

JOHN A. PRESTON

**GOVERNMENT INTERVENTION IN THE
ELECTRICITY INDUSTRY**

LLM RESEARCH PAPER

**LAWS AND MARKETS – FACILITATION AND REGULATION
(LAWS 536)**

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Contents

I	INTRODUCTION	3
A	Electricity	3
B	Government Intervention	6
II	REASONS FOR INTERVENTION	7
A	Economic, Social and Political Reasons for Intervention	7
1	Natural monopoly	9
2	Competitive industry	10
3	Monopoly	10
B	Problems with Intervention	12
III	HISTORICAL BACKGROUND - NEW ZEALAND	15
A	Introduction	15
B	Early Legislation: 1885 - 1920	16
C	A Mature System is Developed	18
D	Competition Emerges: No changes since 1984	19
GOVERNMENT INTERVENTION IN THE ELECTRICITY INDUSTRY		21
IV	MINISTERIAL INQUIRY INTO ELECTRICITY INDUSTRY	27
A	Terms of Reference	27
B	Recommendations	28
LLM RESEARCH PAPER		29
LAWS AND MARKETS – FACILITATION AND REGULATION (LAWS 536)		29
A	Distribution	29
B	Retail	30
C	Energy efficiency and environmental issues of the environment	30
D	Reactions to the Economic System	30
LAW FACULTY		31
VICTORIA UNIVERSITY OF WELLINGTON		31
A	United States of America	34
B	Elsewhere	38
2000		38
VI	IS THERE A BETTER WAY? – CONCLUSIONS	39
VII	BIBLIOGRAPHY	44

Contents

I	INTRODUCTION	3
A	Electricity	3
B	Government Intervention	6
II	REASONS FOR INTERVENTION	7
A	Economic, Social and Political Reasons for Intervention	7
1	Natural monopoly	9
2	Competitive industry	10
3	Monopoly	10
B	Problems with Intervention by Regulation	12
III	HISTORICAL BACKGROUND – NEW ZEALAND	15
A	Introduction	15
B	Early Legislation: 1865 – 1920	16
C	A Mature System is Developed	18
D	Competition Emerges: the changes since 1984	19
1	New policy directions	19
2	The Commerce Act 1986	21
3	The Electricity Industry Reform Act 1998	21
IV	MINISTERIAL INQUIRY INTO ELECTRICITY INDUSTRY	27
A	Terms of Reference	27
B	Recommendations made by the Inquiry Panel	28
	Regulation	29
	Wholesale	29
	Transmission	29
	Distribution	29
	Retail	30
	Energy efficiency/sustainability and the environment	30
C	Reactions to the Recommendations	30
V	OTHER JURISDICTIONS	31
A	Australia	31
B	United States of America	34
C	Elsewhere	38
VI	IS THERE A BETTER WAY? – CONCLUSIONS	39
	BIBLIOGRAPHY	44

Abstract: The economic, social and political reasons leading to intervention by governments in the electricity industry, and the intervention mechanisms adopted, are examined. The problems with intervention by regulation are considered. New Zealand legislation affecting the electricity industry from 1865 to the present is reviewed. The radical restructuring of the industry that has resulted from the Electricity Industry Reform Act 1998 is examined. The experiences of some other jurisdictions, principally the United States of America and Australia are noted. The emphasis in recent years on fostering competition in generation and retailing has been based on the application of economic concepts, and appears likely to have a beneficial outcome in New Zealand. It is concluded that, in the absence of government ownership, regulation of the regional natural monopoly distribution markets in New Zealand is essential, but that an optimal mechanism to achieve this remains to be identified. The transmission market remains under government ownership, but it is concluded that this does not remove possible concerns about how this market is operated.

Word Length: The text of this paper (excluding contents page, footnotes, bibliography and annexures) comprises approximately 12,000 words.

I INTRODUCTION

This paper addresses the question of why and how governments intervene in the markets for the production, transmission or supply of electricity, and how this relates to the recent restructuring of the industry in New Zealand. Some of the reasons identified apply to any intervention by governments in economic activity, some reasons and methods apply to public utilities in general, and some relate specifically to electricity.

A Electricity

The ready availability of electricity appears to be a *sine qua non* of contemporary civilised living. The adjustments that would be required to a life without electricity for business and for households are almost unimaginably large.

Electricity is not defined in any New Zealand legislation, but the agreed statement of facts in a 1998 case included the following definition noted by Neazor J: "Electricity is a form of energy consisting of a current of charged electrons transmitted along or through conductors (such as wires) from, in simplistic terms, the point of generation

to the point of use...".¹ A simple scientific definition is that electric current in a metal wire is "a flow of free electrons".² Because the media along which electricity is transmitted are not perfect conductors, some of the electricity is converted to heat and is therefore unavailable for useful work.

The electricity industry is normally divided into four functional levels: generation, transmission, distribution and retailing.

Generation involves the use of a moving fluid, such as water, steam, gas or the wind, to turn a rotor. The mechanical energy that is produced is used to whirl magnets past stationary coils of wire, thereby generating electricity. The machine that "changes the kinetic energy (energy of movement) of a fluid into mechanical energy"³ is a turbine. Where steam is used to drive a turbine, the steam can be produced from coal or oil, or by a nuclear reactor. (Small generators can be driven by diesel or petrol motors. Electricity can also be produced by solar cells, which convert sunlight into electricity, and by batteries, which convert chemical energy into electricity.)

Transmission is the process of moving the electricity at a high voltage through cables, from the point of generation to a location where the voltage is broken down by a transformer to a lower voltage. As "consumers and power stations are scattered around the country...the transmission system is a means of interconnection as well as transport."⁴

Distribution is effected through a network of wires that run from the point the electricity was received from the operator of the transmission system, to the individual business or household. Further transformers are required to lower the voltage to that required by users.

1 Electricity Supply Association of New Zealand Incorporated v Commerce Commission & Anor [1998] 6 NZBLC

2 *The World Book Encyclopaedia Volume 6* (Chicago, 1985) 150

3 *The World Book Encyclopaedia Volume 19* (Chicago, 1985) 406

4 *Ministerial Inquiry into the Electricity Industry – Issues Paper*, February 2000, 11

Retailing is the process of selling electricity to the end user. As noted below, 'pure' retailing of electricity, that is, without any vertical integration to distribution or other functional levels, has been possible only relatively recently. A retailer who has access to a supply of electricity requires a contractual arrangement with the distribution company serving the region in which the customer is located allowing the use of the lines, and access to a meter at the customer's premises. In New Zealand the 'deemed profiling' system was introduced on 1 April 1999. This system uses average prices that relate the wholesale price for each half-hour slot to the price paid by consumers. This system allows competition to take place for small consumers for whom the technically possible alternative of installing a time of use meter would be uneconomic.

Functional levels may be combined within an organisation, and not all levels necessarily exist in particular circumstances. For example, if a large manufacturer generated all of its own electricity requirements at the point of use, only the first stage, generation, would exist. A small number of very large users in New Zealand, such as the Comalco aluminium smelter, are connected directly to the national transmission grid, so that the distribution networks and the services of retailers are not used. Another possible variation is for generating stations to direct their supply into a distribution network, a structure described as 'embedded' generation.

As the Issues Paper for the New Zealand Ministerial Inquiry noted, there are two broad contractual structures by which most electricity consumers obtain their supply.⁵ The traditional one, (the 'interposed' option), has been that the supplier offers the use of distribution lines, and the electricity itself, as a bundled service. The other and more recent approach, (the 'conveyance' option), is where the consumer and the retailer each have contractual arrangements with the operator of the distribution lines.

⁵ Ministerial Inquiry Issues Paper, above n 4, 21

B Government Intervention

A government could intervene in any industry by directly participating in it (through establishing an enterprise, or by acquiring an existing enterprise), or by introducing legislation that limits the ability of firms to make economic decisions.

In addition to actions or legislation that might be seen as targeting a specific industry, or business activity in general, business enterprises are subject to the application of the panoply of the generic laws of a state. Many laws have the effect of limiting the use of economic power by firms, and provide penalties for proscribed conduct. It is well established that corporations are subject to criminal law.

An article published by the OECD outlined four tasks which were seen as "typically needing careful attention during and after the transition from government ownership or heavy regulation to much greater reliance on market forces"⁶. These categories, which are listed below, are relevant to the current situation in New Zealand of the electricity industry.

- *"competition protection" – controlling anti-competitive conduct and mergers;*
- *"access regulation" – ensuring non-discriminatory access to necessary inputs, especially network infrastructures;*
- *"economic regulation" – adopting cost based measures to control monopoly pricing; and*
- *"technical regulation" – setting and monitoring standards so as to assure compatibility and to address privacy, safety, an environmental protection concerns.*

This paper examines the legislation which is directed specifically at the electricity industry, or which impacts heavily on it.

⁶ Gary Hewitt "The Relationship between Competition and Regulatory Authorities" (1999) Vol 1 No 3, OECD Journal of Competition Law and Policy 169, 172

II REASONS FOR INTERVENTION

Why do governments intervene to limit the economic power of firms in any industry? A general explanation appears to be that it is because the government taking the action does not like the result that market activity has produced, or may produce, and it considers that an outcome that is more desirable in some respect is attainable.

A Economic, Social and Political Reasons for Intervention

Two economists, Lipsey and Chrystal,⁷ defined two groups of reasons for intervention. The first group is described as attempts to remedy "market failure", which they defined as a situation where "the *best attainable outcome* has not been achieved" as a result of one or more of five types of causes: monopoly power, externalities, absence of property rights, public goods and information asymmetries.⁸

The second group comprised actions designed to offset a "failure to achieve other social goals". The causes of these failures identified by the authors were: unsatisfactory income distribution, protecting individuals from others, paternalism and fulfilling social obligations.⁹

Zajac describes positive theories in terms of the theory of public choice, and of rent seeking, and he considers that the standard tools of economic analysis can be useful in applying these concepts.¹⁰

In his discussion of normative theories, Zajac suggests that attempts "to rectify or cure perceived market failures" are the basis for most government intervention.¹¹ He gives monopoly, externalities and lack of information as the reasons for such market failures.¹² The other "standard" reason he provides is that of finding "economically efficient methods of redistributing income".

7 Richard G Lipsey and K Alec Chrystal *An Introduction to Positive Economics* (Oxford University Press, 1995)

8 Lipsey and Chrystal, above n *, 418

9 Lipsey and Chrystal, above n *, 422-424

10 Edward E Zajac, *Political Economy of Fairness* (The MIT Press, Cambridge, Mass, 1996) 148+11
Zajac, above n 10, 148-153

12 Zajac, above n 10, 157-166

The electricity industry is one of a group of industries, which are generally defined as 'utilities'. Bollard and Pickford¹³ found that such industries usually exhibit two characteristics. One is that their supply involves "a network of cables, pipes or other facilities which tend to enjoy such large-scale economies as to become natural monopolies".¹⁴ The other is that "since the service they provide is often regarded as an 'essential' input to other industries, the efficiency of utilities has a widespread impact on the efficiency of other firms".¹⁵ Bollard and Pickford noted a further characteristic in New Zealand (and in some other countries) that "historically the social importance of such industries, and doubts about their ability to function in competitive markets, have resulted in a history of public ownership."¹⁶

All three of the characteristics identified by Bollard and Pickford appear to have had a substantial impact on government intervention in the electricity industry ever since electric power was introduced in New Zealand.

For electricity, monopoly, and specifically 'natural monopoly' in parts of its structure is an influential reason for government intervention. In New Zealand, the functions for which natural monopolies may exist involve two types of lines: the high tension lines used to transmit electricity from the generating station to the point where the current is transformed to a lower voltage, and the lines used from that point for distribution to households and commercial and industrial users.

Such characteristics of electricity markets are not confined to New Zealand. Gellhorn and Pierce describe the generation of electricity as a classic example of "economies of scale ...available up to a very large output level"¹⁷, and the local distribution of electricity as a classic example of natural monopoly.¹⁸

13 Alan Bollard and Michael Pickford "The New Zealand Solution: An Appraisal" in M Beesley (ed) *Regulating Utilities: broadening the debate* (The Institute of Economic Affairs and The London Business School, London, 1997)

14 Bollard and Pickford, above n 13, 93

15 Bollard and Pickford, above n 13, 93-94

16 Bollard and Pickford, above n 13, 94

17 Ernest Gellhorn and Richard J Pierce Jr *Regulated Industries* (West Publishing, St Paul, Minn, 1987) 10

18 Gellhorn and Pierce, above n 17, 45

Zajac notes that, while economies of scale were earlier considered sufficient to determine whether a market was a natural monopoly, the concept of contestability has caused the focus to change to the role of sunk costs.¹⁹ He suggests that if sunk costs are large, there may be a case for regulation. If they are not, the existence of even substantial economies of scale might not justify regulation.²⁰

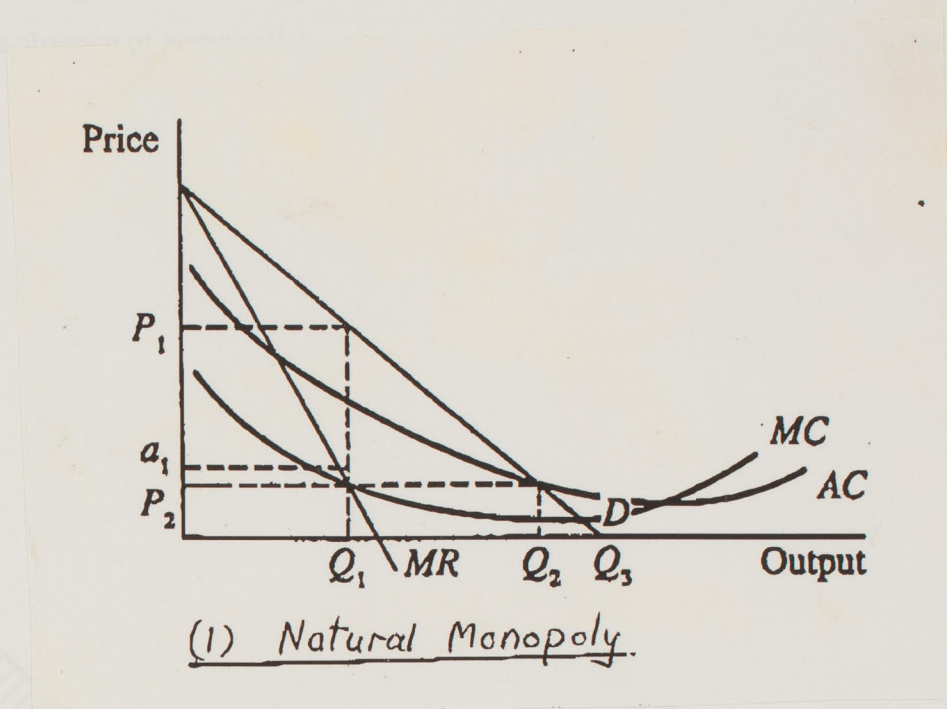
The concepts of economies of scale that could lead to natural monopolies, of pricing in a competitive industry and of pricing by a monopolist can be illustrated in three representative graphs. These are shown below.

1 *Natural monopoly*

The graph at the top of page 10 shows the hypothetical cost structure for an industry. The curve labelled 'D' shows the demand for the industry's product, that is the quantity that consumers in aggregate will demand at any given price. The AC curve shows the average cost of producing the industry's output, while the MC curve shows the marginal cost, that is the cost of producing an additional unit at any given level of output. The shapes of the MC and AC curves, that is, they are falling over an extended range of output and then rising, are representative patterns of cost behaviour. In this graph, the marginal cost continues to decline over a large range, up to point Q#. If the incumbent producer's output is less than Q3, say Q2, and a new firm enters with a production of Q1, the new firm's costs would be much higher than those of the original firm. The latter can expand its output, and sell it profitably at a much lower price than the new firm, thereby forcing it from the market.

¹⁹ Zajac, above n 10, 32

²⁰ Zajac, above n 10, 33



2 Competitive Industry

The graph at the left on page 11 shows the standard representation of a competitive industry. Equilibrium, where the supply (S) and demand (D) curves intersect, is at a price of P_c and at an output of Q_c . This outcome results in a producer surplus (PS) and a consumer surplus (CS) equivalent to the two hatched areas. The consumer surplus represents the aggregate benefit consumers place on buying Q_c at P_s , above the price paid. Consumers derive greater value from earlier units, so that the surplus declines as equilibrium is approached. Similarly, the producer surplus is the aggregate value producers obtaining above their costs of production, by selling Q_c at the price of P_c .

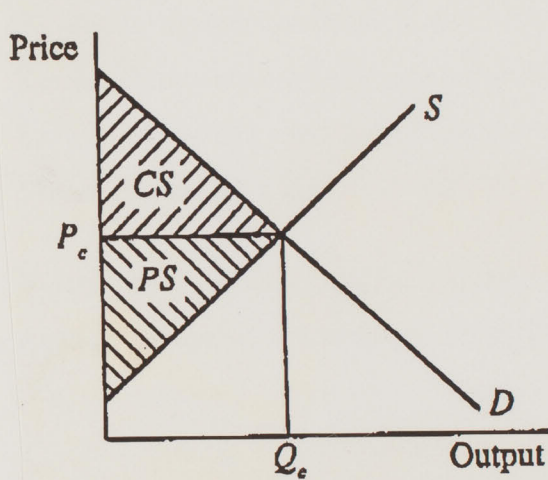
3 Monopoly

As shown in the graph at the right on page 11, the most profitable position for a monopolist is produce Q_m and to sell this at a price of P_m . The consumer surplus is greatly reduced. While some of the reduction has been taken by the monopolist, there

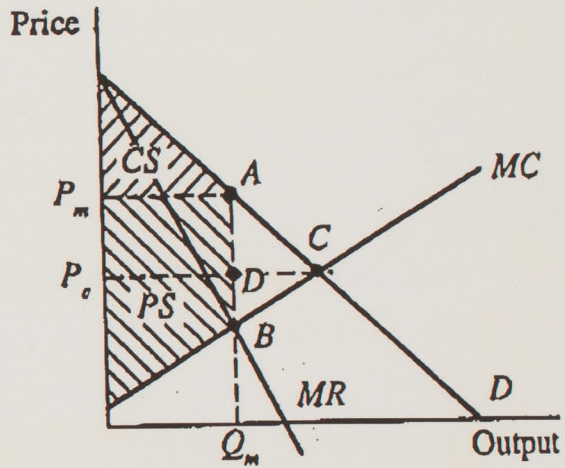
is a loss of welfare the economy equivalent to the triangle ABC. This loss is called the 'dead weight loss' and it represents a misallocation of society's resources resulting from the absence of competition.

competition in the electricity industry (or in any other utility) could be remedied by the imposition of controls on prices and/or profits. It would be presumably implicit in such a view that this could be done in an objective and equitable way, and that there would be no perverse effects. Sentiments along these lines are often expressed by politicians and others.

The reality is that the problem of devising a regulatory regime which will be of net benefit to the economy is far more complex than that, and that the net effect of any such



(2) Competitive Industry



(3) Monopolist

addition, the country's geographical remoteness and its membership of international trade in utility services will also be factors.

The problems noted by Bellard and Pickford included excessive returns of the electricity that lead to small numbers of participants, and significant barriers to entry and exit that diminish competition. These are also

21 'What should we do? By the Chairman's Commission' The Age, Wellington, New Zealand, 21 June 1980.
 22 Bellard and Pickford, *ibid.* p. 27-28.

B Problems with Intervention by Regulation

It might be assumed that problems perceived to result from the absence of competition in the electricity industry (or in any other utility) could be remedied by the imposition of controls on prices and/or profits. It would be presumably implicit in such a view that this could be done in an objective and equitable way, and that there would be no perverse effects. Sentiments along these lines are often expressed by politicians and others.

The reality is that the problem of designing a regulatory regime which will be of net benefit to the economy is far from straightforward, and that the net effect of any such regime is far from certain.

As one newspaper commented succinctly and accurately, in relation to the New Zealand Ministerial Inquiry into Electricity, "Regulating monopolies isn't easy. You have to be cleverer than them, have more information than them and be incorruptible. You must also have nerves of steel."²¹

Bollard and Pickford identified a number of the problems involved in creating a regulatory regime, and concluded that they are

...among Western economies, probably at their most acute in New Zealand, given the small size of the economy and the difficulty of gaining the economies of scale needed for the efficient operation of many utilities. In addition, the country's geographical isolation removes any possibility of international trade in utility services with adjoining countries.²²

The problems noted by Bollard and Pickford included structural features of the electricity that lead to small numbers of participants, and significant barriers to entry and exit that diminish competition. These include

²¹ "What should we do? Er, ask the Commerce Commission" *The Independent*, Wellington, New Zealand, 21 June 2000

²² Bollard and Pickford, above n *, 97-98

...substantial economies of scale, sometimes to the point of natural monopoly (such as with high voltage electricity transmission lines), economies of scope...and large, lumpy, immobile investments in sunk assets (for example...distribution networks...). Further regulatory problems are raised by networks and plants (such as hydro-electric dams) typically having low marginal costs of expanding output up to full capacity, but high fixed costs associated with that capacity; by the potential for substantial externalities, especially environmental (as in...power stations); and in some cases, by inelastic demand curves (for instance, for electricity because of appliance ownership), which raise the gains from the exercise of market power. 23

In addition, there are the more general problems faced by regulators. These result from the likelihood that target firms have a greater knowledge of their costs structures and accounting systems, and of the processes used in their industry and of its markets, than the regulators. If the regulator gets things wrong (a far more likely scenario than replicating the equivalent of a competitive outcome), and the price and/or profit allowed is too high, the target firm could be rewarded excessively or might not have adequate incentive to operate at the most efficient level. Conversely, if prices and allowed profits are set at too low a level, necessary investment could be discouraged. In both scenarios, innovation might not receive sufficient attention.

The USA has a long history of regulation of the electricity industry, but this background has not prevented some significant conceptual problems in determining acceptable bases for setting prices. The resolution of such issues appears to involve a substantial element of subjectivity, and, consequently, in some cases different outcomes for similar issues in different states.

Issues which have been considered in the USA have included the question of how the cost of constructing capacity for future customers should be apportioned between existing and future customers, 24 and what utilities should be able to recover from the large sunk costs incurred for nuclear power plant projects which had appeared viable in the

23 Bollard and Pickford, above n 13, 97

24 Gellhorn and Pierce, above n 13, 116

planning stages, but which had been cancelled before completion.²⁵ Another issue is that of ‘stranded assets’. These are primarily generating plants for which the regulators have been allowing amortisation on the economic life of the plant as originally calculated, which have become obsolete through technical advances. The question is the equitable treatment of the unamortised balance of a plant which can no longer be used. Other disputes have concerned the appropriateness of using marginal cost over average costs in setting electricity prices,²⁶ and the issue of whether utilities could take account of their customers’ relative ability to pay in setting differential rates.²⁷

Kuttner noted the problems created for the pricing models used by regulators in the USA during the 1970s, when inflation was high. The cost of anti-pollution technologies was another pricing issue.²⁸

In respect of the latter situation, Gellhorn and Pierce found “no consistent trend of agency and court decisions concerning the legal adequacy of relative ability to pay as a justification for rate differentials”. They noted that in *American Hoecheater Corp v Dep’t of Public Utilities*²⁹ the court rejected the argument “that a particularly low rate for electric service to the elderly poor constitutes undue discrimination”. In contrast, the court found in *Mountain States Legal Foundation v Colorado Public Utility Commission*³⁰ that it was “unduly discriminatory” to have a “particularly low rate for electric service to poor residential customers”.

A further generic problem for regulators which has been identified only in recent years was reviewed Jenkinson and Mayer in relation to the experience in Britain. They found that many utilities had diversified away from their core businesses after

25 Gellhorn and Pierce, above n 17, 117

26 Gellhorn and Pierce, above n 17, 213

27 Gellhorn and Pierce, above n 17, 192

28 Robert Kuttner *Everything for sale – the virtues and limitations of markets* (Alfred A Knopf, New York, 1998) 236

29 (1980 Mass.) *American Hoecheater Corp v Department of Public Utilities*, 399 N.E.2d 1, from Gellhorn and Pierce, above n 17, 192

30 (1979 Colo.) *Mountain States Legal Foundation v Colorado Public Utility Commission*, 590 P.2d 495, from Gellhorn and Pierce, above n 17, 192

they had been privatised, and that this raised concerns for regulators. One was that transactions between the different business activities of the utility might not be at arms-length prices. Another was that, if the utility was listed on the stock exchange, the value of interpreting trends in the utility's share prices as "indicators of whether regulation is unduly onerous or lax" was greatly reduced. The authors saw the acquisitions that had occurred as accentuating these problems. 31

III HISTORICAL BACKGROUND – NEW ZEALAND

A Introduction

The New Zealand pattern was outlined concisely by Taggart, who observed that

Until very recently in New Zealand, ...public utilities have been largely state-established, owned and run. The fact of public ownership dispelled the need for regulation, as it ensured universal service at reasonable and uniform prices. ...The movement from state ownership toward private ownership has raised important regulatory issues. 32

The history of government intervention in the New Zealand electricity industry can be divided into three major three periods:

- the early period, to about 1920, during which the state's dominant role in the industry emerged, although electricity was still far from being the major source of energy for households or industry;
- the development of a mature system, from 1920 to 1984, as electricity became the principal energy source, with the state being virtually the only generator and local authorities being the monopoly distributors and retailers, and

31 Tim Jenkinson and Colin Mayer "Regulation, Diversification and the Separate Listing of Utilities" in M E Beesley (ed) *Regulating Utilities: broadening the debate* (The Institute of Economic Affairs and The London Business School, London, 1997) 292 – 294

32 Michael Taggart "Public Utilities and Public Law" in Philip A Joseph (ed) *Essays on the Constitution* (Brookers, Wellington, 1995) 214-215

- the continuing period of restructuring which followed the election of a Labour government in 1984.

B Early Legislation: 1865 – 1920

Electricity was first used in New Zealand in 1861 for a privately owned telegraph line which ran between Dunedin and Port Chalmers.³³ Legislation quickly followed, in the form of the Electric Telegraph Act 1865. This Act “established a central government monopoly over the transmission of messages...[and] became the basis of later government regulation of the burgeoning electricity industry”.³⁴

While there are isolated cases in which electricity was used by manufacturing industries in the early years, lighting was the first significant application. The first use of electricity in a private house appears to have been in November 1882 when privately generated electricity was used, while the first use of electricity for street lights was in Reefton in August 1888.³⁵

As with telegraphy, legislation on electricity was introduced quickly. The Electric Lines Act 1884, which incorporated the Electric Telegraph Act 1865, covered both the use of electricity for lighting and for telephones. The rationale for the Act was “to ensure proper quality and care of installations...[including] interference between adjacent telegraph...telephone...and electric lines”, but the Act also prohibited “the erection by private individuals or companies of lines for public supply without special legislation”.³⁶

The Municipal Corporations Act 1886 “helped promote the use of electricity for lighting”.³⁷ In 1891, three private Acts were introduced to allow the development of electricity supply in Auckland, Wellington and Christchurch. The Acts gave each of the three city councils the right to purchase the generating plant after ten years.

³³ John E Martin (ed) *People Politics and Power Stations* (ECNZ and Historical Branch, Department of Internal Affairs, Wellington, 1998) 15

³⁴ Martin, above n 33, 15

³⁵ Martin, above n 33, 22

³⁶ Martin, above n 33, 18

³⁷ Martin, above n 33, 25

The Auckland Act lapsed before being applied, because the required ratepayers' poll was not held. In 1889 Wellington became the first major centre to have a supply of electricity for public lighting.³⁸ Several statutes were subsequently enacted to introduce similar provisions for other towns and cities.

Other legislation laid the way for the government's later central role in the electricity industry. The Public Works Act 1882 and the Mining Act 1886 strengthened the government's place in the use of water resources, while the Electric Motive Power Act 1896 introduced a requirement that government permission be obtained to generate electricity or to use it for motive power.³⁹

The Water-power Act 1903 can be seen as the beginning of the coordinated development of hydro electric power.⁴⁰ However, the Public Works Act 1908 was the first formal statement that the Crown was to have a key role in the construction of generating stations, the operation of these stations and the supply of electricity.⁴¹

By 1917, nearly one in three New Zealand homes was lit by electricity, but total electricity consumption was small because of its limited use by manufacturing and processing industries.⁴²

The Electric-power Boards Act 1918 was enacted with the purpose of extending the supply of electricity to rural districts, in effect by cross-subsidising rural users from the revenue gained from sales in urban areas.⁴³

By 1919, there were 64 supply authorities, with most (53) being operated by borough councils.⁴⁴ There was no interconnection between these supply authorities, and not all districts had an electricity supply.⁴⁵

The Municipal Corporations Act 1920 took a different approach to the 1918 Act. "It gave municipalities the right to build stations and distribute electricity, and to transfer

38 Martin, above n 33, 26

39 Martin, above n 33, 38

40 Martin, above n 33, 326

41 Martin, above n 33, 41

42 Martin, above n 33, 67

43 Martin, above n 33, 70

44 Martin, above n 33, 71

45 N M Speer *The Electrical Supply Industry in New Zealand* (Electrical Supply Authorities Association of New Zealand, 1962) 61

funds from their profitable electricity departments to other activities... This encouraged local politicians to preserve their income-generating enterprises".⁴⁶

What forces drove the New Zealand Government to enact the early legislation outlined above, for what was then only a fledgling industry?

One source of influence appears to have been British legislation that, for policy reasons, limited the opportunity for private sector development of the generation and supply of electricity. A concern for safety for this relatively new energy source no doubt played a part in relation to some issues. Of particular significance was the government's desire to control water resources, and the importance placed on public works. Further, and strong, influences came for the policies of the Liberal Government that was in power from 1891 to 1912. This Government "acted in a strongly regulatory and paternalistic fashion"⁴⁷ in many sectors of the economy.

C A Mature System is Developed

The use of electricity in New Zealand began to develop rapidly in the 1920s, and per capita consumption increased three and a half fold in the decade. It was "the beginning of the familiar pattern of demand outpacing supply that has existed until recently".⁴⁸

During the 1920s and 1930s the Government undertook the construction of several hydro-electric stations on the Waikato River in the North Island, and in the South Island.

Following the outbreak of the Second World War, the Electricity Emergency Regulations were issued under the Emergency Regulations Act 1939. These Regulations created the office of Electricity Controller, to whom wide powers were given.⁴⁹

⁴⁶ Martin, above n 33, 73

⁴⁷ Martin, above n 33, 37

⁴⁸ Martin, above n 33, 123

⁴⁹ Martin, above, n 33, 128

A cause, which had many strong supporters over several years, the 'Save Manapouri Campaign', resulted in the Manapouri-Te Anau Development Amendment Act 1981, which set guidelines for lake levels.⁵⁰

Up to the mid-1980s, the structure for the production and supply of electricity remained as it had been for a long time. The government generated almost all of New Zealand's electricity, transmitted it to 61 electricity supply authorities throughout the country, and it set the bulk supply price. A small number of very large users received direct supply from the government. The supply authorities, which were either divisions of territorial local authorities or ad hoc local authorities, had defined geographical boundaries within which they had both the right and the obligation to be the sole supplier of electricity.

This structure meant that there was no competition in any part of the electricity industry. At the time this seemed to raise little or no disquiet among consumers. Presumably it was implicitly assumed that both the government and the supply authorities would act in the interest of consumers. The structure of retail tariffs, which favoured households over commercial users, no doubt helped maintain this perception among the majority of the community. For industry, the cost of electricity was, with few exceptions, only a minor element of cost. This, together with the protected environment that then prevailed for most industries, might, in the writer's view account for the seemingly passive attitude of industry. (A notable exception was the strong reaction from Comalco, the operator of the aluminium smelter at Bluff, whenever increases to its electricity price were proposed.)

D Competition Emerges: the Changes since 1984

1 New policy directions

Following the election of a Labour Government in 1984, a broad and far reaching programme was initiated "to remove statutory barriers to competition, and to reduce the government's direct involvement in business activities".⁵¹ Subsequent legislation

⁵⁰ Martin, above n 33, 217

⁵¹ *New Zealand Official Yearbook 1998* (GP Publications, Wellington) 431

and policy decisions have impacted heavily on the electricity industry.

The first indication that there would be substantial changes for the electricity industry was an announcement in 1986 that the government planned to reform its trading activities for electricity generation and transmission. In April 1987 the Electricity Corporation of New Zealand (ECNZ) was established as a state owned enterprise (SOE) to operate the government's generation and transmission businesses.

The Electricity Amendment Act 1987 removed the need for the Minister of Energy to approve hydro electricity generation proposals.

In 1988, Transpower was formed as a subsidiary of ECNZ to manage the transmission of electricity generated by ECNZ. In 1990 a Transpower Establishment Board was set up to plan for its separation from ECNZ. Initially a 'club' ownership of the transmission business by supply authorities and generators was favoured, but this approach was abandoned, and Transpower was set up as an SOE in April 1994..

The Energy Companies Act 1992 required electricity supply businesses to be corporatised.

While not a creature of legislation, the establishment of a wholesale electricity market was a significant development in the structure of the industry. The market became fully operational in October 1996.

In April 1998, the government announced a major package of measures designed to develop competition in the supply of electricity. Contact Energy Limited, which had been separated from ECNZ in 1996, was to be sold. ECNZ was to be split into three SOEs: Mighty River Power, Genesis Power and Meridian Energy. Ownership of the retail and lines businesses of the supply authorities would have to be split.

Writing three years before the Electricity Industry Reform Act 1998, Taggart concluded that New Zealand was "unique in the extent to which public utilities have been deregulated and by the absence of any formal regulatory framework."⁵²

⁵² Taggart, above n 32, 214

2 *The Commerce Act 1986*

The Commerce Act 1986 represented a major philosophical change from the relatively ineffectual Commerce Act 1975 which it replaced, and it brought New Zealand into the mainstream of modern competition law. The 1986 Act introduced generic, but light-handed, measures to promote competition in the economy. The Act applies to all conduct in the course of trade, and there are few exceptions to its application.

The electricity industry has been the subject of several investigations by the Commerce Commission, which enforces the Commerce Act. Several of these have involved adjudications, either where one electricity company sought clearance to acquire another in the industry, or for the authorisation of rules for electricity markets.

The Commerce Commission has also investigated some allegations of anti-competitive conduct in the industry. The major case in this category was the action initiated against Southpower Limited. This related to “the manner in which Southpower apportioned its costs between its line and energy business units, and its anti-competitive contractual structure.” The case was settled before the substantive hearing, “with Southpower paying \$450,000 costs to the Commission and undertaking to reorganise its business structure...”⁵³

The Commerce Commission also enforces the Fair Trading Act 1986, a statute that, inter alia, prohibits false or misleading claims in connection with trade. The Act applies to the electricity industry, as to all other industries. On 4 September 2000, the Commerce Commission announced that Trust Power Limited had agreed that it risked breaching the Fair Trading Act in its advertisements that claimed the company was “the only electricity supply company which is predominantly New Zealand owned. The Commission Chairman noted that in fact many electricity supply companies were 100% New Zealand owned.”⁵⁴

3 *The Electricity Industry Reform Act 1998 (EIRA)*

The forced separation of dominant firms to allow competition to develop is not unknown in some jurisdictions, as the outcome of some high profile antitrust cases in

the USA demonstrate. However, the changes required of the electricity industry by EIRA appear unprecedented in New Zealand in terms of their scale and extent. Despite the extensive scope of the changes, and the speed with which the changes were introduced, they appear to have been accepted relatively calmly by the industry.

As Patterson has noted, EIRA “and subsequent events have led to a reassessment of light-handed regulation”.⁵⁵ In Patterson’s view, the forced separation of electricity distribution and retailing “was necessary only because light-handed regulation had failed, and the government was not prepared to introduce an access model along the lines developed in other jurisdictions”.⁵⁶ This seems a realistic conclusion.

What did EIRA set out to do? The Act’s purpose was to put downward pressure on costs and prices in the industry, and to give all categories of consumers the benefits of efficient electricity pricing. The Act also provided that the Electricity Corporation of New Zealand would be split into three independent but state-owned businesses, to remove the Corporation’s dominance in generation. However, the major generating companies now also significant retailers of electricity. Previously, the Corporation and Contact Energy had been prohibited from undertaking this activity in terms of directions issued by the shareholding Ministers under section 13 of the State-Owned Enterprises Act.

Subsections (1) and (2) of Section 2 of EIRA state:

- (1) The purpose of this Act is to reform the electricity industry to better ensure that –
 - (a) Costs and prices in the electricity industry are subject to sustained downward pressure; and
 - (b) The benefits of efficient electricity pricing flow through to all classes of consumers –
 by
 - (c) Effectively separating electricity distribution from generation and retail: and
 - (d) Promoting effective competition in electricity generation and retail.

⁵⁴ Commerce Commission media release of 4 September 2000

⁵⁵ Ross Patterson “Light-Handed Regulation in New Zealand Ten Years on” (1998) *Competition and Consumer Law Journal* 6(2) December 1998, 155

⁵⁶ Patterson, above n 55, 153

(2) The particular purpose of Parts 1 to 5 (separation of lines and supply) is –

- (a) To prohibit certain involvements in electricity lines businesses and electricity supply businesses which create incentives or opportunities –
 - (i) To inhibit competition in the electricity industry:
or
 - (ii) To cross-subsidise generation activities from electricity lines businesses: and
- (b) To restrict relationships between electricity lines businesses and electricity supply businesses which may otherwise not be at arms length.

The effect of these provisions was to require that the assets of electricity supply companies be classified as either an electricity lines business or as an electricity supply business. A lines business is one which owns or operates electricity lines or related core assets, while a supply business sells or generates electricity. The Act prohibits a person who is involved in a lines business from involvement in a supply business.

The Act required electricity businesses not owned by trusts to undertake corporate separation into lines and supply businesses by 1 April 1999, to then comply with the 'arms' length' rules, and to separate ownership fully by 1 January 2004. For trust-owned electricity businesses, the Act allowed for the formation of a 'mirror trust' by 1 April 1999, with the lines and supply activities being operated as separate and independent businesses. Future ownership separation was not required for trust-owned businesses. The purpose of separation was to allow competition in both generation and retailing. If vertical integration had continued, a new retailer would have had its ability to compete reduced if the incumbent company which owned the lines had cross-subsidised its retail prices from its lines revenues, or imposed other anti-competitive conditions. Similarly, if the incumbent's vertical integration also included generation, it would have the ability to reduce the ability of a new generator to sell its output by cross-subsidising its wholesale electricity price from its lines revenues.

The outcome of the requirement that ownership and control of electricity distribution businesses be separated from generation and retailing was that most electricity

companies chose to remain in the natural monopoly business of distribution, and to sell their retailing and generation businesses. No trust used the mirror trust provision.

Provision was made in the Act for the Commerce Commission to have responsibility for enforcing and monitoring some of the Act's sections. These responsibilities were:

- To receive notices from exempt persons of any acquisition or increase in cross-involvements
- To bring within the scope of the Act, or to exclude from the Act, an involvement that was otherwise exempt (by giving notice in the Gazette), and to maintain a register of these determinations
- To provide general enforcement of the Act

The Act provided that certain of the powers of the Commerce Commission contained in the Commerce Act 1986 would apply also to actions by the Commission under EIRA. These were:

- Authority to use lay members in the High Court
- The application of a civil standard of proof
- Authority for seeking injunctions, for obtaining search warrants, for using section 98 notices (...) and for the making of orders to protect the confidentiality of information
- Allowing for the powers given to the Commerce Commission in EIRA to be delegated to Commission Members, and, a
- Allowing for proceedings to be privileged.

The Commission presented the following summary of its responsibilities under EIRA.⁵⁷ As the Commission noted, "Other Government agencies, including the Ministry of Commerce and the Inland Revenue Department, also have responsibilities for enforcing the EIR Act".⁵⁸ The responsibilities of the Ministry of Commerce (now the Ministry of Economic Development) include the implementation of the information disclosure regime.

Sections of the EIRA imposing responsibility		Description of Responsibility	Enforcement role	Adjudication Role
17, 18, 20	Part 2	Ownership Separation Rules	#	
24	Part 2	Requirement for corporate separation	#	
25	Part 2	Requirement for compliance with arms' length rules	#	
30	Part 2	Ban on expansion in cross-involvements	#	
35	Part 2	Expansion option requiring notification to Commission and ownership separation by 1.7.99	#	
36	Part 2	Compliance process for existing 20% aggregates	#	
38, 39, 40 41, 42	Part 2	Rules and compliance options for mirror trusts and mirror co-operatives	#	
45	Part 2	Trusts that cease to be mirror trusts	#	
46	Part 2	No expansion of control by trust-like agencies in electricity supply except where section 44 applies)	#	
68	Part 5	Duty not to defeat purposes of Parts 1 to 5	#	
80	Part 5	Extensions		#
81	Part 5	Exemptions		#
87	Part 5	Recommending regulations		#

In its adjudication role, the Commission had received 23 applications for exemptions in terms of section 81 by 1 September 2000.⁵⁹ Most applicants were given exemptions, often on a temporary basis, and, in several cases, with conditions. Three applications were declined, and a similar number withdrawn.

One category of applicants represented building owners, including AMP Asset Management New Zealand Limited and Colonial First State Property (NZ) Limited, who supplied electricity to their tenants. In such cases, the building owners were defined as being cross-involved in electricity lines and electricity supply businesses, because they owned the lines which conveyed electricity to their tenants, and acted as a retailer of electricity to them, a situation prohibited by the Act. It is not clear if this

⁵⁷ Adapted from Commerce Commission Practice Note No. 3, September 1998 (Revised August 1999) "Electricity Industry Reform Act 1998 Commission's Role and Processes" 4

⁵⁸ Commerce Commission Practice Note No 3, above n 57, 5

⁵⁹ Commerce Commission Public Register

situation had been envisaged when the Act was drafted, but the Commission's decisions on such applications did produce an outcome that allowed otherwise captive electricity users to have a choice of supplier. That is, exemptions were granted to the property-owning companies, which applied, subject to conditions designed to allow the tenants a choice of supplier.

Tranz Rail Holdings Ltd and its subsidiaries had sought, and were granted, an exemption. The company's involvement with electricity included ownership of lines to supply its electric locomotives and lines on its inter-island ferries yards and buildings, the generation of electricity by North Island main trunk locomotives and the supply of electricity to the national grid, and the supply of electricity to the tenants of its buildings. The Commission found that granting an exemption would not impact on competition to more than a minimal extent.⁶⁰

Another application for exemption was from an individual who was a director of both Auckland International Airport Limited and Meridian Energy Limited. The airport company was defined as an electricity supply business because of the electricity network it owned at the airport, while Meridan was an electricity retailer and generator. The Commission granted an exemption because it found that there was no business relationship between the two companies, and that the cross-directorship would not hinder competition in any electricity market.⁶¹

The Commission received and examined 32 notices from electricity supply companies on the expansion of their involvement in other electricity companies, in terms of section 35 of the EIRA

To what extent has EIRA achieved its purposes? The separation of the activities of electricity companies appeared to go relatively smoothly, and in some respects well ahead of the timetable allowed in the Act. Competition has developed in retailing, following intense competition by the major companies (principally the four largest

⁶⁰ Commerce Commission Media Release 2000/30, 14 April 2000

⁶¹ Commerce Commission, Media release 2000/31, 17 April 2000

generating companies, TransAlta and Trustpower) to acquire the retail businesses offered for sale by the former electricity supply authorities. The framework of the industry is now one that may appear attractive to new entrants for generation. Sophisticated mechanisms now exist for the wholesaling of electricity. While the government's investment in the industry is still very large (including much of New Zealand's existing generation capacity, the transmission network, and part of the retailing function), the government's role appears likely to diminish. It is now free of any obligation to be the provider of new generating capacity, for long one of its responsibilities.

While EIRA has achieved much, the structure that resulted from it and from the other reforms of the industry, had some shortcomings, particularly in relation to the natural monopoly area of distribution, as subsequent developments, including the initiation of a ministerial inquiry, indicate.

In May 1999, the government introduced The Commerce (Controlled Goods or Services) Amendment Bill, which was designed to fix prices or to set revenue caps for electricity distribution companies. As the then government did not have a majority in Parliament, and was unable to obtain sufficient support for the measure from other parties, the bill was not enacted.

IV THE MINISTERIAL INQUIRY INTO THE ELECTRICITY INDUSTRY

On 3 February 2000, the Minister of Energy announced a ministerial inquiry into the electricity industry, and set 12 June 2000 as the date for the Panel's final report. The target was met.

A Terms of Reference

The Minister's announcement of the Inquiry noted the numerous changes in the electricity industry since the mid-1980s. The terms of reference given to the Inquiry Panel were to:

- a. Assess the extent to which the current regulatory regime meets the Government's objective for electricity, with a focus on the matters for particular comment listed below.
- b. If the current arrangements do not achieve the government's objective for electricity, make recommendations for any amendments to policy and the regulatory framework that will assist in achieving the Government's objective.
- c. In developing recommendations, assess the costs and benefits of key options by reference to the Government's objective.
- d. In making this assessment take due regard of:
 - (i) New Zealand's progress to date in the provision of electricity services, including by comparison with progress made in other relevant countries;
 - (ii) regulatory developments in other countries;
 - (iii) relevant theoretical perspectives on the regulation of the electricity industry;
 - (iv) the impact of new technologies;
 - (v) the impact of any options on investment in electricity infrastructure and services;
 - (vi) environmental impacts;
 - (vii) any factors specific to the New Zealand regulatory framework;
 - (viii) any proposals for industry self-regulation;
 - (ix) any proposals for changes to relevant legislation (such as the Commerce Act).
- e. Comment on the detailed implementation requirements of any recommendations, for example, any required legislation or regulations.⁶²

In addition, the Panel was asked to make particular comment on several issues relating to each of transmission and distribution, the wholesale market and retailing.

A less measure, and more political, observation was made by the Minister in his comment that

The instability and uncertainty created by National's hasty and ill-conceived changes were both predictable and predicted... Our objective with the inquiry is to ensure that electricity is delivered in an efficient, reliable and environmentally sustainable manner to all consumers.⁶³

B Recommendations made by the Inquiry Panel

Given the breadth of the issues in its terms of reference, it is not surprising that the Inquiry Panel's recommendations were numerous. There were 53 of them, numerous

of which included several elements. The recommendations were grouped into six categories: regulation, wholesale, transmission, distribution, retail and energy efficiency and the environment. A summary of the main points in the recommendations, and the writer's assessment of them, follows.

1 *Regulation*

The first recommendation listed six elements needed in the regulatory framework. While these elements may be unobjectionable individually, it is not clear that they are necessarily consistent. For example, "a heavily prescriptive approach" is to be avoided, but there must be "a strong assurance that the governments...objectives will be met". If the government has an important policy objective which conflicts with the interests of the operators, it is not clear how this difference in viewpoint would be resolved.

2 *Wholesale*

The Inquiry concluded that the markets for financial instruments and for physical supply should be more clearly distinguished. It made no recommendations for the former, but several for the physical market, designed to increase competition.

3 *Transmission*

The recommendations on transmission centered around setting objectives for Transpower, to put more pressure on it to operate efficiently, given the absence of competition for this activity. The Inquiry recognised the potential for conflict between the multiple objectives it prescribed, and said that there should be "a reasonable and transparent balance" between "a fair return to the taxpayer" and the "fulfilment of the government's overall energy policy."

4 *Distribution*

The charges made by the lines companies have been one of the major areas of criticism arising from the present structure of the electricity industry. The Inquiry recommended that substantial powers be given to the Commerce Commission in two

62 *Inquiry into the Electricity Industry – Report to the Minister of Energy* (June 2000) 66 – 67

63 "Under the Microscope" *The Ensign*, Gore, New Zealand, 8 March 2000

broad areas. One was to make the Commission responsible for designing and enforcing information disclosure regulations, and for re-calculating asset values on a common basis. These elements recognised the limited value of the existing disclosure regulations, and the scope for lines companies to revalue their assets. The other was to give the Commission the power to impose price control on individual companies for periods of up to five years.

5 *Retail*

The Inquiry recommended that the industry should establish an Electricity Ombudsman scheme, and that it failed to do so within six months, the government should pursue other options. Another recommendation was that the Consumer Guarantees Act should be amended to apply to electricity, (a reflection of a 1998 case in which Neazor J found that, for the purposes of that Act, electricity is not a “good” or a “service, and that line function services are not “goods” or “services”).⁶⁴

6 *Energy efficiency/sustainability and the environment*

The four recommendations under this heading set a limit to the proportion of typical household electricity bills which should be for fixed network charges, and they outlined an approach to network connection charges and to co-generation proposals. With the possible exception of co-generation, the recommendations appear to have little connection with the heading of this category.

C *Reactions to the recommendations*

A few weeks after the Ministerial Inquiry's report was published, two economists, Simon Terry and Geoff Bertram, released a report which claimed that lines companies were overcharging consumers by \$200 million a year. They attributed this to lines companies revaluing their assets, using the optimised deprival value (ODV) method, and then increasing their charges on the basis of these values. Messrs Terry and Bertram said that the Inquiry was allowing the practice to continue, and they claimed that the use of revalued assets as a basis for setting charges is not permitted in either -

⁶⁴ *Electricity Supply Association of New Zealand Inc v Commerce Commission*, above n 1

the United States or Britain.⁶⁵

The chairman of the Inquiry, Mr Caygill, responded to the report by saying that allegations of overcharging had been considered, and that the Commerce Commission would “consider the appropriateness of this or any other [valuation] methodology”.⁶⁶

The chief executive of the Electricity Networks Association asserted that the conclusions of Terry and Bertram were unfair because, when the networks had been owned by local authorities, the book values did not show all of the historic costs, and because the networks had not been required to operate on a commercial basis. He claimed that regulators in Australia allow the use of a method of valuing assets which is similar to ODV – “depreciated optimised replacement cost”.⁶⁷

In the writer’s view, it would be facile and dangerous to reach an immediate conclusion on the basis on which distribution network assets should be valued. Given the natural monopoly character of distribution, it is important to identify a path between over-rewarding the owners of the networks on the one hand, and allowing them a return which is sufficient to maintain and develop their networks and to provide a reasonable return on their investment on the other. Further study is needed to identify the extent to which the book values resulting from the accounting methods used by local authorities are inappropriate as a basis for future pricing, and to develop an equitable approach to making any adjustments found to be necessary.

V OTHER JURISDICTIONS

A Australia

The electricity industry in Australia has been restructured substantially in recent years. The moves to separate the functional levels in the industry and to encourage the development of competition show similarities to the changes that have been

65 “Cost of power ‘unfair’ claims report” *New Zealand Herald*, Auckland, New Zealand, 12 July 2000

66 “Power rip-off claim and blame” *Evening Post*, Wellington, New Zealand, 12 July 2000

67 “Overcharging claim rejected” *New Zealand Herald*, Auckland, New Zealand, 13 July 2000
made in the New Zealand industry. However, apart from differences resulting from the separation of powers between the Federal and state governments under the

Australian Constitution, the process of change in Australia has involved regulation, including price controls on activities where competition did not exist, from the outset.

As the generation and supply of electricity in Australia is organised on a state basis, restructuring has required negotiations between state governments, in addition to intra-state changes.⁶⁸ The first significant step was an agreement by several state premiers in 1990-91 to create a wholesale electricity market covering eastern and southern Australia. This market, which is called the national electricity market (NEM) although it does not cover all of Australia, came into effect on 13 December 1998. The electricity networks of New South Wales, Victoria, South Australia and the Australian Capital Territory are now physically linked, and Queensland is expected to be joined in 2001 or 2002. Western Australia, Tasmania and the Northern Territory are not part of the NEM, although Tasmania may become connected by a cable in Bass Strait.

Within each of New South Wales, Victoria, Queensland and South Australia, the generating stations owned by the respective state governments have been divided into competing businesses.

The transmission and distribution functions, which are recognised as natural monopolies, are subject to regulation that has the dual objectives of preventing monopoly pricing and of establishing rules for access by generators and retailers.

Australia's competition agency, The Australian Competition and Consumer Commission (ACCC), has been made the economic regulator of electricity transmission in the National Electricity Market in terms of the National Electricity Code (NEC) and the transitional rules of the states.

“The NEC requires the Commission to set a revenue cap with an incentive mechanism (such as $CPI - X$ or some variant) for non-contestable

⁶⁸ The information in this section draws heavily on the article “What’s happening in the electricity market” in ACCC Update, Canberra, Australia, June 1999, 8-9
transmission network services. ...The Commission is developing the

regulatory framework and released a draft Statement of Principles for the Regulation of Transmission Revenues (Regulatory Principles) in May 1999.⁶⁹

The first decisions made by the ACCC in terms of these provisions were on 21 January 2000, when revenue caps were set for the New South Wales and ACT electricity transmission networks. These decisions set "the maximum revenue that Transgrid and Energy Australia may earn in providing non-contestable electricity transmission services...(for)...high voltage electricity".⁷⁰ The calculation of the revenue cap includes allowances for operating and maintenance expenditure, insurance and taxes, depreciation and a return on capital.

Retail competition is being introduced in five stages, starting with the largest consumers. These steps (some details of which vary a little in some state states) are:

- Stage 1. Consumption over 40 GWH a year
(e.g. hospitals and heavy manufacturers)
- Stage 2 Consumption over 4 GWH a year
(e.g. commercial buildings)
- Stage 3 Consumption over 750 KWH a year
(e.g. supermarkets)
- Stage 4 Consumption over 160 KWH a year
(e.g. fast food restaurants)
- Stage 5 All consumers

Stage 5 will be reached in January 2001 by New South Wales, Victoria, Queensland and the ACT, and by January 2003 in South Australia.

Until Stage 5 is reached, distributors and retailers are given exclusive rights to supply specific geographic regions. Maximum retail prices will be imposed by the state and territory regulators during this period, but price control will be discontinued when all electricity consumers are contestable.

⁶⁹ "NSW and ACT Electricity Network Revenue Caps", ACCC Journal, Canberra, Australia, Issue 26, April 2000, 22

⁷⁰ ACCC Journal, above n 69, 22

Entry as a retailer requires a licence from a state or territory government. Generators are able to acquire retail licences allowing them to sell direct to large customers.

B *United States of America*

Most electricity sold in the United States is generated by privately owned companies. The balance is generated partly by federal government agencies (notably the Tennessee Valley Authority), by state government agencies, by power districts covering several counties, and by co-operative groups, particularly in rural areas. In the United States electricity and public utilities in general, have long been subject to regulation. According to Taggart

Early on in America a coherent body of law developed under the rubric of public utilities... The defining characteristic of American public utilities law is the imposition at common law of duties to provide service to all, without discrimination, and at a reasonable price. This law flourished in a country where for the most part, public utility companies have been privately owned.⁷¹

As Kuttner observed, the regulation of utilities was often shared between the Federal Government and the states. He added that

The federal courts made clear, beginning in 1877, that states did have the power to regulate prices and conditions of service for local...electric companies...As it evolved, state public-utility regulation computed the utility's cost structure, which became the "rate base" upon which was calculated a reasonable rate of return.⁷²

In his review of the history of electricity pricing, Kuttner noted that, by the early 20th Century, most states had public utility commissions in operation to regulate the electricity companies.⁷³ However, by the 1920s, the industry was practising

⁷¹ Michael Taggart "Public Utilities and Public Law" in Philip A Joseph (ed) *Essays on the Constitution* (Brookers, Wellington, 1995) 214

⁷² Kuttner, above, n 28, 231

⁷³ Kuttner, above, n 28, 271

widespread avoidance of state regulations through the use of multi-state holding companies.

Under President Roosevelt the Public Utility Holding Company Act 1935 provided for Federal regulation of utility holding companies. This Act “sharply constrained combinations among utilities, particularly across state borders”.⁷⁴ Roosevelt also promoted the development of electricity by public agencies, notably the Tennessee Valley Authority, and fostered the view that public power sources should be seen as providing a discipline on the private power system.⁷⁵

Other major Federal legislation included the Public Utilities Regulatory Power Act 1978, which required electricity utilities to allow independent generators access to their lines networks, and the Energy Policy Act 1992. The latter “further stimulated independent generation by authorising a new category of essentially unregulated wholesale generating companies” and promoted the wholesale purchase of electricity among utilities (“wheeling”) based on the view that increased competition would reduce prices.⁷⁶

These developments required action by the Federal Energy Regulatory Commission, which began to issue rulings to bring about competition. The first of these was Order 888, “which permitted a local utility in one part of the country to contract for electric power from a cheap generator in another part of the country...(so that)... those with high-cost power would no longer be able to block their low-cost competitors from getting to market.”⁷⁷

Yergin and Stanislaw saw the Public Utility Regulatory Policies Act as reflecting two conflicting responses to the breakdown of the ‘regulatory compact’, the long-standing arrangement under which each electricity industry “was given its monopoly franchise in exchange for a limited rate of return and a very high degree of governmental oversight and regulation”.⁷⁸

⁷⁴ Kuttner, above n 28, 271

⁷⁵ Kuttner, above n 28, 271

⁷⁶ Kuttner, above n 28, 272

⁷⁷ Daniel Yergin and Joseph Stanislaw *The Commanding Heights* (Simon & Schuster, New York, 1998) 350

⁷⁸ Yergin and Stanislaw, above n 77, 352

One response was 'more government', that is, by state public-utility commissions applying more detailed controls to the utilities. The other was "a more radical response – based on the heretical thought that perhaps utilities, at least in many of their functions, were not natural monopolies".⁷⁹

According to Kuttner, electricity generators who were not utilities produced about seven percent of the total generated in the USA in 1998, and an increase to about one-third was likely within ten years.⁸⁰

Kuttner pointed out that the practice of electricity regulators in the USA of applying regulation in the form of a permitted rate of return supported the idea of universal service. The utilities

could maximise earnings only by maximising diffusion of service. They necessarily took advantage of scale economies, operating according to the core economic principle that increasing demand is associated with declining cost ... This made cheaper economic power more widely available, and raised company earnings.⁸¹

Kuttner argues that there is no prima facie case for suggesting that regulation of the electricity industry in the USA retarded its progress. While the industry was very substantially regulated, he found it to be among "the most dynamic" of USA industries in the 20th Century. It achieved average annual productivity growth over 50 years of 5.5%, compared with the 1.7% for the economy as a whole. He found it "very hard to believe unregulated competition would have done better".⁸² In his view, "paradoxically, the regulated environment encouraged risk" and it appeared that, for the USA, "dynamic efficiency was superior to allocative efficiency".⁸³ ('Allocative efficiency' is the concept which, if met, signifies "the allocation of resources to their highest value uses."⁸⁴) Allocative efficiency together with productive efficiency (producing without waste of resources) constitute 'economic

⁷⁹ Yergin and Stanislaw, above n 77, 350

⁸⁰ Kuttner, above n 28, 272

⁸¹ Kuttner, above n 28, 226

⁸² Kuttner, above n 28, 226

⁸³ Kuttner, above n 28, 270

⁸⁴ Neil T Skaggs and J Lon Carlson *Microeconomics* (Blackwell Publishers, Oxford, 1996) 36

efficiency". 'Dynamic efficiency' refers to the efficiency of adaptation to changes in technology and other factors.)

Kuttner suggested that

In highly imperfect markets such as...electric-power generation...opportunism, oligopoly and asymmetric bargaining power do not disappear. With new technology they simply take different forms. If left to private forces, the result typically frustrates both allocative efficiency and consumer sovereignty. Despite the persistent quest for the grail of a perfect, self-regulating market, the need for ground rules never disappears.⁸⁵

Other writers agree that, for a long period, the USA electricity industry achieved excellent results for users. Yergin and Stanislaw concluded that, while the industry was "conservative, slow-moving and cautious" with clear but rigid rules, it produced "an astonishing boon to customers" and to the economy from the 1930s to the 1970s.⁸⁶ They state that the real price of electricity fell from 37 cents a kilowatt-hour in 1934 to about five cents in 1970, because "economies of scale worked".

A recent article in *The Economist*⁸⁷ noted that California began deregulating its electricity industry in 1996, and that about half of the states of the USA have followed its example. However, while deregulation appears to have worked well in many of these states, there have been substantial problems in California.

None of the promised benefits of cheaper power, more reliable supply or innovative services have yet materialised in the state, but unfamiliar devils such as price surges and brown-outs have. Since June, wholesale prices for electricity have increased by 270% over last year.⁸⁸

The article noted that a paper by Stephen Littlechild, the former electricity regulator in Britain, argued that this problem was the result of needless inhibition of "the development of retail competition" by the regulators in California. He noted that new

⁸⁵ Kuttner, above n 28, 227

⁸⁶ Yergin and Stanislaw, above n 77, 350

⁸⁷ "A shocking backlash" *The Economist*, London, 26 August 2000, 51 – 52

⁸⁸ *The Economist*, above n 87, 51

entrants had been burdened with “part of the cost of “stranded assets” built by incumbents”, which prevented them from competing effectively.⁸⁹ *The Economist’s* article added that, although California’s electricity supply is tight, the state’s environmental laws make generation an unattractive business prospect, and that the state deregulated electricity in a “murky and politicised way” which created uncertainty resulting a failure to build any new plants.”⁹⁰

The Economist article suggested that the smoothness of the process of electricity deregulation in other countries could have been deceptive.

California’s reformers were also lulled into complacency by the apparent ease with which other markets had liberalised. Europe’s deregulation, early on in Britain and Scandinavia and more recently across the rest of the European Union, has not resulted in reliability problems. But credit for that belongs not to European models of reform, but rather to excess capacity. Europe’s top-heavy, state-dominated power sector has tended to “gold-plate” its assets (through higher tariffs paid by captive customers).⁹¹

The Economist article asserted that the role of the electricity regulators in California is muddled. “Sometimes, as with price caps, they meddle arbitrarily. They also cling to old suspicions... And at other times, officials naively expect the market to sort out the problems of transition by itself”.⁹² “Companies will invest in generation only if the rules of the game are clear. In America, they seldom are.”⁹³

C *Elsewhere*

Moves to restructure the electricity industry to improve its efficiency are not confined to the developed world. For example, it was announced on 9 August 2000 that the Zimbabwe Electricity Supply Authority (ZESA), a state-owned organisation that holds monopoly rights to generate, import, transmit and supply electricity within the

⁸⁹ *The Economist*, above, n 87, 51

⁹⁰ *The Economist*, above n 87, 51 - 52

⁹¹ *The Economist*, above n 87, 51

⁹² *The Economist*, above n 87, 52

⁹³ “Charge ahead” *The Economist*, London 26 August 2000, 14

country, would be restructured. ZESA would be divided into seven state owned enterprises to unbundle its activities and to commercialise them. A regulatory authority would be created by a proposed Electricity Act, and the authority would be empowered to grant licences to companies wishing to enter the industry in competition with the state owned enterprises. A target of 2003 was set for the privatisation of the seven proposed state owned enterprises.⁹⁴

VI IS THERE A BETTER WAY? – CONCLUSIONS

In attempting to answer the question of whether there is an ideal way to regulate electricity, or at least a way likely to lead to improved outcomes, it is necessary to ask what society is trying to achieve. There is no question about the need in all countries for technical regulation of the industry, to ensure the safe use of electricity and to provide for the compatibility of the supply system with the electrical apparatus likely to be used. The industry must be subject to all of the generic laws affecting business, including the law of contract, the laws affecting business organisation, and to competition and fair trading laws.

For the electricity industry of a country to approach optimal economic efficiency, several ingredients are required. To the greatest extent possible, the results should be achieved through market forces. The structure should provide incentives to induce new investment, especially in generation, where this is required. The structure should also encourage innovation. It is important that there should be an absence of practices or structures that would prevent the system from achieving the economies possible from an integrated system. Where effective competition is not possible, because of the existence of natural monopolies, there must be a means of ensuring that prices are not excessive. The pricing structure should include the right incentives, that is, for example, if supply appears likely to exceed demand at any given time or for any given period, the price signals should encourage both a reduction in use and increase in,

⁹⁴ ZESA set to be unbundled into seven new companies”, *The Herald*, Harare, Zimbabwe, 9 August 2000

capacity. The framework should include the incentives which will ensure a very high degree of reliability of supply that is, there should be little risk of 'black-outs' (total absence of supply) or of 'brown-outs' (a noticeable reduction in the strength of the supply).

A society might have non-market objectives, which it wishes to accomplish through the markets for electricity, and, if so, these must be taken into account. For example, if it were considered to be important to provide electricity at low prices to low-income citizens by cross-subsidisation, rather than by making increased direct payments to those in this group, the organisational structures will need to be accommodate this.

The existing organisational background of the industry varies between countries, and this might affect the choice of path to be followed. The steps may be different if there is substantial excess capacity than if supply is tight.

The history of the electricity industry in New Zealand demonstrates the application of most of the possible forms of intervention by governments. For much of our history, virtually all of the industry had been brought into existence by central and local governments which continued to own and operate them. Competition was prohibited by a system of legal monopolies. The restructuring of the industry from the mid-1980s onwards included an unprecedented compulsory separation of the industry's functional levels, and a separation of the government's generating interests, as a way of fostering the development of competition for generation and retailing. In New Zealand now, achieving economic efficiency of the industry leading to the price and other benefits this could bring to users, is clearly the target of policy.

While the forced restructuring has been radical in the New Zealand context, New Zealand is not unique in giving priority to the application of economic concepts to the industry, with the objective of increasing efficiency through fostering the development of competition in those parts of the industry where it appears possible. In New Zealand, the new structure has allowed competition to develop in retailing, and even the smallest consumers have a choice of supplier. The generation market is now open to entry.

The Commerce Act 1986 introduced a major change in the nature of New Zealand's competition law. While the Act is generic in its scope, the numerous mergers and ownership changes of electricity businesses which have been proposed or which have taken place in recent years, and the relative newness of the concept of competition in the electricity industry, have meant that the Act has had some effect on the structure of the industry. However, the effect on the industry's structure appears to have been a marginal one in comparison with the major impact of EIRA and of other industry-specific measures. In terms of business conduct, the publicity which followed the Southpower case would have helped confirm to the industry that the industry is fully subject to the restrictive trade practices provisions of the Act.

While it is too early to draw any firm conclusions on the extent to which the post-EIRA structure of the electricity industry will benefit consumer welfare in New Zealand, there is reason to hope that the net effect will be positive. An analogy is provided in a cost-benefit analysis undertaken by Newbery and Pollitt in 1997. This showed that the privatisation and restructuring of the generation and transmission of electricity in Britain in 1990 had resulted in a permanent cost reduction of 5% a year, equivalent to an extra 40% return on assets.⁹⁵ Newbery and Pollitt did not examine distribution and retailing.

The New Zealand Government failed to accompany the enactment of the EIRA with some form of control over the pricing of the regional distributors, which are natural monopolies. This appears to have been a serious omission, although it was later one of the key tasks assigned to the Ministerial Inquiry initiated in February 2000.

However, the Ministerial Inquiry did not come to a conclusion on how the natural monopolies should be prevented from charging excessively high prices, a position which attracted some criticism, and it proposed that the matter be passed to the Commerce Commission for further study. The Inquiry might have failed to take a position because it was not convinced that regulation of prices would necessarily improve the distribution markets. Alternatively, its caution might have resulted from an awareness of the pitfalls of regulation, of the great difficulty in regulating

⁹⁵ David M Newbery and Michael G Pollitt "The Restructuring and Privatisation of Britain's CEBG – was it worth it?" (1997) Vol XLV, *The Journal of Industrial Economics*, 269

effectively, and of the likely costs of comprehensive regulation. Dnes has pointed out “a tendency among many writers on economic policy to ignore relevant constraints affecting a particular problem...(including)...the costs of corrective economic policy”⁹⁶.

At the time of writing, the Government’s response to the recommendations of the Inquiry Panel is awaited. However, if the benefits to electricity consumers presumably possible from the introduction of competition in generation and retailing are not to be significantly diminished, or even eliminated, by excessive pricing for electricity distribution, effective regulation of that functional level is required. The problem is that monopolies have the general characteristic that it is more profitable for a monopolist to produce a smaller output, and to charge higher prices, than would be the case in competitive markets. Further serious objections are that the pressure for productive efficiency which exists in a competitive market is blunted, and that innovation might be pursued less vigorously.

As Newbery and Pollitt have pointed out, “regulation or public ownership is the only stable form of organisation for natural monopolies”⁹⁷. As the tide has been away from public ownership for many years, and seems unlikely to be reversed in the foreseeable future, some form of regulation of distribution appears essential.

The Ministerial Inquiry has proposed that extensive responsibility for regulating electricity should be placed on the Commerce Commission. It is not necessarily appropriate for the task of price control to be undertaken by a competition agency, and the issue of whether a separate regulator should be established appears to require more scrutiny.

The transmission market is also a natural monopoly, although its continued ownership of Transpower gives the government additional avenues of control. The fact that a monopoly is owned by a government which has benevolent intentions towards electricity users, is far from providing certainty that the outcome will necessarily be

⁹⁶ Antony W Dnes *The Economics of Law* (International Thomson Business Press, London, 1996) 7

⁹⁷ Newbery and Pollit, above n 95, 269

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the optimal one for the economy. Government's advisers will need to be receptive to suggestions about the effectiveness of Transpower's operations, and to possible lessons from other countries on electricity transmission. As part of the separation of functional levels in the industry, Transpower is prohibited from generating electricity. However, it has been claimed that Transpower would be the best placed organisation to construct small-scale generating stations to optimise transmission costs.⁹⁸ If this is fact an arguable case, the prohibition should be re-visited.

Kuttner's view, that "at the end of the day, this industry remains a classic candidate for regulated competition"⁹⁹ could be the right one for New Zealand, if this view is interpreted to mean that competition will be fostered in the sectors where it appears feasible and beneficial, that is, in generation and retailing, and that regulation is applied to the natural monopoly areas of transmission and distribution. Getting the method of regulation right is an important and challenging task.

98 New Zealand Herald, Auckland, New Zealand, 25 April 2000

99 Kuttner, above, n 28, 275

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