

***Power to the People:
Privatisation and Deregulation
of the Electricity Industry in
Australia***

by Alan Moran

**(Director, Deregulation Unit,
Institute of Public Affairs)**

**Johannesburg
18 September 2002**

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"Until self-trained economist Edwin Chadwick came along, 19th-century Britain had a huge problem with its convicts bound for Australia: most were dying before they reached the "fatal shore" down under. Chadwick, however, proposed a solution as effective as it was simple. Instead of paying sea captains by the number of convicts that boarded their ships, he suggested paying them for the number of convicts who disembarked from their ships -- under their own power. It worked. Soon after Chadwick's policy was implemented, convict survival rates surged to over 90 percent."

"Entrepreneurial Economics for Fun, Profit, and a Better World," by Alex Tabarrok (May, 2002)

Background to Privatisation in Australia

The Australian Political Environment

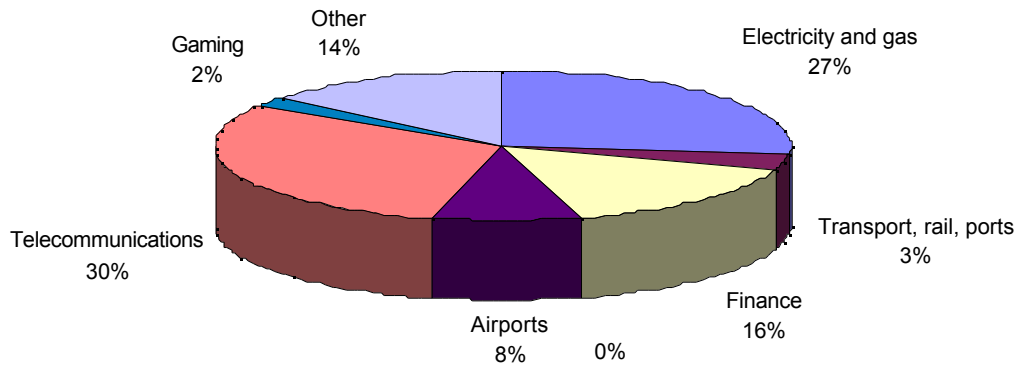
Private ownership uses those same insights that Chadwick discovered two centuries ago. It is based on incentives and, harnessed with competition to meet market needs, is the most powerful means of promoting efficiency and high living standards.

Fifteen years ago, following a century of increasing government ownership, it was a new concept and Australians, like most people, are conservative and suspicious of radical new approaches that might impose risks of severing rights that have evolved.

Australia's political structure also makes it a difficult country in which to embark upon reform. A federation of nine jurisdictions, a bicameral parliamentary system and the fact that the Federal Government of the day seldom controls both Houses of Parliament means change is normally gradual. That served us relatively well in resisting the vast wave of nationalisations and increased government ownership that swept Britain, France and much of Europe fifty years ago. It may be a liability in pursuing the modern ideological perspective of reform to downsize government based on a greater confidence in the market place.

Nonetheless, change does come about. As for deregulation and market reforms, Australia followed general global trends. Something similar also occurred in the case of privatisation but in that case it was assisted by another midwife, financial crisis.

Over the past dozen years, well in excess of \$100 billion of previously owned government businesses have been sold to the private sector. In terms of industry sector these were dominated first by the government's half float of Telstra and secondly by the electricity and gas industry. The Figure below illustrates the industry shares.

Figure 1**Australian Privatisations by Industry Sector**

The sums raised from privatisation understates the magnitudes involved since, concurrent with and subsequent to it, there has been considerable new private investment in areas formerly reserved for government.

Impetus to Australian Reform

Reforms in Australia were spurred by three different but associated factors:

- seeking improved management efficiency,
- neutrality in the dealings of SOEs with other parties, and
- privatisation of assets both to better meet these goals and to relieve budgetary pressures.

It was in fact the Hawke Labor Government that, initially in the mid-1980s, first embarked on some rather tepid movements in the direction of deregulation. Because many in the Labor Party cut their teeth on the need for *more*, not *de*, regulation, once the process got underway a euphemism was required. In Australia, the moniker was “micro-economic reform”, which progressively became more serious, especially in the early 1990s following a report on competition policy chaired by businessman/academic Fred Hilmer.

As well as attempting to dismantle layers of government restraint of business, deregulation had three other dimensions:

- placing government business entities on a footing similar to private businesses and at arms length from the political process;
- ensuring “open access” by users of and suppliers to natural monopoly facilities like electricity lines and rail tracks; and

- terminating as the exclusive preserve of government entities, certain activities including infrastructural facilities.

Privatisation in Australia was sparked by the Thatcherite revolution. In Australia and elsewhere this was derided by Labor Governments when they were out of office but adopted in part when such governments became sufficiently established and able to carry their constituents in a shift from ideology to pragmatism. For the conservative side of politics, the path followed was observation of successful privatisation measures and then mollifying its more curmudgeonly elements who worried about “selling the family silver”. Privatisation however was never electorally popular in Australia and remains unloved even though service outcomes of the privatised entities show demonstrable improvement over their predecessors.

Although the Federal Labor Government—in power for 13 years from 1982—moved towards privatisation, the areas it chose were those where government business entities were heavily involved in a competitive business environment. The entities included the Commonwealth Bank, Qantas and a pipeline business.

Massive impetus to privatisation was given by a collapse of State Government financial instrumentalities in the early 1990s. Not only did this reveal mismanagement that shook the confidence of those championing State owned business, but the consequences also placed the State Governments that had presided over these businesses in a parlous financial position.

The most serious was that of Victoria and a Liberal Government was elected in 1992 with a privatisation platform. The electricity industry was the prime target and this program brought a melding of the deregulation, pursuit of business efficiency and privatisation strands.

Electricity Reform and Privatisation

Privatisation

The vigorous process of privatisation which the Victorian Liberal Government embarked upon following its election in 1992 radically transformed the Victorian economy. Following many years during which the State was among Australia’s worst performers with low income growth and fiscal mismanagement, the post 1992 period saw it converted to enjoy rapid growth and a sound budgetary position.

Asset sales were a major feature of the policy both as a means of restoring the State’s low credit rating position and allowing lower levels of taxation, and as a means of injecting greater competitiveness into the State’s economy. Privatisation of the Victorian electricity assets accounted for the lion’s share of the State’s asset sales in a process which was among the most notable in the world.

Some \$23 billion was earned from the Victorian privatisations of electricity and a further \$5 billion from gas. From the electricity privatisations alone, the Auditor-General put the annual savings net of expectations from dividends etc. at \$760 million per annum, equivalent to about 9 per cent of the State's own taxation raisings.

By the time of the Government's fall in 1999, as well as electricity, the state owned gas, rail, bus services, trams and ports had been privatised.

In addition, the Government had brought in private ownership to build its major urban road development, City Link and had introduced private ownership of prisons and hospitals. The success of the Victorian privatisation, especially of electricity, brought other State Governments to pursue that same policy.

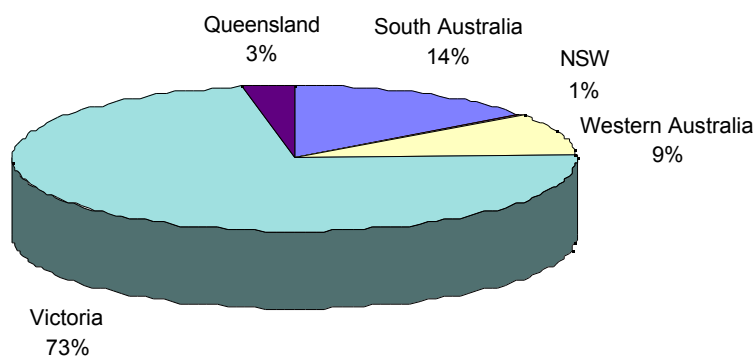
Nonetheless, only in Victoria and South Australia was the privatisation of electricity complete. Union opposition in NSW, the largest state, has meant very little privatisation, even though the Labor Government is keen to sell its electricity assets. The NSW Liberal Opposition, having lost an election on a platform that included electricity privatisation is now ostensibly even more against its privatisation than the Labor Government. In Queensland, a gradual privatisation may be taking place as several new generation facilities are being built largely by private enterprise.

In Western Australia, the State Government has privatised its gas business but both the State's major parties oppose privatising electricity. Western Australia is a stand-alone jurisdiction not linked with the rest of the Australian grid.

The following Figure illustrates that Victoria (which comprises about 30% of the Australian market) dominated Australian privatisation with South Australia (comprising about 8% of the Australian market) also fighting above its weight.

Figure 2

Share of Australian Electricity and Gas Privatisations by Jurisdiction



Structural reform and issues emerging

The basis of the Australian reforms and privatisations, in line with those in other jurisdictions, was a disaggregation of the previous monopoly over electricity supply into generation, long distance transmission, local distribution and retailing.



This disaggregation was planned in Victoria concurrently with the privatisation but other states also embarked on a disaggregation of the industry. Privatisation in Australia, leveraging off the mistakes made in the UK, was set in train to allow for a maximum role of competition as the discipline to promote efficiency and prevent price gouging. In Victoria and South Australia, generation was disaggregated to the maximum—essentially seven separate Victorian suppliers and five in South Australia.

It was intended for generation and retailing to operate in a totally deregulated market with distribution and transmission, which were viewed as “essential facilities” or natural monopolies, to be regulated.

At the onset, generation, transmission and distribution/retailing were to be structurally separated but there were no specific long-term measures to prevent re-aggregation.

Although retailing and distribution were sold as combined units, they were to be “ring fenced” to prevent the distribution business favouring its affiliate. In the event all five of the original Victorian host distribution business/retailers now have separate companies handling the two activities. What has surprised some is that all the privatised retailers and some of those remaining in government hands have moved to acquire some generation of their own. This is a function of the need that retailers see for some control over their supply, particularly in view of the wholesale price shifts to which electricity is now subject.

Retail was a part of the electricity industry envisaged as being contestable and requiring no more regulation than is required of other retail activities. In fact, although commercial supply is now largely deregulated, governments have been cautious about deregulating household supply. Both in NSW and Victoria, retail competition at the household level has been accompanied by safety nets that make it unattractive for retailers to poach customers. This on-going regulation of retail supply has resulted in some market confusion and is reported to have been the straw that resulted in two of

the five original owners of Victorian retailers exiting the market. Commercial customers have seen a churn rate from their host retailer of about 40% but the regulations in place have meant that very few households have switched retailer.

Other developments have not followed the path that was expected. In the case of transmission, a centrally planned provision was envisaged. However, a situation recognised from the outset is that transmission and new generation are alternatives. If transmission is provided free or at regulated prices this may discourage a more rational and lower cost development of new generation.

This led to provision being made for entrepreneurial interconnects in the National Electricity Law. And Transenergie, a subsidiary of Hydro Quebec, has started building these entrepreneurial links. This has in turn given rise to issues concerning the circumstances under which a *regulated* augmentation of links should be permitted. The danger is that links which are financed by a compulsory charge on the customer, might lead to incentives to site generation in places that are distant from major markets. If someone else is paying for transmission, the rational generation business will take its profits and socialise its losses.

Australia's electricity market no longer comprises several internal market supplied by monopoly firms. It is now a multiplicity of bilateral contracts between generators, and retailers strongly underpinned by a "gross pool" through which virtually all electricity has to be bought and sold. The four states that are in the National Electricity Market (NEM) are connected by transmission links though the different states all comprise regions that sometimes have constrained interconnects.

Essentially the NEM is a one-way market with the demand emerging from whatever end-users require and with supply being offered by generators at different price levels. All supply is paid the same price, that of the highest bid plant that is loaded. In the short term, generators are relatively indifferent to the price of that part of their supply for which they have contracts (probably 90% plus of the market) and will often bid close to their marginal costs for this part of the load. Compared to a price norm of about \$30 per MWh, at present prices can rise to as much as \$10,000 per MWh which makes retailers especially keen to be fully contracted.

A rather complex National Electricity Code controls the rules under which generation and transmission are placed on the market. And the fact that the price has oscillated has contributed to unease in certain quarters that there is price manipulation. Of course, the price oscillations have always been there but were masked in the past because the monopoly provider called in higher merit order plant without this actually being specifically priced.

Price Outcomes

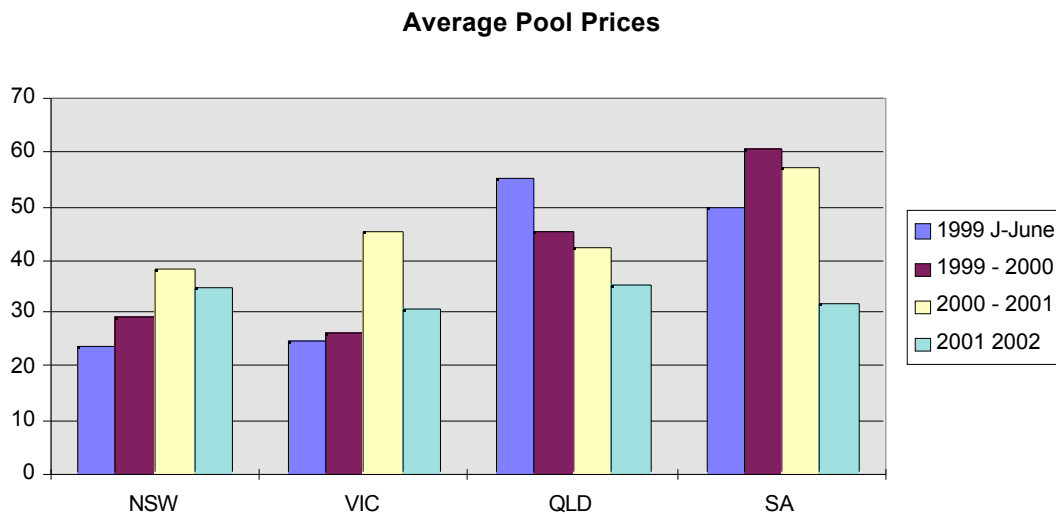
Wholesale Prices

The overall outcome has been much lower average prices than most people expected. Over the past four years the average wholesale price in the two largest sub-markets, NSW and Victoria has been below that required to justify new baseload capacity, a price commonly estimated to lie between \$34 and \$45 per MWh depending on the State. Compared with a pre-reform intra-company price of \$38-44 per MWh in NSW and Victoria the price outcomes have been as shown in Table 1 and Figure 3. By and large, contract prices have reflected these spot prices.

Table 1

Average Prices in Major National Electricity Markets (\$/MWh)				
Year	NSW	VIC	QLD	SA
1999 J-June	23.7	25.1	55	49.7
1999 - 2000	28.9	26.1	45.3	60.6
2000 - 2001	38.4	45.4	42.2	57.3
2001 - 2002	34.8	31.0	35.3	31.6

Figure 3



These wholesale price outcomes are very much the telescoped outcome of prices that have ranged from near zero levels to needle peaks of \$9000 per MWh.

The very high price excursions cause political difficulties especially where major customers allege generators are abusing market power. The effect of the high price excursions on average prices is not inconsiderable. Even though the prices above \$1,000 prevail less than one third of one percent of the time in all jurisdictions, they have an affect in raising prices by between 12% and 25%.

Table 2 Effects of High Price Excursions

	Number of hours	% of time	affect on average price
NSW	24.5	0.19	18%
Vic	30.5	0.23	12%
SA	40.5	0.31	25%
Qld	24.5	0.19	14%

The high price incidences occur in all jurisdictions that have a market in place. They are not due to private ownership—indeed the price peaks have led to claims that generators are exercising market power and it is the NSW generators who have been most strongly accused of such abuse. NSW has the most highly concentrated supply, with essentially only three portfolio generation businesses.

That said, the competition authority, the ACCC, has recently issued a report that says abuse of market power by generators is not occurring. In many respects the best evidence of this is the much lower aggregate prices that we have seen and the evidence of generator financial distress. In this respect only one of the generators is publicly listed, the 2000 MW Loy Yang. Since that plant was sold in 1997 for \$4.8 billion, in spite of the business since markedly improving its productivity and availability, its value is now at least \$1 billion less than its sale price as a result of very low wholesale prices.

As Table 1 showed, prices in Victoria have risen as demand has gradually increased. But it has been the peak prices that have brought this about.

The price developments in Victoria and other states have led to predictable new investment responses. South Australia and Queensland were short of capacity, saw high prices and have experienced a surge of new investment. Victoria has a surfeit of baseload power but a shortage of peaking capacity and again the market has responded. NSW was relatively comfortable in both respects. These capacity augmentations are summarized below.

Table 3 New Generation

State	Committed Projects (MW's)
South Australia	1,130 MW baseload since 2000
Victoria	856 MW peak since July 2001
Queensland	2,496 MW baseload since 2000
NSW	220 MW peak since 2000

Distribution and Retail

Distribution and transmission profits are largely controlled by government regulation. In the case of transmission, price reductions required by regulation have resulted in considerable marking down of value. For distribution, even though the businesses have complained about regulators' price setting, the outcomes have left values unchanged.

With retailing, an activity that was thought to have little value at the time of privatisation, recent sales of a stand-alone retailer and the implicit price of the retailing arm of a retailer/distributor, have demonstrated rather more value. Electricity retailing has upside potential because of the other retailing opportunities it offers through leveraging off its developed customer relations.

Post-Privatisation Asset Resales

Prices resulting from market forces and regulatory decisions have been major factors in establishing the value of the privatised businesses. A further factor has been global trends and perspectives. In this respect many British and American energy businesses during the later part of the 1990s when the privatisations took place had decidedly different business strategies than they now have. The euphoric attitudes to the prospect of capitalising on overseas energy opportunities are now more subdued.

In some cases this has resulted from a new realism in assessing earning prospects due to changed perceptions about regulatory risk or more sober market forecasts. Broader events like the collapse of Enron have also played a role. The general view is that the

prices for the Victorian and South Australian energy assets would be somewhat reduced today. Nonetheless, new buyers have emerged and the assets continue to command good prices.

The following table summarises the available information on post privatisation asset price movements.

Table 4 Estimated Changes in the Asset Values of On-Sold Victorian Electricity and Gas Businesses

Sector	Business	Approx Change in Value
Retail	Pulse (2002)	+ 40%
Distribution	Citipower (1998)	+ 5%
	Powercor (1999)	+ 5%
	Citipower (2002)	- 6%
Transmission	Powernet (2000)	-17%
	GasNet (2001)	-20%
Generation	Loy Yang (2002)	-25%

Outcomes in Performance of the Electricity Industry

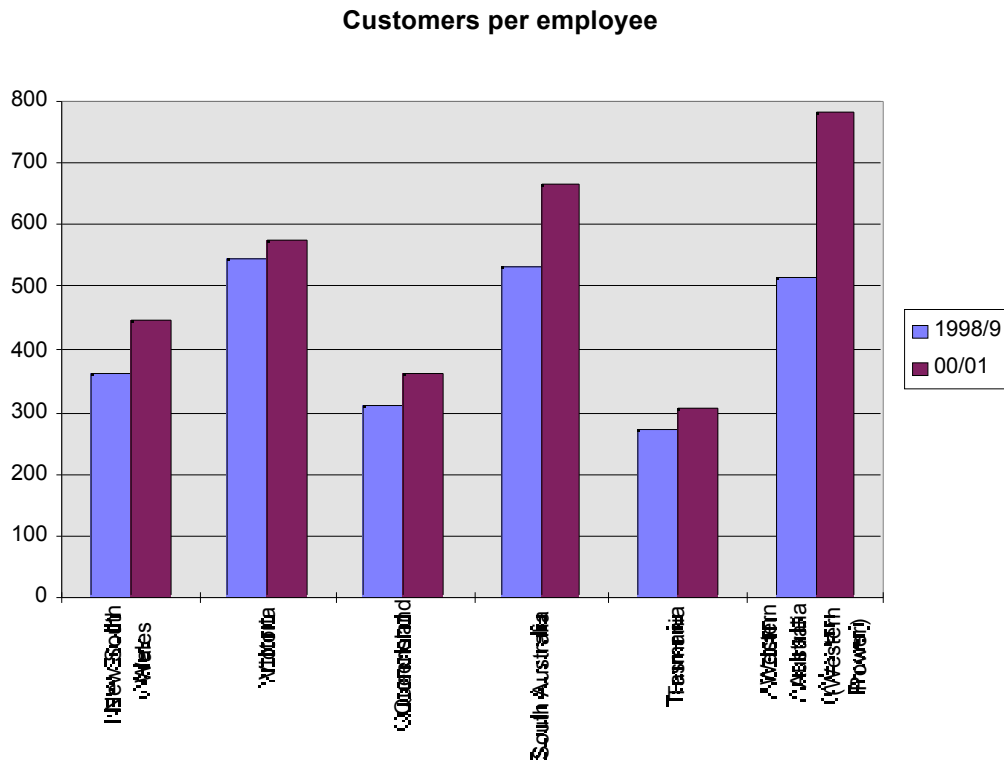
Distribution

Victorian distribution businesses since privatisation have shown marked increases in productivity and in customer service. This is probably better relative to the government businesses but fully documenting the productivity performance of the distribution businesses is difficult.

On the available data, between 1994/5 and 2000/01 all states achieved substantial labour productivity gains.

In comparative terms, in 2000/01 labour productivity in NSW and Queensland, though showing considerable improvements, remained only 78 and 63 per cent respectively of Victoria's level. South Australia, post its privatisation, appeared to have leapfrogged Victoria labour productivity, while Western Australia (which covers only the South East interconnected system) was also well ahead.

Figure 4



ce:

ESAA

The above measure of efficiency levels, labour productivity, excludes the important component of capital productivity. Energy businesses themselves attempt to determine their relative efficiencies to set internal targets (and, in the regulated environment in which distribution operates, to deter regulators from seeking excessive price reductions).

Benchmarking one of the Victorian distribution businesses against 104 US utilities, the Pacific Economics Group (PEG) found that the Company's computed overall cost is 44% of that of the average U. S. firm. The study's findings would have placed United Energy close to the frontier of efficiency.

The following table shows United Energy compared with the average in the sample compiled by PEG.

Figure 5

AVERAGE VALUES OF VARIABLES IN THE BENCHMARKING STUDY

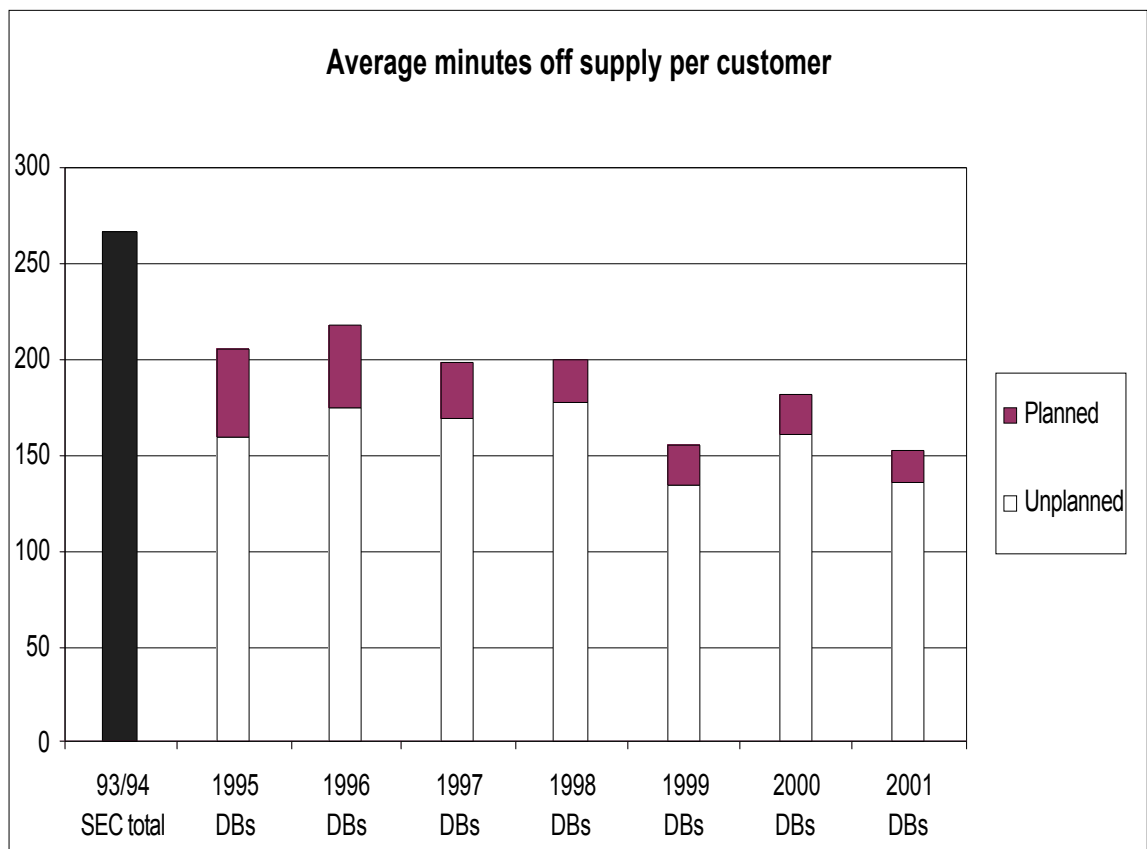
Variable	Units	US Sample Average	United Energy	United Energy / Sample Average
Total Cost	Thousands of \$US	377,782,714	171,158,503	0.45
Price of Capital Services	Index Number	1.00	1.07	1.07
Price of Labor Services	\$1,000/US\$ per Employee	31.75	36.59	0.71
Price of Materials	Index Number	1.12	1.01	0.97
Total Customers	Customers	685,777	538,000	0.77
Retail Deliveries	MWh	17,758,000	8,448,605	0.36
Miles of Distribution System	Miles	20,489	7,387	0.36
% of Distribution System Electric	Percent	89%	100%	1.12

Source: Pacific Economics Group, Kaufmann, L., Lowry, M.N., and Hovde, D., *United Energy Performance, Results of International Benchmarking*, November 1999, p. 39

Reliability of distribution in Victoria has improved considerably since privatisation. The ORG sets targets for each of the businesses, targets that are far less controversial than those covering prices.

A steady improvement in reliability, as measured by minutes off supply, has been experienced in the years since 1995 as illustrated below.

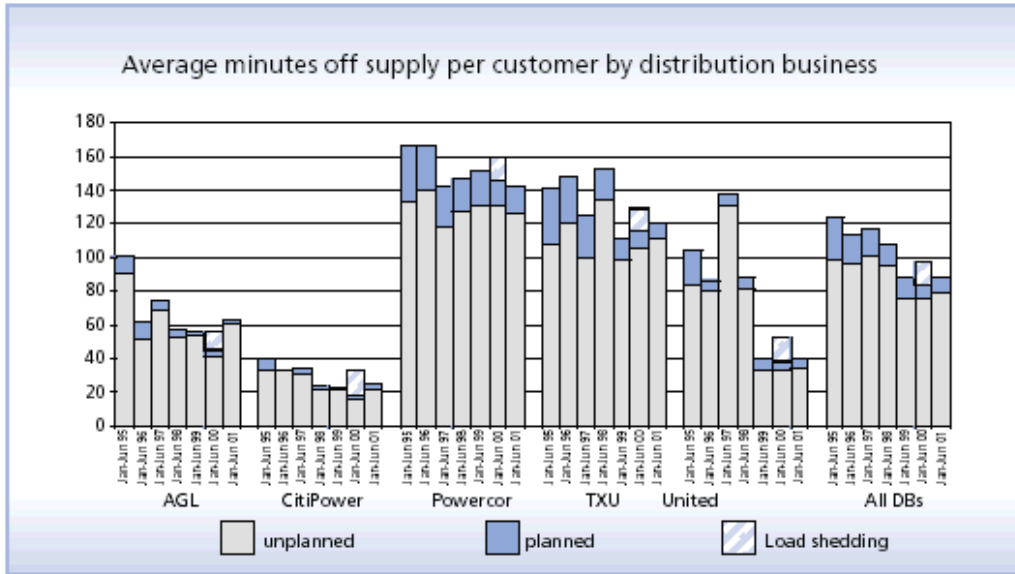
Figure 6



Source: Essential Services Commission

The improvements have been seen in all five distribution businesses as illustrated in Figure 7 below.

Figure 7
 ▪ Chart 2



Source: Essential Services Commission

A small increase was recorded in minutes off supply in the first half of calendar 2001. This was ascribed to more normal storm situations following a very benign first half year in calendar 2000. The Office of the Regulator General noted that the distribution businesses remained on track to the target reductions in minutes off supply that had formed part of the 2001 rate re-set.

In respect of reliability, the Victorian outcome has shown relatively more improvement than that in other jurisdictions. Figure 8 illustrates this.

Figure 8

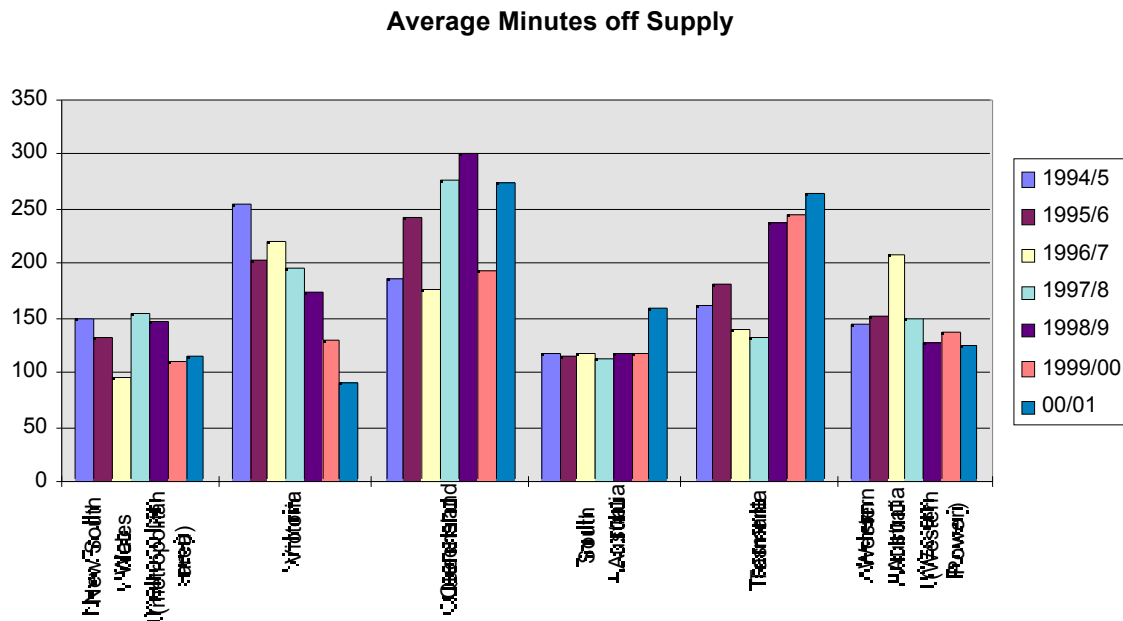


Figure 8 shows that improved performances have been logged by Victoria (outages down 64 per cent) and NSW (outages down 24 per cent). Queensland showed 47 per cent increased outage times and in South Australia an increase of 36 per cent was logged.

Generator Performance

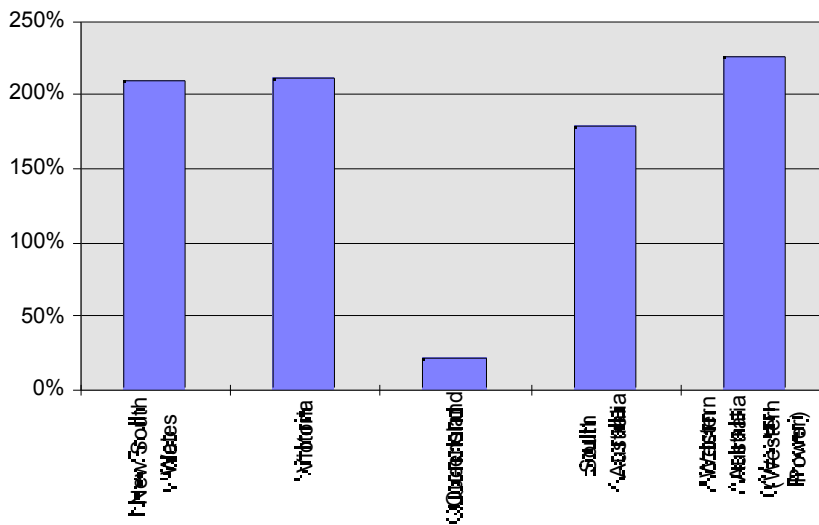
As with distribution, it is rarely possible to assemble simple benchmarks allowing state by state comparisons between generation businesses. Using simple labour productivity is difficult. For example, output per employee, as well as having definitional problems with employees following a greater use of contract labour, also compares Victoria's brown coal generators with other states' black coal generators which employ less labour partly because they do not own and mine their own coal. Similarly, gas generators and hydro-electric generators require fewer staff.

In addition, as with distribution businesses, profit figures are now not readily available because the privatised businesses' profits are normally consolidated into parent company accounts and not separately identified.

The available data shows that productivity in all state systems has experienced marked improvements. The comparative performance of five states is shown in Figure 9 below.

Chart 5

Productivity Increase in Generation 1990-2001

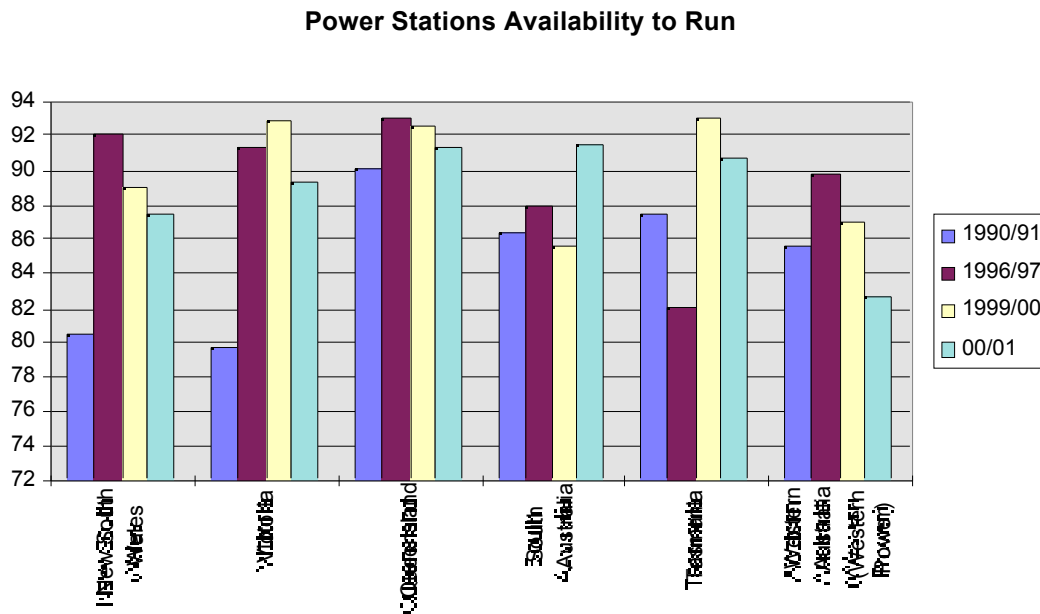


Source ESAA

Part of the improved productivity of the generators is their greater availability.

Not only did the pre-1992 generation sector exhibit gross over-manning but the generators were available for less than 80 per cent of the time. Having generators available to run at short notice allows an ability to meet unexpected changes in demand, thus bringing about lower prices at such periods and allowing higher earnings by the generators. The improvement in Victoria's generators has been outstanding as Figure 10 illustrates (perturbations in the last two years in South Australia and Victoria reflect new capacity coming on line).

Figure 10



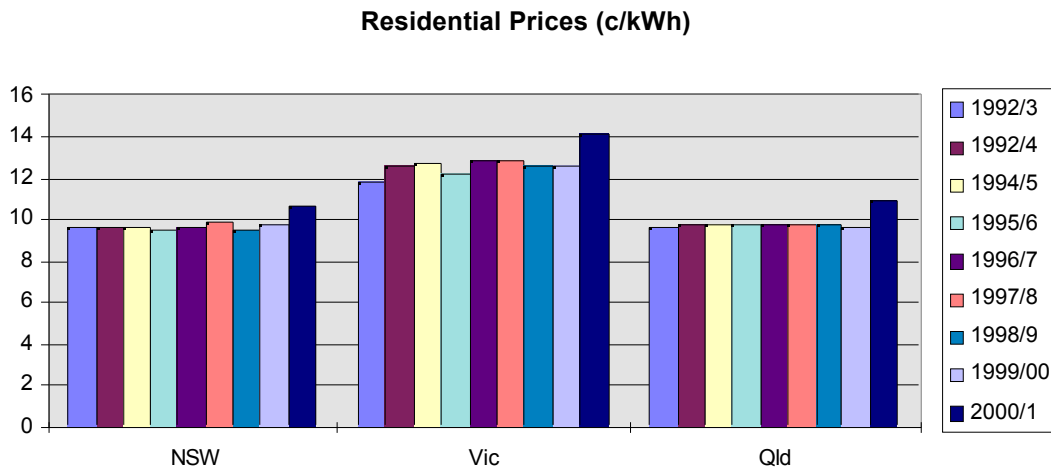
Source: ESAA

Prices to Customers

While Australian prices do not compare favourably to those in the lowest cost supply system in the world, that of Eskom, they are low by world standards (see appendix). The shift to a competitive market means it is no longer possible to discover prices in the traditional way by dividing revenue by energy usage and subdividing this into different customer classes. The historical data remains useful for the regulated customers, where energy price is determined by governments and the customers are captive.

Comparisons of consumer prices are also complicated because of very different usage profiles—Victoria tends to have peakier, and hence more expensive, demand than the other states. The data is shown below.

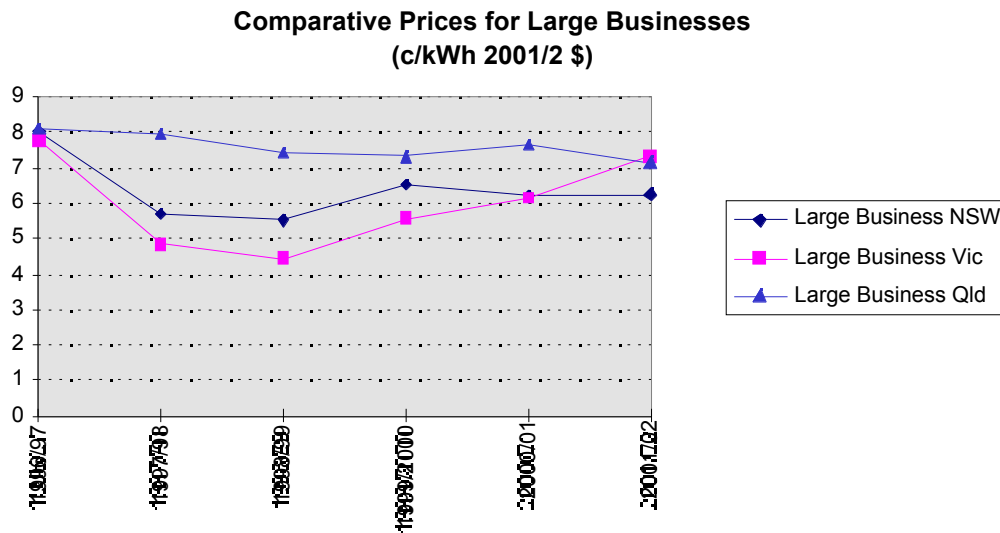
Figure 11



Source ESAA

Nor is it possible to provide directly comparable numbers for contestable customers. However around 40% of customer load is supplied by non-host retailers. Prices fell considerably where the customers were free to shop in NSW and Victoria, though reflecting a more recent tightening of supply, they have tended to rise somewhat, though are still well below pre-deregulation levels.

Figure 12



Source: ESAA

Privatisation versus Corporatisation

All Australian electricity supply businesses are now either privatised or state owned but operating under corporations law with more-or-less independent directors. This is a development over the last ten years and there is no reputable body that advocates returning the operations of electricity supply firms to the public service.

Corporatisation itself meant a considerable improvement in productivity and customer orientation. Further improvements followed with privatisation and, by and large, the government owned firms in Australia have lifted their performance and match those of the private firms. All suppliers have, as shown in the earlier tables, exhibited much greater efficiency in terms of labour productivity, and supply security.

Nonetheless, corporatisation remains a half-way house. Privatisation remains a preferred approach. It does so for reasons over and above the advantages it brings in releasing the government from capital expenditure obligations and consequent improvement in debt levels.

Privatisation allows a more enduring improvement in efficiency for several reasons.

- The government ownership makes expansion and pursuit of synergies more difficult. The firm would need to obtain ministerial approval for such measures and this is likely to be more difficult (especially where there have been histories of ill-advised government business expansion) than is the case with private shareholders. In the electricity and gas industries, where market development appears to be favouring some limited re-aggregation of retailers and generators, such inflexibility is likely to adversely impact on the GBEs.
- There may also be some residual areas where private ownership and the improved incentives inherent in it will prove beneficial. In this respect, the one serious business error of an Australian electricity firm since the reform program has been one of the NSW generation businesses which entered into very poor contracts and lost a sum close to its net worth.
- Irrespective of intentions, Governments will meddle in the behaviour of the firms they own. Some examples in Australia have been:
 - The board appointments, which have occasionally been political, as when the NSW placed the ex leader of the Trade Union federation on the board of one of its generators.
 - State governments have made known their preferred form of labour management to those charged with business management; managers in such circumstances feel obliged to follow ministerial preferences even where they entail costs.
 - In NSW, the government has put in place a mandatory insurance scheme between the state owned retailers and generators. While stabilising prices, this seriously impedes the development of risk markets and would not be possible if there was major private ownership.
- Finally, government ownership leaves no market for the firm itself. Other firms can sell parts of themselves off or face takeovers from entities that consider they can manage their assets more effectively. Australian privatised energy businesses have seen a number of second round sales. Government ownership can do little more than change the team.

Outcomes that might have been improved

The foregoing indicates that the Australian development is incomplete. The supply industry in the largest State is almost exclusively government owned. Aside from this, the privatisation program has been remarkably successful. It has raised far more than was expected and has brought an enhanced level of efficiency. Much was learned from the mistakes in the UK experience.

The disaggregation prior to privatisation has had some deficiencies. These include leaving South Australia with only one host retailer, a situation that may have led to higher prices because of the difficulties new rivals without a local base have experienced in establishing themselves.

A further criticism concerns the NSW disaggregation its generation three portfolio businesses when six or more separate businesses could have been created. There are claims that this brings the risk of UK style market power.

A further more insidious issue is the dividing line between governments and business. Governments, especially when they do not own assets, want to see prices as low as possible. But “free beer” cannot be supplied indefinitely. There is a risk in some of the interventions that governments have made or threatened that some new investment will be deterred with a low price in the short term resulting in higher prices at a later stage. Short-termism is an enduring problem with government decisions and a major reason for privatisation.

Establishing market governance that is immune to political intervention in something with as high a public profile as electricity is a major challenge in all jurisdictions. We have not yet got it right in Australia.

Lessons for South Africa

While I have no detailed knowledge of the South African power industry, I understand generation, transmission distribution and retailing is dominated by the government owned business, ESKOM. Your industry, which is comparable in size to that of Australia, is corporatised, with transmission, distribution and generation all separated, though there is little private sector participation.

While generation is considered to be managed to a high degree of technical efficiency, the Australian experience indicates that further cost savings and benefits from improved flexibility are found once ownership is changed and incentives to discover these are in place.

Competition in spot bidding and for contracts also sharpens efficiency levels, though this does require retailing and distribution to be separated or ring fenced from each other. Full separation also makes it difficult to have the government impose cross-subsidies on the business, perhaps to facilitate system extension. Although a political

disadvantage, requiring subsidies to be clearly visible and on-budget rather than obscured is a major benefit to sound governance.

The disaggregation and privatisations in Australia are important beacons for South Africa.

One approach to be avoided is the experience of Indonesia¹. Indonesia left the electricity supply under a monopoly (Perusahaan Listrik Negara, PLN) but, starting in 1990, it invited private supply of generation into the monopoly business. Some 26 plants were constructed on a build-own-operate basis, amounting to about one third of total capacity. The government accepted take-or-pay contracts with prices denominated in US dollars (in addition the state owned enterprise was not permitted to raise prices to take account of its own cost increases as a result of Indonesia's currency falling to one fifth its previous \$US rate and to the reduced demand.). The outcome has been ruinous losses.

¹ See Ross H. Mcleod, *Second and Third Thoughts on Privatisation in Indonesia*, Agenda Vol 9, No. 2, 2002

APPENDIX**Chart 5.5 International electricity prices - January 2001 residential**