoria	225.8
Queensland	235.1
South Australia	122.7
Western Australia	347.9
Northern Territory	21.2
Tasmania	16.3
TOTAL	1,128.0

Source: EnergyQuest

Table 5.1 notes:

- Includes natural gas used in electricity generation (including that of private own-use generators).
- This table reflects estimates of natural gas consumption, as actual data was not available at time of publication.
- Natural gas consumption excludes natural gas used as fuel in production of gas.

Table 5.2**Projections of primary energy consumption to 2030-31 by fuel**

Sector	Consumption		Share of total		Annual growth 2010-11 to 2030-31 %
	2010-11 PJ	2030-31 PJ	2010-11 %	2030-31 %	
Black coal	1,279.0	1,560.6	23.1	20.6	1.0
Oil products	2,105.1	2,758.6	38.0	36.3	1.4
Natural gas ¹	1,128.0	2,080.9	20.3	27.4	3.1
Brown coal	721.0	577.9	13.0	7.6	-1.1
Renewables ²	311.4	614.4	5.6	8.1	3.5
TOTAL	5,544.5	7,592.4			1.6

Table 5.2 notes:

- Natural gas consumption excludes natural gas used as fuel in production of gas.
- Includes hydro electricity, wind, bioenergy, solar and geothermal.

Source: EnergyQuest

Table 5.3**Projected primary domestic gas demand by sector to 2030-31 (PJ)¹**

Sector	2010-11	2015-16	2020-21	2025-26	2030-31
Electricity generation	343.2	446.0	558.3	692.9	794.8
Manufacturing	368.3	411.3	448.9	477.0	500.6
Mining	201.9	254.1	320.7	405.7	514.2
Residential	145.3	147.6	156.5	168.9	181.9
Commercial	47.9	48.6	51.5	55.6	59.9
Transport and storage	21.3	22.6	24.5	26.8	29.3
Agriculture	0.1	0.2	0.2	0.3	0.3
TOTAL	1,128.0	1,330.5	1,560.7	1,827.2	2,080.9

Table 5.3 note:

- Natural gas demand excludes natural gas used as fuel in production of gas.

Source: EnergyQuest

Table 5.4**Natural gas reticulation and transmission:****mains laid and pipelines in use at 30 June 2011**

NSW & ACT	VIC	QLD	SA	WA	NT	TAS	Total
--------------	-----	-----	----	----	----	-----	-------

Total pipeline network in use (km)¹

Reticulation - low and medium pressure (≤ 210 kPa)	-	6,819	3,080	4,357	11,714	-	-
Reticulation - high pressure (> 210 kPa but $\leq 1,050$ kPa)	30,923 ²	22,831	2,015	3,164	657	38 ²	734 ² 86,333 ³
Transmission - high pressure ($> 1,050$ kPa)	4,081	3,796	6,044	2,029	8,337	3,168	748 28,203
Total⁴	35,004	33,446	11,140	9,550	20,709⁵	3,206	1,482 114,536

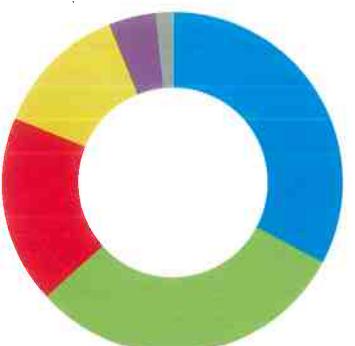
Mains laid during reporting year (km)

Reticulation - low and medium pressure (≤ 210 kPa)	-	-86	81	51	165	-	-
Reticulation - high pressure (> 210 kPa but $\leq 1,050$ kPa)	322 ²	659	18	103	12	0 ²	0 ² 1,325 ³
Transmission - high pressure ($> 1,050$ kPa)	0	83	0	49	187	0	0 319
Total⁴	322	656	99	203	364	0	0 1,644

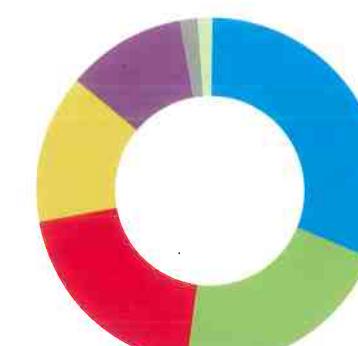
Table 5.4 notes:

- Pressure classification of some pipelines has changed.
- A breakdown of pipeline length into low, medium and high pressure reticulation was not available for New South Wales, Northern Territory or Tasmania at time of publication.
- The high pressure pipeline length total is inclusive of low and medium pressure pipelines.
- The network data shown in this table provides an approximation of total network assets based on current data available and therefore contain revised figures from Electricity Gas Australia 2011.
- The Dampier to Bunbury pipeline includes looping.

Source: esaa, company annual reports

Chart 5.1Primary natural gas consumption by sector 2010-11¹

Source: EnergyQuest
Note:
1. Natural gas consumption excludes natural gas used as fuel in production of gas.

Chart 5.2Primary natural gas consumption by state 2010-11¹

Source: EnergyQuest
Note:
1. Natural gas consumption excludes natural gas used as fuel in production of gas.

Chart 5.3Projected primary domestic gas demand by sector to 2030-31 (PJ)¹

Primary gas demand (PJ)

2,500

2,000

1,500

1,000

500

0

2010-11 2015-16 2020-21 2025-26 2030-31

Source: EnergyQuest

Note:
1. Natural gas demand excludes natural gas used as fuel in production of gas.

Agriculture
Transport and storage
Commercial
Residential
Mining
Electricity generation
Manufacturing

Chart 5.4

Projections of primary energy consumption by fuel type to 2030-31 (PJ)

Primary energy consumption (PJ)

8,000

7,000

6,000

5,000

4,000

3,000

0

2010-11 2015-16 2020-21 2025-26 2030-31

Source: EnergyQuest

Notes:
1. Includes hydro electricity, wind, bioenergy solar and geothermal.
2. Natural gas consumption excludes natural gas used as fuel in production of gas.

Renewables¹
Brown coal
Natural gas²
Oil products
Black coal

Table 5.5

Natural gas distribution connections and consumption

							at 30 June 2011 ¹					
	NSW & ACT ²	VIC	QLD	SA	WA ³	TAS ²	NT	TOTAL				
Number of connections												
Residential & small commercial and industrial ⁴	1,284,925	1,833,276	170,480	403,301	645,257	-	1,083					
Large commercial and industrial ⁵	485	791	189	185	184	-	1					
Total	1,285,410	1,834,067	170,669	403,486	645,441	9,261	1,084	4,349,418				
	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change				
2009	1,218,605	-	1,761,225	2.1	159,115	3.5	388,210	1.8	610,294	2.8	6,697	32.7
2010	1,278,214	4.9	1,789,951	1.6	166,678	4.8	395,297	1.8	627,205	2.8	8,104	21.0
2011	1,285,410	0.6	1,834,067	2.5	170,669	2.4	403,486	2.1	645,441	2.9	9,261	14.3
Consumption (TJ)												
Residential & small commercial and industrial ⁴	-	122,400.1	5,356.1	11,431.0	13,197.1	-	1,047	0.0	4,145,193	-	65.0	
Large commercial and industrial ⁵	-	71,417.3	21,341.8	24,140.0	14,432.6	-	1,080	3.2	4,266,529	2.9	3,232.0	
Total	114,927.0	193,817.4	26,697.8	35,571.0	27,629.6	2,052.2	3,297.0	403,992.1				
	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change				
2009	116,025.8	3.4	190,382.5	2.3	26,965.3	0.5	35,631.0	-0.9	27,977.0	-4.4	2,192.6	17.1
2010	112,266.0	-3.2	179,932.3	-5.5	26,356.6	-2.3	34,606.0	-2.9	27,880.4	-0.3	1,995.9	-9.0
2011	114,927.0	2.4	193,817.4	7.7	26,697.8	1.3	35,571.0	2.8	27,629.6	-0.9	2,052.2	2.8

Table 5.5 notes:

1. This table represents natural gas delivered via the distribution network only, and excludes gas delivered to direct transmission customers such as electricity generators.
2. A breakdown of connections was not available in Tasmania, and a breakdown of consumption by customer classification was not available in New South Wales or Tasmania.
3. Customer connections and consumption in Western Australia reflect the ATCO Gas Australia distribution network only. ATCO Gas Australia acquired WA Gas Networks in July 2011. Refer to Appendix 5 for more details.
4. Small commercial and industrial connections consume less than 10 TJ pa.
5. Large commercial and industrial connections consume 10 TJ pa or more.

Source: esaa, company annual reports

Table 5.6 Technical indicators: natural gas

State	Unaccounted for gas (%)		Average unplanned outages per 1,000 customers	
	2009-10	2010-11	2009-10	2010-11
New South Wales & ACT	2.3	2.3	0.04	0.04
Victoria	3.1	2.8	0.03	0.05
Queensland	2.1	1.8	0.07	0.21
South Australia	5.7	4.8	0.06	0.01
Western Australia	3.0	3.3	0.04	0.04
Tasmania ¹	0.9	0.3	37.76	23.22
Northern Territory	N/A	N/A	N/A	N/A
Australian weighted average	3.0	2.8	0.11	0.10

Source: esaa, company annual reports

Table 5.6 note:

1. The Tasmanian distribution network began construction in 2003 and is still growing rapidly; as a result, outage figures have shown some volatility. This should be taken into consideration in comparisons to the established mainland Australia networks.

Table 5.7

Main natural gas pipelines in Australia at 30 June 2011

Route	Year commissioned	Length (km)	External diameter (mm)	Pipeline operator ¹	Pipeline owner ¹
New South Wales and ACT					
Moomba (SA) to Wilton (NSW)	1976	1,300	864	APA Group	APA Group
Wilton to Sydney	1976	52	864	Jemena	Jemena
Wilton to Wollongong	1978	32	508	Jemena	Jemena
Young to Wagga Wagga	1981	131	324/89	APA Group	APA Group
Dalton to Canberra	1981	52	273	APA Group	APA Group
Horsley Park to Central Coast/Newcastle ²	1982	184	508	Jemena	Jemena
Young to Orange/Oberon/Lithgow	1987	270	168	APA Group	APA Group
Junee to Narrandera/Leeton/Griffith	1993	180	114/168	APA Group	APA Group
Wodonga to Wagga Wagga	1998	145	457	APA Group	APA Group
Central West Pipeline (Marsden to Dubbo)	1999	255	219/168	APA Group	APA Group
Eastern Gas Pipeline (Longford (Vic) to Horsley Park)	2000	797	457	Jemena	Jemena
Illabo to Tumut	2001	64	219	Envestra ³	Envestra ³
Hoskinstown to Canberra (ACT)	2001	22	273	ActewAGL	ActewAGL
Central Ranges Pipeline (Dubbo to Tamworth) ²	2006	394	168/219	APA Group	APA Group
Sydney Primary Looping	2007	30	500	Jemena	Jemena
Colongra Pipeline	2008	9	1067/273	Jemena	Jemena
Victoria					
Dandenong to Morwell (with branch lines)	1970	127	450/300/80	APA Group	APA Group
Longford to Dandenong	1971	174	750	APA Group	APA Group
Brooklyn to Ballarat/Bendigo	1972	180	200/150/80	APA Group	APA Group
Brooklyn to Corio (Geelong)	1972	51	350/400	APA Group	APA Group
Euroa to Shepparton/Kyabram/Echuca	1975	80	219/168	APA Group	APA Group
Wollert to Wodonga	1977	269	324	APA Group	APA Group
Pakenham to Wollert	1982	93	750	APA Group	APA Group
Wandong to Bendigo	1984	136	324	APA Group	APA Group
North Paarate to Portland/Hamilton	1986	188	150	APA Group	APA Group
Codrington to Hamilton	1994	55	150	APA Group	APA Group
Chiltern to Koonoomoo	1998	104	200	APA Group	APA Group
Carisbrook to Ararat/Stawell/Horsham	1998	182	200/100	Gas Pipelines Victoria	Gas Pipelines Victoria
Berri (SA) to Mildura	1999	148	114	Gas Pipelines Victoria	Gas Pipelines Victoria
Iona field to Lara (Geelong)	2000	144	500	Envestra	Envestra
SEA Gas Pipeline (Iona/Port Campbell to Pelican Point (SA))	2004	690	355/456	APA Group	APA Group
BassGass (Yolla to Melbourne)	2006	214	350	Origin Energy	Origin Energy (42.50%), AWE (46.25%) and Toyota Tsusho Gas E&P Trefoil (11.25%) ⁵
Thylacine to Port Campbell	2007	70	240	Origin Energy	Origin Energy (67.2%), Benaris International (27.8%), CalEnergy Gas (5.00%)
South Gippsland Natural Gas Pipeline ²	2008	66	150	Jemena	Multinet Gas
Brooklyn to Corio Looping	2008	58	500	APA Group	APA Group
Longtom to Patricia Balleen	2009	17	305	Nexus Energy	Nexus Energy
Port Campbell to Mortlake	2011	83	300	Origin Energy	Origin Energy

Table 5.7 cont.

Route	Year commissioned	Length (km)	External diameter (mm)	Pipeline operator ¹	Pipeline owner ¹
Queensland					
Roma (Wallumbilla) to Brisbane ⁶	1967	434	273/400	APA Group	APA Group
Kincora to Wallumbilla	1977	53	219	Origin Energy	Origin Energy
Silver Springs to Wallumbilla	1978	102	219	AGL Energy	AGL Energy
Roma (Wallumbilla) to Gladstone	1989	532	219	Jemena	Jemena
Gladstone to Rockhampton	1991	98	324	Jemena	Jemena
Gilmore to Blackall-Barcaldine	1995	240	219	Jemena	Jemena
South West Queensland Pipeline (Ballera to Wallumbilla)	1996	756	168	Ergon Energy	Ergon Energy
Fairview CSM to Roma-Gladstone	1997	27	406	Epic Energy	Epic Energy
Carpentaria Pipeline (Ballera to Mt Isa)	1998	841	219	Santos	Santos (79.5%), Origin Energy (20.5%)
Roma to Brisbane Looping	1998	54	324	APA Group	APA Group
SW Queensland Pipeline EPIC MLV 4 (Cheepie) to Gilmore	1998	163	406	APA Group	APA Group
Carpentaria Pipeline (Ballera-Mt Isa) to Cannington	1998	100	114	Ergon Energy	Ergon Energy
Bunya/Vernon/Cocos to Central Treatment Plant ²	1999	130	150	APA Group	APA Group
Gladstone to Bundaberg-Maryborough	2000	274	150/100	Australian Gasfields	Australian Gasfields
Moura CSM to Roma-Gladstone ²	2000	23	114	APA Group	Envestra
North Queensland Gas Pipeline (Moranbah to Townsville)	2005	393	219	Anglo Coal	Anglo Coal (51%), Mitsui Moura Investment (49%)
Condamine to Braemar	2006	80	273	North Queensland Pipeline Management (NQPM)	Victorian Funds Management Corporation (VFMC)
Tipton Pipeline	2006	141	406	Alinta Energy	Alinta Energy
Fairview to Wallumbilla	2007	130	203/406	Arrow Energy	Arrow Energy
Queensland to South Australia/New South Wales (QSN) Link	2009	180	300/450	Santos	Santos (79.5%), Origin Energy (20.5%)
Berwyndale to Wallumbilla	2009	113	400	Epic Energy	Epic Energy
Wallumbilla to Darling Downs	2009	205	400	APA Group	APA Group
Condamine to Braemar 2	2009	110	450	Origin Energy	Origin Energy
Queensland Gas Pipeline Looping (Moura to Bell Creek)	2010	113	400	Arrow Energy ⁷	Arrow Energy ⁷
South Australia					
Moomba to Adelaide	1969	827	559	Epic Energy	Epic Energy
Wasleys to Angaston (Angaston Lateral)	1969	39	219	Epic Energy	Epic Energy
Whyte Yarcowie to Port Pirie (Port Pirie Lateral)	1976	78	168	Epic Energy	Epic Energy
South-east pipeline system	1985	81	150	Epic Energy	Epic Energy
Wasleys to Adelaide Looping	1986	42	508	Epic Energy	Epic Energy
Port Pirie to Whyalla (Whyalla Lateral)	1989	88	219	Epic Energy	Epic Energy
Ballera (Qld) to Moomba (SA) ⁸	1993	184	400	Santos	Santos
Riverland Pipeline (Angaston to Berri and Murray Bridge)	1994	231	114	APA Group	Envestra
Moomba to Adelaide loop	2000	33	600	Epic Energy	Epic Energy
SESA Pipeline (Poolajelo (Vic) to Ladbroke Grove (SA)) ²	2005	45	219	APA Group	APA Group
QSN Link (Ballera to Moomba)	2009	180	400	Epic Energy	Epic Energy
Western Australia					
Parmelia Gas Pipeline (Dongara to Perth/Pinjarra)	1972	444	356	APA Group	APA Group
North Rankin to Withnell Bay	1984	134	1,016	Woodside Energy	North West Shelf Venture (NWSV)
Dampier to Bunbury Pipeline ²	1984	3,080	660	DBP ^{9,10}	DBP ^{9,10}

Table 5.7 cont.

Route	Year commissioned	Length (km)		External diameter (mm)	Pipeline operator ¹	Pipeline owner ¹
Western Australia cont.						
Robe River Pipeline (Karratha to Cape Lambert)	1984	57		273	Robe River Iron Associates	Robe River Iron Associates
Mungarra to Geraldton	1985	58		168	ATCO Australia ¹¹	ATCO Australia ¹¹
Gascoyne Junction to Carnarvon ²	1987	170		150	DBP ⁹	DBP ⁹
Tubridgi 1 Pipeline (Tubridgi to Dampier-Bunbury)	1992	88		168	BHP Billiton	BHP Billiton
Tubridgi 2 Pipeline (Tubridgi to Dampier-Bunbury)	1993	88		273	BHP Billiton	BHP Billiton
Varanus Island to Dampier-Bunbury	1993	100		324	Apache Energy	Apache Energy (55%), Santos (45%)
Griffin to Tubridgi	1993	70		200	BHP Billiton	BHP Billiton
Pilbara Pipeline (Karratha to Port Hedland)	1995	219		457	Epic Energy	Epic Energy
Kambalda Lateral (Kalgoorlie to Kambalda)	1996	44		219	APA Group	APA Group
Goldfields Gas Pipeline (Yarraloola to Newman/Kalgoorlie)	1996	1,378		400/350	APA Group	APA Group (88.2%), Alinta Energy (11.8%)
GGT Pipeline to Newman Lateral	1996	47		219	APA Group	APA Group (88.2%), Alinta Energy (11.8%)
Pilbara Pipeline System to Wodgina lateral	1996	80		457	Epic Energy	Epic Energy
GGT Pipeline to Jundee Lateral	1997	45		114	Newmont Mining	Newmont Mining
Leonora to Murrin Murrin Lateral	1997	85		219	APA Group	APA Group
Port Hedland main to Burrup Peninsula	1998	24		610	Epic Energy	Epic Energy
Midwest pipeline (Dampier-Bunbury to Windimurra)	1999	353		203/178	APA Group	APA Group (50%), Horizon Power (50%)
Wagerup to Worsley ²	1999	58		450	DBP ⁹	DBP ⁹
Kambalda to Esperance	2004	340		150	Esperance Pipeline Company	ANZ Infrastructure Services
Telfer Pipeline (Port Hedland to Telfer gold mine) ²	2004	422		250	APA Group	Energy Infrastructure Investments (EII)
Telfer to Birla Nifty ²	2006	47		156	APA Group	Energy Infrastructure Investments (EII)
Angel Gas Pipeline (Angel Gas to North Rankin) ²	2008	49		-	Woodside Energy	North West Shelf Venture (NWSV)
Pluto Gas Pipeline (Gorgon to Dampier)	2011	180		914	Woodside Energy	Woodside Energy (90%), Tokyo Gas (5%) and Kansai Electric (5%)
Tasmania						
Longford to Bell Bay	2002	342		350	Tas Gas Networks	Palisade Investment Partners ¹²
Bell Bay to Hobart	2002	226		203	Tas Gas Networks	Palisade Investment Partners ¹²
Rosevale to Port Latta	2002	180		152	Tas Gas Networks	Palisade Investment Partners ¹²
Northern Territory						
Palm Valley to Alice Springs	1983	146		219	APA Group	Envestra
Amadeus Gas Pipeline (Mereenie to Tylers Pass)	1987	116		273	APA Group ¹³	APA Group ¹³
Amadeus Gas Pipeline (Palm Valley to Mataranka/Darwin)	1987	1,512		356/324	APA Group ¹³	APA Group ¹³
Daly Waters to McArthur River Mine	1995	333		168	NT Gas	APA Group (96%), Northern Territory Government (4%)
Timor Sea to Darwin Pipeline (LNG processing) ²	2006	502		660	ConocoPhillips Australasia	ConocoPhillips (57.2%), Eni Australia (11.0%), Santos (11.4%), INPEX (11.3%), Tokyo Electric and Tokyo Gas (aggregate 9.2%)
Bonaparte Gas Pipeline (Wadeye to Amadeus-Darwin)	2008	286		300	APA Group	Energy Infrastructure Investments (EII)
Wickham Point Interconnect Pipeline	2009	12		300	APA Group	Energy Infrastructure Investments (EII)
Blacktip to Wadeye	2009	108		406	Eni Australia	Eni Australia

Source: esaa, Australian Pipeline Industry Association 2012 Directory Year Book, PPO Monthly

SECTION 6 : APPENDICES

Table 5.7 notes:

1. Pipeline owners and pipeline operators represent parent companies.
2. Pipeline details have been revised on the basis of new information.
3. In October 2010, Envestra acquired Country Energy's gas distribution and transmission network in New South Wales. Refer to Appendix 5 for more details.
4. In November 2010, International Power Australia sold its one third share in SEA Gas to the other two owners, APA Group and Retail Employees Superannuation Trust (REST). Refer to Appendix 5 for more details.
5. In December 2011, Toyota Tsusho Gas E&P Trefoil acquired 11.25 per cent interest in BassGass (Yolla to Melbourne).
6. Partially looped (or duplicated).
7. In July 2011, Arrow Energy acquired the remaining 25 per cent stake in the Condamine to Braemar 2 pipeline from ERM Power, taking full ownership and operation. Refer to Appendix 5 for more details.
8. Two-phase pipeline which transports both gas and liquids.
9. Dampier Bunbury Pipeline (DBP) is the trading name for the consortium of DUET (Diversified Utilities and Energy Trusts) (80%) and Alcoa (20%).
10. The DBNPG comprises the mainline, loop and the laterals with a length of 3080km.
11. In July 2011, ATCO Group acquired WA Gas Networks (WAGN) from WestNet Infrastructure Group and DUET Group. Refer to Appendix 5 for more details.
12. In August 2011, Palisade Investment Partners acquired the Tasmanian Gas Pipeline from WestNet, which was owned by Brookfield Infrastructure Partners. Refer to Appendix 5 for more details.
13. In June 2011, APA Group acquired the remaining 4 per cent share of the Amadeus Gas Pipeline from the Northern Territory Government, becoming a full owner and operator of the pipeline.

Appendix 1

Power stations in Australia 2010-11

Power station	Operating company	Plant type	Primary fuel type	Location	Cogeneration	Renewable	Year of commission	Unit details	Total capacity (MW)
New South Wales									
Principal power stations¹									
Eraring	Origin Energy	Steam	Black coal	Near Newcastle			1982-84	2x720, 1x680, 1x660	2,780.0
Bayswater	Macquarie Generation	Steam	Black coal	Near Muswellbrook			1982-84	4x660	2,640.0
Liddell	Macquarie Generation	Steam	Black coal	Near Muswellbrook			1971-73	2x510, 2x520	2,060.0
Tumut 3	Snowy Hydro	Hydro	Water	Cabramurra			1973	6x250	1,500.0
Mt Piper	TRUenergy	Steam	Black coal	Near Lithgow			1993	1x700, 1x687	1,387.0
Vales Point B	Delta Electricity	Steam	Black coal	Lake Macquarie, near Newcastle			1978	2x660	1,320.0
Wallerawang C	TRUenergy	Steam	Black coal	Near Lithgow			1976-80	2x500	1,000.0
Colongra	Delta Electricity	Gas turbines	Natural gas	Colongra			2009	4x167	668.0
Uranquinty	Origin Energy	Gas turbines	Natural gas	Uranquinty			2009	4x166	664.0
Munmorah	Delta Electricity	Steam	Black coal	Lake Munmorah			1969	2x300	600.0
Tallawarra	TRUenergy	Combined cycle	Natural gas	Lake Illawarra			2009	1x435	435.0
Tumut 1	Snowy Hydro	Hydro	Water	Cabramurra			1959	4x82.5	329.6
Tumut 2	Snowy Hydro	Hydro	Water	Cabramurra			1962	4x71.5	286.4
Shoalhaven	Origin Energy	Pump storage	Water	Near Nowra			1977	2x40, 2x80	240.0
Smithfield	Marubeni Corporation	Combined cycle	Natural gas	West of Sydney			1997	3x37.5, 1x47.5	160.0
Redbank	Redbank Energy	Steam	Black coal	South of Singleton			2001	1x150	150.0
Blowering	Snowy Hydro	Hydro	Water	Blowering			1969	1x80	80.0
Guthaga	Snowy Hydro	Hydro	Water	Guthaga			1955	2x30	60.0
Hunter Valley	Macquarie Generation	Gas turbines	Oil products	Near Muswellbrook			1988	2x25	50.0
Hume NSW	Eraring Energy	Hydro	Water	Hume Weir, Albury			1957	1x29	29.0
Non-principal power stations²									
Capital	Infigen Energy	Wind	Wind	Bungendore			2009	67x2.1	140.7
Appin	Energy Developments	Reciprocating engine	Coal waste methane	Appin			1996	54x1.03	55.6
Port Kembla Steelworks	BlueScope Steel	Steam	Waste Gas	Port Kembla			1928, 1992	1x2.5, 1x9.5, 1x7.5, 1x16, 1x6.25, 1x12.5	54.3
Warragamba	Eraring Energy	Hydro	Water	Warragamba			1959	1x50	50.0
Broken Hill	Essential Energy	Gas turbines	Oil products	Broken Hill			1989	2x25	50.0
Tower	Energy Developments	Reciprocating engine	Coal waste methane	Tower			1996	40x1.03	41.2
Eraring GT	Origin Energy	Gas turbines	Natural gas	Near Newcastle			2008	1x40	40.0
Broadwater	Sunshine Electricity Joint Venture	Steam	Bagasse	Broadwater			2008	1x30	30.0
Condong	Sunshine Electricity Joint Venture	Steam	Bagasse	Condong			2008	1x30	30.0
Cullerin Range	Origin Energy	Wind	Wind	Goulburn			2009	15x2	30.0
Hunter Economic Zone	Infratil Energy Australia	Reciprocating engine	Oil products	Hunter Valley			2008	16x1.8	28.8
Burrinjuck	Eraring Energy	Hydro	Water	Burrinjuck			1938, 2001	2x6, 1x16	28.0
Copeton	AGL Energy	Hydro	Water	Copeton			1996	1x24	24.0
Wyangala Dam	Hydro Power	Hydro	Water	Wyangala Dam			1992, 2006	2x9, 1x4.5	22.5
Lucas Heights	Energy Developments	Reciprocating engine	Landfill gas	Lucas Heights			1994, 2004	11x1.15, 5x1.03, 1x4.1	22.0
Visy Paper Tumut	Visy Paper	Steam	Black liquor	Tumut			2001	1x20	20.0
Burrendong	AGL Energy	Hydro	Water	Burrendong			1996	1x14.5	14.5
Jounama	Snowy Hydro	Hydro	Water	Jounama			2010	1x14	14.0
Clyde Refinery	Shell	Steam	Waste Gas	Clyde			1968, 1985	1x2.6, 1x5, 1x4	11.6
Wilga Park	Santos	Reciprocating engine	Natural gas	Wilga Park			2004	1x11	11.0
Glennies Creek	Envirogen	Reciprocating engine	Coal waste methane	Glennies Creek			2007	1x10	10.0
Total of fossil fuel stations with capacity less than 10 MW ³									62.2
Total of renewable stations with capacity less than 10 MW ⁴									144.0

Appendix 1 cont.

Power station	Operating company	Plant type	Primary fuel type		Location	Cogeneration	Renewable	Year of commission	Unit details	Total capacity (MW)
Victoria										
Principal power stations¹										
Loy Yang A	Loy Yang Power	Steam	Brown coal		Near Morwell, Latrobe Valley			1984-87	1x515, 3x560	2,195.0
Hazelwood	Hazelwood Power Partnership	Steam	Brown coal		Near Morwell, Latrobe Valley			1964-71	8x200	1,600.0
Yallourn W	TRUenergy	Steam	Brown coal		Near Morwell, Latrobe Valley			1975, 1982	2x360, 2x380	1,480.0
Loy Yang B	IPR-GDF SUEZ and Mitsui & Co	Steam	Brown coal		Near Morwell, Latrobe Valley			1993-96	2x500	1,000.0
Murray 1	Snowy Hydro	Hydro	Water		Khancoban			1967	10x95	950.0
Murray 2	Snowy Hydro	Hydro	Water		Khancoban			1969	4x137.5	550.0
Newport	Ecogen Energy	Steam	Natural gas		Newport			1980	1x510	510.0
Jeeralang A and B	Ecogen Energy	Gas turbines	Natural gas		Near Morwell, Latrobe Valley			1980	4x55, 3x76	449.0
Laverton	Snowy Hydro	Gas turbines	Natural gas		Laverton			2006	2x160	320.0
Valley Power	Snowy Hydro	Gas turbines	Natural gas		Near Morwell, Latrobe Valley			2002	12x25	300.0
Morwell	Energy Brix Australia	Steam	Brown coal		Near Morwell, Latrobe Valley			1958-62	1x90, 1x30, 1x75	195.0
Dartmouth	AGL Energy	Hydro	Water		Dartmouth			1960	1x180	180.0
Anglesea	Alcoa Australia	Steam	Brown coal		Anglesea			1969	1x160	160.0
McKay Creek	AGL Energy	Hydro	Water		Kiewa			1980	6x26.7	160.0
Somerton	AGL Energy	Gas turbines	Natural gas		Somerton			2002	4x40	160.0
Bogong	AGL Energy	Hydro	Water		Bogong			2009	2x70	140.0
Eildon	AGL Energy	Hydro	Water		Eildon			1957	2x60, 2x7.5	135.0
Bairnsdale	Aurora Energy	Gas turbines	Natural gas		Bairnsdale			2001	2x46	92.0
West Kiewa	AGL Energy	Hydro	Water		Kiewa			1956	4x15.5	62.0
Hume VIC	Eraring Energy	Hydro	Water		Hume Weir, Albury			1957	1x29	29.0
Non-principal power stations²										
Waubra	Acciona Energy	Wind	Wind		West of Ballarat			2009	128x1.5	192.0
Portland 2	Pacific Hydro	Wind	Wind		Cape Bridgewater			2008	29x2	58.0
Paperlink Maryvale	Paperlink	Steam	Black liquor		Maryvale			1976-89	3x12, 1x18.5	54.5
Challicum Hills	Pacific Hydro	Wind	Wind		Near Ararat			2003	35x1.5	52.5
Corio Refinery	Shell	Steam	Waste Gas		Corio			1968-92	2x6, 1x7.2, 1x25.2	44.4
Portland 3	Pacific Hydro	Wind	Wind		Cape Nelson			2009	22x2	44.0
Longford	Esso Australia	Gas turbines	Natural gas		Longford			1992	2x8, 1x10, 3x2.5	33.5
Yambuk	Pacific Hydro	Wind	Wind		Yambuk			2006	20x1.5	30.0
Clover	AGL Energy	Hydro	Water		Clover			1945	2x14.5	29.0
Toora	RATCH-Australia	Wind	Wind		Toora			2002	12x1.75	21.0
Codrington	Pacific Hydro	Wind	Wind		Codrington			2001	14x1.3	18.2
Fairfield Paper Mill	Amcor	Steam	Natural gas		Fairfield			1966-87	1x10, 1x7.5	17.5
Banimboola	AGL Energy	Hydro	Water		Banimboola			2005	2x5.3, 1x2.3	12.9
Royal Melbourne Hospital	Energy Impact	Gas turbines	Natural gas		Melbourne			1994	2x6.21	12.4
Wonthaggi	Origin Energy	Wind	Wind		Wonthaggi			2005	6x2	12.0
South Melbourne	Cogenco	Gas turbines	Natural gas		South Melbourne			1994	2x5.5	11.0
Clayton	Energy Developments	Reciprocating engine	Landfill gas		Clayton			1995	11x0.98	10.8
Total of fossil fuel stations with capacity less than 10 MW ³										
Total of renewable stations with capacity less than 10 MW ⁴										

Power station	Operating company	Plant type	Primary fuel type		Location	Cogeneration	Renewable	Year of commission	Unit details	Total capacity (MW)
Queensland										
Principal power stations¹										
Gladstone	CS Energy	Steam	Black coal		Gladstone					
Tarong	Stanwell Corporation	Steam	Black coal		Nanango			1976-82	6x280	1,680.0
Stanwell	Stanwell Corporation	Steam	Black coal		West of Rockhampton			1984-86	4x350	1,400.0
Callide C	CS Energy	Steam	Black coal		Biloela			1993-96	4x350	1,400.0
Millmerran	InterGen (Australia)	Steam	Black coal		South of Surat coalfield			2001	2x450	900.0
Kogan Creek	CS Energy	Steam	Black coal		Darling Downs near Chinchilla			2002	2x426	852.0
Callide B	CS Energy	Steam	Black coal		Biloela			2007	1x750	750.0
Darling Downs	Origin Energy	Combined cycle	Coal seam methane		Darling Downs			1989	2x350	700.0
Braemar 2	Arrow Energy	Gas turbines	Coal seam methane		Dalby			2010	3x120, 1x270	630.0
Braemar	Alinta Energy	Gas turbines	Natural gas		Braemar			2009	3x173	519.0
Wivenhoe	CS Energy	Pump storage	Water		Esk			2006	3x168	504.0
Swanbank B	Stanwell Corporation	Steam	Black coal		Near Ipswich			1984	2x250	500.0
Tarong North	Stanwell Corporation	Steam	Black coal		Nanango			1970-73	4x125	500.0
Mt Stuart	Origin Energy	Gas turbines	Oil products		North of Townsville			2002	1x443	443.0
Swanbank E	Stanwell Corporation	Combined cycle	Coal seam methane		Near Ipswich			1999, 2009	2x146, 1x131	423.0
Mica Creek	Stanwell Corporation	Combined cycle	Natural gas		Mt Isa			2002	1x385	385.0
		Steam	Natural gas		Mt Isa			1997, 2001	3x35, 1x33, 1x20	158.0
		Gas turbines	Natural gas		Mt Isa			1998	4x33	132.0
Oakey	AGL Energy	Gas turbines	Natural gas		Darling Downs			1997	1x35	35.0
Yabulu	AGL Energy	Combined cycle	Coal seam methane		North of Townsville			2000	2x144	288.0
Collinsville	Stanwell Corporation	Steam	Black coal		North west of Mackay			2005	1x160, 1x80	240.0
Yarwun	Rio Tinto Alcan	Gas turbines	Natural gas		Yarwun			1998	3x32, 1x33, 1x51	180.0
Condamine A	Queensland Gas Company	Combined cycle	Coal seam methane		Darling Downs			2010	1x160	160.0
Kareeya	Stanwell Corporation	Hydro	Water		Cairns region			1957-59, 2005	2x42, 1x56	140.0
Roma	Origin Energy	Gas turbines	Natural gas		Surat Basin			1999	2x40	84.0
Barron Gorge	Stanwell Corporation	Hydro	Water		Barron Gorge, Cairns region			1963	2x30	80.0
Barcaldine	Ergon Energy	Combined cycle	Natural gas		Barcaldine			1996	1x40, 1x17	60.0
Mackay	Stanwell Corporation	Gas turbines	Oil products		Mackay			1976	1x34	57.0
										34.0
Non-principal power stations²										
Pioneer Sugar	Sucrogen	Steam	Bagasse		Near Ayr					
Invicta Sugar	Sucrogen	Steam	Bagasse		South of Townsville			2005	1x31, 1x37	68.0
Ballera	Santos	Gas turbines	Natural gas		Ballera			1976-96	1x9, 1x2.5, 1x39	50.5
Moranbah North	Energy Developments	Reciprocating engine	Coal waste methane		Moranbah North			2005	1x45	45.0
Mt Isa - Mines Station	Xstrata	Steam	Natural gas		Mt Isa			2008	3x15	45.0
Yabulu (Coal)	Queensland Nickel	Steam	Black coal		Townsville			1974	1x44.5	44.5
Isis Sugar	AGL Energy	Steam	Bagasse		Childers			1965-75, 2006	3x12.5	37.5
Cannington	Energy Developments	Reciprocating engine	Natural gas		Cannington					37.0
Daandine	APA Group	Reciprocating engine	Coal seam methane		Daandine			1997, 2003	18x1.03, 4x1.46, 6x2	36.4
Bulwer Island	ATCO Australia	Combined cycle	Coal seam methane		Bulwer Island			2007	11x3	33.0
German Creek	Energy Developments	Reciprocating engine	Coal waste methane		German Creek			2000	2x13 GT, 1x7 ST	33.0
Rocky Point	Rocky Point Sugar Mill	Steam	Biomass		Rocky Point			2006	2x16	32.0
Project X41, Mt Isa	APA Group	Reciprocating engine	Natural gas		Mt Isa			2001	1x30	30.0
								2007	10x3	30.0

Appendix 1 cont.

Power station	Operating company	Plant type	Primary fuel type		Location	Cogeneration	Renewable	Year of commission	Unit details	Total capacity (MW)
Mt Isa - Phosphate Hill	Incitec Pivot	Combined cycle	Natural gas		Phosphate Hill			1999	4x4.5 GT, 1x8.5 ST	26.5
Beaudesert	Energy Impact	Reciprocating engine	Oil products		Beaudesert			2005	1x26	26.0
Gladstone QAL	Queensland Alumina	Steam	Black coal		Gladstone			1973	2x12.5	25.0
Tully Sugar	Tully Sugar	Steam	Bagasse		Tully			1965-97	2x2.25, 1x5.3, 1x10, 1x1.6	21.4
Proserpine Sugar	Sucrogen	Steam	Bagasse		Proserpine			1974-99	1x10, 1x6, 2x2	20.0
Oaky Creek Coal Mine	Envirogen	Reciprocating engine	Coal waste methane		Oaky Creek Coal Mine			2006	14x1, 2x3	20.0
South Johnstone	Bundaberg Sugar	Steam	Bagasse		South Johnstone			1970-97	1x2.0, 1x9.5, 1x7.8	19.3
Marian Sugar	Mackay Sugar Cooperative Association	Steam	Bagasse		Marian			1967-78	1x3, 1x10, 1x5	18.0
Tarong (Oil)	Stanwell Corporation	Gas turbines	Oil products		Nanango			1983	1x15	15.0
Gladstone (Oil)	CS Energy	Gas turbines	Oil products		Gladstone			1976	1x14	14.0
Plane Creek Sugar	Sucrogen	Steam	Bagasse		Plane Creek			1970-97	1x4, 1x10	14.0
Farleigh Sugar	Mackay Sugar Cooperative Association	Steam	Bagasse		Farleigh			1956-83	1x1.5, 1x3.0, 1x3.5, 1x5.0	13.0
Racecourse Sugar	Mackay Sugar Cooperative Association	Steam	Bagasse		Mackay			1968-82	1x3.5, 1x7.0, 1x2	12.5
Windy Hill	RATCH-Australia	Wind	Wind		Windy Hill					
Moranbah	AGL Energy	Reciprocating engine	Coal seam methane		Moranbah			2000	20x0.6	12.0
Mossman Sugar	Mossman Sugar Mill	Steam	Bagasse		Mossman			2005	2x6	12.0
Victoria Sugar	Sucrogen	Steam	Bagasse		Ingham			1954-95	2x1, 1x3, 1x0.85, 1x6	11.9
Mulgrave Sugar	Maryborough Sugar Factory	Steam	Bagasse		Mulgrave			1965-76	1x3.2, 1x3.6, 1x5.0	11.8
Inkerman Sugar	Sucrogen	Steam	Bagasse		Home Hill			1970	1x5.0, 1x3.0, 1x1.0, 1x1.5	10.5
Mt Isa Fertilisers	Incitec Pivot	Steam	Natural gas		Mt Isa			1963-76	1x2, 1x8	10.0
Total of fossil fuel stations with capacity less than 10 MW ³								1999	1x10	10.0
Total of renewable stations with capacity less than 10 MW ⁴										54.5
										102.6

South Australia

Principal power stations¹

Torrens Island	AGL Energy	Steam	Natural gas		Torrens Island			1967, 1977	4x120, 4x200	1,280.0
Northern	Alinta Energy	Steam	Brown coal		South of Port Augusta			1985	2x270	540.0
Pelican Point	IPR-GDF SUEZ Australia	Combined cycle	Natural gas		Pelican Point			2000	2x160 GT, 1x158 ST	478.0
Playford	Alinta Energy	Steam	Brown coal		South of Port Augusta					
Quarantine	Origin Energy	Gas turbines	Natural gas		Torrens Island			1960	4x60	240.0
Hallett	TRUenergy	Gas turbines	Natural gas		North of Adelaide			2002	4x23, 1x128	220.0
Osborne	Osborne Cogeneration	Combined cycle	Natural gas		North-west of Adelaide			2002	11x16.4, 1x23	203.0
Lake Bonney 2	Infigen Energy	Wind	Wind		Lake Bonney			1998	1x120, 1x65	185.0
Dry Creek	IPR-GDF SUEZ Australia	Gas turbines	Natural gas		Adelaide			2008	53x3	160.0
Hallett 4 (North Brown Hill)	AGL Energy	Wind	Wind		North Brown Hill			1973	3x52	156.0
Waterloo	TRUenergy	Wind	Wind		Waterloo			2011	63x2.1	132.3
Snowtown	TrustPower	Wind	Wind		Snowtown			2010	37x3	111.0
Hallett 1 (Brown Hill)	AGL Energy	Wind	Wind		Brown Hill, near Mount Bryan			2008	47x2.1	98.7
Mintaro	IPR-GDF SUEZ Australia	Gas turbines	Natural gas		North of Adelaide			2008	45x2.1	94.5
								1984	1x90	90.0

Appendix 1 cont.

Power station	Operating company	Plant type	Primary fuel type		Location	Cogeneration	Renewable	Year of commission	Unit details	Total capacity (MW)
Ladbroke Grove	Origin Energy	Gas turbines	Natural gas		Mt Gambier North			2000	2x42	84.0
Hallett 2 (Hallett Hill)	AGL Energy	Wind	Wind		Hallett Hill			2010	34x2.1	71.4
Snuggery	IPR-GDF SUEZ Australia	Gas turbines	Oil products		South-east of Adelaide			1978-97	3x21	63.0
Clements Gap	Pacific Hydro	Wind	Wind		Clements Gap			2010	27x2.1	56.7
Port Lincoln	IPR-GDF SUEZ Australia	Gas turbines	Oil products		Port Lincoln			1998-00	2x25	50.0
Angaston	Infratil Energy Australia	Reciprocating engine	Oil products		Angaston			2006	30x1.67	50.0
Lake Bonney 3	Infigan Energy	Wind	Wind		Lake Bonney			2010	13x3	39.0
Port Lincoln 2	IPR-GDF SUEZ Australia	Gas turbines	Natural gas		Port Lincoln			2010	1x23.5	23.5
Non-principal power stations²										
Wattle Point	AGL Energy	Wind	Wind		Wattle Point					
Lake Bonney	Infigan Energy	Wind	Wind		Lake Bonney			2005	55x1.65	90.8
Mount Millar	Meridian Energy	Wind	Wind		Mount Millar			2005	46x1.75	80.5
Cathedral Rocks	Acciona Energy, TRUenergy	Wind	Wind		Cathedral Rocks			2005	35x2	70.0
Whyalla	OneSteel	Steam	Waste Gas		Whyalla			2005	33x2	66.0
Port Stanvac	Infratil Energy Australia	Reciprocating engine	Oil products		Lonsdale			1941	1x60	60.0
Canunda	IPR-GDF SUEZ Australia	Wind	Wind		Lake Bonney			2011	36x1.6	57.0
Starfish Hill	RATCH-Australia	Wind	Wind		Starfish Hill			2005	23x2	46.0
Total of fossil fuel stations with capacity less than 10 MW ³										34.5
Total of renewable stations with capacity less than 10 MW ⁴										35.8
										24.1
Western Australia										
Principal power stations (South West Interconnected System)⁵										
Muja	Verve Energy	Steam	Black coal		Collie					
Kwinana (Verve)	Verve Energy	Gas turbines	Natural gas		Kwinana			1981, 1986	2x200, 2x227	854.0
Pinjar	Verve Energy	Gas turbines	Multi-fuel		Kwinana			1972	1x21	21.0
			Multi-fuel		North of Perth, near Yanchep			1970, 1976	2x200, 2x120	640.0
								1992, 1996	6x38, 2x 116, 1x126	586.0
Wagerup (Alinta)	Alinta Energy	Gas turbines	Natural gas		Wagerup			2007	2x190	380.0
Collie	Verve Energy	Steam	Black coal		Collie			1999	1x340	340.0
Neerabup	ERM Power	Gas turbines	Natural gas		Neerabup			2009	2x165	330.0
Kwinana (NewGen)	ERM Power	Combined cycle	Natural gas		Kwinana			2008	2x160	320.0
Kemerton	Verve Energy	Gas turbines	Natural gas		Kemerton			2005	2x150	300.0
Pinjarra (Alinta)	Alinta Energy	Gas turbines	Natural gas		Pinjarra			2007	2x140	280.0
Cockburn	Verve Energy	Combined cycle	Natural gas		Kwinana			2003	1x240	240.0
Bluewaters 1	Griffin Energy	Steam	Black coal		Collie			2009	1x208	208.0
Bluewaters 2	Griffin Energy	Steam	Black coal		Collie			2010	1x208	208.0
Worsley (Alumina)	BHP Billiton Worsley Alumina	Steam	Black coal		Worsley			1982-00	3x45	135.0
Worsley (Verve)	Verve Energy, Origin Energy	Gas turbines	Natural gas		Worsley			2000	1x120	120.0
Kwinana Swift	Perth Energy	Combined cycle	Natural gas		Kwinana			2010	4x30	120.0
Kwinana (PPP)	Perth Power Partnership	Combined cycle	Natural gas		Kwinana			1996	2x39 GT, 1x42 ST	120.0
Mungarra	Verve Energy	Gas turbines	Natural gas		East of Geraldton			1991	2x37, 1x38	112.0
Parkeslon	Goldfields Power	Gas turbines	Natural gas		Parkeslon			1981-96	3x37	110.0
Wagerup (Alcoa)	Alcoa Australia	Steam	Natural gas		Wagerup			1984	2x19, 1x25, 1x35	98.0
Pinjarra (Alcoa)	Alcoa Australia	Steam	Natural gas		Pinjarra			1972-85	3x20, 1x35	95.0
Walkaway	Infigan Energy	Wind	Wind		Walkaway			2005	54x1.65	89.1
Emu Downs	APA Group	Wind	Wind		Emu Downs			2006	48x1.67	80.0
Kwinana (Alcoa)	Alcoa Australia	Steam	Natural gas		Kwinana			1963-98	5x10, 1x8.5, 1x16	74.5
Kalgoorlie	Verve Energy	Gas turbines	Oil products		Kalgoorlie			1984-90	1x25, 1x37	62.0

Appendix 1 cont.

Power station	Operating company	Plant type	Primary fuel type		Location	Cogeneration	Renewable	Year of commission	Unit details	Total capacity (MW)
Kambalda	Southern Cross Energy	Gas turbines	Natural gas		Kambalda					
Kalgoorlie Nickel	Southern Cross Energy	Gas turbines	Natural gas		Kalgoorlie/ Kambalda			1996	1x40	40.0
Tiwest	Verve Energy	Gas turbines	Natural gas					1996	1x40	40.0
Albany	Verve Energy	Gas turbines	Natural gas		Kwinana			1999	1x38	38.0
Geraldton	Verve Energy	Wind	Wind		Albany			2001	12x1.8	22.0
Other power stations⁶		Gas turbines	Oil products		Geraldton			1973	1x21	21.0
Port Hedland	Alinta Energy	Gas turbines	Natural gas		Port Hedland					
Mt Newman	Alinta Energy	Gas turbines	Natural gas		Mt Newman			1996	5x42	210.0
Yurralyi Maya	Rio Tinto	Gas turbines	Natural gas		Dampier			1996	3x42, 1x58	184.0
Telfer Gold Mine	Newcrest Mining	Gas turbines	Natural gas		Telfer			2010	4x45	180.0
Hammersley Iron Paraburadoo	Rio Tinto	Steam	Oil products		Paraburadoo			2004	3x47	141.0
Hammersley Iron Dampier	Rio Tinto	Gas turbines	Natural gas		Dampier			2004	1x20	20.0
Dampier (NWS)	North West Shelf Joint Venture	Steam	Natural gas		Dampier			2006	4x35	140.0
Mt Keith	Southern Cross Energy	Gas turbines	Natural gas		Mt Keith			-	4x30	120.0
Cape Lambert	Rio Tinto	Gas turbines	Natural gas		Cape Lambert			-	3x40	120.0
Karratha (ATCO)	ATCO Australia	Gas turbines	Natural gas		Karratha				1x40, 1x26, 1x50	116.0
Murrin Murrin	Minara Resources	Combined cycle	Natural gas		Murrin Murrin			1996	3x35	105.0
Burrup Peninsula	Woodside Energy	Gas turbines	Natural gas		Burrup Peninsula			2010	2x43	86.0
Ravensthorpe Nickel Mine	First Quantum Minerals Australia	Steam	Natural gas		Ravensthorpe			1998	1x20 GT, 2x28 ST	76.0
Leinster	Southern Cross Energy	Gas turbines	Natural gas		Leinster			2005	1x74	74.0
Broome	Energy Developments	Reciprocating engine	Natural gas		Broome			2007	3x18.5	55.5
Karratha	Yara, Apache	Gas turbines	Natural gas		Broome			1996	2x32.5	65.0
Cloud Break	Contract Power	Steam	Natural gas		Karratha			2008	17x2	34.0
Esperance	Burns & Roe Worley	Reciprocating engine	Oil products		Cloud Break			2007	1x15	15.0
Argyle	Argyle Diamond Mines	Gas turbines	Natural gas		Esperance			2005	2x22	44.0
Ord Dam	Pacific Hydro	Reciprocating engine	Oil products		Argyle			2007	1x36, 1x2	38.0
Plutonic	Barrick Gold of Australia	Hydro	Water		Ord Dam			2004	1x35	35.0
Christmas Creek Iron Ore Mine	Contract Power	Reciprocating engine	Natural gas		Plutonic			-	1x32	32.0
Laverton, Granny Smith Gold Mine	Barrick Gold of Australia	Reciprocating engine	Oil products		Christmas Creek			1996	4x7.5	30.0
Mt Magnet Hill 50 and 60	Remelius Resources	Gas turbines	Oil products		Laverton			1997	5x4, 1x8.3	28.3
Cawse	Norilsk Nickel Cawse	Gas turbines	Natural gas		Mt Magnet			-	-	28.0
Sunrise Dam Gold Mine	Energy Developments	Gas turbines	Natural gas		Cawse			-	-	23.8
Naval Communication Station Exmouth	Department of Defence	Gas turbines	Oil products		Sunrise Dam			1998	4x5, 1x1.5 RCP	22.0
Gwalia Deep Gold Mine	Pacific Energy KPS	Reciprocating engine	Oil products		Exmouth			-	1x20.1	21.5
Carnarvon	Horizon Power	Gas turbines	Natural gas		Gwalia Deep			-	1x18	20.1
Bronzewing Gold Mine	Pacific Energy	Reciprocating engine	Natural gas		Carnarvon			-	1x17	18.0
Wodgina Tantalum Mine	Energy Developments	Gas turbines	Oil products		Bronzewing Gold Mine			1981-2000	3x5.1	17.0
Jundee	Energy Developments	Reciprocating engine	Natural gas		Wodgina			-	1x15	15.3
Derby	Energy Developments	Reciprocating engine	Natural gas		Jundee			2001	-	15.0
Kununurra	Horizon Power	Reciprocating engine	Oil products		Derby			1997	6x2.2	13.6
Wiluna	Apex Gold	Reciprocating engine	Natural gas		Kununurra			2008	6x1.47, 2x0.37, 1x1.54, 1x2	13.1
					Wiluna			1970	1x12.4	12.4
								1997, 2005	-	12.0

Appendix 1 cont.

Power station	Operating company	Plant type	Primary fuel type	Location	Cogeneration	Renewable	Year of commission	Unit details	Total capacity (MW)
Darlot Gold Mine	Barrick Gold of Australia	Gas turbines	Oil products	Darlot			2008	-	11.2
Higginsville Gold Mine	Pacific Energy KPS	Reciprocating engine	Oil products	Higginsville			-	-	11.0
Savannah Nickel Mine	Contract Power	Reciprocating engine	Oil products	Savannah			-	-	10.8
Sally Malay Nickel Mine	Contract Power	Reciprocating engine	Oil products	Sally Malay Nickel Mine			-	1x10.1	10.1
Carosue Dam Gold Mine	Pacific Energy KPS	Reciprocating engine	Oil products	Carosue			-	-	10.0
Total of fossil fuel stations with capacity less than 10 MW ³							-	-	97.0
Total of renewable stations with capacity less than 10 MW ⁴							-	-	49.3
Tasmania									
Principal power stations¹									
Gordon	Hydro Tasmania	Hydro	Water	Gordon River			1978	3x144	432.0
Poatina	Hydro Tasmania	Hydro	Water	Central Plateau Area			1964	6x50	300.0
Reece	Hydro Tasmania	Hydro	Water	Pieman River			1986	2x115.6	231.2
Tamar Valley Combined Cycle	Aurora Energy	Combined cycle	Natural gas	Tamar Valley			2009	1x208	208.0
Tamar Valley Peaking	Aurora Energy	Gas turbines	Natural gas	Tamar Valley			2009	1x58, 3x40	178.0
John Butters	Hydro Tasmania	Hydro	Water	King River			1992	1x144	144.0
Woolnorth	Shenhua Clean Energy Holding, Hydro Tasmania	Wind	Wind	North-east Tasmania			2002-04, 2007	37x1.75, 25x3	139.8
Tungatinah	Hydro Tasmania	Hydro	Water	Central Plateau Area			1953	5x25	125.0
Bell Bay Three	Aurora Energy	Gas turbines	Natural gas	Tamar Valley			2006	3x35	105.0
Trevallyn	Hydro Tasmania	Hydro	Water	Launceston			1955	4x24.7	98.8
Tarraleah	Hydro Tasmania	Hydro	Water	Central Plateau Area			1938	6x15	90.0
Cethana	Hydro Tasmania	Hydro	Water	Forth River			1971	1x85	85.0
Liapootah	Hydro Tasmania	Hydro	Water	Central Plateau Area			1960	3x27.9	83.7
Tribute	Hydro Tasmania	Hydro	Water	Anthony River - west coast			1994	1x82.8	82.8
Bastyan	Hydro Tasmania	Hydro	Water	Pieman River			1983	1x79.9	79.9
Mackintosh	Hydro Tasmania	Hydro	Water	Murchison River			1982	1x79.9	79.9
Devils Gate	Hydro Tasmania	Hydro	Water	Forth River			1969	1x60	60.0
Lemonthyme	Hydro Tasmania	Hydro	Water	Forth River			1969	1x51	51.0
Catagunyah	Hydro Tasmania	Hydro	Water	Central Plateau Area			1962	2x24	48.0
Fisher	Hydro Tasmania	Hydro	Water	Fisher River			1973	1x43.2	43.2
Meadowbank	Hydro Tasmania	Hydro	Water	Lower Derwent			1967	1x40	40.0
Wayatinah	Hydro Tasmania	Hydro	Water	Central Plateau Area			1957	3x12.8	38.4
Lake Echo	Hydro Tasmania	Hydro	Water	Central Plateau Area			1956	1x32.4	32.4
Wilmot	Hydro Tasmania	Hydro	Water	Forth River			1971	1x30.6	30.6
Paloona	Hydro Tasmania	Hydro	Water	Forth River			1972	1x28	28.0
Repulse	Hydro Tasmania	Hydro	Water	Lower Derwent			1968	1x28	28.0
Cluny	Hydro Tasmania	Hydro	Water	Lower Derwent			1968	1x17	17.0
Butlers Gorge	Hydro Tasmania	Hydro	Water	Central Plateau Area			1951	1x14.4	14.4
Rowallan	Hydro Tasmania	Hydro	Water	Mersey River			1968	1x11	11.0
Lake Marget Upper	Hydro Tasmania	Hydro	Water	Lake Margaret - west coast			2009	7x1.2	8.4

Appendix 1 cont.

Power station	Operating company	Plant type	Primary fuel type		Location	Cogeneration	Renewable	Year of commission	Unit details	Total capacity (MW)
Non-principal power stations²										
TEMCO/Bell Bay	TEMCO	Gas turbines	Oil products		Bell Bay			1997	1x10	10.0
Total of fossil fuel stations with capacity less than 10 MW ³										21.8
Total of renewable stations with capacity less than 10 MW ⁴										20.9
Northern Territory										
Principal power stations⁷										
Channel Island	Power and Water	Combined cycle	Natural gas		Darwin			1986	3x32	96.0
Weddell	Power and Water	Gas turbines	Natural gas		Darwin			1986	3x38, 1x44.5	158.5
Ron Goodin	Power and Water	Gas turbines	Natural gas		Weddell			2008	2x44	88.0
Pine Creek	Energy Developments	Combined cycle	Natural gas		Alice Springs			1988	1x11.7, 2x2, 1x10.1	25.8
Berrimah	Power and Water	Gas turbines	Oil products		Alice Springs			1974-87	2x1.9, 3x4.2, 3x5.5	32.9
Katherine	Power and Water	Gas turbines	Natural gas		Pine Creek			1989	2x9.64, 3x2.75, 1x7.31 ST	34.8
McArthur River	Energy Developments	Gas turbines	Natural gas		Darwin			1979	2x15	30.0
Tennant Creek	Power and Water	Gas turbines	Natural gas		Katherine			1987	3x7.1	21.3
Yulara	Power and Water	Reciprocating engine	Natural gas		McArthur River			1995	3x3.9, 3x2.75, 1x0.95 RCP	20.9
		Reciprocating engine	Oil products		Tennant Creek			2004	1x3.9	3.9
Brewer Estate	Central Energy Power	Reciprocating engine	Natural gas		Tennant Creek			1975-99	5x1.3, 5x0.98, 2x1.5	14.3
Owen Spring	Power and Water	Gas turbines	Natural gas		Near Yulara			1982-99, 2000	2x0.7, 1x0.8, 4x0.9, 2x1.2, 2x1.3	10.8
Borroloola	Power and Water	Reciprocating engine	Oil products		Alice Springs			1997	4x2.128	8.5
Ti Tree	Power and Water	Reciprocating engine	Oil products		Owen Spring			2010	1x3.9	3.9
Elliott	Power and Water	Reciprocating engine	Multi-fuel		Borroloola			-	1x0.7, 1x1.5, 1x1	3.2
Timber Creek	Power and Water	Reciprocating engine	Oil products		Ti Tree			-	1x0.6, 1x0.45, 1x0.7	1.8
Kings Canyon	Power and Water	Photovoltaic	Solar		Elliott			-	1x0.6, 1x0.8, 1x0.34	1.7
Shoal Bay	Landfill Management Services	Reciprocating engine	Landfill gas		Timber Creek			2003	-	0.2
Daly Waters	Power and Water	Reciprocating engine	Oil products		Kings Canyon			-	1x0.292, 1x0.256, 1x0.472	1.0
Non-principal power stations⁸										
Gove	Rio Tinto Alcan	Steam	Oil products		Shoal Bay			2005	1x1.1	1.1
Jabiru	Energy Resources Australia (ERA)	Steam	Oil products		Daly Waters			-	1x0.18, 1x0.3, 1x0.15	0.6
Groote Eylandt	BHP / GEMCO	Reciprocating engine	Oil products		Gove			1971	3x35.0	105.0
Total of fossil fuel stations with capacity less than 10 MW ³					Jabiru			1981	1x28	28.0
Total of renewable stations with capacity less than 10 MW ⁴					Groote Eylandt			2003	-	16.0
										23.5
										1.5

Appendix 1 notes:

1. Generating plant classified as market scheduled, market semi-scheduled, non-market scheduled or non-market semi-scheduled by the Australian Energy Market Operator (AEMO).
2. Generating plant classified as market non-scheduled or non-market scheduled by AEMO.
3. Includes non-principal fossil fuel stations with individual plant capacity less than 10 MW.
4. Includes non-principal renewable stations with individual plant capacity less than 10 MW.
5. Market generators operating within the South West Interconnected System (SWIS) with a capacity greater than 10 MW.
6. Inclusive of generating plants located outside of the SWIS and generating plants operating within the SWIS with a capacity less than 10 MW.
7. Generating plant located within the Darwin-Katherine, Alice Springs and Tennant Creek power systems.
8. Remote/off-grid generating plant located outside of the Darwin-Katherine, Alice Springs and Tennant Creek power systems.

Appendix 2a

Proposed new power stations and expansions^{1,2}

Power Station Name	Developer	Total capacity (MW) ³	Plant type	Primary fuel type	Location	Status	Proposed commissioning year
New South Wales							
Adjungibilly	CBD Energy	39	Wind turbine	Wind	West of Sydney	Proposed	-
Bamarang	Infratil Energy Australia	450	CCGT	Natural gas	Bamarang, near Nowra	Approved	-
Bango	Wind Prospect CWP	250	Wind turbine	Wind	Near Boorowa	Proposed	2015
Bannaby	Snowy Hydro	600	Gas turbine	Natural gas	Bannaby	Proposed	-
Bayswater B	Macquarie Generation	2,000	CCGT or Ultra-supercritical steam	Natural gas or coal	Muswellbrook	Approved	2016
Ben Lomond	AGL Energy	150	Wind turbine	Wind	Armidale	Proposed	-
Birrema	Epuon Australia	140	Wind turbine	Wind	Yass	Proposed	2014
Black Springs	Wind Corporation	20	Wind turbine	Wind	Near Oberon	Approved	-
Boco Rock	Wind Prospect CWP	270	Wind turbine	Wind	North of Bombala	Advanced planning	2014
Bodangora	Infigen Energy	100	Wind turbine	Wind	South-east of Dubbo	Proposed	2013
Broken Hill	AGL Energy	50	Photovoltaic	Solar	Broken Hill	Proposed	2015
Buronga	IP-GDF Suez	150	Gas turbine	Oil products	Buronga	Approved	-
Capital 2	Infigen Energy	100	Wind turbine	Wind	Bungendore	Approved	-
Capital Solar Farm	Infigen Suntech Australia	50	Photovoltaic	Solar	North of Bungendore	Approved	2013
Carols Ridge	Epuon Australia	30	Wind turbine	Wind	Yass region	Proposed	2014
Collector	RATCH-Australia	160	Wind turbine	Wind	Collector	Proposed	2016
Conroys Gap	Origin Energy	30	Wind turbine	Wind	Crookwell	Approved	2016
Crookwell II	Union Fenosa Wind Australia	92	Wind turbine	Wind	Crookwell	Advanced planning	2014
Crookwell III	Union Fenosa Wind Australia	102	Wind turbine	Wind	Crookwell	Proposed	2014
Crudine Ridge	Wind Prospect CWP	165	Wind turbine	Wind	Mudgee	Proposed	2014
Dalton	AGL Energy	780	Gas turbine	Natural gas	West of Goulburn	Proposed	2016
Eden	Epuon Australia	14	Wind turbine	Wind	South east of Eden	Proposed	-
Eraring upgrade (Unit 1)	Eraring Energy	60	Steam	Black coal	Near Newcastle	Completed	2011
Eraring upgrade (Unit 4)	Eraring Energy	60	Steam	Black coal	Near Newcastle	Under construction	2012
Flyers Creek	Infigen Energy	120	Wind turbine	Wind	Orange	Proposed	2014
Glen Innes	National Power Partners	54	Wind turbine	Wind	Glen Innes	Approved	-
Gloucester	AGL Energy	15	Gas turbine	Wind	Gloucester	Approved	-
Golspie	Wind Prospect CWP	340	Wind turbine	Coal seam gas	Crockwell	Proposed	2015
Gullen Range	Goldwind	170	Wind turbine	Wind	Near Goulburn	Advanced planning	2012
Gunning	Acciona Energy	46.5	Wind turbine	Wind	Cullerin Range	Completed	2011
Hanging Rock 1	Loran Energy Products	300	Wind turbine	Wind	Near Moss Vale	Proposed	-
Hanging Rock 2	Loran Energy Products	300	Gas turbine	Natural gas	Near Moss Vale	Proposed	-
Highfields	AGL Energy	21	Gas turbine	Natural gas	Near Moss Vale	Proposed	-
Hunter Valley Geothermal Project	Geodynamics	10	Wind turbine	Wind	Armidale	Proposed	-
Kerraway	Origin Energy	1,000	Steam	Geothermal	Hunter Valley	Proposed	-
Kyoto Energy Park - Wind	Pamada	102	Gas turbine	Natural gas	North east of Goulburn	Proposed	2017
Kyoto Energy Park - Solar	Pamada	10	Wind turbine	Wind	Upper Hunter Valley	Approved	-
Kyoto Energy Park - Hydro	Pamada	1	Photovoltaic	Solar	Upper Hunter Valley	Approved	-
Leafs Gully	AGL Energy	360	Hydro	Water	Upper Hunter Valley	Approved	-
			Gas turbine	Natural gas	Campbelltown	On hold	-

Appendix 2a cont.

Power Station Name	Developer	Total capacity (MW) ³	Plant type	Primary fuel type	Location	Status	Proposed commissioning year
Liverpool Range							
Manildra Solar Farm	Epuron Australia	1,100	Wind turbine	Wind	Upper Hunter Valley	Proposed	2015
Marulan 1	Infigen Suntech Australia	50	Photovoltaic	Solar	North west of Manildra	Approved	2013
Marulan 2	TRUenergy	330	Gas turbine	Natural gas	Marulan	Approved	2014
Moree Solar Farm (Infigen)	TRUenergy	420	CCGT	Natural gas	Marulan	Approved	2014
Moree Solar Farm	Infigen Energy	60	Photovoltaic	Solar	South east of Moree	Approved	2013
Mt Piper expansion	Moree Solar Farm Consortium	150	Photovoltaic	Solar	Moree	Approved	2013
Munmorah rehabilitation	TRUenergy	2,000	Steam	Black coal	Mt Piper	Approved	2015
Narrabri 1	TRUenergy	100	-	Black coal or gas	Lake Munmorah	Approved	2016
Narrabri 2	East Coast Power	30	Gas turbine	Natural gas	Narrabri	On hold	-
Nyngan Solar Farm	East Coast Power	172	Gas turbine	Natural gas	Narrabri	On hold	-
Paling Yards	Infigen Suntech Australia	100	Photovoltaic	Solar	South of Nyngan	Approved	2014
Parkes Peaking	Union Fenosa Wind Australia	180	Wind turbine	Wind	Paling Yards	Proposed	2016
Port Kembla	IP-GDF Suez	150	Gas turbine	Natural gas	Port Kembla	Approved	-
Port Kembla Steelworks	Port Kembla Port Corporation	21	Wind turbine	Wind	Port Kembla	Proposed	2014
Richmond Valley	BlueScope Steel	225	Gas turbine	-	Port Kembla	On hold	-
	Metgasco	30	Gas turbine	Coal seam methane	Richmond Valley	Approved	-
Rugby							
Rye Park	Suzlon Energy, Windlab	290	Wind turbine	Wind	North of Yass	Proposed	2014
Sapphire Wind Farm	Epuron Australia	250	Wind turbine	Wind	North of Yass	Proposed	2015
Silverton	Wind Prospect CWP	325	Wind turbine	Wind	West of Glen Innes	Proposed	2013
Tallawarra B	Silverton Wind Farm Developments	1,000	Wind turbine	Wind	Western NSW	Approved	-
Taralga	TRUenergy	450	OCGT/CCGT	Natural gas	Tallawarra	Approved	2015
Tomago 1	AusChina Energy Group	100	Wind turbine	Wind	Tomago	Under construction	2013
Tomago 2	Macquarie Generation	250	Gas turbine	Natural gas	Tomago	Approved	-
Tomago 3	Macquarie Generation	250	Gas turbine	Natural gas	Tomago	Approved	-
Tumut 3 upgrade	Macquarie Generation	290	Steam	Natural gas	Tomago	Approved	-
Upper Tumut expansion	Snowy Hydro	300	Hydro	Water	Talbingo	Completed	2011
Uungula	Snowy Hydro	40	Hydro	Water	Cabramurra	Advanced planning	2013
Wellington 1	Wind Prospect CWP	1,122	Wind turbine	Wind	East of Wellington	Proposed	2015
Wilga Park B	ERM Power	660	Gas turbine	Natural gas	Wellington	Advanced planning	2016
	Santos	30	Gas turbine	Coal seam methane	Wilga	Advanced planning	-
Williamsdale							
White Rock	ActewAGL	500	Gas turbine	Natural gas	South of Canberra	On hold	-
Woodlawn	Epuron Australia	240	Wind turbine	Wind	Glen Innes	Proposed	2016
Yass Valley	Infigen Energy	48.3	Wind turbine	Wind	Woodlawn	Completed	2011
	Origin Energy	420	Wind turbine	Wind	Yass	Proposed	-
Victoria							
Altona upgrade	AGL Energy, Qenos	21	Gas turbine	Natural gas	Altona	Advanced planning	2012
Ararat	RES Australia (RES)	247.5	Wind turbine	Wind	Ararat	Approved	-
Bald Hills	Mitsui & Co	104	Wind turbine	Wind	Bald Hills	Advanced planning	2013
Baynton	RATCH-Australia	130	Wind turbine	Wind	Baynton	Proposed	2015

Appendix 2a cont.

Power Station Name	Developer	Total capacity (MW) ^a	Plant type	Primary fuel type	Location	Status	Proposed commissioning year
Ben More	RATCH-Australia	126	Wind turbine	Wind	Ben More	Proposed	2014
Berrimal	Acciona Energy	24	Wind turbine	Wind	Berrimal	Approved	2013
Berrybank	Union Fenosa Wind Australia	247.5	Wind turbine	Wind	Berrybank	Approved	2016
Castlemaine	Mount Alexander Sustainability Group, Future Energy	12	Wind turbine	Wind	Mount Alexander Shire	Proposed	-
Carrajung & Blackwarry	Synergy Wind	50	Wind turbine	Wind	Strezlecki Range	Proposed	-
Cherry Tree	Infigen Energy	50	Wind turbine	Wind	North of Shepparton	Proposed	-
Crowlands	Pacific Hydro	126	Wind turbine	Wind	North east of Ararat	Approved	-
Darlington	Union Fenosa Wind Australia	345	Wind turbine	Wind	Darlington	Proposed	2015
Discovery Bay & Bridgewater Lakes	Synergy Wind	60	Wind turbine	Wind	Glenelg Shire	Proposed	-
Drysdale	Wind Farm Developments	30	Wind turbine	Wind	Drysdale	Approved	-
Dual Gas	HRL	600	IDGCC	Brown coal	Latrobe Valley	On hold	2014
Dundonnell	NewEn Australia	180	Wind turbine	Wind	Dundonnell	Proposed	-
Geelong Geothermal	Greenearth Energy	140	Steam	Geothermal	North west of Anglesea	Proposed	2015
Hawkesdale	Union Fenosa Wind Australia	62	Wind turbine	Wind	Hawkesdale	Under construction	2014
Kongorong	RATCH-Australia	120	Wind turbine	Wind	Kongorong	Proposed	-
Koroit	Hot Rock	50	Wind turbine	Wind	Otway Basin	Proposed	2014
Lal Lal	WestWind Energy	150	Wind turbine	Wind	Lal Lal	Approved	2013
Lexton	Origin Energy	38	Wind turbine	Wind	Lexton	Approved	2013
Macarthur	AGL Energy, Meridian Energy	420	Wind turbine	Wind	Macarthur	Under construction	2013
Mallee Solar Park	TRUEnergy	180	Photovoltaic	Solar	Mildura	Proposed	2015
Mildura 1	Silex Systems	2	Photovoltaic	Solar	Mildura	Under construction	2012
Mildura 2	Silex Systems	102	Photovoltaic	Solar	Mildura	Advanced planning	2016
Mildura 3	Silex Systems	54	Photovoltaic	Solar	Mildura	Proposed	-
Moorabool	WestWind Energy	321	Photovoltaic	Solar	Mildura	Under construction	2014
Mortons Lane	NewEn Australia	29.9	Wind turbine	Wind	South of Ballan	Approved	2014
Mortlake South	Acciona Energy	72	Wind turbine	Wind	Near Caramut	Under construction	2012
Mortlake 1	Origin Energy	550	Wind turbine	Wind	Mortlake	Approved	2015
Mortlake 2	Origin Energy	450	Gas turbine	Natural gas	Western Victoria	Under construction	2012
Mount Gellibrand	Acciona Energy	189	CCGT	Natural gas	Western Victoria	Proposed	2015
Mount Mercer	Meridian Energy	131	Wind turbine	Wind	Mount Gellibrand	Under construction	2014
Naroghid	Wind Farm Developments	42	Wind turbine	Wind	Mount Mercer	Advanced planning	2014
Newfield	Acciona Energy	23	Wind turbine	Wind	Naroghid	Advanced planning	2013
Oaklands Hill	AGL Energy	67	Wind turbine	Wind	Newfield	Approved	2015
Orford	Future Energy	100	Wind turbine	Wind	Oaklands Hill	Under construction	2012
Penshurst	RES Australia (RES)	758	Wind turbine	Wind	Near Warrnambool	Proposed	-
Port Phillip Heads	Tenax Energy	34	Wind turbine	Wind	Penshurst	Proposed	2015
Portland 4	Pacific Hydro	54	Tidal energy	Water	Port Phillip Heads	Proposed	2014
Portland Wave	Victorian Wave Partners	19	Wind turbine	Wind	Portland	Approved	-
Portland Wave (Oceanlinx)	Oceanlinx	30	Wave energy	Water	Portland	Proposed	-
Ryan Corner	Union Fenosa Wind Australia	136	Wave energy	Water	Portland	Proposed	-
Saint Clair	Synergy Wind	30	Wind turbine	Wind	Ryan Corner	Under construction	2014
			Wind turbine	Wind	East of Wonthaggi	Proposed	-

Appendix 2a cont.

Power Station Name	Developer	Total capacity (MW) ³	Plant type	Primary fuel type	Location	Status	Proposed commissioning year
Salt Creek	NewEn Australia	29.9	Wind turbine	Wind	Near Mortlake	Under construction	2015
Shaw River 1	Santos	500	CCGT	Natural gas	Near Orford	Proposed	-
Shaw River 2	Santos	500	CCGT	Natural gas	Near Orford	Proposed	-
Shaw River 3	Santos	500	CCGT	Natural gas	Near Orford	Proposed	-
Sidonia Hills	Hydro Tasmania	68	Wind turbine	Wind	North east of Kyneton	Proposed	-
Stockyard Hill	Origin Energy	484	Wind turbine	Wind	West of Ballarat	Approved	2016
Tarrone GT	AGL Energy	920	Gas turbine	Natural gas	Western Victoria	Proposed	2017
Tarrone Wind	Union Fenosa Wind Australia	60	Wind turbine	Wind	North of Port Fairy	Proposed	2016
The Sisters	Wind Farm Developments	24	Wind turbine	Wind	Terang	Proposed	-
Willatook	Wind Prospect CWP	261	Wind turbine	Wind	South west Victoria	Proposed	2014
Winchelsea	IP-GDF Suez	28	Wind turbine	Wind	Winchelsea	Advanced planning	2015
Wingeel	NewEn Australia	160	Wind turbine	Wind	North east of Colac	Proposed	-
Woolsthorpe	Wind Farm Developments	40	Wind turbine	Wind	Woolsthorpe	Under construction	2014
Yallourn	TRUenergy	1,000	CCGT	Natural gas	Latrobe Valley	Proposed	2015
Yalook South	Pacific Hydro	29.9	Wind turbine	Wind	Ballan	Approved	-
Yarram	Synergy Wind	14	Wind turbine	Wind	Yarram	Advanced planning	2012
Queensland							
Archer Point	Archer Point Wind Farm/NP Power	120	Wind turbine	Wind	South of Cooktown	Proposed	-
Aldoga 1	TRUenergy	500	Gas turbine	Natural gas	Gladstone	Proposed	2014
Aldoga 2	TRUenergy	500	Gas turbine	Natural gas	Gladstone	Proposed	-
Aldoga 3	TRUenergy	500	Gas turbine	Natural gas	Gladstone	Proposed	-
Blackstone 1	TRUenergy	500	Gas turbine	Natural gas	Ipswich	Proposed	-
Blackstone 2	TRUenergy	500	Gas turbine	Natural gas	Ipswich	Proposed	2014
Blackstone 3	TRUenergy	500	Gas turbine	Natural gas	Ipswich	Proposed	-
Blackwater	Bow Energy	30	Gas turbine	Coal seam gas	North east of Blackwater	Under construction	2012
Bowen	RATCH-Australia	100	Wind turbine	Wind	Bowen	Proposed	2015
Braemar 3	ERM Power	550	Gas turbine	Natural gas	Braemar	Advanced planning	2015
Braemar 4	ERM Power	500	Gas turbine	Natural gas	Braemar	Approved	2016
Burdekin	Stanwell Corporation	37	Hydro	Water	South west of Charters Towers	Proposed	2015
Callide Oxyfuel Demonstration Project	CS Energy, IHI Corporation, J-POWER, Mitsui & Co, Schlumberger, Xstrata Coal, the Australian Coal Association	30	Oxy-firing	Black coal	Biloela	Under construction	2012
Coopers Gap	AGL Energy	500	Wind turbine	Wind	South of Dalby	Proposed	2015
Crediton	RATCH-Australia	40	Wind turbine	Wind	Crediton	Proposed	2016
Crows Nest	AGL Energy	150	Wind turbine	Wind	Toowoomba	Approved	-
Darling Downs 2	Origin Energy	519	CCGT	Natural gas	Darling Downs	Proposed	2014
Diamantina	APA/AGL Energy	242	CCGT	Natural gas	South of Mt Isa	Proposed	2014
Forsayth	Infigen Energy	80	Wind turbine	Wind	Forsayth	Proposed	2013
Galilee Basin	Galilee Power	900	Steam	Black coal	North west of Alpha	Proposed	2017
High Road	RATCH-Australia	85	Wind turbine	Wind	Far North Queensland	Proposed	2015
Kaiwederia	Windlab	300	Photovoltaic	Solar	Near Hughenden	Proposed	-

Appendix 2a cont.

Power Station Name	Developer	Total capacity (MW) ³	Plant type	Primary fuel type	Location	Status	Proposed commissioning year
Kennedy	Windlab	750	Wind turbine	Wind	Near Hughenden	Proposed	2014
Kogan Creek Solar Boost	CS Energy	44	Solar thermal	Solar	Chinchilla	Under construction	2013
Mount Emerald	RATCH-Australia, Port Bajool	220	Wind turbine	Wind	Mt Emerald	Proposed	-
Mungi	Molopo	60	Gas turbine	Coal seam gas	Moura	Proposed	-
North Qld Bio-Energy Plant	Nth. Qld. Bio-Energy Corporation Ltd	85	Steam	Biomass	South of Ingham	Approved	-
NQ Peaker	AGL Energy	360	Gas turbine	Natural gas	Townsville	Proposed	2014
SEQ 1	AGL Energy	360	Gas turbine	Natural gas	Ipswich	Proposed	2015
SEQ 2	AGL Energy	1,150	CCGT/Gas turbine	Natural gas	Kogan	Proposed	2015
Racecourse Mill	Mackay Sugar	36	Steam	Biomass	Mackay	Proposed	2015
Solar Dawn	Solar Dawn Consortium	250	Solar thermal	Solar	Chinchilla	Under construction	2012
Spring Gully 1	Origin Energy	500	Gas turbine	Coal seam methane	Durham Downs	Proposed	2015
Spring Gully 2	Origin Energy	500	CCGT	Natural gas	Durham Downs	Proposed	2019
Swanbank F	Stanwell Corporation	400	CCGT	Natural gas	Near Ipswich	Proposed	2019
Wandoan	GE Energy, Stanwell Corporation	400	IGCC	Coal	Surat Basin	Approved	-
Westlink 1	Westlink	334	Gas turbine	Natural gas	North of Gatton	On hold	2017
Westlink 2	Westlink	334	Gas turbine	Natural gas	North of Gatton	Proposed	2014
Westlink 3	Westlink	334	Gas turbine	Natural gas	North of Gatton	Proposed	2016
Windy Hill II	RATCH-Australia	12	Wind turbine	Wind	Near Ravenshoe	Proposed	2018
South Australia							
Acquasol 1	Acquasol Infrastructure	100 30	CCGT Solar thermal	Natural gas Solar	Port Augusta	Proposed	-
Allendale	Acciona Energy	70	Wind turbine	Wind	Allendale	Proposed	-
Arckaringa	Arckaringa Joint Venture	1,140	IGCC	Brown coal	North west South Australia	Proposed	2015
Barn Hill	AGL Energy	130.2	Wind turbine	Wind	Hallett	Approved	-
Carmody's Hill	Pacific Hydro	140	Wind turbine	Wind	East of Georgetown	Proposed	-
Cherokee 1	Tungkillo Power Company	250	Gas turbine	Natural gas	Tepko	Approved	2013
Cherokee 2, 3 & 4	Tungkillo Power Company	750	Gas turbine	Natural gas	Tepko	Approved	2021
Crystal Brook	Origin Energy	80	Wind turbine	Wind	North of Adelaide	Proposed	2017
Elliston 1	Ausker Energies	16	Wind turbine	Wind	South of Elliston	Approved	2014
Elliston 2	Ausker Energies	185	Wind turbine	Wind	South of Elliston	Approved	2016
Exmoor	Acciona Energy	144	Wind turbine	Wind	North of Naracoorte	Proposed	-
Great Artesian Basin (GAB)	Pacific Hydro; GreenRock Energy	25	Steam	Geothermal	Great Artesian Basin	Proposed	-
Green Point	Wind Prospect	54	Wind turbine	Wind	Green Point	Approved	2014
Hallett 3 (Mt Bryan)	AGL Energy	80	Wind turbine	Wind	Near Hallett	Advanced planning	2014
Hallett 5 (The Bluff)	AGL Energy	52	Wind turbine	Wind	Bluff Range	Completed	2012
Innamincka (Cooper Basin)	Geodynamics, Origin Energy	25	Steam	Geothermal	Cooper Basin	Proposed	2015
Keyneton	Pacific Hydro	100	Wind turbine	Wind	South-east of Angaston	Proposed	-
Kingston	Strike Energy	40	Steam	Coal	Kingston	Proposed	2016
Kongorong	RATCH-Australia	120	Wind turbine	Wind	South west of Mt Gambier	Proposed	2017
Kulpara	RATCH-Australia	100	Wind turbine	Wind	Kulpara	Proposed	2018
Lincoln Gap	Wind Energy Solutions	177	Wind turbine	Wind	Lincoln Gap	Approved	-

Appendix 2a cont.

Power Station Name	Developer	Total capacity (MW) ³	Plant type	Primary fuel type	Location	Status	Proposed commissioning year
Moomba 2	Geodynamics	25	Steam	Geothermal	Moomba	Proposed	2013
Mount Hill	RATCH-Australia	80	Wind turbine	Wind	Mount Hill	Proposed	-
Olympic Dam	BHP Billiton	600	CCGT	Natural gas	Olympic Dam	Proposed	-
Olympic Dam (Geothermal)	GreenRock Energy	400	Steam	Geothermal	Olympic Dam	Proposed	-
Pelican Point 2	IP-GDF Suez	320	Gas turbine	Natural gas	Pelican Point	Proposed	-
Paralana	Petratherm, Beach Petroleum, TRUenergy	30	Steam	Geothermal	Paralana	Proposed	-
Robertstown	TRUenergy	75	Wind turbine	Wind	North of Adelaide	Advanced planning	-
Snowtown 2	TrustPower	206	Wind turbine	Wind	Snowtown	Proposed	2014
Stony Gap	TRUenergy	123	Wind turbine	Wind	North of Adelaide	Under construction	2012
Torrens Island C	AGL Energy	700	Gas turbine	Natural gas	Torrens Island	Proposed	2014
Waterloo 2	TRUenergy	18	Wind turbine	Wind	Near the Clare Valley	Approved	-
Whyalla Solar Oasis	Wizard Power	40	Solar thermal	Solar	North of Whyalla	Advanced planning	2013
Willigoleche Hill	IP-GDF Suez	74	Wind turbine	Wind	Near Hallett	Proposed	2015
Woakwine	Infgen Energy	450	Wind turbine	Wind	East of Robe	Proposed	-
Worlds End	AGL Energy	180	Wind turbine	Wind	Burra	Proposed	2015
Yorke Peninsula	Suzlon Energy	600	Wind turbine	Wind	Yorke Peninsula	Proposed	-
Western Australia							
Augusta	RATCH-Australia	50	Wind turbine	Wind	Augusta	Proposed	-
Badgingarra	APA Group	130	Wind turbine	Wind	North of Perth	Approved	-
Bluewaters 3	Griffin Energy	208	Steam	Black coal	Collie	Approved	-
Bluewaters 4	Griffin Energy	208	Steam	Black coal	Collie	Approved	2013
Cape Preston	Citic Pacific Mining	450	CCGT	Natural gas	Pilbara	Approved	2015
Centauri	Eneabba Gas	168	Gas turbine	Natural gas	Dongara	Under construction	2012
Chapman	Investec Bank Australia	50	Photovoltaic	Solar	East of Geraldton	Approved	2013
Chapman	Investec Bank Australia	50	Gas turbine	Oil products	East of Geraldton	Proposed	-
Collgar	UBS International Infrastructure Fund, Retail Employees Superannuation Trust (REST)	206	Wind turbine	Wind	Near Merredin	Proposed	-
Coolimba	Aviva	450	Steam	Black coal	Eneabba	Under construction	2012
Coolimba	Aviva	360	Gas turbine	Natural gas	Eneabba	On hold	-
Dandaragan	Wind Prospect	513	Wind turbine	Wind	North of Perth	Approved	-
Derby Tidal	Tidal Energy Australia	40	Wave energy	Water	North of Derby	Proposed	2015
Grasmere	Verve Energy	14	Wind turbine	Wind	Near Albany	Proposed	2014
Greenough River	Verve Energy	10	Photovoltaic	Solar	South east of Geraldton	Completed	2011
Kwinana rebuild	Verve Energy	200	Gas turbine	Natural gas	Kwinana	Under construction	2012
Manjimup	Western Australia Biomass	40	Steam	Biomass	Manjimup	Under construction	2012
Milyeannup	Verve Energy	55	Wind turbine	Wind	East of Augusta	Proposed	-
Mid West Geothermal	Pacific Hydro; GreenRock Energy	25	Steam	Geothermal	Great Artesian Basin	Proposed	-
Mt Gibson	Mt Gibson Iron	35	Gas turbine	Natural gas	Mt Gibson	Proposed	-
Muja A and B	Vinalco Energy	240	Steam	Black coal	Collie	Under construction	2012
Mumbida	Verve Energy, Macquarie Capital	55	Wind turbine	Wind	South of Geraldton	Under construction	2012

Appendix 2a cont.

Power Station Name	Developer	Total capacity (MW) ³	Plant type	Primary fuel type	Location	Status	Proposed commissioning year
Mungullah	Horizon Power	18	Reciprocating engine	Natural gas	Brown Range	Under construction	2012
Nilgen	Pacific Hydro	100	Wind turbine	Wind	East of Lancelin	Proposed	-
Perenjori	Mid West Energy, Areva	200	Solar thermal	Solar	Mid West	Proposed	2015
Perth Biomass	Pacific Energy	30	Steam	Biomass	Near Perth	Under construction	2012
Port Hedland conversion	Alinta Energy	100	CCGT	Natural gas	South of Port Hedland	Proposed	-
Three Springs	ERM Power	330	Gas turbine	Natural gas	North of Perth	Approved	-
Walkaway 2	Infigen Energy, NP Power	94	Wind turbine	Wind	South-east of Geraldton	Proposed	-
Walkaway 3	Infigen Energy, NP Power	300	Wind turbine	Wind	South-east of Geraldton	Proposed	-
West Angelas	Rio Tinto	80	Gas turbine	Natural gas	West Angelas	Proposed	-
Yurralyi Maya 2	Rio Tinto	40	Gas turbine	Natural gas	Near Dampier	Proposed	-
Tasmania							
Banks Strait Tidal Energy Facility	Tenax Energy	302	Tidal energy	Water	Banks Strait	Proposed	2015
Bell Bay Pulp Mill	Gunns Limited	180	Steam	Biomass	Bell Bay	Advanced planning	2013
Cattle Hill	NP Power	240	Wind turbine	Wind	East of Lake Echo	Approved	2014
Huon Valley	Forestry Tasmania	35	Steam	Biomass	Huon Valley	Proposed	-
Musselroe	Hydro Tasmania	168	Wind turbine	Wind	North-east Tasmania	Under construction	2013
White Rock	Eureka Funds Management	440	Wind turbine	Wind	North-east of Launceston	Proposed	2016
Northern Territory							
Channel Island Power Station	Power and Water Corporation	90	Gas turbine	Natural gas	Channel Island	Completed	2011
Clarence Strait Tidal Energy Project	Tenax Energy	200	Tidal energy	Water	Clarence Straight	Proposed	2013
Owen Springs	Power and Water Corporation	32.1	Gas turbine	Natural gas	Brewer Estate	Completed	2011
Weddell III	Power and Water Corporation	43	Gas turbine	Natural gas	Weddell	Under construction	2012

Appendix 2a notes:

1. This table includes power stations and expansions that were commissioned prior to publication but after 30 June 2011.
2. This appendix represents projects over 10MW capacity.
3. Total capacity (MW) represents maximum proposed capacity.

Appendix 2b

Proposed major natural gas pipeline projects¹

Project name	Proponent	Length (km)	Diameter (mm)	Status	Proposed commissioning year
New South Wales					
Hunter Valley to Liddell	Macquarie Generation	75	500	Approved	-
Lions Way	Metgasco	145	-	Advanced planning	-
Queensland to Hunter	Hunter Gas Pipeline Pty	840	508	Advanced planning	2015
Stratford to Hexham	AGL Energy	98	245-457	Approved	-
Wallumbilla (QLD) to Bulla Park	APA Group	645	-	Proposed	2015
Young to Wagga Wagga Looping Stage 2 (Bethunga to Young)	APA Group	70	450	Approved	2014
Young to Wellington	ERM Power	220	400-500	Approved	-
Victoria					
BMG Gas Pipeline	Beach Energy, Roc Oil, CIECO Exploration and Production, Sojitz Energy, Pertamina Hulu Energi	70 offshore 11 onshore	200	Proposed	-
Echuca to Mildura	Victorian Government	500	-	Proposed	-
Iona to Orford	Santos	105	-	Proposed	-
Marlin B to Snapper	BHP Billiton, Esso Australia Resources, Santos	18	455	Under construction	2012
Sole to Patricia-Baleen	Santos	65	350	Proposed	2015
West Tuna to Marlin B	BHP Billiton, Esso Australia Resources, Santos	17	455	Under construction	2012
Queensland					
Australia Pacific LNG (Surat/Bowen to Gladstone)	Origin Energy, ConocoPhillips, Sinpec	520	1,070	Under construction	-
Braemar 3	ERM Power	155	400	Advanced planning	2016
Blackwater to Gladstone	Arrow Energy	257	610	Proposed	2015
Arrow Bowen (Bowen to Gladstone)	Arrow Energy	600	1,070	Proposed	-
Kenya to Goondiwindi	ERM Power	204	-	Proposed	-
Queensland Curtis LNG (Surat to Gladstone)	Queensland Gas Company	540	1,070	Under construction	2014
Surat/Bowen to Abbot Point	Energy World Corporation	350	-	Proposed	-
Gilmore Gas to Abbot Point	Energy World Corporation	550	-	Proposed	-
Gladstone LNG (Fairview to Gladstone)	Santos, PETRONAS, Total, KOGAS	435	910	Under construction	2015
South West Queensland Pipeline (SWQP) - Stage 3 expansion	Epic Energy	940	457	Completed	2012
Surat Basin	Stanwell Corporation, Icon Energy	110	-	Proposed	-
Arrow Surat (Surat to Gladstone)	Arrow Energy	450	660	Advanced planning	2018
South Australia					
Moomba to Olympic Dam	BHP Billiton	250	-	Proposed	-
Western Australia					
Browse to James Price Point	Browse Joint Venture	315 offshore	1,067	Advanced planning	-
Barrow Island to Dampier-Bunbury	Gorgon Venture	59.4 offshore 31.6 onshore	500	Under construction	2016
Bunbury to Albany	Western Australian Government	320	200	Proposed	2015
Great Northern (Broome to Pilbara)	Buru Energy	630	406	Advanced planning	2015
Dampier-Bunbury to Mt Gibson	Mt Gibson Iron	220	250	Approved	-
Port Hedland to Spinifex Ridge	Moly Metals	180	-	Proposed	-
Reindeer to Dampier-Bunbury	Santos, Apache Energy	90 offshore 15 onshore	-	Completed	2012
Scarborough to Onslow	BHP Billiton, ExxonMobil	280 offshore	-	Proposed	-
Wheatstone to Ashburton North	Chevron, Apache Corporation, KUFPEC Australia, Shell	200 offshore 20 onshore	860	Under construction	2016
Northern Territory					
Ichthys to Blaydin Point	Inpex, Total	890 offshore	1,067	Under construction	-

Appendix 2b note:

1. This table includes pipeline projects that were commissioned prior to publication but after 30 June 2011.

Appendix 3a

Ownership of major electricity companies in Australia

Electricity company	Business sector(s)	State(s) of operation	Owner	Share (%)	Country of current owner(s)	at 31 March 2012
ActewAGL	Distribution	ACT	ACT Government Singapore Power International	50.0 50.0	Australia Singapore	
ActewAGL	Retail	NSW, ACT	ACT Government AGL Energy	50.0 50.0	Australia Australia	
AGL Energy ^{1,2}	Generation and retail	NSW, ACT, Vic, Qld, SA, Tas	Publicly listed company ³	100.0	Australia	
Alcoa Australia	Generation	Vic, WA	Alcoa Inc Alumina Limited	60.0 40.0	US Australia	
Alinta Energy ^{4,5}	Generation and retail	Vic, Qld, SA, WA	TPG Capital	100.0	US	
APA Group ^{6,7}	Generation and transmission	NSW, Vic, Qld, SA, WA	Publicly listed company ³	100.0	Australia	
Arrow Energy ^{8,9}	Generation	Qld	Royal Dutch Shell CNPC (PetroChina)	50.0 50.0	UK/The Netherlands China	
Aurora Energy	Generation, distribution and retail	NSW, ACT, Vic, Qld, SA, Tas	Tasmanian Government	100.0	Australia	
Ausgrid ^{10,11}	Distribution	NSW	NSW Government	100.0	Australia	
Australian Power and Gas	Retail	NSW, ACT, Vic, Qld, SA	Publicly listed company ³	100.0	Australia	
Basslink	Transmission	Vic, Tas	CitySpring Infrastructure Trust	100.0	Australia	
CitiPower and Powercor Australia	Distribution	Vic	Cheung Kong Infrastructure and Power Assets Holdings Ltd Spark Infrastructure	51.0 49.0	Singapore	
CS Energy ¹²	Generation and retail	Qld	Queensland Government	100.0	Hong Kong	
Delta Electricity ¹³	Generation and retail	NSW	NSW Government	100.0	Australia	
Ecogen Energy	Generation	Vic	Industry Funds Management (IFM)	100.0	Australia	
ElectraNet	Transmission	SA	Harold Street Holdings Pty Ltd YTL Power Investments Limited Hastings Funds Management Macquarie Specialist Asset Management Limited	100.0 41.1 33.5 19.9 5.5	Australia Malaysia Australia Australia	
Endeavour Energy ^{11,14}	Distribution	NSW	NSW Government	100.0	Australia	
ENERGEK	Distribution	Qld	Queensland Government	100.0	Australia	
Erlaring Energy ¹⁵	Generation and retail	NSW, VIC	NSW Government	100.0	Australia	
Ergon Energy	Generation, distribution and retail	Qld	Queensland Government	100.0	Australia	
ERM Power ^{4,16}	Generation and retail	NSW, ACT, Vic, Qld, SA, WA, Tas	Publicly listed company ³	100.0	Australia	
Essential Energy ^{11,17}	Distribution and retail	NSW, ACT, Tas	NSW Government	100.0	Australia	
ETSA Utilities	Distribution	SA	Cheung Kong Infrastructure and Power Assets Holdings Ltd Spark Infrastructure	51.0 49.0	Hong Kong Australia	
Gladstone Power Station	Generation	Qld	Rio Tinto Aluminium NRG Energy SLMA GPS Mitsubishi YKK GPS (Queensland)	42.1 37.5 8.5 7.1 4.8	Australia US Japan Japan Japan	

Appendix 3a cont.

Electricity company	Business sector(s)	State(s) of operation	Owner	Share (%)	Country of current owner(s)
Griffin Energy	Generation and retail	WA	The Griffin Group	100.0	Australia
Goldfields Power	Generation	WA	TransAlta Newmont Mining Corporation	50.0 50.0	Canada US
Horizon Power	Generation, transmission, distribution and retail	WA	WA Government	100.0	Australia
Hydro Tasmania ¹⁸	Generation and retail	NSW, ACT, Vic, Qld, SA, Tas	Tasmanian Government	100.0	Australia
Infigan Energy	Generation and retail	NSW, SA	Publicly listed company ³	100.0	Australia
Infratil Energy ¹⁹	Generation and retail	NSW, SA, WA, Vic, Qld	Infratil Limited	100.0	Australia
InterGen (Australia)	Generation	Qld	Ontario Teachers' Pension Plan China Huaneng Group	100.0 50.0 50.0	New Zealand Canada China
IPR-GDF SUEZ Australia ^{20,21}	Generation and retail	NSW, Vic, Qld, SA	GDF Suez International Power plc	70.0 30.0	France UK
IPR-GDF SUEZ Hazelwood ²⁰	Generation	Vic	IPR-GDF SUEZ Commonwealth Bank Group	91.8 8.2	UK/France Australia
IPR-GDF SUEZ and Mitsui & Co ²⁰	Generation	Vic	IPR-GDF SUEZ Mitsui & Co Ltd	70.0 30.0	UK/France Japan
Jemena	Distribution	Vic	Singapore Power International	100.0	Singapore
Loy Yang Power ²	Generation	Vic	Great Energy Alliance Corporation (GEAC): AGL Energy Tokyo Electric Power Company RATCH Australia ²² Motor Trades Association of Australia (MTAA) Superannuation Fund Westscheme Statewide Super	32.5 32.5 14.0 12.8 5.7 2.5	Australia Japan Australia Australia Australia Australia
Macquarie Generation	Generation	NSW	NSW Government	100.0	Australia
Marubeni Corporation	Generation	NSW	Marubeni Corporation	100.0	Japan
Origin Energy ^{14,15,17}	Generation and retail	NSW, ACT, Vic, Qld, SA	Publicly listed company ³	100.0	Australia
Osborne Cogeneration	Generation	SA	ATCO Group Origin Energy	50.0 50.0	Canada Australia
Pacific Hydro	Generation	SA	Industry Funds Management (IFM)	100.0	Australia
Perth Energy	Generation and retail	WA	Infratil Limited Perth Energy	82.0 18.0	New Zealand Australia
Perth Power Partnership	Generation	WA	IPR-GDF SUEZ and Mitsui & Co ²⁰ RATCH Australia ²²	70.0 30.0	Australia Australia
Power and Water Corporation	Generation, transmission, distribution and retail	NT	NT Government	100.0	Australia
Powerlink	Transmission	Qld	Queensland Government	100.0	Australia
Queensland Gas Company	Generation	Qld	BG Group	100.0	UK

Appendix 3a cont.

Electricity company	Business sector(s)	State(s) of operation	Owner	Share (%)	Country of current owner(s)
Redbank Energy ⁴	Generation	NSW	Publicly listed company ³	100.0	Australia
Snowy Hydro ²³	Generation and retail	NSW, ACT, Vic, Qld, SA	NSW Government Victoria Government Commonwealth Government	58.0 29.0 13.0	Australia Australia Australia
Southern Cross Energy	Generation and retail	WA	TransAlta	100.0	Canada
SP AusNet	Transmission and distribution	Vic	Singapore Power International Publicly listed company ³	51.0 49.0	Singapore Australia
Stanwell Corporation ¹²	Generation and retail	Qld	Queensland Government	100.0	Australia
Synergy ²⁴	Retail	WA	WA Government	100.0	Australia
Transend Networks	Transmission	Tas	Tasmanian Government	100.0	Australia
TransGrid	Transmission	NSW, ACT	NSW Government	100.0	Australia
TRUenergy ^{13,14}	Generation and retail	NSW, ACT, Vic, Qld, SA, Tas	CLP Holdings	100.0	Australia
TrustPower Australia	Generation and retail	SA	Infratil Limited Tauranga Energy Consumer Trust TrustPower	50.5 33.0 16.5	Hong Kong New Zealand New Zealand
United Energy Distribution	Distribution	Vic	Singapore Power International	34.1	Australia
Verve Energy ²⁴	Generation	WA	Diversified Utility & Energy Trusts (DUET)	65.9	Australia
Western Power	Transmission and distribution	WA	WA Government	100.0	Australia
Appendix 3a notes:					
1.	AGL Energy received an electricity retail licence in Tasmania in October 2010.				
2.	In March 2012, AGL Energy announced that it will acquire the remaining share of the Loy Yang A power station from Tepco, RATCH and remaining shareholders, during 2012. This acquisition will increase AGL Energy's ownership of the power station to 100 per cent, subject to regulatory approval.				
3.	Publicly listed companies are those listed on the Australian Stock Exchange.				
4.	In March 2011, a group of lenders led by TPG Capital took ownership of most of Alinta Group's assets in a debt-to-equity swap. The remaining assets, the Redbank and the Oakey power stations, were put under the ownership of Redbank Energy Limited. Redbank Energy sold its remaining 50 per cent share in the Oakey power station to ERM Power in July 2011. Refer to Appendix 5 for more details.				
5.	Alinta Energy received electricity and gas retail licences in South Australia in July 2011, and in Victoria and Queensland in February 2012.				
6.	In July 2011, APA Group acquired the Emu Downs wind farm in Western Australia from a joint venture between Griffin Energy and Stanwell Corporation. Refer to Appendix 5 for more details.				
7.	In December 2011, APA Group proposed to acquire the remaining 78.9 per cent of Hastings Diversified Utilities Fund (owner of Epic Energy) during 2012. The acquisition would increase APA Group's ownership to 100 per cent, subject to regulatory approval. At the time of publication, the proposal was under review by the ACCC, which published a Statement of Issues on 30 March 2012, outlining preliminary competition concerns.				
8.	Arrow Energy was acquired in a 50/50 joint venture by Royal Dutch and CNPC (PetroChina) in August 2010 and delisted from the Australian Stock Exchange. Refer to Appendix 5 for more details.				
9.	On 30 June 2011, Arrow Energy acquired ERM Power's 50 per cent share in the Braemar 2 power station and the Condamine to Braemar 2 gas pipeline in Queensland, increasing its share to 100 per cent. As part of the acquisition, Arrow Energy also obtained operational rights to the power station and the gas pipeline. Refer to Appendix 5 for more details.				
10.	Energy Australia's retail arm became part of TRUenergy in December 2010. They operate under both the EnergyAustralia brand and the TRUenergy brand. The remaining business which constitutes an electricity distribution network in NSW was renamed Ausgrid in March 2011. Refer to Appendix 5 for more details.				
11.	In March 2012, the NSW Government announced a restructure of the electricity distribution network in New South Wales, to be effective from mid-2012. A new State owned corporation (SOC) will be created to own and operate the electricity distribution network, while Ausgrid, Endeavour Energy and Essential Energy will provide operational services to the SOC under the current brands.				
12.	On 1 July 2011, the Queensland Government restructured its electricity generation companies, CS Energy, Tarong Energy Corporation and Stanwell Corporation were restructured and merged into two companies - CS Energy and Stanwell Corporation. Refer to Appendix 5 for more details.				
13.	The NSW Government sold the output from Delta Electricity's Mt Piper and Wallerawang power stations to TRUenergy in December 2010 under a GenTrader agreement. Refer to Appendix 5 for more details.				
14.	Integral Energy sold its retail arm to Origin Energy in December 2010. The remaining business which constitutes an electricity distribution network in NSW was renamed Endeavour Energy in March 2011. Refer to Appendix 5 for more details.				
15.	The NSW Government sold the output from the Eraring power station to Origin Energy in December 2010 under a GenTrader agreement. Refer to Appendix 5 for more details.				
16.	ERM Power received an electricity retail licence in Western Australia in October 2010.				
17.	Country Energy sold its NSW gas network business to Envestra in October 2010 and its retail arm to Origin Energy in December 2010. The remaining business which constitutes an electricity distribution network in NSW and retail businesses in the ACT and Tasmania, was renamed Essential Energy in March 2011. Refer to Appendix 5 for more details.				
18.	Hydro Tasmania operates as a licensed retail company in New South Wales, the ACT, Victoria, Queensland and South Australia through its wholly-owned subsidiary Momentum Energy.				
19.	Infratil Energy operates as a licensed retail company in New South Wales, Victoria, Queensland and South Australia through its wholly-owned subsidiary Lumo Energy.				
20.	International Power and GDF Suez merged operations in February 2011, forming IPR-GDF SUEZ. The company owns the majority share in the Hazelwood and Loy Yang B principal power stations in Victoria, as well as having full ownership of a number of principal power stations in South Australia. Refer to Appendix 5 for more details.				
21.	IPR-GDF SUEZ operates as a licensed retail company in New South Wales, Victoria, Queensland and South Australia through its wholly-owned subsidiary Simply Energy.				
22.	Transfield Services was renamed RATCH Australia in July 2011.				
23.	Snowy Hydro operates as a licensed retail company in New South Wales, the ACT, Victoria, Queensland and South Australia through its wholly-owned subsidiary Red Energy.				
24.	At the time of publication, the Western Australian Government was proposing a merger between Verve Energy and the retailer Synergy.				

Appendix 3b

Ownership of major natural gas companies in Australia

at 31 March 2012

Natural gas company	Business sector(s)	State(s) of operation	Owner	Share (%)	Country of current owner(s)
ActewAGL	Transmission and distribution	NSW, ACT	ACT Government Singapore Power International	50.0 50.0	Australia
ActewAGL	Retail	NSW, ACT	ACT Government AGL Energy	50.0 50.0	Singapore
AGL Energy	Transmission and retail	NSW, ACT, Vic, Qld, SA	Publicly listed company ¹	100.0	Australia
Alinta Energy ^{2,3}	Transmission and retail	Qld, WA, Vic, SA	TPG Capital	100.0	Australia
APA Group ⁴	Transmission and distribution	NSW, ACT, Vic, Qld, SA, WA, NT	Publicly listed company ¹	100.0	US
Apache Energy	Transmission	WA	Apache Corporation	100.0	Australia
Arrow Energy ⁵	Transmission	Qld	Royal Dutch Shell CNPC (PetroChina)	50.0 50.0	US
ATCO Australia ⁶	Transmission and distribution	WA	ATCO Group	100.0	UK/The Netherlands
Aurora Energy	Retail	NSW, Vic, Tas	Tasmanian Government	100.0	China
Australian Power and Gas	Retail	NSW, ACT, Vic, Qld, SA	Publicly listed company ¹	100.0	Canada
BHP Billiton	Transmission and retail	WA, NSW, Vic	Publicly listed company ¹	100.0	Australia
ConocoPhillips Australasia	Transmission	NT	ConocoPhillips	100.0	Australia
Dampier Bunbury Pipeline (DBP) ⁷	Transmission	WA	Alcoa Energy Diversified Utility and Energy Trusts (DUET)	20.0 80.0	US
Envestra ⁸	Transmission and distribution	NSW, Qld, Vic, SA, NT	Publicly listed company ¹	100.0	Australia
Epic Energy ⁴	Transmission	WA, Qld, SA	Hastings Diversified Utilities Fund	100.0	Australia
Jemena	Transmission and distribution	NSW, Vic, Qld	Singapore Power International	100.0	Australia
Lumo Energy	Retail	Vic, SA	Infratil Limited	100.0	Singapore
Momentum Energy	Retail	Vic, SA	Hydro Tasmania Diversified Utility and Energy Trusts (DUET)	100.0	New Zealand
Multinet Gas ⁹	Transmission and distribution	Vic	APA Group	100.0	Australia
NT Gas	Transmission, distribution and retail	NT	Publicly listed company ¹	100.0	Australia
Origin Energy ¹⁰	Transmission and retail	NSW, ACT, Vic, Qld, SA	Publicly listed company ¹	100.0	Australia
Santos	Transmission and retail	NSW, Vic, Qld, SA, WA, NT	Publicly listed company ¹	100.0	Australia
SEA Gas ¹¹	Transmission	SA, Vic	APA Group Retail Employees Superannuation Trust	100.0 50.0	Australia
Simply Energy	Retail	NSW, Vic, Qld, SA	IPR-GDF SUEZ	50.0	Australia
SP AusNet	Distribution	Vic	Singapore Power International	100.0	Australia
Synergy ¹²	Retail	WA	Publicly listed company ¹	51.0	France/UK
Tas Gas Networks	Transmission and distribution	Tas	WA Government	49.0	Singapore
Tas Gas Retail	Retail	Tas	Brookfield Infrastructure	100.0	Australia
TRUenergy ¹³	Retail	NSW, ACT, Vic, SA	Brookfield Infrastructure	100.0	Australia
Woodside Energy	Transmission	WA	CLP Holdings	100.0	Hong Kong
			Publicly listed company ¹	100.0	Australia

Appendix 3b notes:

1. Publicly listed companies are those listed on the Australian Stock Exchange.
2. In March 2011, a group of lenders led by TPG Capital took ownership of most of Alinta Group's assets in a debt-to-equity swap. The remaining assets, the Redbank and the Oakey power stations, were put under the ownership of Redbank Energy Limited. Redbank Energy sold its remaining 50 per cent share in the Oakey power station to ERM Power in July 2011. Refer to Appendix 5 for more details.
3. Alinta Energy received electricity and gas retail licences in South Australia in July 2011, and in Victoria and Queensland in February 2012.
4. In December 2011, APA Group proposed to acquire the remaining 78.9 per cent of Hastings Diversified Utilities Fund (owner of Epic Energy) during 2012. The acquisition would increase APA Group's ownership to 100 per cent, subject to regulatory approval. At the time of publication, the proposal was under review by the ACCC, which published a Statement of Issues on 30 March 2012, outlining preliminary competition concerns.
5. Arrow Energy was acquired in a 50/50 joint venture by Royal Dutch and CNPC (PetroChina) in August 2010 and delisted from the Australian Stock Exchange. Refer to Appendix 5 for more details.
6. In July 2011, ATCO Group acquired WA Gas Networks (WAGN), a company with interests in gas transmission and distribution in Western Australia, from WestNet Infrastructure Group and DUET Group. Refer to Appendix 5 for more details.
7. In July 2011, Diversified Utility and Energy Trusts (DUET) acquired an additional 20 per cent share in the Dampier Bunbury Pipeline (DBP) from Brookfield Infrastructure. Refer to Appendix 5 for more details.
8. In October 2010, Envestra acquired Country Energy's gas distribution and transmission network in New South Wales. Refer to Appendix 5 for more details.
9. In July 2011, Diversified Utility and Energy Trusts (DUET) acquired an additional 20.1 per cent share in Multinet Gas from Brookfield Infrastructure, increasing its ownership to 100 per cent. Refer to Appendix 5 for more details.
10. In December 2010, Integral Energy and Country Energy sold their retail businesses to Origin Energy. Refer to Appendix 5 for more details.
11. In November 2010, International Power Australia sold its one third share in SEA Gas to the other two owners, APA Group and Retail Employees Superannuation Trust (REST). APA Group and REST each now own 50 per cent. Refer to Appendix 5 for more details.
12. At the time of publication, the Western Australian Government was proposing a merger between Verve Energy and the retailer Synergy.
13. In December 2010, EnergyAustralia sold its retail business to TRUenergy. Refer to Appendix 5 for more details.

Appendix 4a

State and Territory regulations having impact

on electricity supply businesses¹

Regulator / Legislation									
Regulatory function	NSW	VIC	QLD	SA	WA	TAS	ACT	NT	
Wholesale market									
Market and system operator	Australian Energy Market Operator (AEMO)			AEMO	AEMO	Independent Market Operator (market operator) / Western Power Corporation (system management)	AEMO		Power and Water Corporation
Rule maker	Australian Energy Market Commission (AEMC)	AEMC	AEMC	AEMC	Independent Market Operator	AEMC	AEMC		Utilities Commission
Regulator	Australian Energy Regulator (AER)	AER	AER	AER	Economic Regulation Authority (ERA)	AER	AER		Utilities Commission
Relevant legislation	National Electricity (New South Wales) Act 1997	National Electricity (Victoria) Act 2005	Electricity - National Scheme (Queensland) Act 1997	National Electricity (South Australia) Act 1996	Electricity Industry Act 2004	Electricity - National Scheme (Tasmania) Act 1999	Electricity (National Scheme) Act 1997		Electricity Reform Act 2000
Transmission									
Access and pricing	AER	AER	AER	AER	ERA	AER	AER		Utilities Commission
Relevant legislation	National Electricity Rules	National Electricity Rules	National Electricity Rules	National Electricity Rules	National Electricity Rules	Electricity Networks Access Code 2004	National Electricity Rules	National Electricity Rules	Electricity Networks (Third Party Access) Code
Distribution									
Access and pricing ²	AER	AER	AER	AER	ERA	Office of the Tasmanian Economic Regulator (OTTER)	AER		Utilities Commission
Licensing and compliance	Independent Pricing and Regulatory Tribunal (IPART) and Department of Trade and Investment ³	Essential Services Commission (ESC)	Department of Energy and Water Supply ³	Essential Services Commission of South Australia (ESCOSA)	ERA	OTTER	Independent Competition & Regulatory Commission (ICRC)		Utilities Commission
Relevant legislation	National Electricity Rules / Electricity Supply Act 1995	National Electricity Rules / Electricity Industry Act 2000	National Electricity Rules / Electricity Act 1994 / Electricity Regulation 2006	National Electricity Rules / Electricity Act 1996	Electricity Industry Act 2004	National Electricity Rules / Electricity Supply Industry Act 1995 / Tasmanian Electricity Code	National Electricity Rules / Utilities Act 2000		Electricity Reform Act 2000

Appendix 4a cont.

	Regulator / Legislation							
Regulatory function	NSW	VIC	QLD	SA	WA	TAS	ACT	NT
Retail market								
Licensing and compliance ⁴	IPART	ESC	Department of Energy and Water Supply ³	ESCOSA	ERA (Electricity Industry Act)	OTTER	ICRC	Utilities Commission
Standing tariff prices for small customers	IPART	n/a ⁵	Queensland Competition Authority (QCA)	ESCOSA	Public Utilities Office ³	OTTER	ICRC	
Relevant legislation	Electricity Supply Act 1995	Electricity Industry Act 2000	Electricity Act 1994 / Electricity Regulation 2006	Electricity Act 1996	Electricity Industry Act 2004	Electricity Supply Industry Act 1995 / Tasmanian Electricity Code	Independent Competition and Regulatory Commission Act 1997 / Utilities Act 2000	Utilities Commission Act 2000 / Electricity Reform Act 2000
Safety								
Regulator	Department of Trade and Investment ³ / Work Cover Authority	Energy Safe Victoria	Department of Justice and Attorney General - Electrical Safety Office / Workplace Health and Safety	Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE) ³	Department of Commerce - EnergySafety	Department of Justice - Workplace Standards Tasmania	Office of Regulatory Services ³ - WorkSafe	Northern Territory Work Health Authority ³ - NT WorkSafe
Relevant legislation	Electricity Supply Act 1995 / Work Health and Safety Act 2011	Electricity Safety Act 1998	Electrical Safety Act 2002 / Work Health and Safety Act 2011	Electricity Act 1996	Electricity Act 1945	Electricity Industry Safety and Administration Act 1997	Work Safety Act 2008 / Work Health and Safety Act 2011	Electricity Reform Act 2000 / Work Health and Safety Act 2011
Environment protection								
Regulator	Environment Protection Authority (EPA)	Environment Protection Authority Victoria	Department of Environment and Resource Management	Environment Protection Authority South Australia	Environmental Protection Authority Tasmania / Department of Primary Industries, Parks, Water and Environment - EPA Division	Environment Protection Authority Tasmania / Department of Primary Industries, Parks, Water and Environment - EPA Division	Environment and Sustainable Development Directorate ³ - Environment Protection Authority	Department of Natural Resources, Environment, the Arts and Sport
Relevant legislation	Protection of the Environment Operations Act 1997 / Electricity Supply Act 1995	Environment Protection Act 1970	Environmental Protection Act 1994	Environment Protection Act 1993	Environmental Protection Act 1986	Environmental Management and Pollution Control Act 1994	Environment Protection Act 1997	Waste Management and Pollution Control Act 1998 / Environmental Assessment Act 1994

Appendices 4a notes:

1. Current at 31 March 2012.
2. From 1 January 2008 the AER's role was expanded to include economic regulation of electricity distribution networks, with the transfer occurring at the next regulatory reset for each jurisdiction. New South Wales and the Australian Capital Territory commenced regulatory control periods under the AER in July 2009, Queensland and South Australia commenced in July 2010, Victoria commenced in 2011. Regulation of Tasmania's distribution networks by the AER will commence from 1st July 2012. The ERA of Western Australia and the Northern Territory's Utilities Commission continue to regulate distribution networks in those jurisdictions.
3. The name of the responsible Department has changed since the last publication.

4. Non-economic regulation of distribution and retail services is to be transferred progressively to the AER under the National Energy Customer Framework (NECF), coming into effect in all States and Territories except Western Australia and the Northern Territory. Ministers have agreed that jurisdictions will work towards introducing the framework in July 2012. On 15 March 2012, two bills on the implementation introduced in the Parliament of South Australia. On 27 March 2012, the National Energy Retail Law (Victoria) Bill 2012 was introduced to the Victorian Parliament and the National Energy Retail Law (Tasmania) Bill 2012 was introduced to the Tasmanian Parliament.

5. From 1 January 2009, the Energy Legislation Amendment (Retail Competition and Other Matters) Act came into effect which removed retail price caps in Victoria. The legislation includes provisions for the Essential Services Commission of Victoria to undertake price monitoring and report publicly on retail prices. Other obligations on retailers, including the obligation to supply and the consumer protection framework, are not affected by the removal of retail price regulation.

Appendix 4b

State and Territory regulations impacting downstream

natural gas supply businesses¹

Regulator / Legislation									
Regulatory function	NSW	VIC	QLD	SA	WA	TAS	ACT	NT	
Wholesale market									
Market and system operator	Australian Energy Market Operator (AEMO) ²		AEMO ²		AEMO ²	n/a	AEMO ²	AEMO ²	n/a
Rule maker	Australian Energy Market Commission (AEMC)	AEMC	AEMC		AEMC	n/a	AEMC	AEMC	n/a
Regulator	Australian Energy Regulator (AER)	AER	AER		AER	n/a	AER	AER	n/a
Relevant legislation	National Gas (New South Wales) Act 2008	National Gas (Victoria) Act 2008	National Gas (Queensland) Act 2008		National Gas (South Australia) Act 2008	n/a	National Gas (Tasmania) Act 2008	National Gas (ACT) Act 2008	n/a
Transmission									
Access and pricing	AER	AER	AER		AER	Economic Regulation Authority (ERA)	n/a ³	AER	AER
Relevant legislation	National Gas (New South Wales) Act 2008	National Gas (Victoria) Act 2008	National Gas (Queensland) Act 2008		National Gas (South Australia) Act 2008	National Gas Access (WA) Act 2009	National Gas (Tasmania) Act 2008	National Gas (ACT) Act 2008	National Gas (Northern Territory) Act 2008
Distribution									
Access and pricing	AER	AER	AER		AER	ERA	n/a ³	AER	AER
Licensing and compliance ⁴	Independent Pricing and Regulatory Tribunal (IPART)	Essential Services Commission (ESC)	Department of Energy and Water Supply ⁵		Essential Services Commission of South Australia (ESCOSA)	ERA	Office of the Tasmanian Economic Regulator (OTTER)	Independent Competition and Regulatory Commission (ICRC)	Utilities Commission
Relevant legislation	Gas Supply Act 1996 / National Gas (New South Wales) Act 2008	National Gas (Victoria) Act 2008 / Gas Industry Act 2001	National Gas (Queensland) Act 2008 / Gas Supply Act 2003		Gas Act 1997 / National Gas (South Australia) Act 2008	Energy Coordination Act 1994 / National Gas Access (WA) Act 2009	Gas Act 2000 / Gas Pipelines Act 2000	Utilities Act 2000 / National Gas (ACT) Act 2008	Energy Pipelines Act 2009
Retail market									
Balancing, metering and customer transfer	AEMO	AEMO	AEMO		AEMO	Retail Energy Market Company Ltd (REMCo)	n/a	AEMO	n/a
Licensing and compliance ⁴	IPART	ESC	Department of Energy and Water Supply ⁵		ESCOSA	ERA	OTTER	ICRC	n/a
Regulated tariffs for small use customers	IPART	n/a ⁶	n/a ⁶		ESCOSA	Public Utilities Office ⁵	n/a ⁶	n/a ⁶	n/a ⁶
Relevant legislation	Gas Supply Act 1996 / National Gas (New South Wales) Act 2008	National Gas (Victoria) Act 2008 / Gas Industry Act 2001	National Gas (Queensland) Act 2008 / Gas Supply Act 2003		Gas Act 1997 / National Gas (South Australia) Act 2008	Energy Coordination Act 1994	Gas Act 2000, Gas Pipelines Act 2000	Utilities Act 2000 / National Gas (ACT) Act 2008	n/a

Appendix 4b cont.

Regulator / Legislation									
Regulatory function	NSW	VIC	QLD	SA	WA	TAS	ACT	NT	
Safety									
Relevant body	Department of Trade and Investment ⁵ / Work Cover Authority	Energy Safe Victoria	Department of Energy and Water Supply ⁵ / Department of Justice and Attorney General - Workplace Health and Safety	Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE) ⁵	Department of Commerce - EnergySafety	Department of Justice - Workplace Standards Tasmania	Environment and Sustainable Development Directorate ⁵ / Office of Regulatory Services - WorkSafe	Northern Territory Work Health Authority ⁵ - NT WorkSafe	
Relevant legislation	Gas Supply Act 1996 / Work Health and Safety Act 2011	Gas Safety Act 1997 / Energy Safe Victoria Act 2005	Gas Supply Act 2003 / Work Health and Safety Act 2011	Gas Act 1997	Gas Standards Act 1997 / Energy Safety Act 2006 / Gas Supply (Gas Quality Specifications) Act 2009	Gas Act 2000 / Gas Pipelines Act 2000	Gas Safety Act 2000 / Dangerous Goods Work Health and Safety Act 2011	Gas Safety Act 2000 / Work Health and Safety Act 2011	
Environment protection									
Relevant body	Environment Protection Authority	Environment Protection Authority Victoria	Department of Environment and Resource Management	Environment Protection Authority South Australia	Environmental Protection Authority	Environment Protection Authority Tasmania / Department of Primary Industries, Parks, Water and Environment - EPA Division	Environment and Sustainable Development Directorate ⁵ - Environment Protection Authority	Department of Natural Resources, Environment, the Arts and Sport	
Relevant legislation	Protection of the Environment Administration Act 1991 / Protection of the Environment Operations Act 1997	Environment Protection Act 1970	Environmental Protection Act 1994	Environment Protection Act 1993	Environmental Protection Act 1986	Environmental Management and Pollution Control Act 1994	Environment Protection Act 1997	Waste Management and Pollution Control Act 1998 / Environmental Assessment Act 1994	

Appendix 4b notes:

1. Current at 31 March 2012.
2. Wholesale market functions: NSW - Gas Bulletin Board (GBB) and Short Term Trading Market (STTM) from 1 September 2010; Victoria - Declared Wholesale Gas Market and GBB; Queensland - GBB and STTM from 1 December 2011; SA - GBB and STTM from 1 September 2010; Tasmania - GBB (no current plans for introducing a STTM); ACT - GBB and may include a STTM in the future.
3. Tasmanian transmission and distribution gas pipelines are not 'covered' and as a result are not subject to third party access regulation.
4. Non-economic regulation of distribution and retail services is to be transferred progressively to the AER under the National Energy Customer Framework (NECF), coming into effect in all States and Territories except Western Australia and the Northern Territory. Ministers have agreed that jurisdictions will work towards introducing the framework in July 2012. On 15 March 2012, two bills on the implementation introduced to the Victorian Parliament and the National Energy Retail Law (Victoria) Bill 2012 was introduced to the Tasmanian Parliament.
5. The name of the responsible Department has changed since the last publication.
6. Victoria, Queensland, Tasmania, the ACT and NT do not regulate retail gas prices.

Appendix 5

Electricity and downstream natural gas

Utility	Sector	Former owner	businesses mergers and acquisitions at 31 March 2012					
			New owner	Transaction type	Share (%)	Acquisition cost (A\$ million)	Date of event	Country of current owner
Arrow Energy	Generation and gas transmission	Publicly listed company	Royal Dutch Shell CNPC (PetroChina)	Asset ownership Asset ownership	50.0 50.0	3,500.0 ¹ -	Aug-10 Aug-10	UK/The Netherlands China
Country Energy gas network ²	Gas network	Country Energy	Envestra	Asset ownership	100.0	108.6	Oct-10	Australia
SEA Gas pipeline ³	Gas transmission	APA Group Retail Employees Superannuation Trust International Power plc	APA Group Retail Employees Superannuation Trust	Asset ownership Asset ownership	16.7 16.7	46.3 46.3	Nov-10 Nov-10	Australia Australia
International Power plc ⁴	Generation and retail	International Power plc	GDF Suez International Power	Company shareholdings Company shareholdings	70.0 30.0	2,240.0 -	Feb-11 Feb-11	France UK
Country Energy retail business ²	Retail	Country Energy	Origin Energy	Asset ownership	100.0	1,300.0	Mar-11	Australia
Integral Energy retail business ⁵	Retail	Integral Energy	Origin Energy	Asset ownership	100.0	1,000.0	Mar-11	Australia
EnergyAustralia retail business ⁶	Retail	EnergyAustralia	TRUenergy	Asset ownership	100.0	1,480.0	Mar-11	Australia
Eraring Energy generation trading rights ⁷	Generation	Eraring Energy	Origin Energy	GenTrader agreement ⁹	100.0	950.0	Mar-11	Australia
Delta Electricity generation trading rights ⁸	Generation	Delta Electricity	TRUenergy	GenTrader agreement ⁹	100.0	539.0	Mar-11	Australia
Bamarang power station development site	Generation	Delta Electricity	Infratil Energy Australia	Asset ownership	100.0	9.0	Feb-11	Australia
Marulan (DE) power station development site	Generation	Delta Electricity	TRUenergy	Asset ownership	100.0	8.6	Mar-11	Australia
Mount Piper Extension	Generation	Delta Electricity	TRUenergy	Asset ownership	100.0	1.0	Mar-11	Australia
Marulan (EA) power station development site	Generation	EnergyAustralia	TPG Capital	Company shareholdings	100.0	6.4	Mar-11	Australia
Alinta Energy ¹⁰	Generation and retail	Publicly listed company	Redbank Energy	Company shareholdings	100.0	2,900.0	Apr-11	Australia
Redbank power station ¹⁰	Generation	Alinta Energy	Hydro Tasmania	Asset ownership	100.0	-	Apr-11	Australia
Sidonia Hills wind farm development site	Generation	Roaring 40s ¹¹	Hydro Tasmania	Asset ownership	100.0	-	Jun-11	Australia
Musselroe wind farm development site	Generation	Roaring 40s ¹¹	TRUenergy	Asset ownership	100.0	-	Jun-11	Australia
Waterloo wind farm	Generation	Roaring 40s ¹¹	TRUenergy	Asset ownership	100.0	-	Jun-11	Australia
Robertstown wind farm development site	Generation	Roaring 40s ¹¹	TRUenergy	Asset ownership	100.0	-	Jun-11	Australia
Stony Gap wind farm development site	Generation	Roaring 40s ¹¹	TRUenergy	Asset ownership	100.0	-	Jun-11	Australia
Cathedral Rocks wind farm	Generation	Roaring 40s ¹¹	TRUenergy	Asset ownership	100.0	-	Jun-11	Australia
Braemar 2 power station and associated gas pipeline ¹²	Generation and gas transmission	Acciona Energy	Acciona Energy	Asset ownership	50.0	-	Jun-11	Australia
Emu Downs wind farm	Generation	Arrow Energy ERM Power	Arrow Energy	Asset ownership	50.0	66.1	Jun-11	Australia
Mica Creek power station	Generation	Griffin Energy	APA Group	Asset ownership	100.0	171.0	Jul-11	Canada
Swanbank B power station	Generation	Stanwell Corporation	Stanwell Corporation	Asset ownership	100.0	-	Jul-11	Australia
Swanbank E power station	Generation	CS Energy ¹³	Stanwell Corporation	Asset ownership	100.0	-	Jul-11	Australia
Collinsville power station trading rights	Generation	CS Energy ¹³	Stanwell Corporation	Asset ownership	100.0	-	Jul-11	Australia
Tarong power station	Generation	CS Energy ¹³	Stanwell Corporation	Asset ownership	100.0	-	Jul-11	Australia
Tarong North power station	Generation	Tarong Energy ¹³	Stanwell Corporation	Asset ownership	100.0	-	Jul-11	Australia
Wivenhoe hydro	Generation	Tarong Energy ¹³	Stanwell Corporation	Asset ownership	100.0	-	Jul-11	Australia
Gladstone power station trading rights	Generation	Tarong Energy ¹³	Stanwell Corporation	Asset ownership	100.0	-	Jul-11	Australia
Multinet Gas	Gas transmission and distribution	Stanwell Corporation ¹³ Diversified Utility and Energy Trusts (DUET) Brookfield Infrastructure Partners	CS Energy	Asset ownership	100.0	-	Jul-11	Australia
			CS Energy	Asset ownership	100.0	-	Jul-11	Australia
			Diversified Utility and Energy Trusts (DUET)	Asset ownership	20.1	198.0 ¹⁴	Jul-11	Australia

Appendix 5 cont.

Utility	Sector	Former owner	New owner	Transaction type	Share (%)	Acquisition cost (A\$ million)	Date of event	Country of current owner
Dampier Bunbury Pipeline (DBP)	Gas transmission	DUET Alcoa Energy Brookfield Infrastructure Partners	DUET Alcoa Energy	Asset ownership	20.0	198.0 ¹⁴	Jul-11	Australia
WA Gas Networks	Gas network	WestNet Infrastructure Diversified Utility and Energy Trusts (DUET)	ATCO Group	Asset ownership	100.0	1,000.0	Jul-11	Canada
Oakey power station ¹⁰	Generation	Redbank Energy Contact Energy ERM Power Others	ERM Power Contact Energy Others	Asset ownership	50.0	61.6	Jul-11	Australia
Tasmanian gas pipeline	Gas transmission	Brookfield Infrastructure Partners	Palisade Investment Partners	Asset ownership	100.0	200.0	Aug-11	Australia
Eastern Star Gas ¹⁵	Gas transmission	Publicly listed company	Santos	Company shareholdings	100.0	942.0	Oct-11	Australia
Oakey power station ¹⁰	Generation	ERM Power Contact Energy Others	ERM Power Others	Asset ownership	20.8	26.1	Jan-12	Australia
Woolnorth (Bluff Point and Stadland Bay) wind farms ¹⁶	Generation	Roaring 40s ¹¹	Shenhua Clean Energy Holdings Hydro Tasmania	Asset ownership Asset ownership	75.0 25.0	88.6 -	Feb-12 Feb-12	China Australia

Appendix 5 notes:

1. The total value of the transaction is \$3.5 billion, equally spread between Royal Dutch Shell and CNPC (PetroChina).
2. Country Energy sold its NSW gas network business to Envestra in October 2010 and its NSW retail arm to Origin Energy in December 2010. The remaining business, which constitutes an electricity distribution network in NSW and retail businesses in the ACT and Tasmania, was renamed Essential Energy in March 2011.
3. In November 2010, International Power Australia sold its one third share in SEA Gas to the other two owners, APA Group and Retail Employees Superannuation Trust (REST), for a total of \$92.6 million. APA Group and REST both now own 50 per cent share.
4. GDF Suez and International Power merged operations in February 2011, with GDF Suez owning a 70 per cent stake in the new company and existing International Power shareholders owning the rest. The new company was renamed IPR-GDF SUEZ.
5. Integral Energy sold its retail arm to Origin Energy in December 2010. The remaining business which constitutes an electricity distribution network in NSW was renamed Endeavour Energy in March 2011.
6. EnergyAustralia sold its retail arm to TRUenergy in December 2010. The remaining business which constitutes an electricity distribution network in NSW was renamed AusGrid in March 2011.
7. In December 2010, Origin Energy entered into GenTrader arrangements with Eraring Energy. Under the arrangements, Origin Energy has rights to the market revenue from Eraring Power Station and the Shoalhaven Scheme. Eraring Energy continues to own, operate and maintain these assets.
8. In December 2010, TRUenergy reached an agreement with the NSW Government to acquire the Delta Western gentrader bundle for the Mount Piper and Wallerawang coal-fired power stations. Delta Electricity still owns Colongra, Munmorah and Vales Point Power Stations.
9. Under the GenTrade agreement, Origin Energy and TRUenergy own 100 per cent of electricity output of the power stations, including revenue from trading electricity in the National Electricity Market. They will control electricity dispatch and will be entitled to liquidated damages if contracted availability performance standards are not met. Power station owners will continue to operate and maintain the assets, within performance standards identified in the GenTrader contract.
10. In March 2011, a group of lenders led by TPG Capital took ownership of most of Alinta Group's assets in a debt-to-equity swap. The remaining assets, the Redbank and the Oakey power stations, were put under the operations of Redbank Energy Limited. Redbank Energy sold its remaining 50 per cent share in the Oakey power station to ERM Power for \$61.6 million in July 2011. In February 2012, ERM Power increased its share in the Oakey power station from 62.5 per cent to 83.3 per cent, acquiring 20.83 per cent of Contact Energy's 25 per cent share for a further \$26.1 million. Contact Energy sold its remaining 4.17 per cent to private investors. ERM Power took over operation of the power station in January 2012.
11. Roaring 40s was a 50:50 joint venture between Hydro Tasmania and TRUenergy, owning and operating a number of wind farms and development sites. In April 2011, the two companies decided to disaggregate the partnership and divide the assets. The disaggregation was formalised in June 2011.
12. On 30 June 2011, Arrow Energy acquired ERM Power's 50 per cent share in the Braemar 2 power station and the Condamine to Braemar 2 gas pipeline in Queensland, increasing its share to 100 per cent. As part of the acquisition, Arrow Energy also obtained operational rights to the power station and the gas pipeline.
13. On 1 July 2011, the Queensland Government restructured its electricity generation companies. CS Energy, Tarong Energy Corporation and Stanwell Corporation were restructured and merged into two companies - CS Energy and Stanwell Corporation. CS Energy and Stanwell Corporation kept most of their existing assets, while Tarong Energy's assets were divided between the two companies.
14. DUET acquired a remaining 20.1 per cent share in Multinet Gas and 20 per cent share in the Dampier Bunbury Pipeline from Brookfield Infrastructure Partners for the total of \$198 million.
15. In October 2011, Santos acquired 100 per cent of Eastern Star Gas (ESG) shares, subsequently selling a 20 per cent interest in ESG's permits in the Gunnedah Basin to TRUenergy for \$284 million.
16. The Woolnorth wind farms were acquired by Hydro Tasmania in June 2011, after the disaggregation of the Roaring 40s joint venture. In February 2012, Hydro Tasmania sold a 75 per cent share in the wind farms to Shenhua Clean Energy Holdings company for \$88.6 million.

Appendix 6a

Glossary

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences. ABARES was formed in 2010, following the merger of the Australian Bureau of Agricultural and Resource Economics (ABARE) and the Bureau of Rural Sciences (BRS).	esaa	Energy Supply Association of Australia
ABS	Australian Bureau of Statistics	ESC	Essential Services Commission (Victoria)
ACCC	Australian Competition and Consumer Commission	Franchise customers	Customers who may buy electricity only from the relevant host retailer at prices which must not exceed the regulated maximum uniform tariff.
AEMC	Australian Energy Market Commission	Full retail contestability (FRC)	Where all customers may purchase electricity through a licensed retailer of their choice.
AEMO	Australian Energy Market Operator. Formed in 2009, AEMO is an amalgamation of the former National Electricity Market Management Company (NEMMCO), the Victorian Energy Networks Corporation (VENCorp), the Electricity Supply Industry Planning Council (ESIPC), the Retail Energy Market Company (REMCO), the Gas Market Company (GMC) and the Gas Retail Market Operator (GRMO).	GJ	Gigajoule = 10^9 joules
AER	Australian Energy Regulator	GSOO	AEMO Gas Statement of Opportunities
APIA	Australian Pipeline Industry Association	GT	Gas turbine
Baseload generator	Generating plant that is normally operated to take all or part of the minimum load of a system, and which produces electricity at an essentially constant rate.	GW	Gigawatt = 10^9 watts
BREE	Bureau of Resources and Energy Economics. BREE was formed on 1 July 2011 and represents an economic and statistical research unit within the Department of Resources, Energy and Tourism (RET).	GWh	Gigawatt hours = 10^9 watt hours
CEC	Clean Energy Council. Formed in 2007, the CEC is the amalgamation of the former Australian Wind Energy Industry Association (Auswind) and the Australian Business Council for Sustainable Energy (BCSE).	Host retailer	The default retailer that services a specified geographic area.
CCGT	Combined cycle gas turbine	ICRC	Independent Competition and Regulatory Commission (Australian Capital Territory)
Cogeneration	A generating facility that produces electricity and another form of useful thermal energy (such as heat or steam) used for industrial, commercial, heating or cooling purposes.	IDGCC	Integrated Drying Gasification Combined Cycle
Competitive retail trading	A policy framework where electricity retailers are able to sell electricity to customer classes open to competition. Similar to full retail contestability (FRC).	IMO	Independent Market Operator (Western Australia)
Defacto regulatory role	Where the indicated department undertakes a regulatory function, although that is not its primary policy function.	Independent power producers (IPP)	Private generators connected to the South West Interconnected System (SWIS).
Decommissioned plant	Generating plant that has been permanently taken offline.	Interconnector	A transmission system which connects the networks of adjacent states.
DECC	Department of Environment and Climate Change (New South Wales)	Inter-regional capability	Maximum amount of electricity that can be delivered via a particular interconnector.
Distribution network	The apparatus, equipment, plant and buildings used to convey and control the flow of electricity from the network to customers and which is not a transmission network.	IPART	Independent Pricing and Regulatory Tribunal (New South Wales)
DMITRE	Department for Manufacturing, Innovation, Trade, Resources and Energy (South Australia)	Joule	A unit of electrical energy equal to the work done when a current of one ampere is passed through a resistance of one ohm for one second.
DPI	Department of Primary Industries (New South Wales) and Department of Primary Industries (Victoria)	kV	Kilovolt = 10^3 volts
Embedded generator	A generating unit connected directly to a distribution network and with no direct connection to the transmission network.	kW	Kilowatt = 10^3 watts
ESCOSA	Essential Services Commission of South Australia	kWh	Kilowatt hours = 10^3 watt hours
ESOO	AEMO Electricity Statement of Opportunities	Market generator	A generator which has at least one generating unit classified as a market generating unit and which is also registered with AEMO as a market generator.
ENA	Energy Networks Association	Market non-scheduled generator	Generating plant within the NEM that is not scheduled as part of central dispatch either because (1) its combined capacity is less than 30 MW, or (2) it is classified as such pursuant to the National Electricity Rules.
ERA	Economic Regulation Authority (Western Australia)	MCAP	The Marginal Cost Administrative Price in the WA Wholesale Electricity Market.
		MJ	Megajoule = 10^6 joules
		Mothballed plant	Generating plant that has been taken offline but may be brought back into service in the future.
		MVA capacity	Mega Volt Ampere = 10^6 volt amperes
		MW	Megawatt = 10^6 watts
		MWh	Megawatt hours = 10^6 watt hours
		NCAS	Network control ancillary service
		NEL	National Electricity Law
		NEM	National Electricity Market (covers the Queensland, New South Wales, the ACT, Victorian, South Australian and Tasmanian electricity markets)
		NER	The National Electricity Rules govern the operation of the National Electricity Market (NEM). The Rules have the force of law, and are made under the National Electricity Law (NEL).

Appendix 6a cont.

Non-market, non-scheduled generator	A generating unit or group of units whose entire electricity output is sold directly to a local retailer or customer and is not scheduled by the market operator as part of central dispatch.
NTNDP	AEMO National Transmission Network Development Plan
OHS	Occupational health and safety
OTTER	Office of the Tasmanian Economic Regulator
Oxy-firing	The process of firing a fossil-fuelled power plant with an oxygen-enriched gas mix instead of air.
Peak generator	Generating plant used to supply electricity during peak demand times.
PJ	Petajoule = 10^{15} joules
Pool price	The half-hourly average of the five-minute interval wholesale price of electricity in the NEM.
Principal generator	Generating plant that is market scheduled, market semi-scheduled, non-market scheduled or non-market semi-scheduled as part of central dispatch.
QCA	Queensland Competition Authority
Remote generator	Embedded generators located in areas away from population centres.
Retired plant	Generating plant that is no longer in use (has been decommissioned).
Spot price	Five-minute interval price of electricity in the NEM.
STEM	The Short Term Energy Market in the WA Wholesale Electricity Market. The STEM Clearing Price for a Trading Interval is the lowest price at which the STEM offer curve for a Trading Interval intersects the STEM bid curve for the Trading Interval.
SWIS	Western Australian South West Interconnected System
TJ	Terajoule = 10^{12} joules
Transmission network	High voltage transmission assets that transport electricity between generators and distribution networks. Transmission networks do not include the connection assets which form part of a transmission system.
Transmission system	The combination of a transmission network and connection assets which are connected to other transmission systems or to a distribution system.
TW	Terawatt - 10^{12} watts
TWh	Terawatt hours - 10^{12} watt hours
UAG	Unaccounted for gas recorded for gas distribution network system.
Utilities Commission	Utilities Commission (Northern Territory). The Commission regulates electricity supply, water supply and sewerage services in the Territory with regards to relevant industry specific legislation.
Volt ampere	A unit of electrical power in an AC circuit equal to the power dissipated when 1 volt produces a current of 1 ampere.
Wh	Watt-hour - a unit of energy, usually electrical energy, equal to one watt of power supplied to, or taken from, an electric circuit steadily for one hour (equivalent to 3,600 joules).
WT	Wind turbine

Appendix 6b

Definitions: performance indicators

Generation performance indicators

System Load Factor (%)

$\frac{\text{System Energy (MWh)}}{\text{Historical System Peak Load (MW)} \times \text{Period Hours (8760)}}$

Capacity Factor (%)

$\frac{\text{Total Annual Generation (MWh)}}{\text{Total Installed Plant Capacity (MW)} \times \text{Period Hours (8760)}}$

Reserve Plant Margin (%)

$\frac{\text{Total Installed Capacity (MW)} - \text{Historical System Peak Demand (MW)}}{\text{Historical System Peak Demand (MW)}}$

Planned Outage Factor (%)

$\frac{\text{MWh Out of Service Due to Planned and Maintenance Outage}}{\text{Installed Plant Capacity (MW)} \times \text{Period Hours (8760)}}$

Equivalent Forced Outage Factor (%)

$\frac{\text{MWh Out of Service Due to Forced Outage}}{\text{Installed Plant Capacity (MW)} \times \text{Period Hours (8760)}}$

Equivalent Availability Factor (%)

Where MWh losses are those due to all causes (Planned, Maintenance and Forced).

$\frac{\text{Installed Plant Capacity (MW)} \times 8760 - \text{MWh Losses Due to Outages}}{\text{Installed Plant Capacity (MW)} \times 8760}$

Thermal Efficiency (%)

$\frac{\text{Total Energy Sent Out (MWh)} \times 3600}{\text{Heat Value of Fuel Consumed (Megajoules)}}$

Lost Time Injury Frequency Rate

(Number of Injuries Per Million Hours Worked)

$\frac{\text{Total Number of Lost Time Injuries Per Annum}}{\text{Total Annual Hours Worked (millions)}}$

Lost Time Injury Severity Rate

(Number of Days Lost Per Million Hours Worked)

$\frac{\text{Total Days Lost due to Workcover Injuries Per Annum}}{\text{Total Annual Hours Worked (millions)}}$

Transmission performance indicators

System Minutes

$\frac{\text{Annual MWh Unsupplied} \times 60}{\text{System Maximum Demand (MW)}}$

Circuit Availability (%)

$\frac{\text{Actual Circuit Hours Available (100 kV and above)}}{\text{Total possible circuit hours available}}$

Lost Time Injury Frequency Rate

(Number of Injuries Per Million Hours Worked)

$\frac{\text{Total Number of Lost Time Injuries Per Annum}}{\text{Total Annual Hours Worked (millions)}}$

Lost Time Injury Severity Rate

(Number of Days Lost Per Million Hours Worked)

$\frac{\text{Total Days Lost due to Workcover Injuries Per Annum}}{\text{Total Annual Hours Worked (millions)}}$

Appendix 6b cont.

Distribution performance indicators

Distribution Losses (%)

$$\frac{\text{Electricity Purchased} - \text{Electricity Sold}}{\text{Electricity Purchased}}$$

Distribution Transformer Utilisation Factor (%)

$$\frac{\text{Electricity Sold MWh (at 415 V)}}{\text{Distribution Transformer Capacity (MVA)} \times 8760}$$

System Average Outage Frequency - SAIFI
(Number of Interruptions/Customer)

$$\frac{\text{Total Number of Customer Interruptions}}{\text{Average Total Number of Customers}}$$

System Average Outage Duration - SAIDI
(Mins Per Customer Per Annum)

$$\frac{\text{Total Customer Hours Interrupted} \times 60}{\text{Average Total Number of Customers}}$$

Average Customer Outage Time - CAIDI
(Mins Per Interruption)

$$\frac{\text{Total Customer Hours Interrupted} \times 60}{\text{Total Number of Customer Interruptions}}$$

System Load Factor (%)

$$\frac{\text{System Energy (MWh)}}{\text{Historical System Peak Load (MW)} \times \text{Period Hours (8760)}}$$

Lost Time Injury Frequency Rate
(Number of Injuries Per Million Hours Worked)

$$\frac{\text{Total Number of Lost Time Injuries Per Annum}}{\text{Total Annual Hours Worked (millions)}}$$

Lost Time Injury Severity Rate
(Number of Days Lost Per Million Hours Worked)

$$\frac{\text{Total Days Lost due to Workcover Injuries Per Annum}}{\text{Total Annual Hours Worked (millions)}}$$

Natural gas performance indicators

Unaccounted For Gas (%)

$$\frac{\text{Total Gas Injected} - \text{Total Gas Withdrawn} + \text{Total Gas in Linepack}}{\text{Total Gas Injected}}$$

Average Unplanned Outages
(Per 1000 Customers)

$$\frac{\text{Total Number of Unplanned Interruptions}}{(\text{Total Number of Customers} / 1000)}$$

Lost Time Injury Frequency Rate
(Number of Injuries Per Million Hours Worked)

$$\frac{\text{Total Number of Lost Time Injuries Per Annum}}{\text{Total Annual Hours Worked (Millions)}}$$

Lost Time Injury Severity Rate
(Number of Days Lost Per Million Hours Worked)

$$\frac{\text{Total Days Lost due to Workcover Injuries Per Annum}}{\text{Total Annual Hours Worked (millions)}}$$

Notes to performance indicators

Availability Indicators Note

Equivalent Availability Factor + Equivalent Forced Outage Factor + Equivalent Planned Outage Factor = 1

Circuit availability provides a measure of overall system availability as well as the proportion of planned, forced and fault outages. Circuit unavailability may be caused by planned outage (both maintenance and construction) and unplanned outages (both forced and fault).

Circuit Availability

Typically refers to transformers at 22 kV and below.

An outage of a unit or portion of a unit caused by component failure or a plant condition which results in either a reduction in capacity or the unit removed from service within 48 hours of the identification of the problem.

Distribution Transformers Forced Outage

Annualised capacity = (nameplate capacity of units x months in service)/12
This excludes pump storage plant.

Installed Plant Capacity

Work Cover injuries that have caused lost time on work of more than half a shift. The Total Annual Hours Worked is set at 2,000 hours.

Number of Work Cover injuries per million hours worked over a 12 month period.

Lost Time Injuries

Total days lost due to Work Cover injuries per million hours worked over a 12 month period.

Lost Time Injury Frequency Rate

An outage of a unit or portion of a unit which can be deferred for more than 48 hours but not until the next planned outage. Maintenance outages are included in the planned outage factor in this publication.

Lost Time Injury Severity Rate

The removal of a unit or portion of a unit from service for work which is of a predetermined duration, scheduled well in advance, and occurs only once or twice per annum.

Maintenance Outage

esa has used plant nameplate capacity as the proxy for Installed Plant Capacity. For a plant that is active for only a period of the year, the capacity is annualised.

Planned Outage

The total energy sent out from power stations in an interconnected system plus energy imports.

Plant Nameplate Capacity

This indicator is measured at state level.

System Energy

The system maximum demand recorded within a given period of time.

System Load Factor

This indicator is measured at state level.

System Peak Load

This indicator, which measures the operating efficiency of fossil fuel-fired generating plant, excludes generation from renewable generation.

Thermal Efficiency

Typical zone substation transformers refer to 132 kV, 66 kV, 33 kV or 11 kV, 22 kV and 6.6 kV.

Zone Substation Transformer

Appendix 7

esaa member organisations at 15 April 2012

Organisation	Address	Telephone	Website (www.)
Full Members			
ActewAGL	GPO Box 366, Canberra ACT 2601	13 14 93	actewagl.com.au
AGL Energy Limited	Locked Bag 1837, St Leonards NSW 2065	13 12 45	agl.com.au
Alinta Energy	Level 11, 20 Bridge Street, Sydney NSW 2000	02 9372 2600	alintaenergy.com
Arrow Energy Limited	GPO Box 5262, Brisbane QLD 4001	07 3012 4000	arrowenergy.com.au
ATCO Australia Pty Ltd	Level 12, 2 Mill Street, Perth WA 6000	08 9320 0200	atcoaustralia.com.au
Aurora Energy Pty Ltd	GPO Box 191, Hobart TAS 7001	1300 132 003	auroraenergy.com.au
Ausgrid	GPO Box 4009, Sydney NSW 2001	13 15 35	ausgrid.com.au
Basslink Pty Ltd	GPO Box 4606, Melbourne VIC 3001	03 9607 4700	basslink.com.au
CitiPower Pty	Locked Bag 14090, Melbourne VIC 8001	1300 301 101	citipower.com.au
CS Energy Limited	PO Box 2227, Fortitude Valley BC, QLD 4006	07 3854 7777	csenergy.com.au
Delta Electricity	Level 20, 175 Liverpool Street, Sydney NSW 2000	02 9285 2700	de.com.au
Ecogen Energy	350 Douglas Parade, Newport VIC 3015	03 9393 3200	No website
ElectraNet	PO Box 7096, Hutt Street Post Office, Adelaide SA 5000	1800 243 853	electranet.com.au
ENERGEX Limited	GPO Box 1461, Brisbane QLD 4001	13 12 53	energex.com.au
Envestra Limited	Level 10, 81 Flinders Street, Adelaide SA 5000	08 8227 1500	envestra.com.au
Eraring Energy	PO Box A2238, Sydney South NSW 1235	02 8268 4200	eraring-energy.com.au
Ergon Energy Corporation Ltd	PO Box 1090, Townsville QLD 4810	13 10 46	ergon.com.au
ERM Power Pty Ltd	PO Box 7152, Riverside Centre QLD 4000	07 3020 5100	ermpower.com.au
Geodynamics Limited	PO Box 2046, Milton QLD 4064	07 3721 7500	geodynamics.com.au
Hydro Tasmania	GPO Box 355, Hobart TAS 7001	1300 360 441	hydro.com.au

Organisation	Address	Telephone	Website (www.)
Full Members cont.			
Horizon Power	PO Box 817, Karratha WA 6714	08 9159 7250	horizonpower.com.au
Hydro Tasmania	GPO Box 355, Hobart TAS 7001	1300 360 441	hydro.com.au
InterGen (Australia) Pty Ltd	Level 26, 400 George Street, Brisbane QLD 4000	07 3001 7177	intergen.com
International Power GDF SUEZ	Level 37, Rialto North Tower, 525 Collins Street, Melbourne VIC 3000	03 9617 8400	ippic.com.au
IPM Operation and Maintenance Loy Yang Pty Ltd	Locked Bag 2500, Traralgon VIC 3844	03 5177 2000	ippic.com.au
Jemena Limited	Locked Bag 7000, Mount Waverley VIC 3149	03 8544 9000	jemena.com.au
Loy Yang Power	PO Box 1799, Traralgon VIC 3844	03 5173 2000	loyyangpower.com.au
Macquarie Generation	PO Box 38, Hunter Region MC NSW 2310	02 4968 7499	macgen.com.au
Multinet Group Holdings Pty Ltd	PO Box 449, Mount Waverley VIC 3149	1300 131 689	multinetgas.com.au
Origin Energy Limited	GPO Box 5376, Sydney NSW 2001	02 8345 5000	originenergy.com.au
Power and Water Corporation	GPO Box 3596, Darwin NT 0801	1800 245 092	powerwater.com.au
Powernor Australia Ltd	Locked Bag 14090, Melbourne City MC VIC 8001	13 22 06	powernor.com.au
SP AusNet	Locked Bag 14051, Melbourne City MC VIC 8001	03 9695 6000	sp-ausnet.com.au
Synergy	GPO Box K851, Perth WA 6842	08 6212 2222	synergy.net.au
Transend Networks Pty Ltd	PO Box 606, Moonah TAS 7009	1300 361 811	transend.com.au
TRUenergy Pty Ltd	Locked Bag 14060, Melbourne VIC 8001	13 34 66	truenergy.com.au
United Energy Distribution	PO Box 449, Mount Waverley VIC 3149	03 8846 9900	ue.com.au
Verve Energy	GPO Box F366, Perth WA 6841	08 9424 1888	verveenergy.com.au
Western Power	GPO Box L921, Perth WA 6842	13 10 87	westernpower.com.au

Appendix 7 cont.

Organisation	Address	Telephone	Website (www.)
Affiliate Members			
Transpower New Zealand Ltd	PO Box 1021, Wellington New Zealand	+64 4495 7000	transpower.co.nz
Associate Members			
ACIL Tasman Pty Ltd	Level 15, 127 Creek Street, Brisbane QLD 4000	07 3009 8700	aciltasman.com.au
AECOM Australia Pty Ltd	Level 21, 420 George Street, Sydney NSW 2000	02 8934 0000	aecom.com
Aeropower Pty Ltd	Hangar 14B, Redcliffe Aerodrome, Nathan Road, Kippa Ring QLD 4021	07 3204 1280	aeropower.com.au
Aggreko	101-105 Woodlands Drive, Braeside VIC 3195	03 9586 5050	aggreko.com.au
ALSTOM Limited	16 Giffnock Avenue, North Ryde NSW 2113	02 8870 6000	alstom.com/australia/
Arup Pty Limited	Level 17, 1 Nicholson Street, Melbourne VIC 3000	03 9668 5500	arup.com
Ashurst Australia	GPO Box 9938, Brisbane QLD 4001	07 3259 7000	ashurst.com
Aurecon Australia Pty Ltd	Level 2, 116 Military Road, Neutral Bay NSW 2089	02 9465 5599	aurecongroup.com
Australian Energy Market Operator Ltd	Level 22, 530 Collins Street, Melbourne VIC 3000	1300 858 724	aemo.com.au
Baker & McKenzie	Level 19, 181 William Street, Melbourne VIC 3000	03 9617 4200	bakermckenzie.com/ Australia
Better Place (Australia) Pty Ltd	114 Balmain Street, Richmond VIC 3121	03 8679 0800	betterplace.com.au
Carpentaria Contracting T/A Weipa Hire Pty Ltd	PO Box 520, Weipa QLD 4874	07 4030 9999	carpentariacontracting. com
Century Yuasa Batteries Pty Ltd	37-65 Cobalt Street, Carole Park QLD 4300	13 22 87	cyb.com.au
Clayton Utz	GPO Box 55, Brisbane QLD 4001	07 3292 7000	claytonutz.com
Clyde Babcock-Hitachi (Australia) Pty Ltd	PO Box 1559, Milton QLD 4064	07 3878 0888	cbh.net.au
Crowe Horwath Sydney Pty Ltd	Level 15, 309 Kent Street, Sydney NSW 2000	02 9262 2155	crowehorwath.com.au
Deloitte Touche Tohmatsu Ltd	Level 14, Woodside Plaza, 240 St Georges Terrace, Perth WA 6000	08 9365 7000	deloitte.com.au
DELTA Utility Services Ltd	PO Box 1404, Dunedin, New Zealand	+64 3474 0322	4delta.co.nz

Organisation	Address	Telephone	Website (www.)
Department of Employment, Economic Development and Innovation			
Department of Resources, Energy and Tourism	PO Box 15216, City East QLD 4002	13 25 23	deedi.qld.gov.au
DUET Group			
Electrix Pty Ltd	GPO Box 1564, Canberra ACT 2601	02 6276 1000	ret.gov.au
Energy Developments Limited	GPO Box 4294, Sydney NSW 1164	1800 005 049	duet.net.au
EnergyAdvice Pty Ltd	208 Hall Street, Spotswood VIC 3015	03 9399 4688	electrix.com.au
Ernst & Young	PO Box 4046, Eight Mile Plains QLD 4113	07 3275 5555	energydevelopments.com
Freehills	PO Box 5106, Brandon Park VIC 3150	03 8558 4100	energyadvice.com.au
GHD Pty Ltd	Level 5, Waterfront Place, 1 Eagle Street, Brisbane QLD 4000	07 3011 3333	ey.com/au
Hatch Associates Pty Limited	GPO Box 128, Melbourne VIC 3001	03 9288 1234	freehills.com
Hill Michael	PO Box 1540, Buddina QLD 4575	07 5413 8100	ghd.com/australia/
Hitachi Australia Pty Ltd	PO Box 425, Spring Hill QLD 4004	07 3166 7777	hatch.com.au
HRL Morrison & Co (Australia) Pty Ltd	GPO Box 3195, Brisbane QLD 4000	07 3236 4244	hmac.com.au
HRL Technology Pty Ltd	PO Box 1096, Toombul QLD 4012	07 3868 6100	hitachi.com.au
JP Morgan Securities Australia Limited	GPO Box 1242, Brisbane QLD 4001	07 3360 0295	hrlmorrison.com
KPMG	Level 1, Unit 9, 677 Springvale Road, Mulgrave VIC 3170	03 9565 9888	hrl.com.au
Marsh Pty Ltd	Level 28, Grosvenor Place, 225 George Street, Sydney NSW 2000	02 9250 4111	jpmorgan.com/australia
Marubeni Power Development Australia Pty Ltd	555 Lonsdale Street, Melbourne VIC 3000	08 9263 7171	kpmg.com.au
Minter Ellison Lawyers	Level 26, 44 Market Street, Sydney NSW 2000	03 9603 2222	marsh.com.au
	Waterfront Place, 1 Eagle Street, Brisbane QLD 4000	02 9931 2222	marubeni.com
		07 3119 6000	minterellison.com

Appendix 7 cont.

Organisation	Address	Telephone	Website (www.)
Mitsubishi Electric Australia Pty Ltd	348 Victoria Road, Rydalmere NSW 2116	02 9684 7777	mitsubishielectric.com.au
Mizuho Corporate Bank Limited	Level 33, 60 Margaret Street, Sydney NSW 2000	02 8273 3888	mizuhocbk.com
NHP Electrical Engineering Products Pty Ltd	43-67 River Street, Richmond VIC 3121	03 9429 2999	nhp.com.au
O'Donnell Griffin Pty Limited	Unit 2, 8 Nelson Road, Cardiff NSW 2285	02 4922 7999	odg.com.au
Parsons Brinckerhoff	Level 27, Ernst & Young Centre, 680 George Street, Sydney NSW 2000	02 9272 5100	pb.com.au
Piper Alderman	167 Flinders Street, Adelaide SA 5000	08 8205 3333	piper-alderman.com.au
PNG Power Limited	PO Box 1105, Boroko Papua New Guinea	+ 67 5311 3185	pngpower.com.pg
Premier Coal Limited	PO Box X2231, Perth WA 6847	08 9324 6800	premiercoal.com.au
PricewaterhouseCoopers	GPO Box 1331, Melbourne VIC 3001	03 8603 1000	pwc.com.au
Professional Power Management Pty Ltd	PO Box 35, Glen Forrest WA 6071	08 9250 8788	profpower.com.au
Protiviti Pty Ltd	Level 17, 140 William Street, Melbourne VIC 3000	03 9948 1200	protiviti.com.au
Prysmian Cables & Systems	1 Heathcote Road, Liverpool NSW 2170	1300 300 304	prysmian.com.au
Rothschild Australia Limited	Level 41, 50 Bridge Street, Sydney NSW 2000	02 9323 2000	rothschild.com
Schneider Electric (Australia) Pty Limited	78 Waterloo Road, Macquarie Park NSW 2113	1300 369 233	schneider-electric.com.au
Siemens Ltd	160 Herring Road, Macquarie Park NSW 2113	13 72 22	siemens.com/entry/auanz/en/
Silcar Pty Ltd	Building B6, 18 - 24 Ricketts Road, Mt Waverley VIC 3149	03 9263 7600	silcar.com
Sinclair Knight Merz Pty Ltd	PO Box 164, St Leonards NSW 2065	02 9928 2100	skmconsulting.com
Standard & Poor's (Australia) Pty Ltd	Level 45, 120 Collins Street, Melbourne VIC 3000	03 9631 2000	standardandpoors.com/home/en/au
Toshiba International Corporation	Locked Bag 5029, Parramatta NSW 2124	02 9768 6600	tic.toshiba.com.au
Tyree Industries Pty Ltd	PO Box 191, Mittagong NSW 2575	02 4872 6177	tyree.com.au

Organisation	Address	Telephone	Website (www.)
UGL Infrastructure Pty Ltd	Locked Bag 903, North Sydney NSW 2060	02 8925 8925	ugllimited.com
VEMCO Australia Pty Ltd	PO Box 478, Mount Waverley VIC 3149	03 8542 0700	vemco.com.au
Vero Insurance Ltd	GPO Box 3999, Sydney NSW 2001	13 18 13	vero.com.au
Vicpower Trading	GPO Box 2765, Melbourne VIC 3001	03 9679 4777	vicpower.com.au
Wilson Transformer Company Pty Ltd	PO Box 5, Glen Waverley VIC 3150	03 9560 0411	wtc.com.au
Zenergy Power Pty Ltd	Suite 7, 1 Lowden Square, Wollongong NSW 2500	02 4227 6611	zenergypower.com

Table 3.2 Number of customers at 30 June 2012¹

Classification of customers	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL
Residential	3,116,809	2,312,250	1,806,860	732,350	961,804	229,663	64,808	9,224,544
Business	378,233	321,226	215,740	99,723	124,490	48,293	12,900	1,200,605
Total	3,495,042	2,633,476	2,022,600	832,073	1,086,294	277,956	77,708	10,425,149
TOTAL	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2008	3,371,852	1.1	2,478,634	1.0	1,892,460	2.5	796,213	1.2
2009	3,395,368	0.7	2,505,844	1.1	1,908,736	0.9	807,553	1.4
2010	3,429,980	1.0	2,562,102	2.2	1,947,328	2.0	817,270	1.2
2011	3,463,905	1.0	2,585,702	0.9	1,980,752	1.7	825,218	1.0
2012	3,495,042	0.9	2,633,476	1.8	2,022,600	2.1	832,073	0.8

Source: esaa, company annual reports

Table 3.2 note:

1. The number of customers is based on information provided by companies in the industry.

Table 3.3 Consumption (GWh) 2011–12¹

Classification of customers	NSW & ACT ²	VIC	QLD	SA	WA	TAS ³	NT	TOTAL
Residential	20,102.5	12,057.2	11,739.0	4,139.1	5,478.4	1,991.3	573.7	56,081.3
Business	48,956.7	31,077.1	32,201.1	8,576.5	12,794.2	8,047.5	1,227.8	142,880.8
Unmetered	409.8	350.7	150.8	108.1	31.7	37.3	14.5	1,102.9
Total	69,469.0	43,485.0	44,090.9	12,823.7	18,304.3	10,076.1	1,816.0	200,065.0
TOTAL	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2008	71,569.7	2.0	44,221.2	0.4	45,657.4	0.8	12,690.6	0.1
2009	71,674.6	0.1	44,214.1	0.0	47,414.5	3.8	12,878.2	1.5
2010	71,011.0	-0.9	43,678.3	-1.2	47,473.4	0.1	12,896.7	0.1
2011	71,810.5	1.1	43,659.7	0.0	43,933.6	-7.5	12,999.7	0.8
2012	69,469.0	-3.3	43,485.0	-0.4	44,090.9	0.4	12,823.7	-1.4

Source: esaa

Table 3.3 notes:

1. Total consumption and the classification of customers is based on information provided by companies in the industry.

2. Extremely mild summer weather, reduced aluminium smelter loads and general customer response to increasing electricity prices led to a decrease in consumption in 2011–12.

Refer to commentary at the beginning of Chapter 3.

3. Major industrial load decreased between 2010–11 and 2011–12 due to a temporary shutdown of TEMCO's manganese smelter. Refer to commentary at the beginning of Chapter 3.

4. The figure has been revised on the basis of new information.

Table 3.4 Technical indicators: transmission

State	System minutes unsupplied (mins)		Energy delivered ¹ (GWh)		Circuit availability (%)	
	2010–11	2011–12	2010–11	2011–12	2010–11	2011–12
New South Wales & ACT	2.24	0.44	66,980	64,428	99.0	99.1
Victoria	0.20	2.57	46,421	46,008	99.1	99.2
Queensland	N/A	N/A	46,216	46,246	N/A	N/A
South Australia	2.46	2.80	13,362	12,992	99.8	98.6
Western Australia ²	11.52	6.52	17,008	16,570	97.9	98.5
Tasmania	8.28	8.72	10,617	10,219	99.1	99.1
Australian total	—	—	200,604	196,463	—	—

Source: esaa, company annual reports

Table 3.4 notes:

1. The 2010–11 energy delivered figures for Victoria have been revised on the basis of new information. This has changed the Australian total for the year.

2. Western Australian transmission indicators relate to the SWIS only.

Table 3.2Number of customers at 30 June 2013¹

Classification of customers	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL
Residential	3,148,350	2,344,031	1,842,983	737,582	971,097	233,979	67,441	9,345,463
Business	387,369	319,840	221,300	98,783	128,942	44,777	15,104	1,216,115
Total	3,535,719	2,663,871	2,064,283	836,365	1,100,039	278,756	82,545	10,561,578
TOTAL								
	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2009	3,395,368 0.7	2,505,844 1.1	1,908,736 0.9	807,553 1.4	1,051,334 –	269,556 2.0	72,080 –	10,010,471 ² –
2010	3,426,356 ² 0.9	2,562,102 2.2	1,947,328 2.0	817,270 1.2	1,055,861 0.4	279,789 3.8	74,004 2.7	10,162,710 ² 1.5
2011	3,459,414 ² 1.0	2,585,702 0.9	1,980,752 1.7	825,218 1.0	1,060,269 0.4	275,536 –1.5	76,603 3.5	10,263,494 ² 1.0
2012	3,485,897 ² 0.8	2,633,476 1.8	2,022,600 2.1	832,073 0.8	1,086,294 2.5	277,956 0.9	77,708 1.4	10,416,004 ² 1.5
2013	3,535,719 1.4	2,663,871 1.2	2,064,283 2.1	836,365 0.5	1,100,039 1.3	278,756 0.3	82,545 6.2	10,561,578 1.4

Source: esaa, company annual reports

Table 3.2 notes:

1. The number of customers is based on information provided by companies in the industry. CitiPower and Powercor did not participate in the esaa survey and their customer breakdown was estimated.
2. Historical customer data has been revised on the basis of new information.

Table 3.3Consumption (GWh) 2012–13¹

Classification of customers	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL
Residential	19,602.4	11,848.0	11,461.7	3,973.8	5,284.8	1,907.1	611.3	54,689.1
Business	46,288.3	31,000.2	32,068.4	8,756.0	13,271.5	8,155.5	1,254.7	140,794.6
Unmetered	418.2	592.7	159.6	119.3	160.9	36.1	17.1	1,503.9
Total	66,308.9	43,440.9	43,689.7	12,849.1	18,717.3	10,098.6	1,883.1	196,987.6
TOTAL								
	% Change	% Change	% Change	% Change	% Change	% Change	% Change	% Change
2009	71,674.6 0.1	44,214.1 0.0	47,414.5 3.8	12,878.2 1.5	15,499.0 4.0	10,807.0 1.8	1,761.6 –0.4	204,248.9 1.4
2010	71,011.0 –0.9	43,678.3 –1.2	47,473.4 0.1	12,896.7 0.1	16,899.2 9.0	10,375.7 –4.0	1,820.4 3.3	204,154.6 0.0
2011	71,810.5 1.1	43,659.7 0.0	43,933.6 –7.5	12,999.7 0.8	18,166.0 7.5	10,431.0 0.5	1,814.3 –0.3	202,814.8 –0.7
2012	69,469.0 –3.3	43,281.2 ² –0.4	44,090.9 0.4	12,823.7 –1.4	18,304.3 0.8	10,076.1 –3.4	1,816.0 0.1	199,861.2 ² –1.5
2013	66,308.9 –4.5	43,440.9 0.4	43,689.7 –0.9	12,849.1 0.2	18,717.3 2.3	10,098.6 0.2	1,883.1 3.7	196,987.6 –1.4

Source: esaa

Table 3.3 notes:

1. Total consumption and the classification of customers is based on information provided by companies in the industry.
2. The 2011–12 figure has been changed on the basis of new information.

Table 3.4

Technical indicators: transmission

State	System minutes unsupplied (mins)		Energy delivered (GWh)		Circuit availability (%)	
	2011–12	2012–13	2011–12	2012–13	2011–12	2012–13
New South Wales & ACT	0.44	1.10	64,428	64,657	99.1	98.9
Victoria	2.57	0.40	46,008	45,575	99.2	99.2
Queensland	N/A	N/A	46,246	45,871	N/A	N/A
South Australia	2.80	10.65	12,992	12,928	98.6	96.5
Western Australia ¹	6.52	6.82	16,570	17,129	98.5	98.4
Tasmania	8.72	20.49	10,219	10,266	99.1	99.3
Australian total	–	–	196,463	196,425	–	–

Source: esaa, company annual reports

Table 3.4 note:

1. Western Australian transmission indicators relate to the SWIS only.

SECTION 3

TABLE 3.2 Number of customers at 30 June 2014¹

Classification of customers	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL								
Residential	3,189,194	2,377,337	1,857,602	743,918	996,657	235,170	75,669	9,475,547								
Business	407,330	321,142	227,379	99,203	129,259	42,356	13,632	1,240,301								
Total	3,596,524	2,698,479	2,084,981	843,121	1,125,916	277,526	89,301	10,715,848								
TOTAL																
2010	3,426,356	0.9	2,562,102	2.2	1,947,328	2.0	817,270	1.2	1,055,861	0.4	279,789	3.8	74,004	2.7	10,162,710	1.5
2011	3,459,414	1.0	2,585,702	0.9	1,980,752	1.3	825,218	1.0	1,060,269	0.4	275,536	-1.5	76,603	3.5	10,263,494	1.0
2012	3,499,958 ²	1.2	2,633,476	1.8	2,022,600	2.1	832,073	0.8	1,086,294	2.5	277,956	0.9	77,708	1.4	10,430,065 ²	1.6
2013	3,541,054 ²	1.2	2,663,871	1.2	2,064,283	2.1	836,365	0.5	1,100,039	1.3	278,756	0.3	82,545	6.2	10,566,913 ²	1.3
2014	3,596,524	1.6	2,698,479	1.3	2,084,981	1.0	843,121	0.8	1,125,916	2.4	277,526	-0.4	89,301	8.2	10,715,848	1.4

Source: esaa, company annual reports

Table 3.2 notes:

1. The number of customers is based on information provided by companies in the industry. CitiPower and Powercor did not participate in the esaa survey and their customer breakdown was estimated.

2. Historical customer data have been revised on the basis of new information.

TABLE 3.3 Consumption (GWh) 2013–14¹

Classification of customers	NSW & ACT	VIC	QLD	SA	WA	TAS	NT	TOTAL								
Residential	18,756.2	11,547.3	11,666.2	3,743.0	5,473.0	1,903.3	599.1	53,688.2								
Business	47,098.2	31,425.3	31,662.6	8,564.5	13,097.2	8,021.7	1,252.5	141,121.9								
Unmetered	414.7	535.8	259.2	122.0	164.0	37.7	14.7	1,548.1								
Total	66,269.1	43,508.5	43,588.0	12,429.5	18,734.2	9,962.7	1,866.2	196,358.2								
TOTAL																
2010	71,011.0	-0.9	43,678.3	-1.2	47,473.4	0.1	12,896.7	0.1	16,899.2	9.0	10,375.7	-4.0	1,820.4	3.3	204,154.6	0.0
2011	71,810.5	1.1	43,659.7	0.0	43,933.6	-7.5	12,999.7	0.8	18,166.0	7.5	10,431.0	0.5	1,814.3	-0.3	202,814.8	-0.7
2012	69,469.0	-3.3	43,281.2	-0.9	44,090.9	0.4	12,823.7	-1.4	18,304.3	0.8	10,076.1	-3.4	1,816.0	0.1	199,861.2	-1.5
2013	66,308.9	-4.5	43,440.9	0.4	43,689.7	-0.9	12,849.1	0.2	18,717.3	2.3	10,098.6	0.2	1,883.1	3.7	196,987.6	-1.4
2014	66,269.1	-0.1	43,508.5	0.2	43,588.0	-0.2	12,429.5	-3.3	18,734.2	0.1	9,962.7	-1.3	1,866.2	-0.9	196,358.2	-0.3

Source: esaa

Table 3.3 note:

1. Total consumption and the classification of customers is based on information provided by companies in the industry.

TABLE 3.4 Technical indicators: transmission

State	System minutes unsupplied (mins)		Energy delivered (GWh)		Circuit availability (%)	
	2012–13	2013–14	2012–13	2013–14	2012–13	2013–14
New South Wales & ACT	1.10	0.64	64,657	61,842	98.9	99.0
Victoria	0.40	1.50	45,575	44,381	99.2	99.2
Queensland	N/A	N/A	45,871	45,169	N/A	N/A
South Australia	10.65	6.58	12,928	12,341	96.5	92.7
Western Australia ¹	6.82	8.56	17,129	17,526	98.4	98.0
Tasmania	20.49	2.91	10,159 ²	10,045	99.3	99.3
Australian total	-	-	196,318	191,304	-	-

Source: esaa, company annual reports

Table 3.4 notes:

1. Western Australian transmission indicators relate to the SWIS only.

2. Historical consumption data have been revised on the basis of new information.