NEW ZEALAND’S EXPERIENCE OF ‘DE-REGULATED’ ELECTRICITY SUPPLY

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INTRODUCTION AND SUMMARY

This paper summarises New Zealand’s experience in a ‘deregulated’ electricity supply environment, emphasising the advantages of a shift from predominantly State and ad-hoc public body ownership to the current, mixed, State and private ownership structure. The author also summarises the current, increasing, level of regulatory control but identifies areas where regulation is non-existent, leaving parts of the sector subject only to imperfect market forces. The author’s objective is to summarise the prevailing situation and to set it in the context of the particular circumstances in the country. Current issues are identified.

The paper is based on thirty-five years of experience in electricity sector development, operation and management in New Zealand and internationally, including the directorship of electricity supply companies in New Zealand and the conduct of regulatory reviews, optimisation studies and valuations in various jurisdictions.

THE INDUSTRY PRIOR TO 1980

Until the 1980s, most electricity generation and all transmission activities in New Zealand were the responsibility of governmental departments with distribution and retail sales undertaken by ad hoc electricity supply authorities or municipal electricity departments. The electricity distribution operations had been reviewed on several occasions including in 1959, when a governmental Commission of Inquiry was established to investigate all electricity supply authorities in the country – see [1]. The Commission set out what it considered the proper objectives for electrical supply and recommended rationalisation of the industry. Specifically, the proposals recommended the reduction of the then 84 electricity supply businesses to 26.¹ The Commission found that the electrical industry in general was efficient and well organised but it referred to several aspects of supply that it considered should be given attention, particularly the question of tariff rates to various classes of customers and the simplification of tariffs generally.²

The findings of the Commission reflected the then current view of the industry with their implicit emphasis on electricity as a social good, developed and supplied on a non-profit basis for the promotion of economic prosperity. It is a matter of historical interest only that the Government did not implement the recommendations of the 1959 Inquiry and that the industry continued substantially unchanged in structure through to the 1980s, except for some voluntary amalgamations of electricity supply authorities that reduced their number from 84 to around 60.

PUBLIC SECTOR REFORM IN THE 1980s

Starting in the mid 1980s, the New Zealand Government, faced with the need to re-vitalise the economy and reduce debt, introduced a comprehensive programme of public sector reform. The programme was designed to support the Government’s economic restructuring programme for the country as a whole by establishing a free market economy, abolishing many controls and regulations, re-establishing state trading enterprises as commercial organisations, selling many of them and promoting efficiency in all remaining public sector operations. The sale of public sector enterprises included telecommunications services, state-owned banks, an insurance company, natural gas distribution, coal mining, forestry cutting rights, the railways and government printing services. These changes were accompanied by labour market and tax reforms as well as other measures to enhance economic efficiency.

These principles were embodied in the State-Owned Enterprises Act 1986 and were extended to the electricity sector through the introduction in 1991 of the Energy Sector Reform Bill and subsequent enactment of the Electricity Act 1992 and Energy Companies Act 1992. The new legislation was intended to introduce competition to generation and energy sales activities whilst recognising the natural monopoly characteristics of the transmission grid and distribution networks. Details of the reforms and the status of the industry prior to and after their introduction have been presented earlier by the author – see [2] and [3].³

By 1995, the Government’s electricity sector reforms had reached the following stage:

- Generation: still 95% in the hands of the Electricity Corporation of New Zealand (ECNZ), a State-Owned Enterprise (SOE). Competition not yet introduced. Public debate about break-up of ECNZ was continuing;
- Transmission: grid owned by Transpower NZ Ltd, a subsidiary of ECNZ. Transpower to be re-established as

¹ At that time, New Zealand had a population of 2.3 million, a peak electrical demand of 1,300 MW and annual electricity sales of around 6.5 GWh. By comparison, today’s figures are around 3.9 million in population, 7.500 MW of maximum demand and 35,000 GWh in annual sales.
² At that time, and up to the reforms of the 1980s and 1990s, the cross-subsidisation of residential customers by commercial customers was commonplace.
³ General information on the sector is also available from the Ministry of Economic Development’s web site: www.med.govt.nz.
a separate SOE. Competition not intended for this natural monopoly. An agreed rate of return on assets controls charges;

- Distribution lines businesses: natural monopolies. Light-handed regulatory (information disclosure) regime introduced to ensure "transparent" pricing for lines companies. Monopolistic franchise areas abolished and freedom to wheel through networks introduced;
- Energy retailing businesses: full competition allowed.

The Government had decided upon a light-handed regulatory framework for the electricity distribution sector. Transparent pricing and information disclosure by energy companies, in accordance with regulations published pursuant to the Electricity Act 1992, were the central feature of the regime – see [4].

Customers or other parties who alleged anti-competitive practice had recourse to the Commerce Commission. The Commission was established under the Commerce Act 1986. Its stated objective was "to promote competition in markets within New Zealand". The Act was and is a major feature of the regulatory environment in which businesses in New Zealand operate. The Commission has various powers as set out in the Act. The Commission, if felt appropriate, can recommend price control of the industry to the Minister, although the Minister is not bound to act on the Commission's advice. In accordance with the Electricity Act 1992, the Government could also introduce price restraint in respect of electricity supplied to domestic premises.

The original concept of the Government's reforms included, amongst other things, the belief that competition could be introduced into the generation sector. However, it was not until 1995 that it split the then ECNZ into two SOEs, ECNZ and Contact Energy Limited, to bring this about. This step was taken against advice (that two companies would not be enough to create competition) and failed to achieve the desired competition in the generation sector, with ECNZ retaining control of approximately 70% of total generation in the country and Contact having control of a further 25%. Accordingly, the Government took further steps and, in 1996, introduced a wholesale electricity market run by a company known as M-Co. Of concern to major energy users and others, however, the market remained voluntary and was characterised by the fact that approximately 75% of transactions by-passed the market or were backed by hedge contracts set up in earlier years with the then ECNZ.

FURTHER REFORMS IN 1998

In response to a public perception that the electricity sector reforms had failed to deliver benefits to customers, and perceiving that the benefits of efficiency gains to date had been captured by shareholders (ironically the Government in the case of most generation companies), the Government enacted the Electricity Industry Reform Act 1998. The main features of this act were to: further split ECNZ into three SOEs giving four competing SOEs in the generation sector plus smaller private sector operators, mostly distribution lines companies with small, embedded hydropower plants; and to require the distribution lines companies to split their ownership, divesting themselves either of their natural monopoly lines businesses or their retail/generation activities. Other measures were included – see [3].

The aims of the further reforms remained much as before but with added pressure to see downward movement in the price of delivered energy.

The Government also announced its intention to sell its shareholding in Contact Energy through a public share float combined with a cornerstone share sale, and it implemented this step.

These changes took effect early in 1999. The forced split of line and retailing activities resulted in a major structural change in the industry. All but a small number of distribution lines companies opted to retain their line functions and divest retail and generation activities. The buyers of these were the three new SOE generators, Contact Energy and TrustPower, a distribution company that opted to remain in retail and generation. TrustPower built a portfolio of small generation schemes previously operated by distribution companies throughout the country and purchased a sizeable retail customer base. Only one significant retailer without a generation base, TransAlta, resulted.

Late in 1999, shortly before the expiry of its parliamentary term, the Government introduced further measures to help ensure grid security (this action arose largely over the failure of electricity supply to the central business district of the City of Auckland in early 1998).

In summary, the industry structure at the end of 1999 was as follows: 5

Generation:
- Three competing SOEs;
- Private sector generation comprising around 40% of the total market;
- No licenses required for generating activities, nor any regulatory intervention except through the Commerce Commission in cases where a complainant might consider another party was making improper use of a dominant market position;
- No national energy planning for the long-term development of the sector;
- No restrictions on the building of new generating plant;
- No restrictions on overseas ownership;
- Behaviour of market participants controlled by the country's general competition law, the Commerce Act;
- Behaviour of the parties in environmental terms controlled by the Resource Management Act;

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4 An evaluation of public benefit and detriment under the Commerce Act is given in [5].

5 Source: Ministry of Commerce papers and author's own assessment.
• Treatment of consumers controlled by the Fair Trading Act and the Consumer Guarantees Act.

Wholesale market:
• A voluntary wholesale market exists in which spot prices are set half-hourly for four hours in advance to match supply and demand;
• Spot prices are volatile, especially in dry years;
• Generators compete to be dispatched;
• Generators and buyers have significant hedge contracts against spot prices for most of their sale and purchase contracts for energy;
• In the authors’ opinion, the wholesale market is dominated by the generators because of the short-term availability of advance supply and demand information on the market, making it difficult for demand-side actions to be taken. In addition, bid prices in the market are not disclosed.

Transmission:
• Transmission is the responsibility of a separate SOE, Transpower;
• It contracts with users for the maintenance of security standards (contracts include penalties for breaches) and the implementation of new investments to strengthen the network, and it is responsible for short-term security of supply;
• Transpower also has the role of System Operator, despatching production from all power stations.

Distribution lines:
• Operated by stand-alone businesses that cannot be in common ownership with retail or generation businesses;
• Recognised as natural monopolies, subject to an information disclosure regime and threatened with price control, but not required to obtain an operating licence and not subject to regulatory intervention or ownership restrictions;
• 32 distribution companies ranging in size from 5,000 connections to over 500,000 connections, (the number of companies having reduced through mergers and acquisitions);
• Ownership structures range from private ownership to consumer or community trust ownership and territorial local authority ownership.

Retail:
• Not allowed to be in common ownership with lines businesses;
• Competition for all consumers by perhaps four or five of the larger retailers;
• No regulator, no price control and no ownership restrictions;
• General competition law applies;
• Of importance, however, the major retailers are owned mainly by the major generators and, somewhat ironically in terms of the Government's earlier privatisation objectives, over 50% are under State ownership.

In February 2000, following a change in government, a Ministerial Inquiry was instigated to review the industry structure, including regulatory issues and reform options – see [6] and [7]. The Inquiry Panel recommended: (a) the overhaul and consolidation of electricity market governance arrangements; (b) continued self-regulation of the [supposedly] competitive parts of the industry, namely generation and retailing; and (c) devolution of the regulation of the natural monopoly parts of the industry to an independent regulatory body, the Commerce Commission, along with powers to impose price control. The Government accepted the main recommendations but gave itself regulatory powers, to be exercised if industry self-regulation did not meet its desired objectives, and other wide powers to be exercised, if considered necessary, for industry governance.

POWER SHORTAGE AND FURTHER CHANGE

A very low-rainfall winter in 2001 led to a power shortage and further concern over the suitability of the industry structure – see [8]. Interestingly, not only hydropower generators but also thermal generators bid prices up. The one retailer without generation incurred large losses because of not being hedged adequately and its owners sold its customer base to two of the SOE generators and left the business. This further consolidated retail activities into government ownership. The major generator/retailers were also becoming increasingly regional in both their generation and retail activities and competition for customers, after initial flurries, was decreasing. This resulted in ongoing concern about the lack of retail competition as the four major players dominated both the supply and demand sides of the market: and, of them, only one was truly a nation-wide retail operator.

By mid-2002, it was recognised that the arrangements proposed for self-regulation of the industry were not suitable and the Government considered further options before establishing, in 2003, a government-appointed Electricity Commission to be the chief regulatory agency for New Zealand’s electricity supply industry. Its function is to govern the electricity sector, taking primary responsibility for achieving the Government’s policy objectives. Its responsibilities include; making available information on supply and demand; maintaining security of supply; contracting for reserve generation for dry years; transmission system planning, pricing and investment decision-making; functioning of the wholesale market, including improving demand-side participation in it; setting terms and conditions for the use of distribution lines by competing retailers; and introducing consumer protection measures such as minimum terms and conditions for consumer contracts.

6 Theoretically, the correct economic response would have been a sharp rise in retail prices but that did not happen. Instead, a government plea for savings, combined with various industry initiatives, achieved a 7% reduction in demand during the crisis.
7 Confusingly, a committee of parliament, the Commerce Committee, established an inquiry of its own into the industry in July 2003 but, at the time of writing this paper, it had not reported.
At the time of writing this paper, the Electricity Commission was implementing these tasks\(^8\) whilst the Commerce Commission initiated its regulations for the control of lines business charges, based on a CPI-X price path threshold and a quality threshold.

**IMPACT OF THE REFORMS**

In summary, it can be said of the reforms, particularly those up to 1999, that:

- In all sectors – generation, transmission, distribution and retailing – there have been significant efficiency gains in terms of staff reductions although the true measure of labour employed in the sector is difficult to discern because, in many instances, services have been contracted out;
- Efficiency gains have also been achieved through higher plant utilisation and better asset management practices;
- These gains have not, however, been reflected in reductions in the real price of delivered energy;
- Cross-subsidies have been reduced, increasing domestic prices and reducing commercial prices;
- There has been significant new private sector entry, particularly in gas and geothermal generation, and in the purchase of distribution lines businesses;
- There have been significant returns to the Government in terms of taxation, from the proceeds of the sale of generation assets and the substantial profits now being made by the SOEs;
- There has been significant consolidation of distribution lines companies in private ownership but amalgamation of companies with trust ownership has been slow, as has the development of retail competition;
- The forced separation in 1998 of distribution lines and retail businesses destroyed value to existing shareholders by forcing sales of generation and retail activities at a time when wholesale prices were low and the number of buyers was limited;
- The efficacy of the regulatory regime in controlling monopoly line charges is in doubt, particularly in relation to its ability to monitor network performance v. investment and long-term trends in asset condition;
- The long-term future of the State-Owned Enterprise model is being questioned.\(^9\)

**CURRENT ISSUES**

Several issues remain in the sector, or have developed during the period of the reforms:

- Wholesale electricity prices, supply-demand balance, future capital investment and public v. private ownership

There is a perception that the previous low-cost electricity environment in New Zealand has gone, with remaining, viable, hydropower resources depleted, the price of indigenous natural gas set to rise and a tightening demand-supply balance. However, this is not yet evident in spot market prices.\(^10\) There is doubt, therefore, about whether the needed investment funds for new plant will be forthcoming from either the private sector or the SOEs. If exclusively from the latter, one might question whether the current, complex, sector framework should not be dispensed with and the sector returned to public ownership in its previous form – notwithstanding the shortcomings of the previous, publicly owned operations. The fact that the current sector structure leaves the door open to governmental influence heightens this concern – see [9]. Alternatively, it could be argued that the Government’s case for retaining ownership of the SOEs is tenuous and that they should be privatised.

The related issues are difficult to separate; and the privatisation of SOEs is always a contentious issue as advocacy and opposition are often on purely ideological grounds. In the meantime, the small number of market participants, small market size and tightening supply-demand situation will contribute to a thin hedge contract market, which in turn will place considerable stress on companies during dry weather years when the ability of hydropower generators to produce electricity is constrained. This could drive out competition, or, at least, maintain high entry barriers, with consequential ill effects.

**Related structural flaw in the market**

A related structural flaw in the market is the preponderance (around 60%) of hydropower generation in the system with limited storage. This already leads to ambiguity in prices with periods of excess supply distorting price signals to the market, particularly in relation to the commitment of new generation investment. The nature of the market thus strongly favours vertically integrated (generation and retailing) companies that act as a natural hedge and as a barrier to new entrants.

**Lack of retail competition**

Notwithstanding governmental studies in 2004 that found to the contrary, there is evidence that efficiency gains in the distribution lines businesses have been captured by retailers (the majority of whom are owned by the SOE generators) and not passed on to retail customers.\(^11\) This has damaged the credibility of the market model. It remains to be seen whether the Electricity Commission’s actions will address the problem. There is little active prospecting for customers and the generator/retailers are content to maintain the balance.

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\(^8\) It was given its full powers only in or around October 2004.

\(^9\) See [3] for a discussion of these points.

\(^10\) Contrary to statements frequently made, spot prices do not need to rise to the long-run marginal cost of new generation in order for existing generators to make, on average, an appropriate return on their assets – assuming that their fixed assets are valued at depreciated replacement cost on a ‘going concern’ basis.

\(^11\) The contrary evidence referred to is presented in Ministry of Economic Development papers, released in January 2004 but consumer groups say, correctly in the author’s view, that the analysis was too limited to be useful.
between generation capacity and retail sales that they currently enjoy, effectively self-hedging and blocking new entrants.

Growing regulatory risk and compliance costs

The sector is accompanied by increasing regulatory risk and compliance costs. The increasing risk acts, amongst other things, as a deterrent to new investment. The costs arise through the growing numbers of staff and consultants employed at the Commerce and Electricity Commissions and by the companies themselves. In the latter case, the need arises partly through the necessity to make submissions on the numerous papers circulated to the industry, usually on Christmas Eve. Both factors are of concern, given the general premise that bureaucracies grow.

Continuing evolution of policy/regulatory environment

A further concern is that the evolution of the policy and regulatory environment will continue, lending uncertainty to business planning and creating a distraction from the main task of the businesses: the generation and supply of electrical energy.

A detailed discussion of these issues is beyond the scope of this paper but for any industry to attract private investment, particularly in the case of infrastructure where long-term involvement is needed, there needs to be, at a minimum, stability and clarity of policy and structure. Continuing structural and regulatory change is not conducive to investment and may weaken future market outcomes.

CONCLUSION

In conclusion, the principal objectives of the reforms – to deliver lower prices to customers and to ensure adequate and economically efficient supply – have not yet been achieved, with only transmission and distribution charges falling in real terms and with inadequate investment being made over the last decade in both generation and the transmission grid.

The advent of the Electricity Commission, arguably amounting to a vehicle for State control of the industry, or at least the possibility of it, signals a further departure from the concepts of the original public sector reforms reported in this paper. Whilst the original reforms may have been characterised by theoretical purity and a degree of idealism, they were at least fully consistent with the other changes made within the public sector and in the economy as a whole. The same cannot be said, however, of the present structure.

New Zealand has created a model that is a mix of market and regulatory forces. It is likely that further changes will be needed in the sector before it is determined whether, ultimately, the industry should be market or regulatory driven.

ACKNOWLEDGEMENTS

The author thanks his colleagues, particularly Mr Steven Cooke and Mr Derek Walker, for their assistance and advice in preparing this paper. The views expressed are those of the author alone and not necessarily those of Wilson Cook & Co Limited, its consultants or clients.

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