

## Submission to the Finance and Expenditure Committee on the Mixed Ownership Model Bill

1. My name is Ivo Geoffrey Bertram. I hold degrees from Victoria University of Wellington and Oxford University, including a D Phil degree in Economics from Oxford. From 1976 to 2009 I taught in the School of Economics and Finance at Victoria University of Wellington. During most of that period, and since my retirement in 2009, my professional research interests have included the evolution of the New Zealand electricity industry. I am currently a Senior Associate at the Institute of Policy Studies.
2. Reports and publications on the electricity industry of which I have been sole or joint author include “Rents in the Energy Sector” (1988)<sup>1</sup>; “Hydro New Zealand: Providing for Progressive Pricing of Electricity” (1992)<sup>2</sup>; “Pricing as an Integral Part of Electricity Reform” (1993)<sup>3</sup>; “Efficiency and Equity: Securing Pareto Gains in Electricity Generation” (1995)<sup>4</sup>; “Non-Linear Pricing Theory: the Case of Wholesale Electricity Pricing in New Zealand” (1996)<sup>5</sup>; “Economic Implications of a Mandatory New-Renewables Quota in New Zealand” (2000)<sup>6</sup>; “Lining Up the Charges: Electricity Line Charges and ODV” (2000)<sup>7</sup>; “Deregulation and Monopoly Profits in New Zealand’s Gas and Electricity Industries” (2004)<sup>8</sup>; “Price-cost margins and profit rates in New Zealand electricity distribution networks since 1994: the cost of light handed regulation” (2006)<sup>9</sup>, “Restructuring of the New Zealand Electricity Sector, 1984-2005” (2006)<sup>10</sup>; and “Kicking the Fossil Fuel Habit: New Zealand’s Case” (2009)<sup>11</sup>.

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<sup>1</sup> In Royal Commission on Social Policy, *The April Report* Volume IV, pp.293-325.

<sup>2</sup> Co-authored with Ian Dempster, Stephen Gale and Simon Terry, report prepared for Electricity Reform Coalition, March 1992.

<sup>3</sup> *Victoria Economic Commentaries* Vol.10 No 1, March 1993, pp.69-77.

<sup>4</sup> *Victoria Economic Commentaries* Vol.12 No 2, September 1995, pp.25-32.

<sup>5</sup> *New Zealand Economic Papers* 30, 1 (1996) pp.87-108, downloadable from <http://www.geoffbertram.com/publications/>, section “Regulation”.

<sup>6</sup> Co-authored with Reinhard Pauls, report for New Zealand Wind Energy Association, 2000.

<sup>7</sup> Co-authored with Simon Terry, Simon Terry Associates Ltd, July 2000. Available for download from <http://www.comcom.govt.nz/assetvaluation/>.

<sup>8</sup> *Energy Studies Review* 12(2) (Spring 2004) pp.208-227, online at <http://digitalcommons.mcmaster.ca/>.

<sup>9</sup> Co-authored with Dan Twaddle, *Journal of Regulatory Economics* 27(3) (2005), pp. 281-307 downloadable from <http://www.geoffbertram.com/publications/>, section “Regulation”.

<sup>10</sup> Chapter 7 in Sioshansi, FP and Pfaffenberger, W. (eds) *International experience in restructured electricity markets: What works, what does not, and why?*, Amsterdam: Elsevier, 2006, pp. 203-234, online at [http://books.google.co.nz/books?hl=en&lr=&id=vzqljipT\\_kWwC&oi=fnd&pg=PA203&dq=Restructuring+of+the+New+Zealand+Electricity+Sector,+1984-2005&ots=BGawFNxb9H&sig=\\_Mh0ro5wxbqssuXZHNmS7Puui64#v=onepage&q&f=false](http://books.google.co.nz/books?hl=en&lr=&id=vzqljipT_kWwC&oi=fnd&pg=PA203&dq=Restructuring+of+the+New+Zealand+Electricity+Sector,+1984-2005&ots=BGawFNxb9H&sig=_Mh0ro5wxbqssuXZHNmS7Puui64#v=onepage&q&f=false)

<sup>11</sup> Co-authored with Doug Clover, Chapter 14 in F.P. Sioshansi (ed) *Electricity Generation in a Carbon Constrained World*, Amsterdam: Elsevier, 2009, online at

3. My research on the industry through more than two decades of restructuring has highlighted the shortcomings of New Zealand's regulatory regime (not just for electricity but also for other utility sectors providing essential services of one kind or another to the New Zealand public). The central lesson from the privatisation exercises carried out in New Zealand, the UK and elsewhere since the 1980s has been that clear, robust, and sustainable regulatory rules and institutions need to be in place prior to any asset sale or sell-down. Failure to secure this produces uncertainty and conflict for investors, taxpayers, and the national community as a whole. Allowing privatised or part-privatised utilities to run rampant over consumer interests, and to suppress competitive threats to their market power, leaves the relevant industry always exposed to future decisions by Parliament to legislate, and Government to regulate, in order to correct glaring injustices and instances of market failure. (Relevant examples from another utility sector are the Telecommunications Act 2001 and the Telecommunications Amendment Act 2006.)
4. In the case of electricity, New Zealand's regulatory regime to date has been spectacularly lax by the normal standards of regulation in other countries, and any investor taking up shares in the pending floats of electricity SOEs will have to bear in mind the likelihood of a future policy shift that will more effectively remedy the obvious failings of the industry to date. Due diligence on the electricity SOEs will be adversely affected if major areas of regulatory uncertainty are left to overhang the market. Those areas of uncertainty are in no way removed by statements of policy by the government of the day; today's Government and Parliament cannot bind future Parliaments, and investors therefore must weigh up whether the present Government and its policies will remain long enough for investors to exit their positions profitably in due course.
5. The share floats of the energy SOEs will be taking place in an environment overhung by the ongoing consequences of regulatory failure in relation to the finance industry, which is currently witnessing a series of prosecutions against directors for failure to disclose the true extent of risks faced by potential purchasers of financial instruments issued by finance companies. SOE boards, and those managing the share floats, will have to be careful to ensure that the regulatory and market risks facing the electricity industry in particular are clearly identified and spelled out in prospectus documentation.

6. An important aspect of this issue of regulatory uncertainty is that the type of investor best able to confront such uncertainty will be large corporate operators, particularly overseas companies, that possess the lobbying muscle to deter politicians and officials from pursuing policy changes that are detrimental to profit. (In this connection I concur with recent commentary regarding the proposed Trans Pacific Partnership Agreement, suggesting that New Zealand's sovereign power to regulate overseas-owned companies is likely to be compromised by provisions enabling overseas investors to sue the New Zealand Government for regulatory changes that restrain their profits.)
7. I draw the Select Committee's attention to four areas of regulatory concern regarding the performance of the electricity sector since corporatisation (1986) and part-privatisation (1996-2000: Contact Energy and Trustpower). All four involve matters on which, in my view, future Parliaments and/or Ministers are likely to find themselves compelled to act to restrain anti-consumer and anti-competitive behaviour. I submit that it would be desirable to resolve all four by regulatory changes now, before SOE shares are issued to the public. Alternatively, a decision not to proceed with share sales would leave the Government's future freedom to regulate unaffected, as "losses" suffered by SOEs when they are regulated in the public interest lie with the taxpayer, and do not present the serious potential for conflict and litigation that is present when private firms are regulated.
8. (In passing, although the focus of this submission is the three electricity SOEs, I draw the Committee's attention to the serious possibility that the global market for coal - Solid Energy's main source of revenue - may be progressively restricted by overseas regulatory changes, as the realities of greenhouse-gas emissions reduction sink home. The most recent "World Energy Outlook" produced by the International Energy Agency points to the need to cease worldwide construction of new coal-fired plant within five years, and thereafter progressively to phase out such plant, if the declared goal of 450 parts-per-million of carbon dioxide in the atmosphere is to be achieved<sup>12</sup>. It may well be that the global community opts to abandon the 450ppm goal rather than face the costs of phasing out coal use – but that decision is uncertain, leading potentially to investor uncertainty over whether coal mining assets installed today may become stranded, and hence effectively worthless, within the relevant project lifetimes.)
9. The four areas of regulatory uncertainty with regard to electricity are:

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<sup>12</sup> IEA, *World Energy Outlook 2011*, Chapters 1 and 2, especially p.40. Available at <http://www.worldenergyoutlook.org/>.

- a. The very large proportion of the generation sector's operating surplus that arises as rent (unearned increment) on long-established hydro and geothermal plant whose capital costs are long sunk, and which were paid for by a previous generation of New Zealanders, but from which the generated electricity is sold at a price determined at the margin of the market, raising serious issues in relation to energy poverty, income and wealth distribution, and basic fairness;
- b. The inadequate regulation of pricing behaviour at all levels of the industry since restructuring, and the ongoing absence of price regulation on generation and retail, notwithstanding the industry's record of continual unwarranted price rises underpinned by repeated asset revaluations;
- c. The way in which the electricity market in its current form imposes a very large multiplier on carbon prices imposed by policies such as the Emissions Trading Scheme (ETS), thereby distorting relative-price incentives and securing large windfall profits to owners of existing renewables-based generation; and
- d. The consistent failure of the corporatised and part-privatised (Contact and Trustpower) electricity industry to deliver either orderly investment in new capacity, or ready access for new technologies and distributed generation, with the overall result that New Zealand has lagged increasingly far behind international best-practice in terms of market entry by independent power producers, smart metering and smart grid technologies, forward-looking planning in relation to the pending arrival of electric vehicles, and demand-side conservation incentives and opportunities.

10. In the remainder of this submission I discuss each of these four areas in turn, indicate the direction in which I believe reality will eventually force policymakers to move, and outline the nature of the resulting regulatory uncertainty for investors contemplating purchase of SOE shares today. I remind the Committee of previous experience with the privatisation of telecommunications and rail, where large corporate owners of the privatised utilities fought off regulatory restraint for years while stripping cash out of the operations and blocking technical progress; one hopes that policymakers are now more aware than previously of the virtues of acting early rather than late to confront such behaviour. The same incentives pointing to anti-social behaviour already apply to the corporatised energy SOEs, and are similarly likely eventually to trigger future regulation in the public interest. Sale of shares under the Mixed Ownership model raises the prospect that future owners will appeal against such regulation, and may even be able to block it, on the grounds that it constitutes "taking or impairment" of the value of their investments<sup>13</sup>.

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<sup>13</sup> This terminology appears in Clause 7 of the Regulatory Standards Bill currently before the Commerce Select Committee.

## **Rents on heritage generation and progressive pricing to residential consumers**

11. Schedule 1 to this submission reproduces several charts from my past research, illustrating the way in which a wholesale electricity market that sets price at the margin gives rise to pure rents on hydro and geothermal plant that was constructed in the distant past, was long ago fully paid for by past consumers and taxpayers, and that now incurs minimal operating cost to run. These rents make up the great bulk of operating surplus in the generation segment of the electricity industry, and their distribution between consumers and generators is entirely arbitrary. A long-established insight of economic theory is that pure rents of this sort can be transferred to other parties without affecting the allocative or productive efficiency of the industry.
12. Schedule 2 reproduces two slides from the MED's 2006 Electricity Market Review, which make essentially the same points.
13. A key decision made at the time of the establishment of the wholesale electricity market in the mid-1990s was the imposition of the marginal-cost price across all generation, rather than merely on marginal and incremental generation. This meant that all increases in the operating costs of the small group of generating stations at the margin of the market are automatically translated into windfall rents secured by all the old-established low-cost plant inside the margin. In turn this means that residential electricity consumers are forced to pay far more than the actual total cost of supplying the electricity they consume, fattening the profits of all owners of low-cost generation.
14. A simple mechanism for transferring rents back to consumers, and thereby reversing this unnecessary squeeze on household budgets, would be a long-term contract with generators specifying that a certain quantity of electricity is to be delivered to residential consumers (or to an agency acting on consumers' behalf) at a fixed price below the market price. This mechanism is already the basis for the main contracts under which electricity has been supplied cheaply to the Bluff aluminium smelter since it opened in 1971. (The effect of the smelter contracts on the total revenue secured by the former ECNZ is seen in my 1988 chart for the Royal Commission on Social Policy, in Schedule 1 to this submission.)
15. At the time when the generation assets of the Electricity Corporation of New Zealand were revalued and separated from the transmission grid, several proposals were put forward for a vesting contract or contracts along these lines to be imposed on the generation sector as a means of protecting consumers from being pushed towards

energy poverty as the new market institutions drove the electricity price up. Parliament's Commerce and Marketing Select Committee recommended this in 1992<sup>14</sup>, as did the private-sector-sponsored *Hydro New Zealand* report the same year<sup>15</sup>. Under the heading "vesting contracts" the proposal was then canvassed, but not progressed, by the Wholesale Electricity Market Development Group in 1993-94. My own economic analysis of the theory was published by *New Zealand Economic Papers* in 1996. More recently the Electricity Market Review conducted by the Ministry of Economic Development in 2006 confirmed the feasibility of such an arrangement<sup>16</sup>. Not surprisingly, electricity generators have been implacably – and successfully – opposed to any such incursion into their profits. (Vesting contracts were, incidentally, introduced by Singapore in 2004 to curb monopolistic profit-taking.<sup>17</sup>)

16. So long as generating plant is owned by taxpayers, the large wealth transfers resulting from marginal-cost pricing flow from consumers to taxpayers – groups with overlapping membership. Taxpayers benefit, and electricity consumers lose. If the two groups were identical the net redistributive effect would be nil, provided there were no other economy-wide repercussions from a high electricity price. In fact, the overall effect of the post-corporatisation transfers has been strongly regressive. There is now a legitimate fear that following part-privatisation, the new private owners may reap windfall rents in excess of the capitalised value paid for shares in the SOE assets. In that case electricity consumers will lose without a matching gain to taxpayers. Substantial technological, regulatory and economic uncertainties are likely to lead buyers to discount the prices bid for SOE shares.

17. Looking ahead, consumer dissatisfaction with ongoing price hikes in excess of the inflation rate can be expected to continue to build – especially as the implications of the Emissions Trading Scheme sink home and bite more severely with rising carbon prices (see below). If and when such dissatisfaction finds a political voice, the theoretical attraction of a progressive-pricing arrangement provides one of the policy options that a future Parliament might opt to legislate for. So long as the SOE assets remain in public ownership, this can be very simply done with regard to the hydro and old-geothermal plant held by the three generation companies; the impairment of the assets' book value would simply be absorbed on the

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<sup>14</sup> New Zealand House of Representatives, *Report of the Commerce and Marketing Committee: Inquiry into the Proposed Increases of Wholesale and Retail Electricity Prices*, Wellington February 1992.

<sup>15</sup> Geoff Bertram, Ian Dempster, Stephen Gale and Simon Terry, *Hydro New Zealand: Providing for Progressive Pricing of Electricity*, report prepared for Electricity Reform Coalition, March 1992.

<sup>16</sup> MED, "Pricing in the New Zealand Electricity Market and its Economic Implications", paper Elec.0090 downloadable at <http://www.med.govt.nz/sectors-industries/energy/pdf-docs-library/electricity-market/electricity-industry/chronology-of-electricity-reform/electricity-market-review-2006/Elec.0090 - Pricing in the New Zealand Electricity Market and its Economic Impact -57 kB PDF.pdf/view>, slide 14.

<sup>17</sup> <http://www.ema.gov.sg/page/91/id:134/>

Government's balance sheet while the benefits of lower electricity prices would flow directly to consumers in kind. Once part-ownership of the SOEs has passed into private hands, Parliament's ability to legislate for progressive pricing (or the related idea, lifeline tariffs<sup>18</sup>) will be severely curtailed and may require taxpayers to compensate private shareholders for the resulting impairment of their investments.

18. I have recently suggested that the assets held by the existing electricity SOEs could sustain free delivery of the first 300 kWh per month consumed by each New Zealand household<sup>19</sup>. That would make a substantial and sustainable contribution to overcoming energy poverty, without compromising the operation of the electricity market. Adoption of the Mixed Ownership model effectively forecloses that as a future policy option.

### Asset revaluations and unregulated prices

19. Under New Zealand's "Generally Accepted Accounting Practice" (GAAP) the treatment of asset revaluations in the case of specific, sunk-cost non-current assets is often inconsistent with basic economic theory. Since at least Marshall's classic text *Principles of Economics* (1890) it has been well understood by economists that the market value of a long-lived fixed asset whose costs are sunk is unrelated to those costs, but rather is the capitalised present value of the services derived from its use – that is, the stream of cash income anticipated by the asset's owners, discounted at a market rate of interest. Because the market interest rate enters into the calculation of value, it is circular reasoning to then derive a "rate of return" from the book value and the cashflow stream.<sup>20</sup>
20. It is common, however, for New Zealand companies to revalue their fixed assets to "market fair value" on the basis of the present value of (often optimistically) projected earnings, then to divide actual earnings by the (revalued) asset book value to derive "return on capital" ratios, and then to argue a need to raise prices in order to achieve a higher target rate of return<sup>21</sup>.

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<sup>18</sup> Lifeline tariff are common overseas; they are usually targeted at low-income households rather than as a universal entitlement which is the basis of progressive pricing.

<sup>19</sup> "Another approach to state asset sales programme", *Dominion Post*, 28 March 2012 Page B5.

<sup>20</sup> Marshall, A., *Principles of Economics*, 1<sup>st</sup> published 1890, 8<sup>th</sup> ed. 1920, p.417. In footnote 1 on that page Marshall labels "illegitimate" the use of this circular reasoning by "semi-monopolistic" businesses as the basis for claiming that their rate of return on "capital" is too low and they ought therefore to be allowed to raise their prices. The point arises in the context of Marshall's discussion of various categories of rent in Book V Chapters 8 and 9, especially pages 412 and pp.415-421.

<sup>21</sup> For a recent example of this practice in the New Zealand oil industry see the Chalkie column in the *Dominion Post* of 27 March 2012, <http://www.stuff.co.nz/business/opinion/6648504/Rules-may-hold-fuel-firms-to-honest-competition> .

21. From an economic standpoint, asset revaluations are income and ought to be recorded as such. In other jurisdictions – notably the USA – this is common practice. Under New Zealand GAAP, however, asset revaluations are not included as income in the profit and loss account but are instead reported via the asset revaluation reserve on the balance sheet. If the business is on sold, the price paid includes the estimated “fair value” of the asset, and the new owner then starts its annual accounts from scratch with the higher asset value recorded as historic cost; the previous reserve provision is extinguished, without ever being recorded in the profit and loss account. Alternatively, if the business pays out to its shareholders a “return of capital” or similar special dividend arrangement, the asset revaluation reserve is extinguished, again without the revaluation income ever passing through recorded earnings.
22. These accounting procedures present special difficulties when the firm has market power and consideration is being given to regulating its prices or profits in order to protect consumers from being price-gouged. To set a regulated price, the regulatory agency must work from some idea of how much capital the firm uses, on which an approved rate of return is to be earned. Standard practice for firms facing regulators around the world is to press for a high “regulatory asset base” in order to push up the regulated price. Unless regulators have a clear understanding of the role of asset revaluations, such revaluations can be used as a device to extract excessive profit by price-gouging consumers while evading regulatory restrictions. This essentially was the history of the electricity lines sector under so-called “light handed regulation” between 1994 and 2004<sup>22</sup>.
23. The electricity generator-retailers in New Zealand have not been subject to any regulation of their prices during the restructuring era to date. They have therefore been free to project high future prices, revalue their fixed assets accordingly, then assert the need to raise prices to provide a “fair” rate of return on the revalued assets, following which the cycle is repeated. Schedule 3 to this submission shows the path of electricity prices since 1990, and Schedule 4 shows the impact of unilateral revaluations on the book value of the industry’s fixed assets.
24. The manipulation of asset valuations and “warranted” prices was common practice for nominally regulated utility industries in the USA until the Supreme Court put a stop to it in 1944, in the *Hope Natural Gas* decision. US legislators and regulators had experienced half a century of asset valuation games by utilities ramping up their

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<sup>22</sup> Documented in Geoff Bertram and Dan Twaddle, “Price-cost margins and profit rates in New Zealand electricity distribution networks since 1994: the cost of light handed regulation”, *Journal of Regulatory Economics*, 27, 3 (2005), pp. 281-307.



prices, then their values, then their prices, in an endless spiral that kept the “rate of return” on continually-revalued capital looking “reasonable” or “low”. In *Hope* the Supreme Court ruled for historic cost as the valuation methodology: investors would get an assured return on what they actually invested, but not on paper book values dreamed up by their accountants.

25. Since then, regulated entities in the US have been required to value their fixed assets at historic cost, and regulated prices have been set accordingly by Public Utility Commissions. The mismatch between fixed-asset book values under New Zealand GAAP and historic-cost benchmarks is dramatic, and has been disclosed in recent financial results published by all the major generators except Meridian, as set out in the table below.

**Comparison of “Fair-value” book values of generation assets, and “cost-based” values**

		2005	2006	2007	2008	2009	2010	2011
Book value at which generation fixed assets are carried								
	Contact	3.66	3.65	4.03	4.05	4.07	3.70	4.14
	Genesis	1.02	1.02	1.51	1.46	1.48	1.42	2.54
	Meridian	3.44	4.61	6.12	6.01	5.90	7.75	7.28
	Mighty River	2.29	2.26	2.09	2.98	3.48	4.06	4.42
	Trustpower	1.22	1.22	1.85	2.01	2.31	2.30	2.37
	<b>Total</b>	<b>11.63</b>	<b>12.76</b>	<b>15.60</b>	<b>16.51</b>	<b>17.24</b>	<b>19.24</b>	<b>20.75</b>
	<b>Total excluding Meridian</b>	<b>8.18</b>	<b>8.15</b>	<b>9.48</b>	<b>10.51</b>	<b>11.33</b>	<b>11.49</b>	<b>13.47</b>
Value if a cost basis were used								
	Contact	1.70	1.71	1.86	1.56	1.61	*	*
	Genesis				1.17	1.19	0.92	1.65
	Meridian	na	na	na	na	na	na	na
	Mighty River			1.24	1.24	1.46	1.71	1.72
	Trustpower			1.00	1.14	1.18	1.17	1.23
	<b>Total excluding Meridian, where available</b>				<b>5.10</b>	<b>5.44</b>		

Source: compiled from company annual reports.

\* Contact Energy in 2010 retrospectively deemed its previous "fair value" figure to be historic cost and ceased to report a separate cost figure.

26. Schedule 4 to this submission contains charts showing the importance of asset revaluations in pushing up book values of generator/retailers, lines companies, and the electricity industry as a whole. It can be seen from the first chart that lines companies were the first to leap onto the revaluation bandwagon, but were eventually reined in for a time (after booking \$2 billion of revaluations) by Commerce Commission regulatory hearings. Starting in 1999, the

generator/retailers, including the three SOEs, embarked on an orgy of revaluation that has continued up to the present. By 2011 the sector's balance sheets in total showed \$9 billion of cumulative actual investment spending net of cumulative depreciation, plus \$10 billion of revaluations.

27. Had the sector been price-regulated from the outset on the basis of historic cost, therefore, something of the order of half the price increases of the past decade would have been avoided. Instead, the circular price/asset-value/price spiral has roared on unchecked.
28. For investors in the SOEs, a big uncertainty will be whether or not this will be allowed to continue. If prices remain unregulated and unilateral revaluations based on optimistic price projections continue unchecked, then big cash returns lie ahead and the shares will have high value. If, on the other hand, regulation is brought in to halt price-gouging, the return to investors could be radically lower.
29. Uncertainty is exacerbated by New Zealand's peculiar legislation on price regulation. Under the Commerce Act 1986, price-gouging and profiteering are fully legal unless and until a ministerial decision is taken to regulate under Part IV of the Act.<sup>23</sup> If the Minister decides to regulate, he or she has statutory authority to do so at any time. The decision to regulate is therefore a matter of political judgment and correspondingly difficult to predict, given that governments, and the political complexion of Parliament, change from time to time.
30. In the case of the electricity SOEs there seems to me every likelihood that the rapid price inflation of the past decade will eventually come up against a political will to regulate, but there is no way to know when that will happen, nor how radically the Minister of the day may choose to act. The option of retrospectively rolling back unjustifiable asset revaluations, and regulating prices on the basis of historic cost, cannot be ruled out. Investors in SOE shares will be anxious for some reassurance one way or the other, and are unlikely to be satisfied with undertakings by the present Government that it will keep the regulatory stance unchanged until the 2014 general election.

### **The Emissions Trading Scheme and the electricity price**

31. Two likely trends over the next decade are a rising price of carbon credits and a falling share of fossil-fuel generation in the New Zealand electricity industry (from

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<sup>23</sup> This was the Privy Council's authoritative interpretation in *Telecom Corporation of New Zealand Limited v Clear Communications Limited* [1995] 1 NZLR 385 (PC).

around 70% at present, the renewables share of generation is targeted to increase to 90%). Either or both of these trends will have radical implications for the amount of windfall profits reaped by electricity generators from the ETS; and the emergence of ETS-related windfall profits as a major component of generators' revenue streams exposes the industry to a further area of regulatory uncertainty: will these windfall profits be taxed or not?

32. There is an important sting in the tail of New Zealand's wholesale electricity market design, when carbon pricing is factored in. The market price of electricity is set equal to the offer price submitted by the highest-priced tranche of generation capacity in each half-hour period. Whenever that marginal generator is using fossil fuels, under the ETS it will be liable to cover the resulting emissions by purchasing New Zealand Units, or equivalent carbon credits, and the cost of this will have to be covered by its offer-price into the market. Then the electricity price received by all generators, whether renewables-based or fossil-fuel-based, goes up by that amount, even though only a small fraction of generators actually have to pay for permits; owners of existing renewable capacity simply collect the extra revenue as windfall profits.
33. On the assumption of a (capped) permit price of \$25 per tonne of carbon, and with the two-tonnes-for-one-permit arrangement under the ETS as amended in 2009, Simon Terry and I estimated in 2010 that the ETS would raise the electricity price by nearly \$6 per MWh 2010-2012, rising to \$12 thereafter when the two-for-one concession was to expire. The result would be to raise the electricity generators' total revenue by \$769 million over the period 2010-2012, at the expense of electricity consumers. Of this extra revenue only \$203 million would be required to pay for the generators' total carbon emissions, leaving the remaining \$566 million as windfall profits.<sup>24</sup> Official estimates of the effects of the ETS give similar results.<sup>25</sup>
34. Another way of expressing this outcome is to note that when a consumer buys electricity with the ETS unit price at \$25 per tonne and the two-for-one concession in place, the ETS cost embodied in the electricity price is equivalent to paying a carbon charge of \$40-50 per tonne on the CO<sub>2</sub> emissions actually incurred to generate the electricity; whereas when the same consumer buys petrol the carbon-charge component is \$12.50 per tonne of actual emissions caused by burning the petrol. This is a perverse incentive from the point of view of reducing the nation's

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<sup>24</sup> The calculation is set out in Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, Wellington: Bridget Williams Books, 2010, p.90.

<sup>25</sup> For example, Ministry for the Environment, *Emissions Trading Scheme Legislative Review: Fiscal Neutrality*, 13 February 2009, <http://www.mfe.govt.nz/cabinet-papers/09-b-00363.pdf> p.9 estimated windfall profits in 2013 as \$145 million under a \$25/tonne carbon price, of which \$80 million would accrue to the SOEs.

greenhouse gas emissions, but it is a much-valued side-effect of the ETS from the point of view of the generators, including the SOEs.

35. As carbon prices go up, so will the volume of windfall profits to owners of old-established renewable generation. And as the share of renewables in total generation goes up, the actual purchases of permits by generators will fall, further increasing the windfall component of the price increase. This means that the arrival of serious emission-reducing policy will place an acute squeeze on household electricity budgets by driving up prices to fund generator windfalls, worsening energy poverty and probably triggering political protest, since windfall profits are completely unnecessary to the functioning of the electricity market and constitute simply a wealth transfer from consumers to the owners of renewable generation.
36. The obvious policy to neutralise this vicious spiral is a tax on ETS-derived windfall profits, to finance rebates to electricity consumers sufficient to ensure that they pay for the actual carbon emissions embodied in the electricity they consume, but no more. A future Parliament is, in my judgment, highly likely to legislate for such a tax as the Emissions Trading Scheme (or its successor policy) is tightened up. The prospect of such a tax places a further element of uncertainty over the true market value of shares in the electricity SOEs, and most especially Mighty River Power which is heavily weighted towards old-established renewables in its generation portfolio.

### **Unblocking the path to technical progress**

37. The New Zealand electricity industry prior to restructuring was designed, built and operated to international best practice standards. Since the corporatisation of ECNZ in 1986, the industry has used its market power to obstruct the entry of new technologies and independent power suppliers, while allowing investment to exhibit wild swings in the absence of any well-coordinated strategic plan. As a result, New Zealand now lies far behind the international best-practice frontier in key areas of innovation and investment scheduling.
38. The lack of any feed-in tariff, or of alternative regulatory provisions to enable new entrants to secure long-term purchase contracts from market retailers, is the first obvious area of concern. Overseas, regulatory requirements for retailers to purchase independently-generated power have steadily developed since the 1978 Public Utility Regulatory Policy Act (PURPA) in the USA. Germany introduced its feed-in tariff in 1990 and revised it substantially in 2000. By 2007 feed-in tariff laws were reportedly in force in 46 countries.<sup>26</sup> In New Zealand there is still no

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<sup>26</sup> [http://en.wikipedia.org/wiki/Feed-in\\_tariff](http://en.wikipedia.org/wiki/Feed-in_tariff)

guaranteed market access for independent small generators, and the result of this regulatory failure is that new independent entry to the industry over the past decade has been limited largely to iwi-owned geothermal projects. Freedom of entry and exit is a fundamental test of how competitive a market actually is; the New Zealand electricity market is among the most impermeable in the world, and the market rules, largely designed by the incumbent generators, place enormous obstacles in the way of new entrants.

39. Smart metering has progressed in leaps and bounds overseas, but in New Zealand the introduction of meters with advanced digital capabilities has been restricted mainly to systems that enable retailers to read meters remotely and customise their charging regimes to maximise the revenue extracted from consumers<sup>27</sup>. Metering technologies that empower consumers to manage their own electricity use more efficiently have been conspicuously withheld on the basis of mostly specious excuses by the retailers, including the three SOEs. Greater uptake of smart meters on the basis of a common standard will evidently have to be advanced by regulatory means, against company opposition.
40. Prior to industry restructuring, investment in generation, transmission, and distribution was stable, centrally planned, and guided by publicly-debated strategic forecasts of need for new capacity. Since corporatisation and part-privatisation, investment performance has been erratic in the extreme and has absorbed a lower share of industry operating surplus than before. Schedule 5 to this submission shows charts derived from the national accounts for the sector “electricity, gas and water”, over 80% of which is electricity, which means that the investment trends are dominated by electricity. The first chart shows the transition from pre-restructuring steady growth to post-restructuring wild swings of under- and over-investment. The second chart shows that gross fixed capital formation has only three times since 1990 absorbed even marginally more than 50% of gross industry operating surplus, in contrast to the pre-1986 period when the ratio was never below 50%. (Three charts are also included that show a remarkable blow-out in operating costs per unit of electricity supplied, mainly in the “intermediate consumption” category, since the five-firm oligopoly entrenched its market power at the end of the 1990s.)
41. Electric vehicles are rapidly coming over the horizon in terms of technical development and falling cost, and by 2030 may well comprise as much as 40-50% of

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<sup>27</sup> Refer Parliamentary Commissioner for the Environment, *Smart Meters: How Households and the Environment can Benefit*, June 2009, [http://www.pce.parliament.nz/assets/Uploads/Reports/pdf/Smart\\_Meters.pdf](http://www.pce.parliament.nz/assets/Uploads/Reports/pdf/Smart_Meters.pdf); and “Presentation to the Commerce Select Committee on Smart Meters and Smart Grid”, 11 August 2011, <http://www.pce.parliament.nz/assets/Uploads/PCE-SmartMeters-CSC.pdf>.

the light passenger vehicle fleet<sup>28</sup>. The two leading-edge technologies are battery vehicles and plug-in hybrids, both of which will require the roll-out of a charging infrastructure across the nation. Not one of the existing retailers or lines companies has to date announced any plan to meet this emerging need – a failure comparable to the foot-dragging on smart metering. As with smart meters, there is a need for national standards to ensure nationwide compatibility of vehicles and charging infrastructure, but there is no sign that the existing industry players are up to the task.

42. Overall the innovation and investment performance of the restructured electricity industry has been dismal, with priority given to cash payouts for shareholders, and big difficult decisions deferred by the incumbent industry participants. There is an urgent need either to shock the incumbents into better performance, or to open the way for new entrants to bring innovation and technical progress. Either way, the probability of a future Government acting to break the bottlenecks must be reasonably high, but there is no way at present for potential investors to assess when and how such action may be taken. Again the result is radical uncertainty about future policy.

### **Concluding comments**

43. The four areas of regulatory uncertainty sketched out above add up to a high probability that investors will discount the value of SOE shares at the time of any float, potentially robbing taxpayers of an unknown part of the actual value of the enterprises once those uncertainties are resolved in due course. Subsequent to the floats, it is easy to anticipate major lobbying campaigns by the new part-owners to protect the value of their investment against regulatory action. To the extent that such lobbying is successful, it will enable those same investors later to collect profits whose present value is far in excess of the sums paid initially, while electricity consumers and the national economy emerge the losers from the process.
44. The inadequacies and failures of regulatory policy with regard to the electricity industry since the 1989 Task Force report have left a large backlog of urgently-required policy changes and regulatory interventions. Ignoring the problems and deferring the relevant decisions not only puts New Zealand steadily further behind the pace internationally but increases the regulatory risks that will be apparent to would-be investors undertaking due diligence on the SOEs. Moving with precipitate haste to a mixed-ownership model without resolving the regulatory issues hanging

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<sup>28</sup> Doug Clover, "Will New Zealanders buy electric cars? A survey of car buyers' preferences and the implications for the New Zealand electricity sector", 22 March 2012, <http://www.emanz.org.nz/images/stories/Events/Conf2012/dougcloverv5.pdf> slide 23.

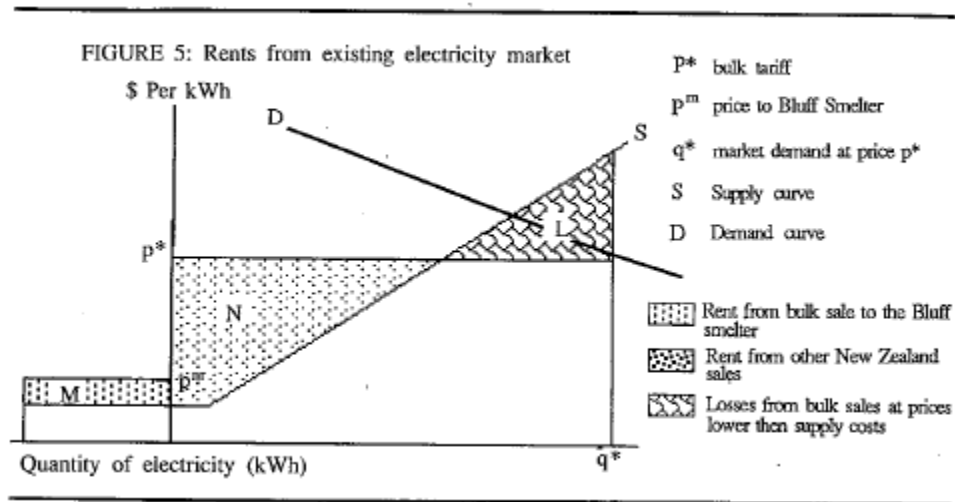
over the industry will lead, predictably, to a repeat of the pattern of failure experienced in the past with telecommunications, rail, and other privatisations of the 1990s.

45. The Select Committee should, in my submission, report back to Parliament that no share floats in energy SOEs should proceed unless and until these issues have been confronted.
46. Before concluding I should place on record here my personal views, recently summarised in the *Dominion Post* article of 28 March 2012 appended as Schedule 6 to this submission, on the ways in which policy should look to the future regarding the structure and role of the electricity sector in the New Zealand economy. The state ownership model served well the past century's need to construct a nationwide generation and transmission system providing an essential service to the nation. Until corporatisation the industry was guided and motivated by the social goal of improving the wellbeing of New Zealanders, rather than focusing narrowly on profit. Since corporatisation the single goal of profit-seeking – pursued by a joint strategy of price-gouging and cost-cutting – has driven other aims out of the picture, and successive Governments have been complicit in this, gratefully banking their SOE dividends and joining the industry's PR lobbyists in fighting off proposals for a return to a more balanced set of social objectives for the sector. This, in my view, has involved confusion of ends and means. Narrowly-defined "efficiency" in the sense often used in current economic discourse, can be justified only when it genuinely serves as a means to the wider end of raising the wellbeing of New Zealanders. That wellbeing has not been well served by the industry's single-minded pursuit of profit at the expense of social goals, and it is time to re-focus on the "long-term benefit of consumers" which has been reduced to an empty slogan over the past two decades.
47. The three generator SOEs currently hold, on behalf of the New Zealand community, a major social asset whose genuine costs are long sunk and whose future utilisation can and should be directed to the alleviation of energy poverty and the encouragement of innovation. The first priority in future use of those assets ought to be supply of a basic block of low-cost (or free) electricity to all households, to provide relief from the relentless price squeeze of the past two decades. This would be financially devastating for the balance sheets of the SOEs, in precisely the same way as their conduct since 1990 has been devastating for the household budgets of millions of ordinary people. But all that is at stake here is a wealth transfer, which (if we are to believe official statements on public benefit) has no welfare implications or (if we take the traditional view on the net benefits of pro-poor transfers) would raise overall wellbeing.

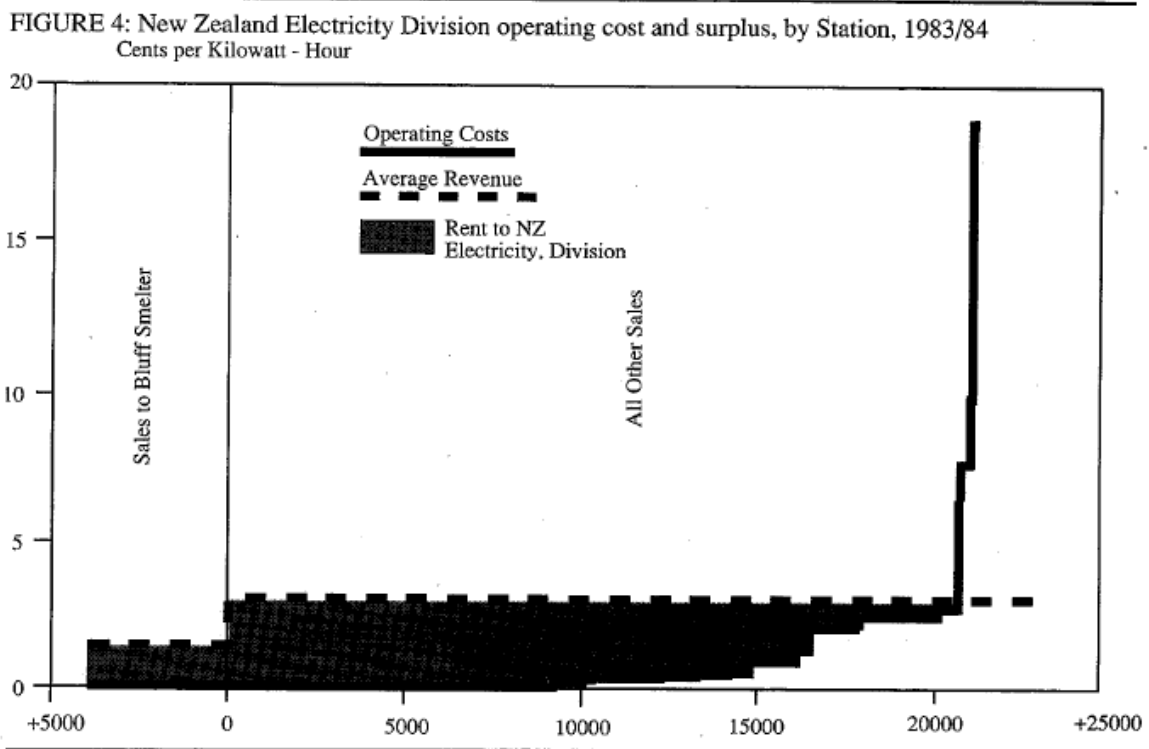
48. Innovation in future will not, it seems to me, consist of more of the same – construction of mega-projects fully under the control of the existing generator-retailers. The pursuit of dynamic efficiency in electricity supply should look to a future with a far greater role for small and medium projects, privately funded by venture capital and share floats, and operating in a redesigned market environment providing widely-distributed sources of supply with the central functions (performed probably by Transpower) of market coordination, guaranteed freedom of entry, exposure to appropriate market disciplines (not including anti-competitive barriers to entry erected by the dominant firms to protect their profitability against market forces), transparent information flows including strategic information on forward planning for the overall direction of generation and transmission, and genuine open access to infrastructure assets. Rather than inviting small investors to park their savings in SOE shares and thereafter ride along as passengers on the old vehicles, it would be more creative to enable them to take stakes in a new generation of smaller operations. One example would be for individual turbines, or small sets of turbines, in wind farms to be floated as separate companies supplying each farm’s central aggregator, in much the same way as dairy farmers supply Fonterra. There would clearly be risks to be borne, but in the long run it is not obvious that those risks are greater than those faced by passive investors in large corporates engaged in hindering, rather than promoting, dynamic efficiency.
49. The wholesale market as currently designed and operated has profoundly distortionary effects on prices and incentives facing the remainder of the national economy. Most dramatic of these is the way that under the Emissions Trading Scheme, as under any successor trading scheme or carbon tax, the dominance of low-emission renewables in the generation mix becomes invisible in terms of carbon charges falling upon electricity consumers, who are forced to fund large unwarranted windfall rents that can and should be taxed away and rebated to consumers. As with vesting contracts/progressive pricing, such a tax can be implemented without affecting allocative or productive efficiency, and the gain to the economy’s overall dynamic efficiency would be substantial – in part by providing protection to small tradeables businesses not covered by the big-corporate exemptions currently offered under the ETS.
50. I thank the Committee for the opportunity to make this submission.



**SCHEDULE I: Charts from my own research showing how rents arise in the New Zealand electricity market**

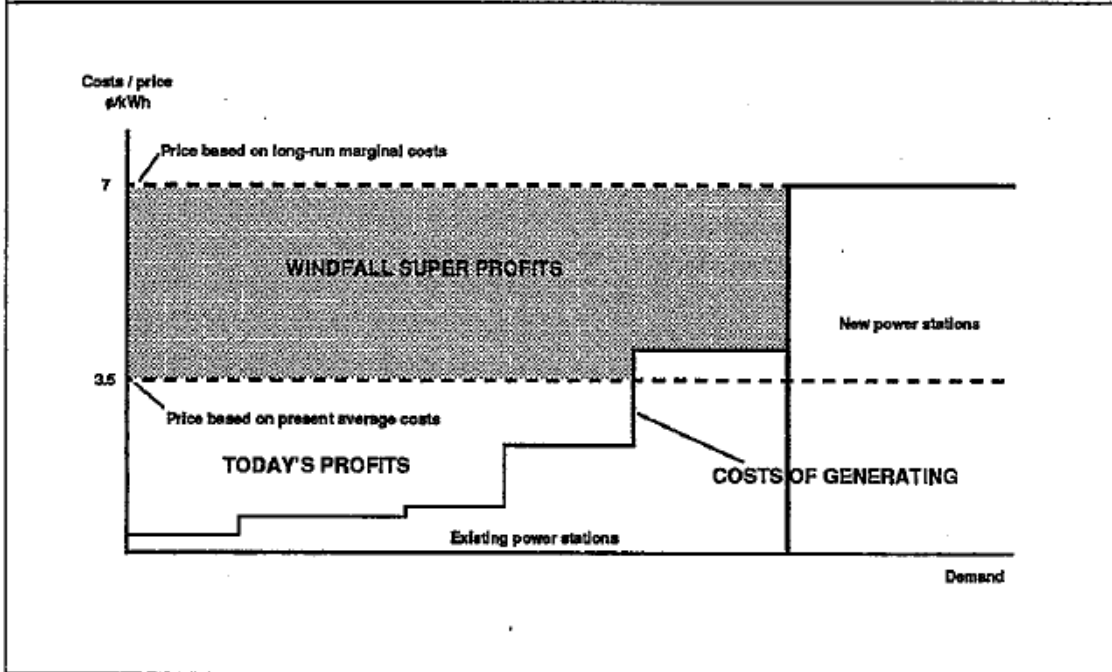


Source: Geoff Bertram, "Rents in the Energy Sector", in Royal Commission on Social Policy, *The April Report*, 1988, Volume IV p.310.



Source: Geoff Bertram, "Rents in the Energy Sector", in Royal Commission on Social Policy, *The April Report*, 1988, Volume IV p.310.

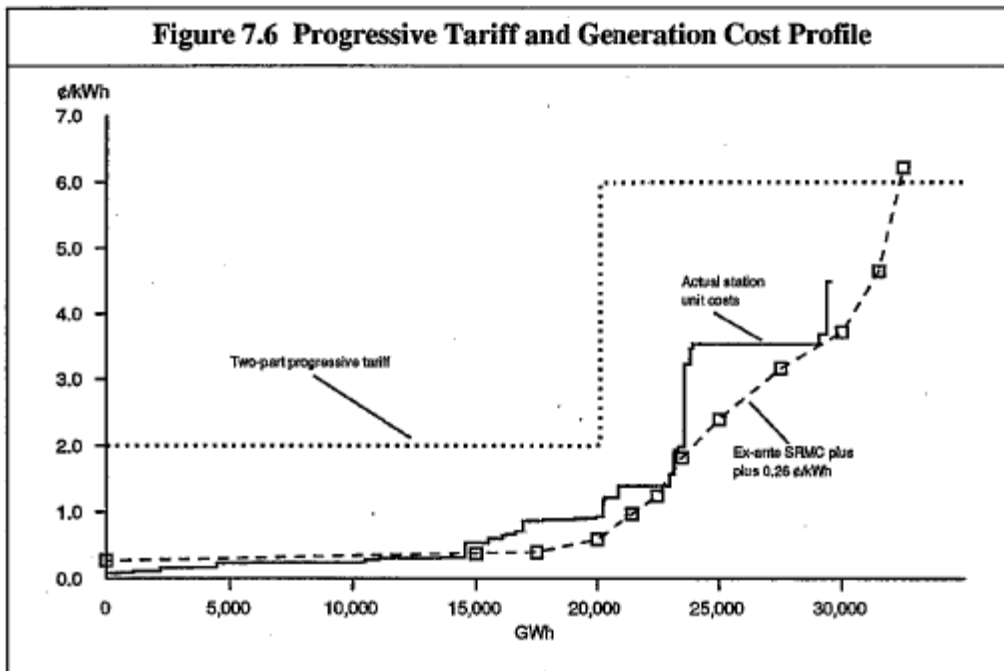
**Figure 6.1 Implications of Pricing Based on Long-Run Marginal Cost of 7 cents/kWh**



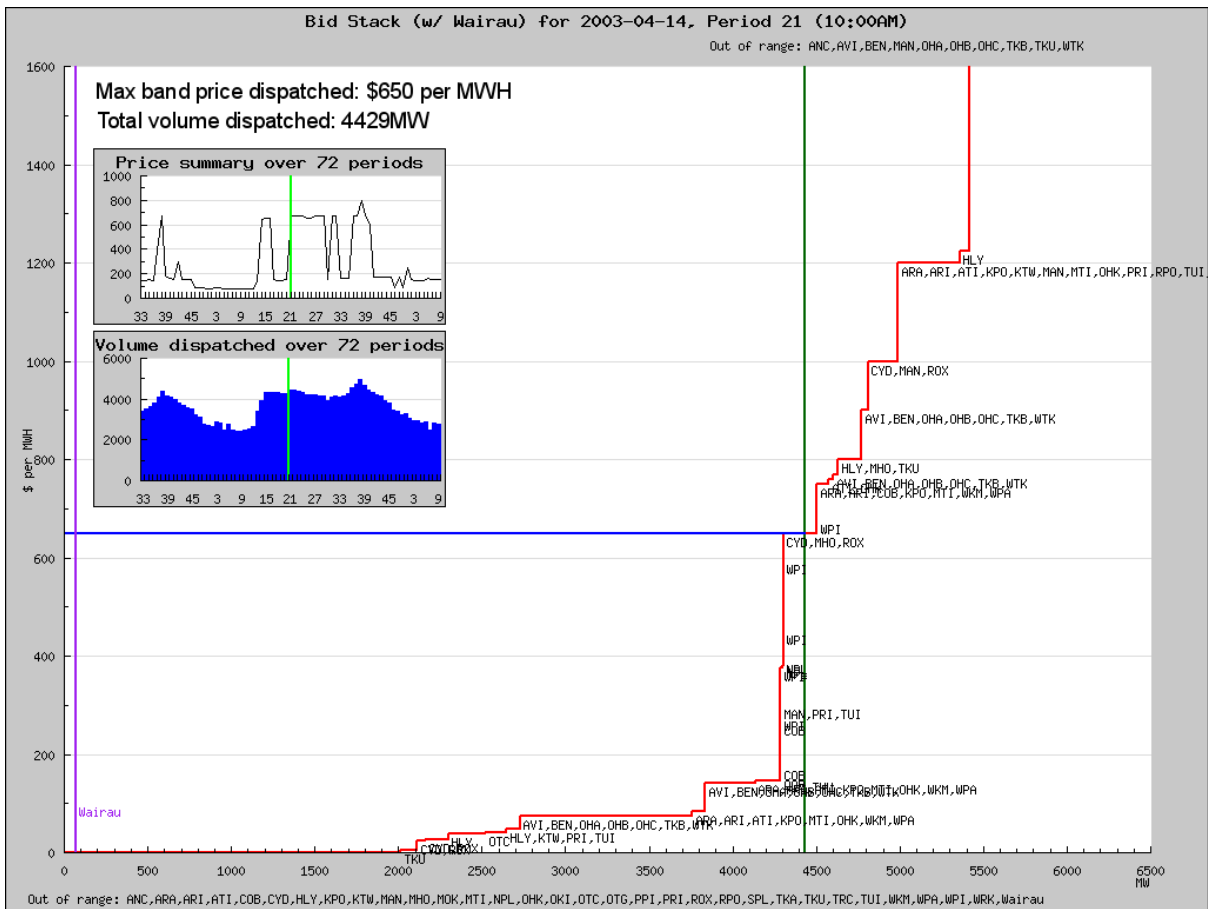
Source: Adapted from Purchase, K., "New Zealand Electricity Supply: An Industrialist's Perspective", paper for Conference on Electricity Reform, Wellington, 2 December 1991.

Source: Geoff Bertram, Ian Dempster, Stephen Gale and Simon Terry, *Hydro New Zealand* "Providing for Progressive Pricing of Electricity, 1992, p.40.

**Figure 7.6 Progressive Tariff and Generation Cost Profile**



Source: Geoff Bertram, Ian Dempster, Stephen Gale and Simon Terry, *Hydro New Zealand* "Providing for Progressive Pricing of Electricity, 1992, p.51.

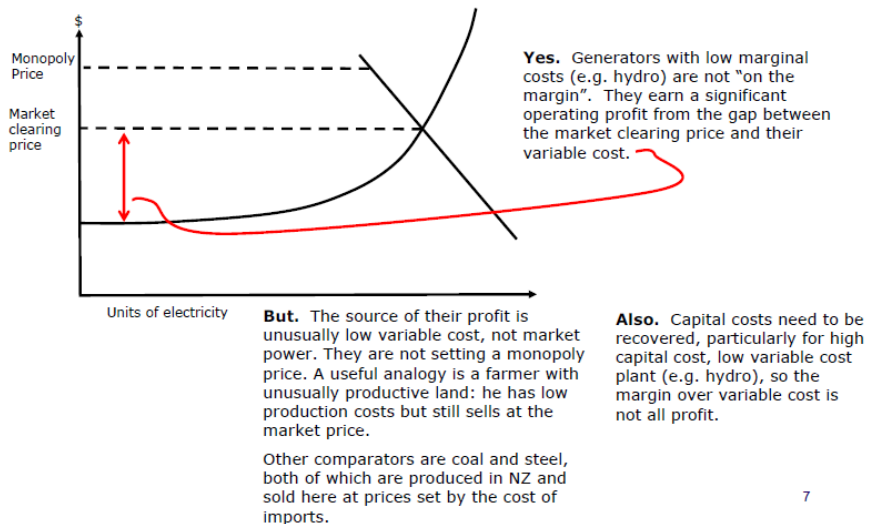


Source: Geoff Bertram, evidence presented to Marlborough District Council Hearing Committee re Trustpower Ltd's proposed Wairau Valley hydro electric scheme, 2006

## SCHEDULE 2: Slides from Ministry of Economic Development 2006 market review

Pricing and its Impacts

### Does marginal cost pricing transfer wealth from end-users to generators?



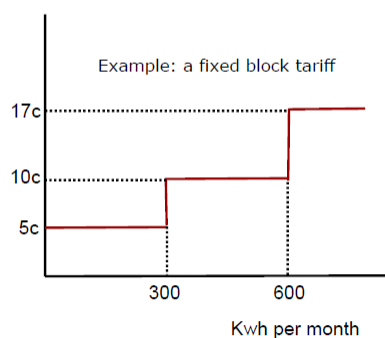
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Source: *Pricing in the New Zealand Electricity Market and its Economic Impact*, MED, 6 March 2006, downloaded 12 April 2012 from <http://www.med.govt.nz/sectors-industries/energy/electricity/industry/chronology-of-new-zealand-electricity-reform/electricity-market-review-2006> p.7.

Pricing and its Impacts

### Progressive pricing

- Rearrange retail pricing so that
  - total costs are just covered
  - users still face marginal cost
- This approach preserves the price signal for marginal use
- At the same time, it regulates total revenue down to total cost
- So the marginal and average conditions are both satisfied



14

Source: *Pricing in the New Zealand Electricity Market and its Economic Impact*, MED, 6 March 2006, downloaded 12 April 2012 from <http://www.med.govt.nz/sectors-industries/energy/electricity/industry/chronology-of-new-zealand-electricity-reform/electricity-market-review-2006> p.14.

### SCHEDULE 3: Electricity prices over recent decades

Figure I.1a: Electricity Consumer Prices (Nominal)

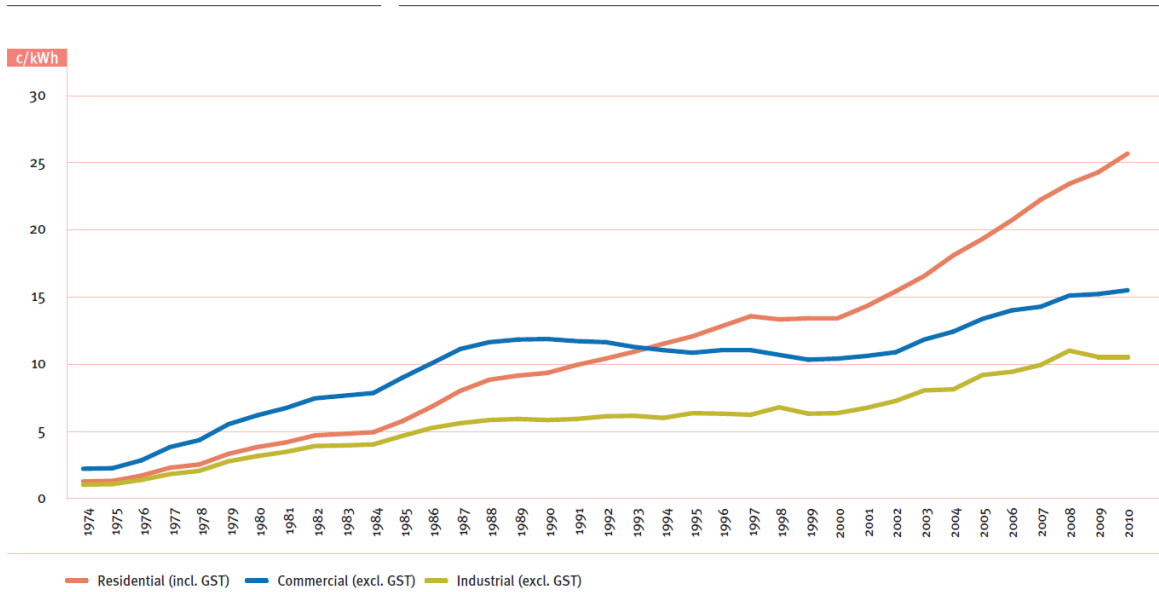
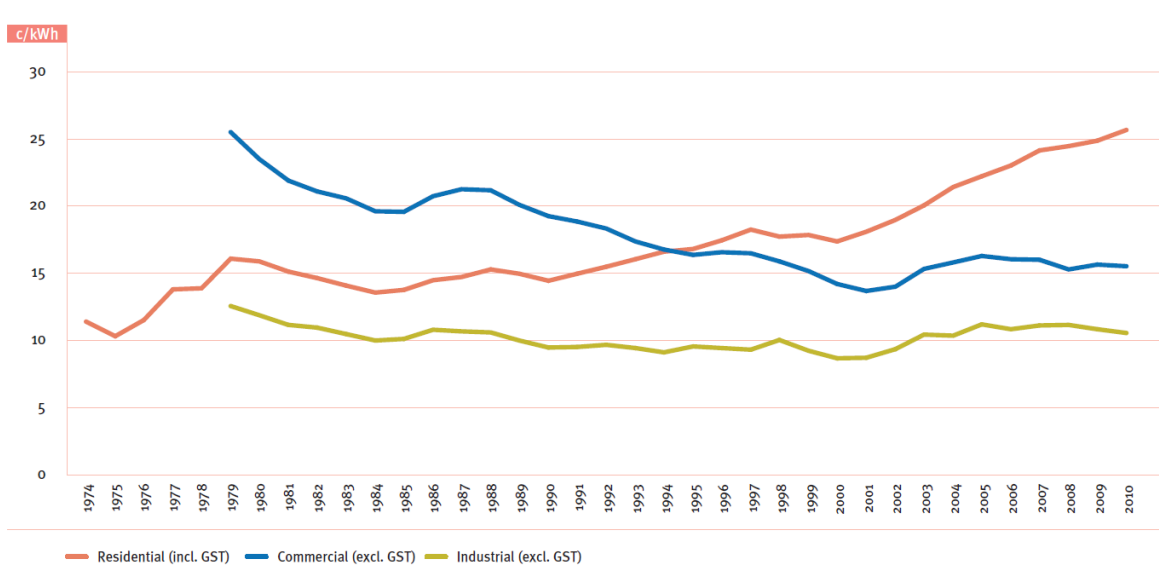
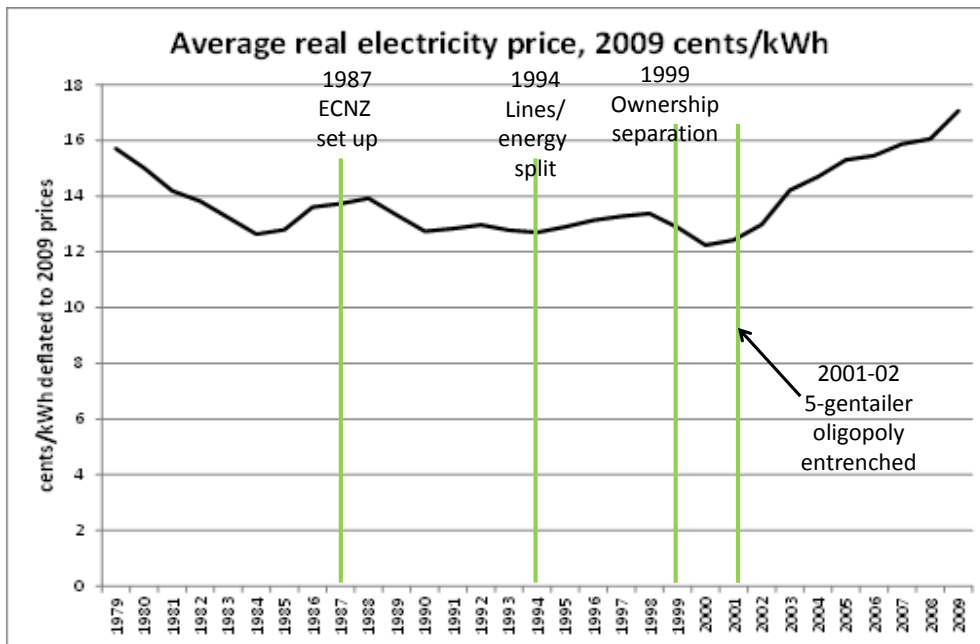


Figure I.1b: Electricity Consumer Prices (Real 2010)

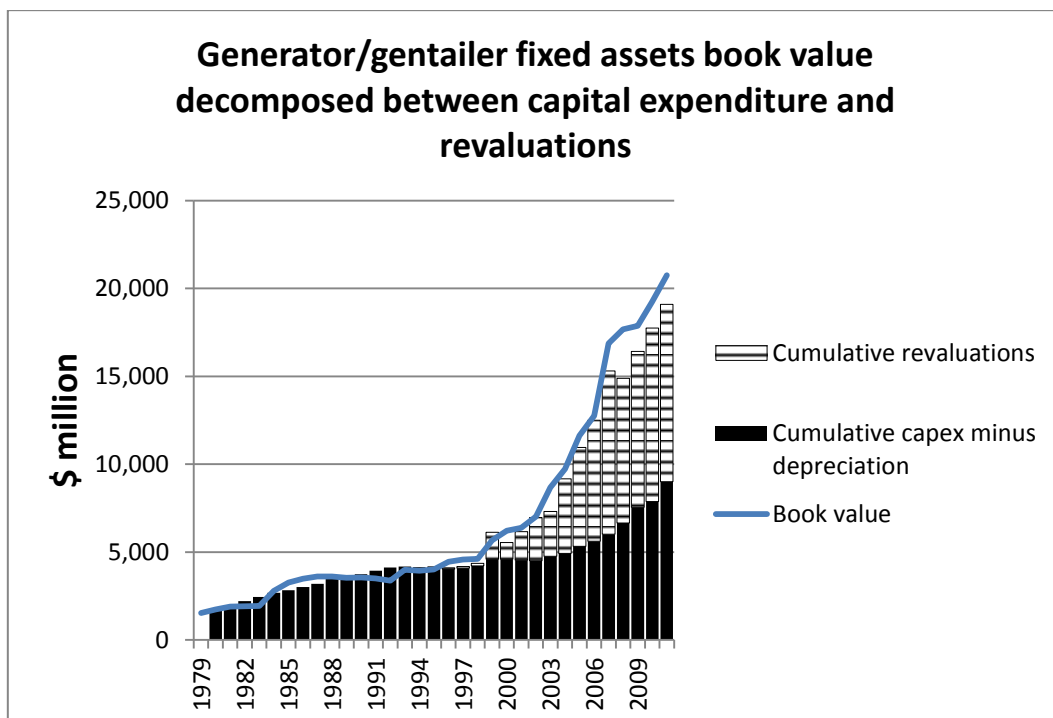
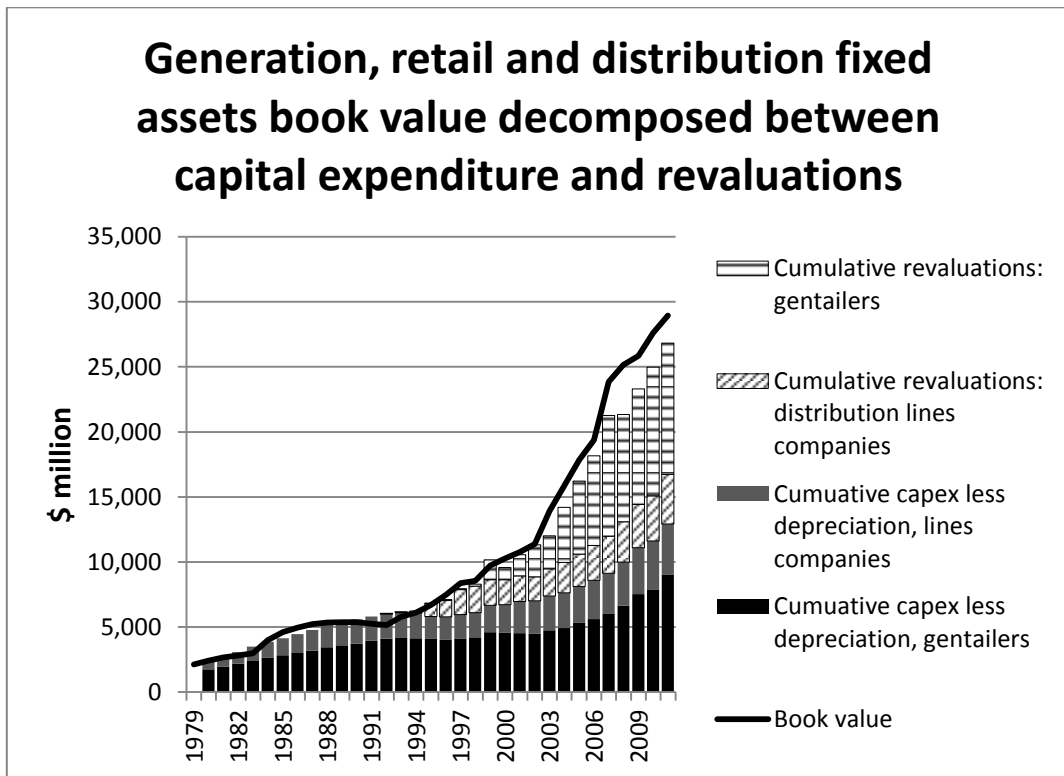


Source: MED, *Energy Data File 2011*, p.132.



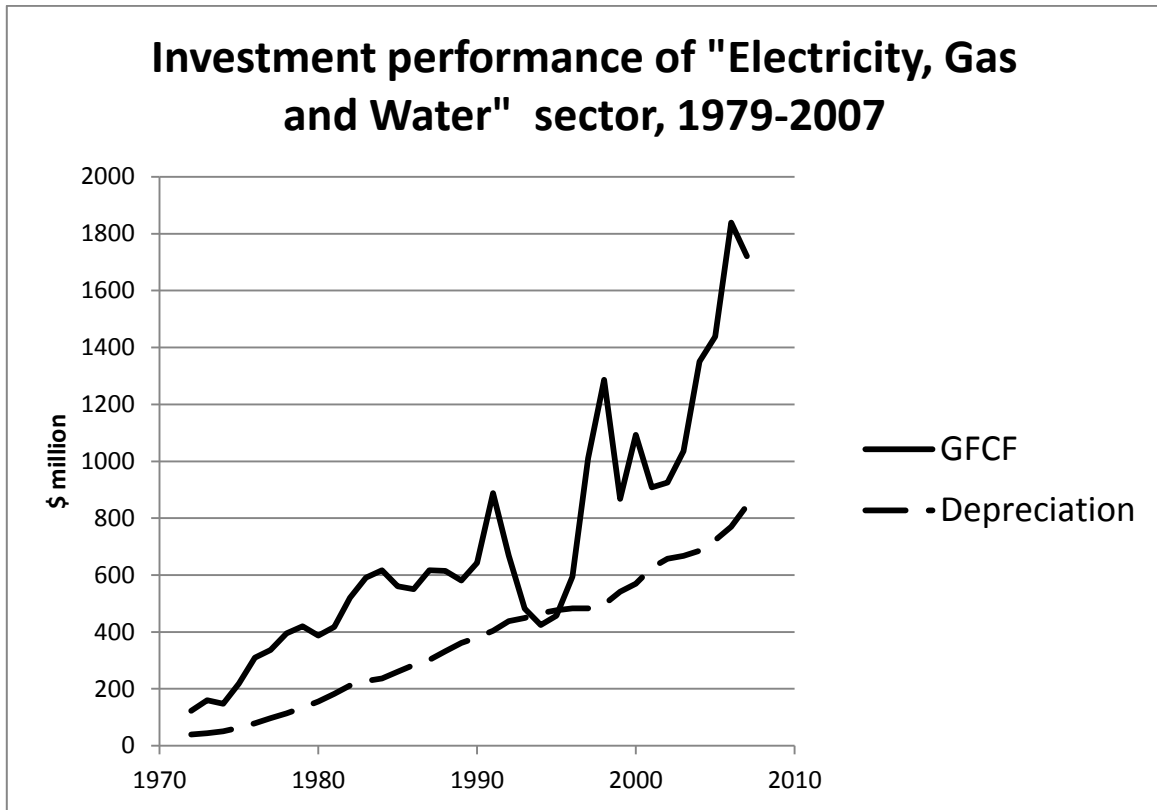
Source: Geoff Bertram “A Stocktake of Profitability and Investment Performance in the New Zealand Electricity Market After Two Decades” paper presented to IAEE International Conference, Stockholm, June 2011, slides 5 and 8.

**SCHEDULE 4: Asset revaluations relative to actual capital outlays in the book values of the electricity industry**

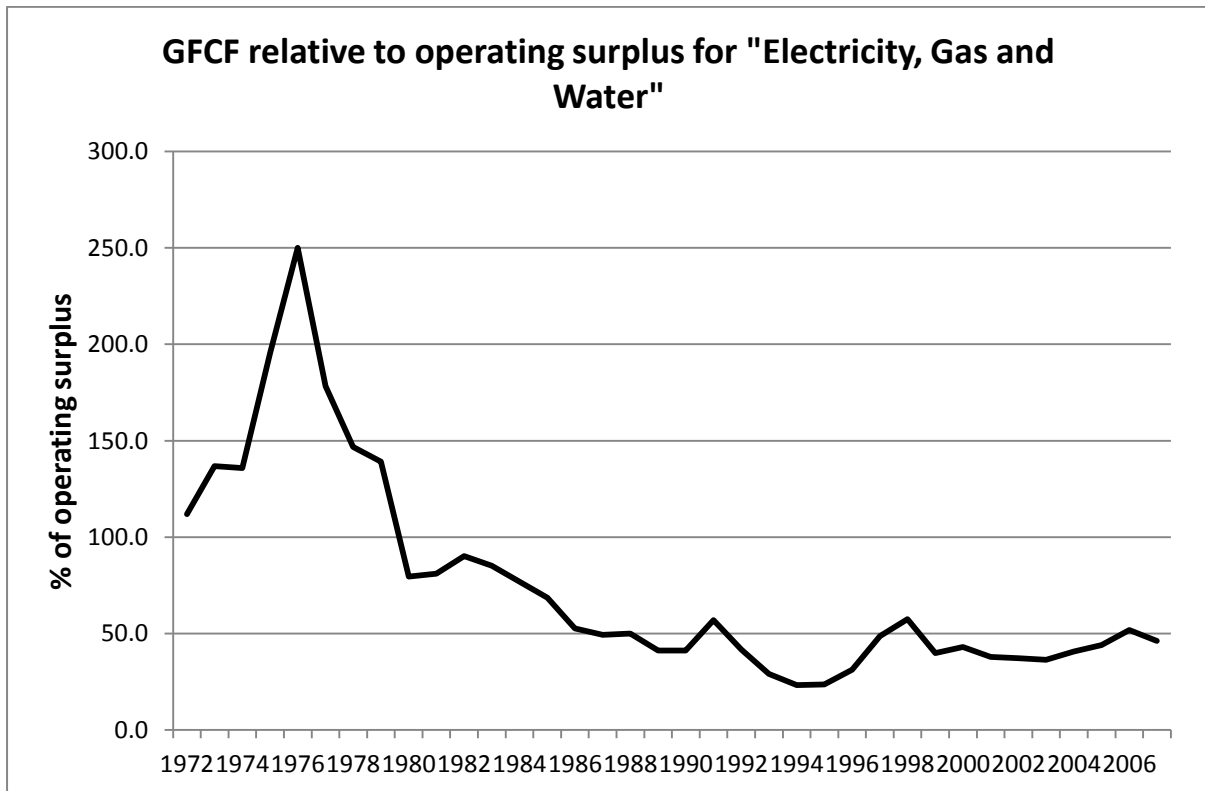


Sources: Compiled by author from information disclosure documents and company annual reports. The minor discrepancies between the two components and the total are attributable partly to the use of cashflow data on asset purchases in tandem with accounting depreciation allowances, and partly to difficulties in untangling the long-run record of revaluations in the company accounts. Orders of magnitude are reliable.

SCHEDULE 5: National accounts data for "Electricity, Gas and Water" sector

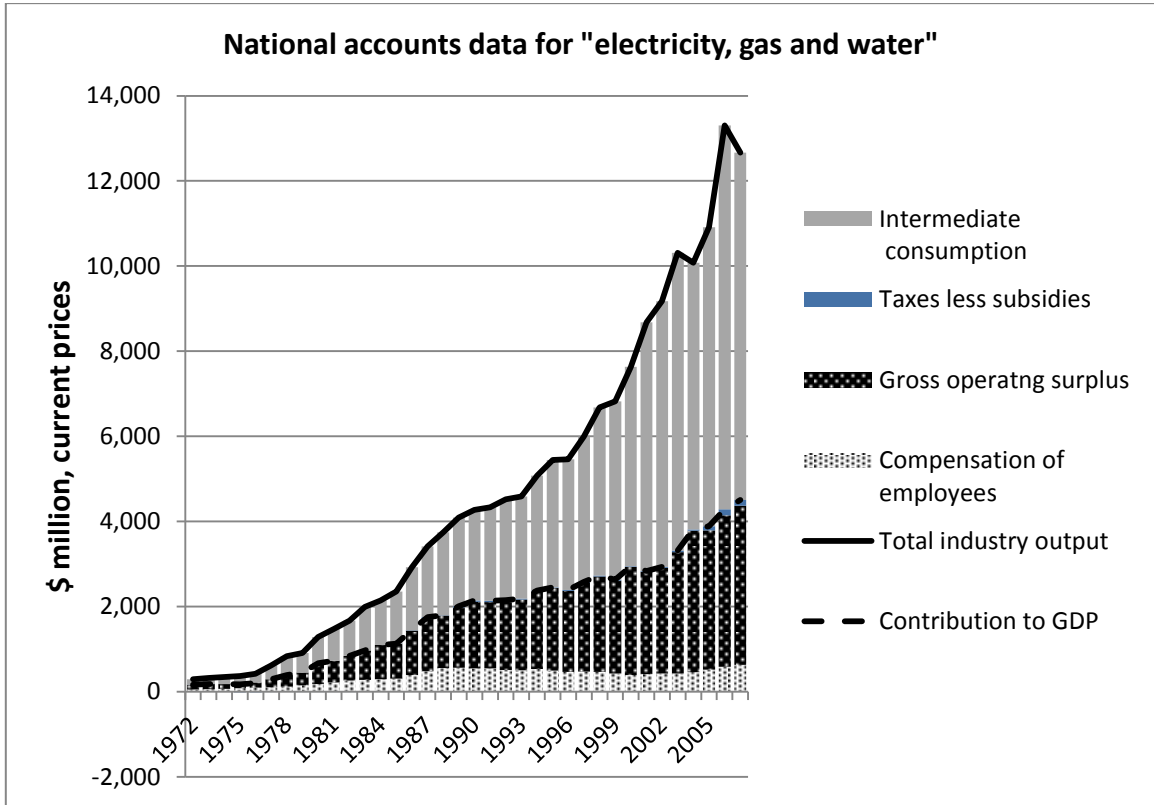


Source: Statistics New Zealand

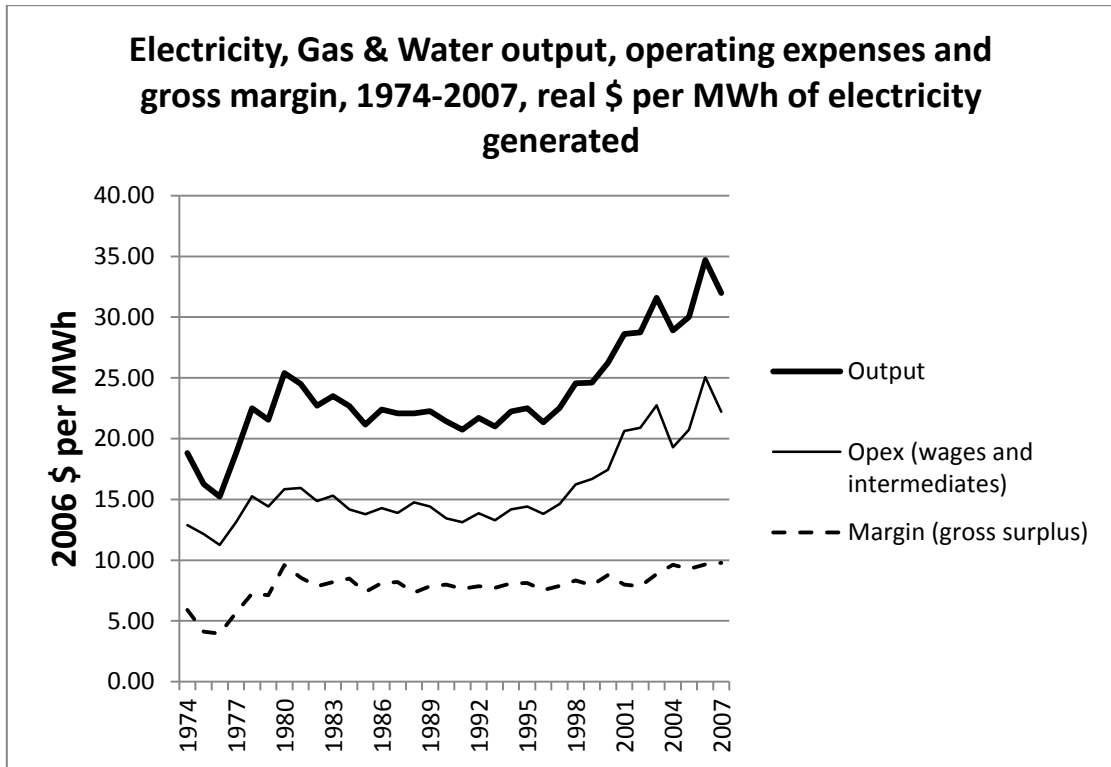


Source: Statistics New Zealand

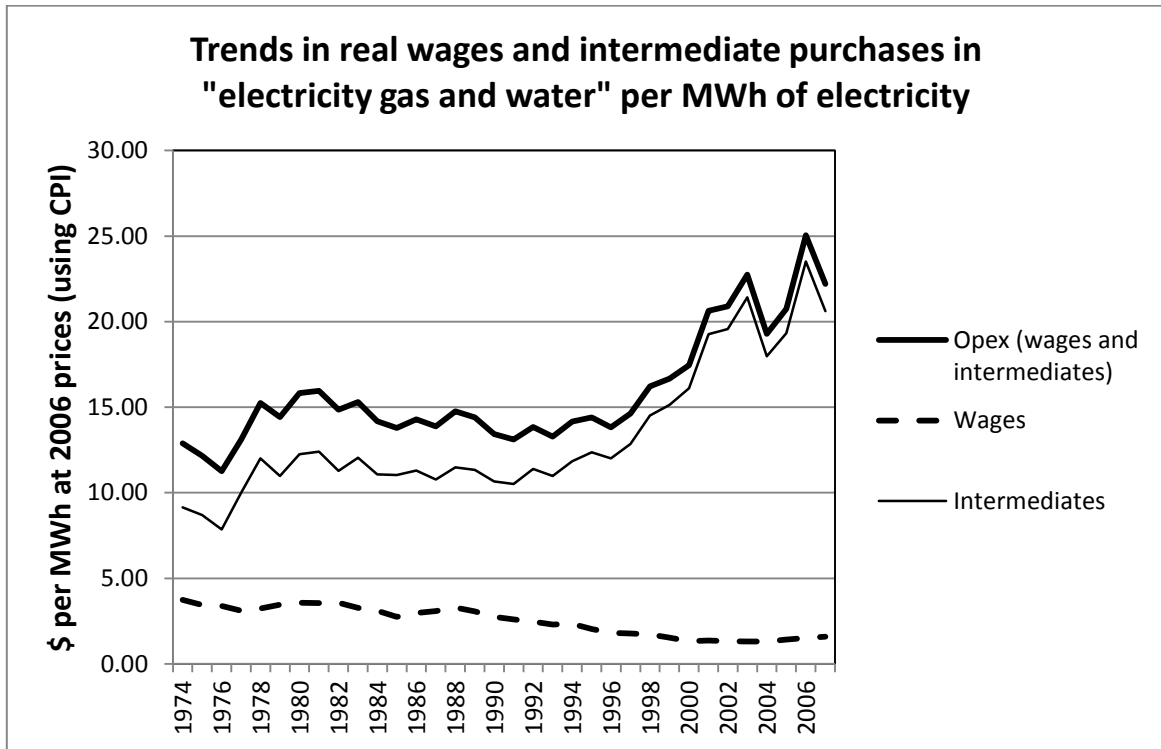




Source: Statistics New Zealand



Source: Geoff Bertram "A Stocktake of Profitability and Investment Performance in the New Zealand Electricity Market After Two Decades" paper presented to IAEE International Conference, Stockholm, June 2011.



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# Another approach to state asset sales programme

Geoff Bertram

**I** WAS asked recently: "If you were prime minister, would you sell off New Zealand assets?" This was my response.

First some potted history. The New Zealand electricity system started off as a patchwork of local generation and distribution systems, but between 1934 and the 1960s it was converted into a state monopoly under William Massey and Gordon Coates, gaining huge "economies of scope and scale" from developing the system as an integrated whole.

Public ownership was the efficient way to achieve the socially desirable and of nationwide electrification at the least feasible cost, and New Zealanders took well-justified pride in their collectively owned system.

Until the 1980s, the electricity system was run for the benefit of consumers. That meant supplying electricity at cost prices, not exploiting the monopoly's market power to fatten the Treasury's books. So electricity was priced on social principles, below the profit-maximising price, but still covering all its costs, effectively a social benefit in kind.

At both national and local levels, electricity pricing was subject to democratic control, through electric power boards, city councils, and the Electricity Ministry. Then came Roger Douglas and a neoliberal Treasury.

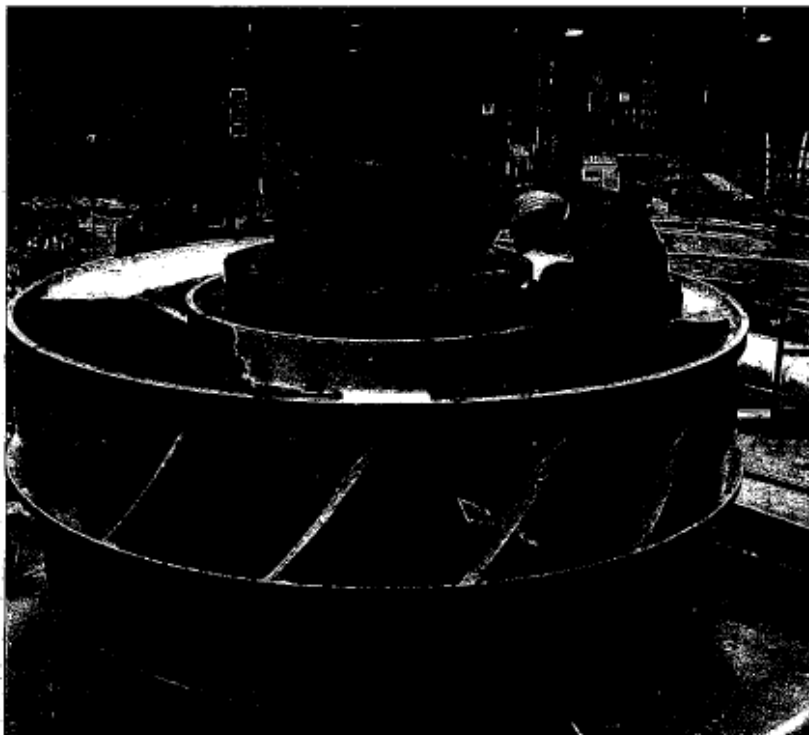
From a neoliberal point of view, state ownership is an anomaly. If privatisation is ruled out, state-owned operations should behave as profit-maximisers. Non-commercial social objectives have no place in the neoliberal vision and so should be subordinated to profit. If the Government wants socially responsible behaviour from state-owned enterprises, it has to pay for it. That's the State-Owned Enterprises Act 1986.

The other leg of the neoliberal double is deregulation. Since 1986, successive governments have left unchecked the predatory behaviour of the restructured electricity industry.

Consumers have been price-gouged, natural-monopoly positions have been exploited, and competitive market disciplines to innovate and change have been fought off by an industry that has successfully protected its de facto cartel against the arrival of independent generators, demand-side efficiencies, smart meters, smart grids, feed-in tariffs, lifeline tariffs – in short, most key innovations in the worldwide electricity industry since the 1980s.

Blocking progress while pushing prices up ahead of inflation has been highly profitable – and most of the profits have flowed into government coffers.

Treasury ministers accordingly have joined industry-linked off-



**Power to the people:** New Zealand's electricity industry used to have social objectives.

cials and consultants to see off virtually all proposals for progressive change. The current asset sales programme will close off policy options that I favour in energy strategy and the future of electricity, first by reducing the scope for future governments to change course towards using the assets for socially desirable purposes, and second by increasing the power of private-sector interests to block progressive policy change.

But I concede the logic of the Government's approach. If the electricity SOEs are simply profit-seeking commercial ventures with no more sense of social responsibility than any private company, and if the Government's sole interest in them is to maximise its financial take-off, it hardly matters whether the state holds the assets and collects dividends, or sells them and uses the value to undertake other projects.

So as prime minister, would I sell the assets?

Well, for me to have become prime minister, New Zealanders would have had to vote for a platform very different from that of Prime Minister John Key.

Key elements in my election

platform would have been the following:

First off, the electricity assets that remain in state hands are still available for social purposes. With its existing generating stations plus the grid, the Government could undertake to supply all New Zealand households with a block of guaranteed electricity at a low price. Let's say the first 300 kilowatt hours each month are free.

**The current asset sales programme will close off policy options that I favour in energy strategy.**

There are about 1.7 million residential consumers, so that would be 600 gigawatt hours a year, or a bit less than half of total residential electricity use. The saving to each household should be more than \$750 a year.

That would make quite a difference to low-income households' health and welfare. Think of this as just like the Comaleco power

contract, but designed to transfer wealth from the Crown to residential consumers, rather than from New Zealand to a transnational.

Second, the Emissions Trading Scheme is basically a money-go-round, not a means of efficiently or effectively reducing New Zealand's carbon emissions. One issue with the ETS is that it charges us all \$60 to \$80 per tonne of emissions from generating electricity, compared to \$12.50 per tonne (or less) on petrol.

Besides providing a perverse incentive for the economy to move away from renewables towards fossil fuels, the ETS fattens the profits of the owners of renewables-based power stations inherited from the old regime, by \$300 million a year of windfall profits. My election platform would have included a proposal to tax all such windfall profits on sunk-cost capacity.

Price regulation of the electricity industry in New Zealand since the 1980s has been lax in lines companies and totally absent in generation and retail. Hence the ability of the companies to hike prices inexorably and to book the resulting profits without suffering

any sanction. My election platform would have included a pledge to return to regulation of electricity prices on the basis of the historic cost of assets. This would imply a forced write-down of book values to eliminate unearned capital gains/revaluations.

There is an urgent need for new technology. We need small-scale renewable distributed generation by farms, households and businesses, with surplus power sold back into the grid at a price determined by a regulated feed-in tariff. We need genuinely smart metering. We need more independent generators. I would direct SOE boards to facilitate the entry of new technologies. With these key reforms in place, the "value" of the SOEs would be far below Finance Minister Bill English's guess of \$6 billion. In fact it would be an interesting question whether private investors would want to buy the SOE assets, without the prospect of using market power to squeeze cash out of consumers and see off potential competitors.

Geoff Bertram is a senior associate at Victoria University's Institute of Policy Studies.