



WWF-AUSTRALIA POWERSWITCH! AUDIT 2004

A Survey of Investment Trends of Australia's Largest Power Generation Companies

	Companies	Their Power Stations in Australia	Grade (Score out of 10)
1	Pacific Hydro Limited Privately owned company (Grade based on Pacific Hydro's full international portfolio)	Hydro: Ord River (WA), Eildon Pondage (VIC), Lake Glenmaggie (VIC), Lake William Hovell (VIC), Drop Hydro (NSW) Wind: Codrington Wind Farm (VIC), Challicum Hills (VIC)	4.0 _{/10}
2	Origin Energy Privately owned company	Gas: Quarantine (SA), Ladbroke Grove (SA), Roma (QLD) Cogeneration: Osborne 50% (SA), BP Amoco Bulwer Island 50% (QLD), OneSteel (SA), Redcliffe Hospital (QLD), Worsley 50% (WA)	3.7 _{/10}
3	Hydro Tasmania Owned by TAS Government	Hydro (all TAS): Great Lake South Esk (3 stations), Derwent (10 stations), Mersy Forth (7 stations), Gordon-Pedder (1 station), Yolande (1 station), Pieman-Anthony (4 stations), King (1 station) Wind: King Island Huxley Hill (TAS), Woolnorth (TAS)	3.2 _{/10}
4	Tarong Energy Owned by QLD Government	Coal: Tarong (QLD), Tarong North 50% (QLD) Hydro: Wivenhoe (QLD) Wind: Starfish Hill (SA)	2.9 _{/10}
5	Western Power Corporation Owned by WA Government	Coal (all WA): Collie, Muja A, B, C & D Coal & Gas: Kwinana A & C (WA) Gas (all WA): Cockburn, Kiwana B, Tiwest Cogeneration: Worsely 50% (WA) Wind (all WA): Albany, Denham, Esperance, Exmouth, Ten Mile Lagoon, Hopetoun, Nine Mile Beach	2.9 _{/10}
6	Snowy Hydro Limited Owned by NSW Government	Hydro: Snowy Mountains Hydro-electric Scheme (7 stations, NSW)	2.5 _{/10}
7	Southern Hydro Owned by Meridian Energy, NZ (Grade based on Meridian Energy's full international portfolio)	Hydro (all NSW): Dartmouth, McKay Creek, Clover, West Kiewa, Eildon, Rubicon, Cairn Curran	2.5 _{/10}
8	Delta Electricity Owned by NSW Government	Coal (all NSW): Mt. Piper, Vales Point, Wallerang, Munmorah Hydro: Mt Piper (NSW), Chichester Dam (NSW)	2.2 _{/10}
9	Eraring Energy Owned by NSW Government	Coal: Eraring (NSW)	1.7 _{/10}
10	AGL Privately owned company	Coal: Loy Yang A 35% (VIC) Gas: Somerton (VIC), Hallet (SA) Cogeneration: Coopers Brewery (SA), Cawse (WA) Bioenergy: Berribee Biogas (VIC)	1.6 _{/10}
11	International Power, UK Privately owned company (Grade based on International Power's full international portfolio)	Coal: Hazelwood (VIC) Gas: Port Lincoln (SA), Mintaro (SA), Pelican Point (SA), Dry Creek (SA), Snuggery (SA)	1.5 _{/10}
12	Stanwell Corporation Owned by QLD Government	Coal: Stanwell 1 (QLD) Gas: Mackay (QLD) Hydro: Kareeya (QLD), Wivenhoe (QLD), Barron Gorge (QLD), Koombaloo (QLD) Wind: Windy Hill (QLD), Toora Windfarm (VIC) Bioenergy: Townsville Biogas (QLD), Rocky Point Cogeneration (QLD)	1.0 _{/10}
13	Macquarie Generation Owned by NSW Government	Coal: Bayswater (NSW), Liddell (NSW) Bioenergy: Liddell (NSW)	0.8 _{/10}
14	NRG Owned by NRG Inc, USA (Includes NRG Energy and NRG Flinders)	Coal: Northern (SA), Playford B (SA), Gladstone 37.5% (QLD)	0.7 _{/10}
15	CS Energy Owned by QLD Government	Coal: Swanbank B (QLD), Callide A & B (QLD), Callide C 50% (QLD) Gas: Swanbank E (QLD), Mica Creek A, B & C (QLD) Landfill gas: ReOrganic Energy Swanbank (QLD)	0.7 _{/10}
16	Edison Mission Energy Owned by Edison International, USA (Grade based on Edison International's full international portfolio)	Coal: Loy Yang B (VIC) Gas: Kwinana 70% (WA), Valley Power Peaker 60% (VIC)	0.7 _{/10}

Note: Several state-owned utilities have been restricted in their ability to invest in baseload power stations. Thus, the investment trend towards renewables for these utilities may be driven by factors other than concerns for reducing greenhouse gas emissions

RANKING METHODOLOGY

This is the second annual audit of the major players in Australia's electricity generation sector. In this audit companies are primarily ranked in terms of their investments in renewable energy (RE)¹ and natural gas-fired combined heat and power (gas-CHP)². The amount of carbon dioxide (CO₂) a company emits was not chosen as a criterion for ranking companies.

The performance of electricity companies is determined by two main criteria:

1. 'Current Situation', which values the share of RE and gas-CHP in a company's current fuel mix, and
2. 'Investment Trend', which refers to the share of RE and gas-CHP in investments since 1992.

The companies receive grades for both main criteria³. The weight of the criteria 'Current Situation' and 'Investment Trend' in the final overall grade is 40% and 60% respectively. 'Investment Trend' is given more importance in the ranking in order to lessen the influence of a company's pre 1992 asset base and put more emphasis on recent asset acquisitions.

The total grade for the criteria 'Current Situation' and 'Investment Trend' are each based on separate grades for the share of RE and the share of gas-CHP. The weighting factors that are used to determine the total grade per criteria are 40% for gas-CHP and 60% for RE.

The criterion 'Investment Trend' indicates the extent to which companies invest in gas-CHP and RE. This criterion is determined by the share of gas-CHP and RE in historic investments (or installed capacity) in the period 1992-2004 and in planned capacity (> 2004).

Table 2 Summary of the Methodology

MW →	Percentage →	Grading →	Weighting →	Overall Grade
Assessment of gas-CHP and RE in MW (megawatt) in current fuel mix and investment trend since 1992 in MW	Assessment of the percentage gas-CHP and RE in current capacity and in investments since 1992	Translation of percentages into grades ³ on a scale of 0-10 (1 – low, 10 – high)	Weighting of grades 'Current Situation' (40%) and 'Investment Trend' (60%), and for gas-CHP (40%) and RE (60%)	Score out of 10

Table 3 Detailed grading³ for 'Current Situation', 'Investment Trend', RE and gas-CHP

	Companies	Current Situation (Grade weighted 40%)			Investment Trend (Grade weighted 60%)			Overall Grade (Score out of 10)
		Gas-CHP (40%)	RE (60%)	Total (100%)	Gas-CHP (40%)	RE (60%)	Total (100%)	
1	Pacific Hydro Limited	0	6	3.6	0	7	4.2	4.0/10
2	Origin Energy	7	3	4.6	3	4	3.1	3.7/10
3	Hydro Tasmania	0	2	1.2	0	8	4.5	3.2/10
4	Tarong Energy	0	1	0.6	0	8	4.5	2.9/10
5	Western Power Corp.	5	1	2.6	3	4	3.1	2.9/10
6	Snowy Hydro Limited	0	0	0.0	0	7	4.2	2.5/10
7	Southern Hydro	0	2	1.2	0	6	3.3	2.5/10
8	Delta Electricity	0	1	0.6	0	6	3.3	2.2/10
9	Eraring Energy	0	1	0.6	0	4	2.4	1.7/10
10	AGL	3	2	2.4	1	1	1.0	1.6/10
11	International Power, UK	2	0	0.8	4	1	2.0	1.5/10
12	Stanwell Corporation	0	2	1.2	0	2	0.9	1.0/10
13	Macquarie Generation	0	1	0.6	0	2	0.9	0.8/10
14	NRG	1	1	1.0	1	1	0.5	0.7/10
15	CS Energy	0	1	0.6	1	1	0.7	0.7/10
16	Edison Mission Energy	0	2	1.2	0	1	0.3	0.7/10

¹ Renewable energy is defined as renewable non-fossil and non-nuclear energy sources; wind, solar, geothermal, wave, tidal, small scale hydropower (< 10 MW), sustainable biomass, landfill gas, sewage treatment plant gas and biogases. Electricity from large-scale hydro power (unless certified by the World Commission on Dams), peat, and waste incineration are excluded.

² WWF has chosen natural gas CHP as the second-best choice after sound renewables for a sustainable energy supply future. In the vast majority of countries a shift from coal, oil and nuclear base load power directly into renewables is presently not possible for a variety of reasons. As the shift from carbon-intensive coal to low-carbon natural gas for instance delivers many climate benefits it also reduces drastically conventional pollutants such as SO₂, heavy metals and dust. A shift from coal and other polluting sources to highly efficient combined heat and power (CHP) stations fired by natural gas is even better from reasons of energy conservation and overall pollution control. However, WWF sees natural gas only as a bridging technology for the next couple of decades.

³ E.g. 0% = grade 0; ≥80-100% = grade 10. For more information on how shares of gas CHP and RE in fuel mix and investments were graded, please contact WWF Australia.