

Chapter 11

Uncertainty and Regulation: Insights From Two Network Industries

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11.1 Introduction

This chapter on network industries considers specifically the telecommunications sector with some references to the electricity sector¹ and the relationships these industries have with regulation in New Zealand. The chapter:

- backgrounds the historical and industry events;
- analyses the events of these network industries and outlines the main points including policy options and whether they addressed the perceived problems;
- analyses what these events in these industries tell us about uncertainty;
- identifies if this type of uncertainty is specific to these network industries (as opposed to other uncertainty issues in regulation); and
- discusses if the uncertainty experienced had effect on capital investment and innovation and, if so, what were those effects.

This chapter focuses on three specific topics, as they illustrate the impact of regulation on network industries:

- (1) the degree of government involvement in the market;
- (2) the evolution of social welfare obligations within the industries; and
- (3) the Ultra-Fast Broadband Initiative (UFBI).

These three topics are contentious. Government involvement in the telecommunications industry in the past 25 years has been an unplanned evolution. It features a strong wave of liberalisation and privatisation, with minimal regulation becoming more and more stringent as dysfunctions appear. It shows a deregulated market controlled first by the courts, then by an industry-specific regulator and,

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¹ For a detailed discussion of the electricity sector see Mark Bennett and Joel Colón-Ríos “Public Participation in New Zealand’s Regulatory Processes” (ch 6) in this volume.

within the past decade, a growing government input. Finally, it goes full circle to once again having the government in control to a large extent of the telecommunications infrastructure.

Social welfare is another illustration of the unplanned evolution characterising this area of the economy. The fourth Labour Government decided to both liberalise and privatise Telecom; but wished to retain certain guarantees, which became known as the “kiwi share”. Those guarantees had a broad social undertone, and generally speaking were: free local calling; a price cap; and a universal service obligation. Those obligations had a tremendous impact on the evolution of the sector; and arguably were more compatible with the government or a central controller delivering a public service than with a private corporation. Yet they were retained, and their compensation is still contentious today.

Finally, the UFBI is one of the most far reaching projects that government has undertaken. It represents an investment of \$1.35 billion of public money, in public-private partnerships, aiming at increasing broadband speed for a majority of New Zealanders, and thereby increasing the country’s overall economic activity and productivity. Yet this programme is also controversial. It appears that no official economic study focusing on the New Zealand context actually corroborates the assumption that the enhanced speeds are necessary for the positive externalities claimed. Further, there is confusion between the advantages brought by the actual network and those requiring the new fibre network.

This chapter has the following structure: Part 2 sets the context, presenting the industry and its evolution. Part 3 discusses, more specifically, the evolution of government involvement, illustrating the “full circle” metaphor. Part 4 introduces the welfare obligations and the effects they had on the sector. Part 5 examines the UFBI, the economic studies underlying it and the most common critiques of fibre networks. Part 6 discusses the electricity industry. Part 7 considers these network industries and regulation while Part 8 concludes the chapter.

11.2 Historical background

This part of the chapter outlines the history of the telecommunications industry in New Zealand. It outlines how Parliament first liberalised and then privatised the industry, and describes how general competition law and the courts were meant to regulate the industry. This did not work so an industry specific regulator was introduced. It discusses how the government retained an interest in telecommunications in order to meet welfare obligations and then provides a case study of ultra fast broadband (UFB).

11.2.1 *Liberalisation and privatisation*

Following the constitutional and foreign exchange crisis of July 1984, the Fourth Labour Government decided to undertake a large programme of economic reform

which led to what is now known as “light-handed regulation”.² This regulation system was characterised by three main points: reliance on general competition law and on the courts to enforce regulation; strong information disclosure obligations; and the threat of further regulation should the market perform unsatisfactorily.³

Telecommunications had been a public monopoly for the major part of the 20th century. Embarking on a fast-paced reform the government created a new State-Owned Enterprise (SOE), Telecom Corp of New Zealand (Telecom), on 1 February 1987 and transferred all telecommunications and assets to it two months later.⁴ By 1 April 1989 the monopoly was fully removed, and “by this time, Telecom New Zealand Limited was doing business in one of the most open telecommunication marketplaces in the world”.⁵ No specific regulation had been adopted; instead, the market, and notably the terms upon which competitive firms could connect to the network, was to be regulated by the Commerce Act 1986.⁶

Telecom was finally privatised on 12 September 1990. The sale involved what became known as the “kiwi share”. It imposed several social welfare obligations upon the new owners of Telecom:⁷

... the price of residential telephone rentals would not rise faster than the Consumer Price Index (CPI) unless profits were unreasonably impaired (the ‘price cap’ obligation), rural residential rental prices would not exceed urban residential rentals (the ‘universal service’ obligation) and residential customers would continue to be offered a tariff with no charges for local calls (the ‘free local calling’ obligation).

11.2.2 *The interconnection dispute*

Competition started to appear shortly after. Clear Communications Limited (Clear) entered the market in 1991, “using the fiber-optic cable of the then New Zealand

² Lewis Evans and others “Economic Reform in New Zealand 1984–95: The Pursuit of Efficiency” (1996) 34(4) *Journal of Economic Literature* 1856.

³ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 10–11.

⁴ Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.1.

⁵ Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.2. This system is still present today, with no licensing regime for telecommunications operators. See Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 15.

⁶ Lewis Evans and others “Economic Reform in New Zealand 1984–95: The Pursuit of Efficiency” (1996) 34(4) *Journal of Economic Literature* 1856 at 1887.

⁷ Another more trivial obligation was that there should be one or more public share offerings over the first three years of private ownership: David Boles de Boer and Lewis Evans “The Economic Efficiency of Telecommunications in a Deregulated Market: The Case of New Zealand” (1996) 72 *The Economic Record* 24, as cited in Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 16.

Railways to bypass the Telecom network”.⁸ It then reached an agreement with Telecom on interconnection. A few other competitors were Bell South, Saturn Communications and Telstra.⁹ The period following corporatisation was arguably characterised by strong “welfare gains”.¹⁰ However, those early successes of the light-handed regulation regime were put in doubt by the long *Telecom v Clear* case, which went all the way to the Privy Council.¹¹ The issue concerned the price for interconnection for local calling. Telecom wanted to use the Efficient Component Pricing Rule (also known as Baumol-Willig rule), under which it could charge full opportunity costs less the average incremental costs – the monopoly price.¹² The basis for this argument was that Telecom had to recover the profits foregone to be able to continue to cross-subsidise the “unprofitable residential services that it was obliged to provide under the kiwi share”.¹³

The Privy Council upheld Telecom’s claim. The long saga raised doubts about the light-handed regulation regime, and the question of an industry-specific regulator resurfaced. In 1995 an inquiry was made by Officials of the Ministry of Commerce and The Treasury, but as Telecom and Clear announced they had reached an accord, no further action was taken.¹⁴ The Telecom and Clear agreement then

⁸ Lewis Evans and others “Economic Reform in New Zealand 1984–95: The Pursuit of Efficiency” (1996) 34(4) *Journal of Economic Literature* 1856 at 1887.

⁹ Bell South entered the mobile telephony market in 1992, trying to deploy its own network. It struggled to gain market share and was bought by Vodafone in 1998. Vodafone has been a successful competitor and in 2005 gained a larger market share than Telecom. Saturn began as a cable TV company on the Kaitiaki Coast, and grew to deliver cable TV, phone and Internet services in the Wellington and Christchurch regions. Telstra “initially focused on providing services to top tier organisations, who were already Telstra clients in Australia”. It also focused on international traffic. At the end of 1999, Telstra entered a partnership with Saturn, and in 2001 TelstraClear was created by the merger of Telstra, Saturn and Clear into a single entity: Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.3–26.4.

¹⁰ The quality of service improved “to the point that the International Institute for Management Development’s 48-country survey ranks New Zealand telecommunications at the top in the extent to which telecommunications infrastructure met the business requirements in 1995”. Productive efficiency also improved, reportedly “to the extent that real costs per minute of use of the network fell by 5.5 percent per annum”: David Boles de Boer and Lewis Evans “The Economic Efficiency of Telecommunications in a Deregulated Market: The Case of New Zealand” (1996) 72 *The Economic Record* 24, as cited in Lewis Evans and others “Economic Reform in New Zealand 1984–95: The Pursuit of Efficiency” (1996) 34(4) *Journal of Economic Literature* 1856 at 1887.

¹¹ *Clear Communications Ltd v Telecom Corp of New Zealand* (1993) 5 TCLR 166, (1992) IPR 481 (HC); *Clear Communications Ltd v Telecom Corp of New Zealand Ltd* (1993) 5 TCLR 413, (1993) 4 NZBLC 103,340 (CA); *Telecom Corp of New Zealand Ltd v Clear Communications Ltd* [1995] 1 NZLR 385, (1994) 5 NZBLC 103,552 (PC).

¹² Lewis Evans and others “Economic Reform in New Zealand 1984–95: The Pursuit of Efficiency” (1996) 34(4) *Journal of Economic Literature* 1856 at 1888.

¹³ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 18.

¹⁴ Lewis Evans and others “Economic Reform in New Zealand 1984–95: The Pursuit of Efficiency” (1996) 34(4) *Journal of Economic Literature* 1856 at 1888.

became the basis for similar agreements between Telecom and its other competitors.¹⁵

This was not the end of the dispute, however. In 1996 Clear requested a variation of the agreement, which Telecom refused. Clear then began to withhold part of its payments. When Telecom started actions to claim the amount owing, Clear counter-claimed that there had been breaches of the Commerce Act and “at both the High Court and the Court of Appeal, it was found that Clear could legally withhold payments, pending a substantive determination on the alleged Commerce Act breaches”.¹⁶ This had the effect of reintroducing uncertainty in the market, and doubts on the efficiency of light-handed regulation.¹⁷ Clear did not pursue litigation to its end. The appearance of the Internet had redistributed the cards.

11.2.3 *Internet service provider wars*

The association of the development of dial-up Internet, of the interconnection agreements and of the free local calling obligation had unforeseen effects. The interconnection agreements provided that termination charges would apply; that is, the network from which the call originated should compensate the one on which it terminated. Because Telecom’s network had much more customers than its competitors, most calls terminated on Telecom’s network.¹⁸ Since dial-up Internet required customers to call an ISP, and that those calls were long and one-way, Telecom’s competitors had a large incentive to sign up as many ISPs as possible. This led to aggressive price discounting, with Telecom’s competitors being much more successful in attracting ISPs. Further, “under the Kiwi Share agreement with the Government, Telecom had to supply to residential customers free and unlimited phone line access for a fixed monthly fee. This both caused and added to the problem faced by Telecom”.¹⁹ This created two main issues for Telecom: first, it largely increased traffic, causing increased pressure on the

¹⁵ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 23.

¹⁶ *Telecom New Zealand Ltd v Clear Communications Ltd* (1997) 6 NZBLC 102,325 (HC) and *Telecom New Zealand Ltd v Clear Communications Ltd* CA CA206/97, 9 December 1997, as cited in Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 24.

¹⁷ This uncertainty was aggravated by the lack of consistency with a similar dispute within the gas industry, where unilateral rejection of contractual agreements prior to resolution of the litigation was found to be illegal: *Shell (Petroleum Mining) Co Ltd v Kapuni Gas Contracts Ltd (No 5)* HC Auckland CL5/94, 4 June 1996 at 146, as cited in Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 25.

¹⁸ Michael Wigley “0867 Dials-up Competition Law Changes?” NZLawyer Online (New Zealand, 30 May 2008) <www.nzlawyer magazine.co.nz>.

¹⁹ Michael Wigley “0867 Dials-up Competition Law Changes?” NZLawyer Online (New Zealand, 30 May 2008) <www.nzlawyer magazine.co.nz>.

infrastructure; and second, and much more importantly, it threatened the financial viability of the firm.²⁰

Telecom first started a price-war, “aggressively marketing flat-rate ISP packages in order to increase its appeal to both new and existing customers”.²¹ As this proved insufficient the 0867 package was introduced, whereby:²²

... only dial-up internet calls made to numbers on the Telecom network with an 0867 prefix would qualify for unlimited uncharged dial-up internet telephony access. Data calls made to any other numbers would be charged to the caller at 2c per minute (the cost to Telecom of calls terminating on other networks) after 10 hours per month of uncharged access had been accrued.

While the solution proved efficient, and was acceptable to the government, it was contested by the Commerce Commission which began the 0867 litigation.²³ The case eventually found its way to the Supreme Court, which in 2010 decided in favour of Telecom.²⁴

11.2.4 Telecommunications Act 2001

The general perception was that light-handed regulation had failed. Dissatisfaction with the high market share still retained by Telecom in 2000 led the government to conduct a Ministerial Inquiry (known as the Fletcher Inquiry).

Other concerns were that interconnection prices were significantly above cost. There was a perception that the courts were not efficient regulators. There was a significant dissatisfaction with the approach the Privy Council adopted in the *Telecom v Clear* case. There were also concomitant concerns above delays and litigation concerns. The kiwi share obligations also led to concerns, in particular, the compensation payable to Telecom for it. Indeed, the basis for Telecom adopting the Baumol Willig rule was that the universal service obligation meant that Telecom had to cross-subsidise rural customers with urban customers.

This led to a major regulatory reform and, with the new Telecommunications Act 2001, marked the end of the self-regulation and reliance on generic competition law era. Yet “the new regulatory regime was still light-handed by international

²⁰ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 27.

²¹ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 27.

²² Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 28.

²³ Michael Wigley “0867 Dials-up Competition Law Changes?” NZLawyer Online (New Zealand, 30 May 2008 <www.nzlawyer magazine.co.nz>.

²⁴ *Commerce Commission v Telecom Corp of New Zealand Ltd* [2010] NZSC 111, [2011] 1 NZLR 577.

standards”.²⁵ The reform was symbolised by the words of Paul Swain: “as much market as possible and as much Government as necessary.”²⁶

The main elements of the reform were the creation of a Telecommunications Commissioner, the implementation of designated and specified services and the replacement of the kiwi share with a Telecommunications Service Obligation (TSO).²⁷ Under the TSO arrangement, Telecom was still required to provide the social welfare obligations, but the cost was spread over all market participants through a levy, the level of which was determined by the Commissioner.²⁸

The Telecommunications Act 2001 also required the new Commissioner to make a recommendation as to the mandatory local loop unbundling (LLU).²⁹ In his final report in 2004 the Commissioner advised against: “platform competition [which] was considered likely to evolve and reduce the extent of Telecom’s control of the bottleneck access (and) the high costs of mandatory unbundling was also cited.”³⁰ At that time most competitors were much more interested in using Telecom’s wholesale bit stream services than in any LLU.³¹ The report recommended instead the designation of an asymmetric DSL bit stream service.³² The government endorsed this report in 2004.

Part of the decision was Telecom’s engagement to achieve:³³

... a broadband take-up of more than 250,000 residential customers by 31 December 2005 and of these connections, over 33% was to be delivered via wholesale channels. In addition, Telecom also committed to improving the performance of these products, including the deployment of Fibre-to-the-Node (FTTN) during the same period.

²⁵ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 16.

²⁶ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 16.

²⁷ Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.5; Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 16–17.

²⁸ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 43.

²⁹ Telecommunications Act 2001, s 64.

³⁰ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 55.

³¹ Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.5.

³² See Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 55; Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 17.

³³ Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.5.

In 2005, however, it became obvious that these commitments had not been achieved.³⁴ While progress on broadband volumes was satisfying, the wholesale channels were insufficient. Further, Telecom had not invested in the deployment of FTTN.³⁵

11.2.5 *The stock take and 2006 reform*

Concern about the poor performance of the country in OECD rankings in the broadband sector led to a new government inquiry in 2005.³⁶ The Ministry of Economic Development undertook the stock take and concluded that the whole telecommunications sector had performed poorly because of a lack of competition.³⁷ It advised not only regulatory reform, but also increased government investment and intervention in the market relying on the “ladder of investment access strategy”.³⁸ The outcome was the significant amendments made to the Telecommunications Act 2001.³⁹ Its main features were:⁴⁰

- full local loop unbundling;
- removal of the remaining constraints on bit stream services;
- ensuring that naked-DSL was made available;
- greater investigation powers granted to the Commissioner; and
- providing for the operational separation of Telecom.

The reform triggered large amounts of public interest and support, and only five years after the Telecommunications Act 2001 had been introduced, the

³⁴ Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) Telecommunications Journal of Australia 26.1 at 26.6.

³⁵ It had been decided that Telecom should offer “unconstrained downstream line synchronisation rates” – that is, Telecom should charge a fixed price for offering the maximum downstream speed that “a given copper access line would support”. This was a strong disincentive for Telecom to invest in Fibre-to-the-Node (FTTN): “Why would one invest in improving the performance of broadband services, when there was little potential to charge higher wholesale prices for the resulting products?”: Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) Telecommunications Journal of Australia 26.1 at 26.5–26.6.

³⁶ Ross Patterson *Regulation of Telecommunications: The Lessons Learned Over the Last 25 Years and their Application in a Broadband World* (Paper delivered to 22nd Annual Workshop of the Competition Law and Policy Institute of New Zealand, 5 August 2011) <www.comcom.govt.nz> at 9.

³⁷ Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) Telecommunications Journal of Australia 26.1 at 26.6.

³⁸ Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) Telecommunications Journal of Australia 26.1 at 26.7; Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 26.

³⁹ Telecommunications Amendment Act (No 2) 2006.

⁴⁰ Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) Telecommunications Journal of Australia 26.1 at 26.8.

telecommunications industry had dramatically changed up from the light-handed to the heavily regulated side of the scale.⁴¹

11.2.6 *The operational separation of Telecom*

The aim of the operational separation was to increase competition by limiting Telecom's incentives to discriminate between access seekers to its bottleneck infrastructure.⁴² It was decided that the Minister of Communications and Information Technology would supervise the separation, and it would be based on the example of the separation of British Telecom in the United Kingdom.⁴³ Lengthy negotiations followed, which were finally concluded in 2008.⁴⁴ Telecom was to be divided in three arm's length groups: Access Network Services (now Chorus); Telecom Wholesale; and Telecom Retail. "There is a requirement for these three groups to operate on a stringent arms length basis, with clearly defined non-disclosure requirements between the groups."⁴⁵ The regime also applied Equivalence of Inputs standards to all regulated fixed access services.⁴⁶ Further, discrimination between access seekers was strictly prohibited.⁴⁷

The Separation Undertakings also included "significant commitments (from Telecom) to migrate its public switched telephone network customers to a new voice platform ..., and invest in rolling out Fibre-to-the Node (FTTN) to 84 per cent of New Zealand's population by December 2011".⁴⁸ While this will reduce the length of the copper loops sufficiently to enable speeds of 10 Mbps, it will not enable very-high-speed digital subscriber line services.

The 2006 reforms have seen positive results,⁴⁹ despite four Telecom requests for variation of its Undertakings.⁵⁰ Following closer monitoring of the market by the

⁴¹ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 19.

⁴² Murray Milner "Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand" (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.8.

⁴³ Bronwyn Howell *A Pendulous Progression: New Zealand's Telecommunications Regulation 1987-2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 88.

⁴⁴ "Separation Day" was 31 March 2008.

⁴⁵ Murray Milner "Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand" (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.9.

⁴⁶ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 29.

⁴⁷ Ross Patterson *Regulation of Telecommunications: The Lessons Learned Over the Last 25 Years and their Application in a Broadband World* (Paper delivered to 22nd Annual Workshop of the Competition Law and Policy Institute of New Zealand, 5 August 2011) <www.comcom.govt.nz> at 9.

⁴⁸ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 31; Telecom "Telecom Separation Undertakings" (25 March 2008) <www.med.govt.nz>.

⁴⁹ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 19 and 25.

Commission, it appears that since 2007 there has been “an increase in competition resulting in increased investment, greater choice, lower prices and better quality across the spectrum of telecommunications services in New Zealand”.⁵¹ Perhaps more significantly, New Zealand has climbed in the OECD ranking of broadband penetration from 22nd to 17th position.

11.2.7 PROBE and the broadband challenge

Lack of confidence that the market alone would sufficiently develop the telecommunications network led to a series of public interventions aiming at bettering New Zealand’s position in OECD rankings. The move started with the Provincial Broadband Extension (PROBE).⁵² This project aimed at reducing the gap (also called “digital divide”) between urban and rural New Zealand. It recognised the importance of the agricultural sector for the New Zealand economy, and had an additional specific focus on schools and hospitals. It divided New Zealand into 14 regions, and provided funding to chosen broadband service providers. The measure has been depicted as “only a partial success”.⁵³

The project then evolved in 2005 into the Broadband Challenge. This new initiative was twofold: it aimed at providing “ready access to very high speed networking in our urban centres, and better and more affordable access in rural and underserved areas”.⁵⁴ The government was to provide up to 50 per cent of the necessary funding in public-private partnerships. The project was a partial success and has been described as “intended that this be the start of a wider deployment of open access fibre infrastructure in New Zealand and certainly this has been the case in a few cities”.⁵⁵

In 2008, however, the political debate moved on. Triggered by concerns about the economy’s growth and competitiveness, and the lack of investment in the telecommunications network, Labour and National planned two very different projects for the telecommunications industry.⁵⁶ Labour proposed the Broadband Investment Fund, a scheme aiming at investing up to \$340 million to upgrade the

⁵⁰ An indication of the costs and difficulty of the operational separation: Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 34.

⁵¹ Ross Patterson *Regulation of Telecommunications: The Lessons Learned Over the Last 25 Years and their Application in a Broadband World* (Paper delivered to 22nd Annual Workshop of the Competition Law and Policy Institute of New Zealand, 5 August 2011) <www.comcom.govt.nz> at 10.

⁵² See iStart “Broadband for all – Probe Project explained” (January 2004) <www.istart.co.nz>.

⁵³ Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.14.

⁵⁴ Hon David Cunliffe “Releases: Broadband Challenge Backgrounder” (8 September 2006) <www.beehive.govt.nz>.

⁵⁵ Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.14.

⁵⁶ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 19.

network “focusing on businesses, health service (and education) providers and under-served rural areas”.⁵⁷ National proposed an investment of \$1.5 billion to roll-out a fibre-to-the-premises (FTTP) network, with an initial focus on businesses, schools and health service providers. National won and the UFBI was adopted.

11.2.8 *The UFBI*

Fibre was identified as:⁵⁸

[An] important national infrastructure, especially for a country with the geographical challenges of New Zealand [It would be]:

- an enabler for growth across the economy;
- increasing access to international markets;
- key to accelerating New Zealand’s transition to a knowledge-based economy;
- and
- the key to enhanced [delivery] of education and health services.

Fibre is described as the best technology available. Yet it was feared that the private sector would not invest in this new network, because of “the high deployment costs, (the constraints of) New Zealand’s geography, geology and dispersed population and the risk of low uptake in the face of established copper-based competition”.⁵⁹ The UFBI answered those risks by providing public funding and support.

In practice this initiative will see the government investing \$1.35 billion to accelerate the construction of a nation-wide fibre network. It is expected to connect 75 per cent of all New Zealanders by 2020, with a specific emphasis on businesses, schools and health services which should be linked by 2015. Fibre will greatly out-speed actual Internet connections, and “will enable downlink speeds of at least 100 Mbps (megabits per second), and uplink speeds of at least 50 Mbps”.⁶⁰ Broadly speaking, this project is expected to bring numerous advantages, ranging from increased efficiency, productivity and economic growth to better innovation, education and health services.⁶¹

⁵⁷ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 19.

⁵⁸ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 48.

⁵⁹ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 48.

⁶⁰ Ministry of Business, Innovation and Employment “Fast Broadband: Ultra-Fast Broadband Initiative” (2 August 2012) <www.med.govt.nz/sectors-industries/technology-communication>.

⁶¹ Ministry of Business, Innovation and Employment “Fast Broadband: Ultra-Fast Broadband Initiative” (2 August 2012) <www.med.govt.nz/sectors-industries/technology-communication>; Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.15.

The proposal is characterised by a vertical separation between the operators of the infrastructure, which is divided into three layers.⁶² Simplifying, layer one, or dark fibre will consist of the fibre network itself, in a similar way to the actual copper network. Layer two (lighting the fibre) will consist of the wholesale level, where the fibre is “converted into bit stream connections over which internet traffic can be passed”.⁶³ Finally, layer three will be the retail level.⁶⁴ Government funding will be limited to layer one. Access to the second and third layers will be open and proposed on a non-discriminatory basis.⁶⁵

In practice, public investment will be managed by a Crown Entity – Crown Fibre Holdings. The country was divided into a number of zones and opened for tender to attract private investors. For each region a public-private partnership will be struck for the provision of layer-1 services, forming a Local Fibre Company (LFC).⁶⁶ The private investor is expected to at least match the public investment.⁶⁷ While this LFC is allowed to provide layer-2 services, it has to provide open access to the second layer on a non-discriminatory basis. This means that it cannot discriminate in favour of its wholesale activity. Further, “layer 3 firms are precluded from having a controlling stake in Layer 1 firms”.⁶⁸ These restrictions aim to avoid the problems associated with vertical integration of a natural monopolist, as had been the case with the copper network.

11.2.9 *Structural separation of Telecom*

A direct consequence of the UFBI was the voluntary structural separation of Telecom.⁶⁹ In order to be able to participate in the tender process, private parties

⁶² Dave Heatley and Bronwyn Howell *Structural Separation and Prospects for Welfare-Enhancing Price Discrimination in a New ‘Natural Monopoly’ Network: Comparing Fibre Broadband Proposals in Australia and New Zealand* (New Zealand Institute for the Study of Competition and Regulation Inc, 26 June 2010) <www.iscr.org.nz/n580,53.html> at 3.

⁶³ Dave Heatley and Bronwyn Howell *Structural Separation and Prospects for Welfare-Enhancing Price Discrimination in a New ‘Natural Monopoly’ Network: Comparing Fibre Broadband Proposals in Australia and New Zealand* (New Zealand Institute for the Study of Competition and Regulation Inc, 26 June 2010) <www.iscr.org.nz/n580,53.html> at 4.

⁶⁴ Dave Heatley and Bronwyn Howell *Structural Separation and Prospects for Welfare-Enhancing Price Discrimination in a New ‘Natural Monopoly’ Network: Comparing Fibre Broadband Proposals in Australia and New Zealand* (New Zealand Institute for the Study of Competition and Regulation Inc, 26 June 2010) <www.iscr.org.nz/n580,53.html> at 4.

⁶⁵ In other words, the network operator will have to grant access to any access seeker, and apply the same terms for the same services to all downstream firms.

⁶⁶ In total, four public-private partnerships have been set-up.

⁶⁷ Ministry of Business, Innovation and Employment “Fast Broadband: Ultra-Fast Broadband Initiative” (2 August 2012) <www.med.govt.nz/sectors-industries/technology-communication>.

⁶⁸ Dave Heatley and Bronwyn Howell *Structural Separation and Prospects for Welfare-Enhancing Price Discrimination in a New ‘Natural Monopoly’ Network: Comparing Fibre Broadband Proposals in Australia and New Zealand* (New Zealand Institute for the Study of Competition and Regulation Inc, 26 June 2010) <www.iscr.org.nz/n580,53.html> at 5.

⁶⁹ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 61.

had to be independent from retail-level firms.⁷⁰ The operational separation undergone by Telecom was insufficient to fulfil that condition. Telecom therefore separated into two distinct entities: Chorus, which retained the network infrastructure; and Telecom, which retained retail activities (and the mobile network). The government endorsed this in the Telecommunications (TSO, Broadband, and Other Matters) Amendment Act 2011.⁷¹

Structural separation has been described as “the ‘nuclear option’ of telecommunications regulation”.⁷² It has been argued that this is the path which should have been taken back at the time of privatisation. Structural separation eliminates all incentives for discrimination between access seekers, because there is no retail arm to favour. In the opinion of Dr Ross Patterson, the Telecommunications Commissioner, “[i]t is impossible to underestimate the impact of structural separation – it really is a game changer”.⁷³

11.2.10 *Rural broadband initiative*

Another core election promise of National was to “accelerate the roll-out of high-speed broadband services to rural and remote areas”.⁷⁴ This was concretised in a second complementary project, the Rural Broadband Initiative (RBI), announced on 10 December 2009.⁷⁵ This scheme recognises the importance of the rural regions for the national economy, and the significant barrier of low population density to private investment.⁷⁶

This plan sees the government committing \$285 million to increase broadband speeds. In practice, another public-private partnership has been reached with

⁷⁰ Bronwyn Howell and Dave Heatley *Submission on: Regulatory Implications of Structural Separation* (15 October 2010) at 9.

⁷¹ Another notable change provided by this Act is the move from regulated UCLL price to a nationally averaged price after three years: Ross Patterson *Regulation of Telecommunications: The Lessons Learned Over the Last 25 Years and their Application in a Broadband World* (Paper delivered to 22nd Annual Workshop of the Competition Law and Policy Institute of New Zealand, 5 August 2011) <www.comcom.govt.nz> at 10.

⁷² Ross Patterson *Regulation of Telecommunications: The Lessons Learned Over the Last 25 Years and their Application in a Broadband World* (Paper delivered to 22nd Annual Workshop of the Competition Law and Policy Institute of New Zealand, 5 August 2011) <www.comcom.govt.nz> at 10.

⁷³ Ross Patterson *Regulation of Telecommunications: The Lessons Learned Over the Last 25 Years and their Application in a Broadband World* (Paper delivered to 22nd Annual Workshop of the Competition Law and Policy Institute of New Zealand, 5 August 2011) <www.comcom.govt.nz> at 12.

⁷⁴ John Key, Prime Minister of New Zealand “Achieving a Step Change – Better Broadband for New Zealand” (Speech to the Wellington Chamber of Commerce, 22 April 2008).

⁷⁵ This policy received considerable attention from the rural electorate and its influential lobby group, Federated Farmers. The original policy was a grant of \$48 million; it soon was upgraded to \$300 million: Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 45–46.

⁷⁶ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 63–64.

Telecom and Vodafone, covering the whole country.⁷⁷ It is vested on the development of both the fibre network and the use of wireless technology, with Vodafone investing in 4G mobile technology LTE.⁷⁸

Within six years, 95 per cent of rural schools will receive fibre, enabling speeds of at least 100Mbps (which are the same as the speeds to be provided by the UFBI), with the remaining seven per cent to achieve speeds of at least 10Mbps. Eighty-six per cent of rural households and businesses will have access to broadband with speeds of at least 5Mbps, with the remainder to achieve speeds of at least 1Mbps.⁷⁹ Consistently with the UFBI, obligations of open access and non-discrimination have been included in the undertakings.⁸⁰

11.3 Government involvement

11.3.1 Introduction

The telecommunications industry, broadly speaking, has been through four phases since the mid-1980s.⁸¹ The first phase was massive liberalisation and privatisation, with the regulation of the sector entrusted to the courts and general competition law. The second started with the Telecommunications Act 2001, enacted because of the widespread dissatisfaction with the lack of competition in the market and the feeling that the light-handed regulation had failed. This led to the creation of the Telecommunications Commissioner, an industry-specific regulator. A third phase was discernible with the “stock take” in 2005. The involvement of the government became more visible; the inquiry was undertaken by the Ministry of Economic Development and the operational separation was supervised by the Minister of Communications and Information Technology rather than the Commissioner. This saw the slide from the light-handed side of the scale to the heavily regulated one. Finally, the fourth phase began in 2008, with the election of the National-led Government and the beginning of UFBI. This initiative started a process whereby significant parts of the “telecommunications network will be back within government ownership and control”.⁸² It appears that regulation has gone full circle.⁸³

⁷⁷ The agreement was announced on 20 April 2011: Steven Joyce “Releases: Rural Broadband Initiative Underway” (20 April 2011) <www.beehive.govt.nz>.

⁷⁸ Steven Joyce “Releases: Rural Broadband Initiative Underway” (20 April 2011) at <www.beehive.govt.nz>.

⁷⁹ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 67.

⁸⁰ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 67; Steven Joyce “Releases: Rural Broadband Initiative Underway” (20 April 2011) <www.beehive.govt.nz>.

⁸¹ This has been shown in [11.2] above.

⁸² Murray Milner “Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand” (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.16.

⁸³ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 117.

This cycle, as striking as it may seem, is rather unsurprising. If the development of UFB is admitted as a necessary investment for the country, it is only logical that the government is forced to fund a large part of it. These kinds of large infrastructure developments generally require some form of public support, because of the size of the necessary investment and the uncertainty of any return.⁸⁴

11.3.2 *The real issue – vertical integration of natural monopolies*

The origin of the cycle is generally blamed on the failure of the light-handed regulatory regime. It underwent widespread criticism, especially at the end of the 1990s,⁸⁵ yet, the actual failure of this regulatory system remains uncertain. Howell argues that New Zealand did not perform any worse than many other countries which were more heavily regulated. She attributes this success in part to:⁸⁶

... a combination of factors including the serendipitous emergence of the internet at the same time as an imperfect interconnection agreement intertwined with the 'Kiwi Share' obligations to create a near unique set of factors that led to rapid and low-priced deployment of broadband.

What is undeniable, however, is that the whole regime was based on an inherent dysfunction: the vertical integration of a natural monopolist. This dysfunction is arguably at the basis of the need for reform. This had already become obvious in the mid-1990s, with the 1995 Inquiry.⁸⁷

A natural monopoly arises in situations where it is more efficient for one company to cater the whole demand than to have competition.⁸⁸ In the telecommunications market the natural monopoly is constituted by the local access network.⁸⁹ Competition issues arise when this natural monopoly is vertically integrated; that is, is active in markets related to the one where it holds its monopoly. In those cases it has an incentive to discriminate between its own arm and its competitors in the terms at which it will grant access to the natural

⁸⁴ Murray Milner "Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand" (2009) 59(2) Telecommunications Journal of Australia 26.1 at 26.16.

⁸⁵ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 16.

⁸⁶ Bronwyn Howell *A Pendulous Progression: New Zealand's Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 114.

⁸⁷ New Zealand Treasury *Regulation of Access to Vertically-integrated Natural Monopolies: A Discussion Paper* (The Treasury, Wellington, 1995).

⁸⁸ New Zealand Treasury *Regulation of Access to Vertically-integrated Natural Monopolies: A Discussion Paper* (The Treasury, Wellington, 1995) at 115.

⁸⁹ The local access network is constituted from the "local loop", the copper connecting the premises to the cabinet, and the line that connects the cabinet to the local exchange. See Alec Mladenovic "Network Industries: Electricity and Telecommunications" in Susy Frankel (ed) *Learning From the Past, Adapting for the Future: Regulatory Reform in New Zealand* (LexisNexis, Wellington, 2011).

monopoly or good.⁹⁰ This was the problem that arose in relation to Telecom. Not only was this firm responsible for running the network, but it also was active at wholesale and retail levels.

This difficulty is now solved, by separation. The 2006 amendments to the Telecommunications Act 2001 required operational separation, with the network, wholesale and retail divided between different business units which were required to operate at arm's length, apply Equivalence of Input terms, and respect non-discrimination obligations.⁹¹ This, of course, evolved in 2011 into structural separation, the “‘nuclear option’ of telecommunication regulation”.⁹²

The lessons were learnt and applied in the development of the UFBI. Operators of the fibre network cannot be active at the retail level and must respect the obligations of open access and non-discrimination.⁹³

11.3.3 Secondary issue – ownership of natural monopolies

If vertical integration was the primary cause of the regulation cycle, there is a second one – the ownership of natural monopolies. Natural monopolies are characteristic of a dysfunctional market. They present all the shortcomings generally associated with monopolies and the absence of competition: allocative; productive; and dynamic inefficiency.⁹⁴ Regulation can only do so much. It can regulate prices, impose open access, require non-discrimination, and limit the influence of the natural monopolist over related markets. Regulation can influence behaviour only to a restricted extent. More specifically, investment in, and development of a network under private ownership will probably be an issue. Because a private operator has, as its main aim, its own profit, if it does not face competition it will have a tendency to live from its rents, without reinvesting in its assets.⁹⁵ Why would it invest in a new technology if it does not enhance its returns? This has been a concern in the regulation of Telecom since its privatisation and

⁹⁰ New Zealand Treasury *Regulation of Access to Vertically-integrated Natural Monopolies: A Discussion Paper* (The Treasury, Wellington, 1995) at 17.

⁹¹ Ross Patterson *Regulation of Telecommunications: The Lessons Learned Over the Last 25 Years and their Application in a Broadband World* (Paper delivered to 22nd Annual Workshop of the Competition Law and Policy Institute of New Zealand, 5 August 2011) <www.comcom.govt.nz> at 9.

⁹² Ross Patterson *Regulation of Telecommunications: The Lessons Learned Over the Last 25 Years and their Application in a Broadband World* (Paper delivered to 22nd Annual Workshop of the Competition Law and Policy Institute of New Zealand, 5 August 2011) <www.comcom.govt.nz> at 10.

⁹³ Dave Heatley and Bronwyn Howell *Structural Separation and Prospects for Welfare-Enhancing Price Discrimination in a New ‘Natural Monopoly’ Network: Comparing Fibre Broadband Proposals in Australia and New Zealand* (New Zealand Institute for the Study of Competition and Regulation Inc, 26 June 2010) <www.iscr.org.nz/n580,53.html> at 5.

⁹⁴ This basically means that because of the lack of competition, the firm has no incentive to price closer to its costs, limit waste in its production and invest in research and development: Matt Sumpter and others *New Zealand Competition Law and Policy* (CCH, Auckland, 2010) at 37–38.

⁹⁵ Matt Sumpter and others *New Zealand Competition Law and Policy* (CCH, Auckland, 2010) at 38.

required numerous governmental interventions, for example, because of a lack of investment in the rural infrastructure,⁹⁶ development of the FTTN network,⁹⁷ or upgrading the network for broadband development.⁹⁸

11.3.4 *Private actors or public control?*

The real question raised by the regulation cycle is not the investment in a new network, but the public disinvestment in the former one – the origin of the privatisation process. Regulation cannot replace incentive, and only the government has, as its aim, the pursuit of the public interest. Only an entity under public oversight has the incentive to invest and enhance the infrastructure.

Yet the current investment scheme for the deployment of the new fibre network does not provide for continued public oversight of the Local Fibre Companies (LFC). The commercial model which the government adopted is innovative, and aims at mitigating the investment risks for the private partner. Basically:⁹⁹

The Crown pays the commercial party the agreed amount for the fixed cost of the communal infrastructure, ... and receives A-shares, which have voting but no distribution rights.

When the LFC first connects a premise, the commercial partner:

- pays for the customer connection (the lead-in, etc), and receives B-shares (distribution rights but no voting rights); and
- reimburses the Crown one customer's worth of fixed cost by buying one customer's worth of A-shares.

Therefore, the Crown starts with 100% control and is progressively bought out by the commercial partner as uptake occurs – the capital returned to the Crown through this process can then be reinvested in UFB networks.

The commercial partner receives 100% of distributions from the LFC during the first 10 years of operation, after which both A and B shares convert to ordinary shares with both voting and distribution rights. After these first 10 years, there would be no further Crown funding.

This process means that while the infrastructure will remain under public control during the first least profitable years, it will progressively be transferred to private management.

⁹⁶ Murray Milner "Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand" (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.16; Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 42.

⁹⁷ Murray Milner "Playing the Telecommunications Game in New Zealand: The Evolving Story of Telecommunications Public Policy in New Zealand" (2009) 59(2) *Telecommunications Journal of Australia* 26.1 at 26.7.

⁹⁸ Which culminated with the Ultra Fast Broadband Initiative (UFB): see [11.2] above.

⁹⁹ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 56–57.

11.3.5 Summary of government involvement

The striking cycle of government intervention in the telecommunication sector from full privatisation back to heavy regulation and partial public control is arguably the result of two factors: the vertical integration of the natural monopolist; and the private ownership of the bottleneck facility. While the first issue has been addressed, the second remains relevant. The massive public investment and the progressive transfer of the fibre network to private hands raises an interesting question: is this the beginning of a new regulation cycle? New Zealand has been described as “the laboratory of the world”, where different options are tried and tested, often to considerable expense of public money.¹⁰⁰ Are we ready to take the risk of privatisation again?

11.4 The welfare obligations

11.4.1 Introduction

Upon privatisation of Telecom, the government decided to retain an interest in the new firm – the kiwi share. “The Kiwi share was created as a special class of share, held and registered in the name of the Minister of Finance on behalf of the Crown, which secured a number of distinct rights for the Crown”.¹⁰¹ Among them were several requirements which can be described as “welfare obligations”. They aimed at ensuring the availability and affordability of basic telecommunications services.¹⁰²

They provided that “the price of residential telephone rentals would not rise faster than the Consumer Price Index (CPI) unless profits were unreasonably impaired (the ‘price cap’ obligation *with the opt-out clause*), rural residential rental prices would not exceed urban residential rentals (the ‘universal service’ obligation) and residential customers would continue to be offered a tariff with no charges for local calls (the ‘free local calling’ obligation)”.¹⁰³ Telecom also had to “make ordinary telephone service as widely available as it was at 11 September 1990”.¹⁰⁴

Those obligations have a strong redistributive flavour to them. The costs of providing telephony services are not identical throughout New Zealand; the main differences are of course between rural and urban areas. The concentration of

¹⁰⁰ David Skilling *Lessons from the world's economic laboratory: What can Australia learn from the New Zealand* (The New Zealand Institute, 29 June 2006) <www.nzinstitute.org>.

¹⁰¹ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 36.

¹⁰² Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 36.

¹⁰³ David Boles de Boer and Lewis Evans “The Economic Efficiency of Telecommunications in a Deregulated Market: The Case of New Zealand” (1996) 72 *The Economic Record* 24, as cited in Bronwyn Howell *A Pendulous Progression: New Zealand's Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 16.

¹⁰⁴ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 37.

population means the rate of return on investment in the infrastructure is much higher in the main cities than in the provinces. Yet the prices charged are the same; meaning that individuals in urban areas are effectively subsidising the line rentals in rural areas.¹⁰⁵ Similarly, free local calling has a strong subsidising effect, this time between those valuing calls least in favour of those valuing them the most.¹⁰⁶ Because there is no marginal price, calls tend to be longer. This, in turn, means the fixed cost of the line rental will have to be higher, to compensate. In practice, it means individuals who use the fixed line telephony service less will subsidise those who call more. The price cap obligation of course also has strong welfare implications, because it restricts the price charged for the service.

11.4.2 Compensation

There is an inherent tension between those welfare obligations and the private entity upon which they fall. As long as the telecommunications industry was a state asset, no issues were raised. However, once Telecom was privatised the question of compensation appeared. How were those obligations to be funded? Should the cost be borne by Telecom, because of its dominant position? Should the cost be shouldered by the whole industry? This issue framed the *Telecom v Clear* dispute and therefore was indirectly at the basis of the collapse of the light-handed regulation.

(a) *The efficient component pricing rule*

The Efficient Component Pricing rule (or Baumol-Willig rule) was based upon the need to compensate for the costs arising from the kiwi share. This rule allowed Telecom to charge interconnection agreements in a way that compensated “for the opportunity cost of customers lost to the entrant including its foregone profits, if any. Hence the Baumol-Willig access price may include the monopoly profit”.¹⁰⁷ As Howell explains, “Telecom argued that this pricing mechanism allowed it to recover profits foregone, thereby enabling continuing cross-subsidy of unprofitable residential services that it was obliged to provide under the ‘Kiwi Share’”.¹⁰⁸ The whole issue could be summarised in the simple question: was it the whole industry or only Telecom who should shoulder the cost of the kiwi share? While the Court of Appeal considered only Telecom should bear the cost, both the High Court and the Privy Council upheld Telecom’s claim and allowed the whole industry to be charged.

¹⁰⁵ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 100.

¹⁰⁶ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 102.

¹⁰⁷ New Zealand Treasury *Regulation of Access to Vertically-integrated Natural Monopolies: A Discussion Paper* (The Treasury, Wellington, 1995) at 27.

¹⁰⁸ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 18.

(b) *The telecommunications service obligation (TSO)*

Those considerations evolved with the Ministerial Inquiry of 2000.¹⁰⁹ As far as the kiwi share is concerned, the Inquiry proposed two main changes.¹¹⁰ First, it was recommended that the cost of the kiwi share be supported by Telecom alone.¹¹¹ This was based on the fact that fixed line rental charges in New Zealand were high by international standards, and that Telecom could seek a variation of the price cap if profits were unreasonably impaired.¹¹² This would put an end to the interconnection pricing disputes, because there would no longer be any reason to deviate from cost-based principles. Second, it recommended that Telecom be allowed “to deviate from price equalisation between rural and urban consumers”.¹¹³ This would allow Telecom to compete with new entrants in urban areas – but the price cap would be maintained for rural areas.¹¹⁴

The government applied the second recommendation, but did not follow the first one.¹¹⁵ Instead, it negotiated a new set of local calling requirements: the TSO. Under this new process, the costs of the welfare obligations were spread out across the industry, but no longer through private interconnection agreements. Instead, Telecom would be compensated by a levy, determined annually by the Telecommunications Commissioner, charged on all market participants.¹¹⁶ Contributions would be based on revenue share.¹¹⁷ The deed explicitly included narrow-band data services within the standard residential telephone service and retained the opt-out clause.¹¹⁸ The Telecommunications 2001 Act then provided the

¹⁰⁹ *Ministerial Inquiry into Telecommunications: Final Report* (Wellington, 27 September 2000).

¹¹⁰ It also recommended that “ordinary residential telephone service” be considered to include narrowband data services, such as dial-up Internet, and that the kiwi share obligations be redrafted in a legislative form: Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 37.

¹¹¹ *Ministerial Inquiry into Telecommunications: Final Report* (Wellington, 27 September 2000) at 5.

¹¹² Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 37.

¹¹³ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 41–42.

¹¹⁴ *New Zealand Ministerial Inquiry into Telecommunications: Final Report* (Wellington, 27 September 2000) at 42.

¹¹⁵ This reform still applies today: “Principle 2” in The Crown and Telecom Corp of New Zealand *Telecommunications Service Obligations (TSO) Deed for Local Residential Telephone Service* (8 November 2011) <www.sec.gov/Archives/edgar/data/875809/000119312512367374/d377363dex48.htm> at 2.

¹¹⁶ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 43.

¹¹⁷ In 2009, the cost of the TSO was estimated at \$69.7 million, with \$46.3 million to be shouldered by Telecom, \$18.2 million by Vodafone and \$4.5 million by TelstraClear: The Economist “New Zealand Telecoms: Telecom Faces Hefty Broadband Bill” *The New Zealand Herald* (New Zealand, 19 March 2010).

¹¹⁸ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 39.

necessary legislative framework. This had the advantage of ending the private disputes over interconnection prices, while still allowing compensation for welfare services. This was the beginning of a new era of contention.

(c) *Calculating the TSO cost*

The key issue became how the TSO costs were to be calculated. Telecom's competitors considered that those costs should be compensated by the profits Telecom realised from commercially viable customers. This view would have transferred the whole burden of the TSO on Telecom alone. The Commission, to the contrary, considered that:¹¹⁹

16. The Act requires that the service that is costed be that of "...providing the service required by the TSO instrument to commercially non-viable customers".... Other approaches sometimes used internationally, such as calculation of the revenue deficit across all of the TSP's customers (both commercially viable and non-viable) cannot be used.

In practice, this approach meant the TSO cost was singled out and spread over all market participants, including Telecom. The whole industry paid for the welfare obligation. Arguably this process was probably the fairest available; but it did not take into account the inherent advantages of being the TSO provider. It proved very controversial and led to no less than five separate legal challenges, contesting the calculation method.

(d) *The telecommunications development levy (TDL)*

The TSO system remained in place until the final reform in the Telecommunications (TSO, Broadband and Other Matters) Amendment Act 2011. The government then decided that the "method used to calculate Telecom's costs is not accurate and the net cost is essentially zero once the benefits of operating the wider basic telephone network are included".¹²⁰ If Telecom does incur a net loss in providing those unprofitable services it will still be allowed to claim compensation – but it is not expected that it will.¹²¹

A new levy will be introduced, replacing the former one: the Telecommunications Development Levy (TDL). The telecommunications industry will be required to contribute \$50 million per year for five years; then the obligation will be reduced to \$10 million.¹²² The cost of this new levy on the industry is

¹¹⁹ Commerce Commission *TSO Discussion Paper and Practice Note* (Cornerstone Issues Paper, 22 March 2002) <www.comcom.govt.nz>, as cited in Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 39.

¹²⁰ The Economist "New Zealand Telecoms: Telecom Faces Hefty Broadband Bill" *The New Zealand Herald* (New Zealand, 19 March 2010).

¹²¹ The Economist "New Zealand Telecoms: Telecom Faces Hefty Broadband Bill" *The New Zealand Herald* (New Zealand, 19 March 2010).

¹²² Neal Wallace "Telecoms 'Gravy Train' Ends" *Otago Daily Times* (New Zealand, 17 March 2010).

expected to be offset by the reduction in TSO charges.¹²³ This levy will be mainly used to fund the RBI – of the total \$300 million only \$48 million will be provided by the government, the remaining \$252 million coming from the telecommunications industry.¹²⁴ It has been estimated that the main loser under this change is Telecom, which “will have to pay \$33 million a year towards the TDL instead of receiving \$23 million a year from the TSO”.¹²⁵ The main winner will be Vodafone, which will contribute only \$15 million under the new TDL instead of \$23 million under the former system.

Those reforms do not include any changes to the TSO itself, however. Universal service, free local calling and price cap obligations remain – as Mr Joyce explained, “the idea is not even on the table”.¹²⁶

In practice, the reform is implementing a fundamental change in the way TSO costs are compensated. Instead of spreading out the burden over the whole industry, they now have to be met by Telecom alone by compensating non-profitable services with gains from commercially viable customers. It implements, a decade late, the proposition of the 2000 Ministerial Inquiry; the motivation being no longer the risk of over-compensating Telecom, but the funding of a new public policy – the Rural Broadband Initiative (RBI). This leads to an important policy question: is this reform a long-overdue change to a poorly performing compensation system? (Incidentally, if this proposition is true it means Telecom has been overcompensated for a decade.) Or is it imposing an unfair burden upon a private operator to enable the transfer of the compensation funds towards the RBI?

11.4.3 *Effects of the kiwi share on the development of the telecommunications sector*

Another related issue is the need to take into account the effect of the kiwi share in the evolution of the sector. The TSO has had a tremendous impact on the telecommunications industry in many ways. Of those, four stand out:

- (1) it distorts pricing and competition;
- (2) it causes efficiency loss;
- (3) it artificially decreases dial-up Internet pricing; and
- (4) it created incentives to increase DSL development.

(a) *Price and competition distortion*

Because the same price must be applied for fixed line rentals throughout New Zealand, this equalises rural and urban areas. While this welfare approach has strong public support in New Zealand, it also has the detrimental effect of distorting

¹²³ Point Topic “New Zealand Broadband Overview” (31 July 2012) <point-topic.com> at 14.

¹²⁴ It will also be used to upgrade the emergency call system: Neal Wallace “Telecoms ‘Gravy Train’ Ends” *Otago Daily Times* (New Zealand, 17 March 2010).

¹²⁵ Neal Wallace “Telecoms ‘Gravy Train’ Ends” *Otago Daily Times* (New Zealand, 17 March 2010).

¹²⁶ Steven Joyce “Releases: Rural Broadband Initiative Underway” (20 April 2011) <www.beehive.govt.nz>.

competition.¹²⁷ It forces Telecom to provide services in rural areas at a below-cost price. This means that no competition can occur in those markets, as no other service provider will be able to compete and still make a profit. While lower prices for rural customers may be desirable, the absence of competition also leads to a lack of investment in those markets.¹²⁸

To offer those unprofitable services Telecom would have to over-price its services in urban areas, in order to create a cross-subsidy effect. This would allow competitors to enter the market and under-cut Telecom's price, which is artificially high. Should such a situation arise, it would be the whole financial viability of the system which would be in jeopardy. The only solution would then be for Telecom to use its opt-out clause and request an increase of residential line rental. This was one of the reasons for the TSO levy: to compensate Telecom for its loss-making in rural areas, so it could still price competitively in urban areas. But the cost was the absence of competition in rural areas, and the risk of underinvestment in infrastructure. This approach is now called into question with the new TDL reform.

(b) Efficiency loss

Free local calling "disconnects the volume and length of calls made from the price paid".¹²⁹ It has mainly two detrimental effects. First, it imposes a single part-tariff, whereby the price charged could vest only on the line rental and not be a composition of both line rental and marginal cost. This means that the line rentals will be higher than under a two-part tariff, because it is the only form of compensation the service provider has. It also means that those valuing fixed line telephony the most (those who make the most calls) will receive a subsidy from those valuing them less, because all will be paying the same price.

Second, it affects the volume of calls made. Marginal cost acts as a disincentive over excessive use. Once again this creates a form of subsidisation between those valuing highly the length of calls from those valuing them less. The reasons for retaining this approach are not clear. The only welfare justification is "that all callers pay the same price (zero) for making (local) calls", but this has the effect of reducing the incentive for low valuation users of having a fixed line.¹³⁰

¹²⁷ Bronwyn Howell *A Pendulous Progression: New Zealand's Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 101.

¹²⁸ As shown by the insufficient investment by Telecom in rural areas under the TSO framework: Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 42.

¹²⁹ Bronwyn Howell *A Pendulous Progression: New Zealand's Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 99.

¹³⁰ Bronwyn Howell *A Pendulous Progression: New Zealand's Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 103.

(c) *Dial-up Internet*

In the dark dim ages of the Internet, service was provided directly through fixed-line telephony – dial-up Internet. An exceptional combination of the emergence of Internet, poorly drafted interconnection agreements and kiwi share obligations led to a situation where Telecom effectively funded the development of dial-up Internet.¹³¹ In this saga free local calling played its part.

Calling local Internet Service Providers (ISPs) was free for fixed-line telephony users. This had the effect of bundling telephony services and Internet usage, and had several effects.¹³² Similar to the above situation, it meant that those users who highly valued the Internet, but did not value telephony services were disadvantaged because they had to pay the high residential line rental price. Further, users of telephony services were automatically given “the ability to connect to the Internet, irrespective of how they valued it”.¹³³ This had a detrimental effect on efficiency. The absence of significant marginal cost led to excessive pressure being imposed on the network, because certain customers remained connected for excessively long periods. Finally, this very negatively affected broadband uptake. Dial-up Internet and broadband are products in competition, or at least were in the early days of broadband. Because of the low pricing of dial-up Internet and its bundling to fixed-line telephony, broadband priced on a marginal cost basis will have to be valued much more highly than in other countries to induce substitution. While this probably only has a marginal affect nowadays it certainly adversely affected broadband uptake in New Zealand in the last decade.

(d) *DSL Internet*

However the “ISP wars” did have a positive effect on broadband. Telecom had to find a viable solution to the dial-up Internet crisis – the development of the DSL product. Free local calling and interconnection agreements would not apply to DSL, therefore bringing an end to the issue. This created an incentive for Telecom’s early development for of the DSL network and to price it aggressively, to try to induce substitution.

However, substitution levels seem to have been low.¹³⁴ A study showed that despite the DSL price being below OECD average it still had one of the highest

¹³¹ See [11.2] above.

¹³² Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 104–105.

¹³³ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 104.

¹³⁴ Only in 2007 did the number of users of non-analog (broadband) services exceed that of dial-up: Statistics New Zealand “Internet Service Provider Survey: September 2007” at <www.stats.govt.nz>.

relative prices to dial-up Internet in the OECD.¹³⁵ This seems to indicate that demand for Internet services is inelastic, meaning that substitution will occur at only “very high levels of usage valuation”.¹³⁶ Only at high-usage volume will users substitute to DSL.

11.4.4 Summary of telecommunications

The TSO creates numerous difficulties. As we have seen the calculation of its cost is highly contentious, and its influence on the evolution of the telecommunications industry has been wide sweeping and sometimes adverse. Yet, despite the shortcomings, it seems that its retention in its current form is not in question.¹³⁷

This is surprising as the welfare effects of the kiwi share are not straight forward. Mr Joyce explained that “the government recognises the importance of the TSO as a mechanism to assure the affordability and availability of essential telecommunications services”.¹³⁸ While it is true that the redistributive effects of the TSO should not be underweighted, it is unclear how unlimited free local calling, for example, can be considered an “essential telecommunications service”.

Moreover, an adaptation of these obligations is perfectly possible. While universal service and price caps seem to be legitimate policy objectives, this is not as clear for free local calling. It would be possible to either cancel it altogether or impose a time limit; for example, each subscriber receives a few hours of free local calling time per month before being charged.

11.5 Case study: The ultra-fast broadband initiative

11.5.1 Introduction

The UFBI has been described as “the great national digital public works project of the 21st century”.¹³⁹ It is a major public investment scheme, which sees the country

¹³⁵ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 108, referring to the De Ridder (2007) study.

¹³⁶ Bronwyn Howell *A Pendulous Progression: New Zealand’s Telecommunications Regulation 1987–2007* (New Zealand Institute for the Study of Competition and Regulation Inc, October 2007) <www.iscr.org.nz/f378,10548/Pendulous_Progress_v_4_12_Nov.pdf> at 107.

¹³⁷ Steven Joyce “Releases: Rural Broadband Initiative Underway” (20 April 2011) <www.beehive.govt.nz>.

¹³⁸ Steven Joyce “Releases: Rural Broadband Initiative Underway” (20 April 2011) <www.beehive.govt.nz>.

¹³⁹ Dwayne Winseck “New Zealand’s Ultrafast Broadband Plan: Digital Public Works Project for a Network Free Press in the 21st Century or Playfield of the Incumbent Interests?” (Presentation to the New Zealand Competition Commission’s “The Future with High-Speed Broadband” Conference, Auckland, February 2012) at 2.

invest \$1.35 billion at a time characterised by an economic slow-down.¹⁴⁰ This grand plan will, in the words of the Prime Minister John Key, “future-proof” New Zealand.¹⁴¹ It is expected that access to fibre will increase productivity and economic activity, make New Zealand more competitive on world-markets and have positive effects on education and health services.

In practice, this project will create a fibre network covering most of (urban) New Zealand and link private premises. This is why the network is described as fibre-to-the-premises (FTTP). Most of the public communication around the initiative talks about a fibre-to-the-home network (FTTH).¹⁴² This simply is a part of the overall scheme: linking residential premises. The primary economic objective, however, is to link the priority users: businesses, schools and health-service providers. In reality, the basic principle is to swap the historic copper network for fibre, but the broad disposition of the network itself remains the same.

This development is intuitively sound and logical. Internet is a major part of our lives and of our economy; and investing in better broadband only makes sense in a small isolated economy such as New Zealand. Yet public investment should not be based solely on intuition. Economic studies should explore the economic impact of policies, and serve as a basis for their adoption. It appears that this has not been done for the UFBI.

11.5.2 Specific elements of focus

Studies justifying the UFBI should focus on several points in order to defend the initiative. The first one is that the study should be made within the New Zealand context. The fact that other countries invest in a new telecommunications technology is, by itself, irrelevant. Those countries may have compelling, but context-specific, reasons to explain the investment. Any public development scheme should be decided on local costs, returns and expected economic development.

The second point is that any such studies should show that the benefits of the initiative depend on the higher broadband offers. This is not as evident as it seems. The advantages that broadband brings at its actual speed are irrelevant, because the advantages of the actual network cannot be used to justify the upgrade to the next. In other words, only applications requiring more than the speed offered by FTTP will be relevant. This is contentious because, of course, those applications have not yet been developed. Proponents of the UFBI explain that they will appear once the network is created. This seems a weak argument to justify massive public spending.

The third element studies should establish is that FTTH is the way that the benefits can be realised. FTTH means that the network will connect all private

¹⁴⁰ Ministry of Business Innovation and Development “Ultra-Fast Broadband Initiative (Wellington) <www.med.govt.nz>.

¹⁴¹ Hon John Key, Prime Minister “2008: Achieving a Step Change – Better Broadband for New Zealand” (Wellington, 22 April 2008) <www.national.org.nz>.

¹⁴² Hon John Key, Prime Minister “2008: Achieving a Step Change – Better Broadband for New Zealand” (Wellington, 22 April 2008) <www.national.org.nz>.

premises throughout urban New Zealand. The benefits required to justify such a large network are very specific. In particular, they should not be confused with those derived from linking businesses, health-service providers and education providers, because those categories of users could be linked without connecting residential premises for a much lower cost.

Finally, the studies should reflect the demand for those new speeds. The success of the new network will largely depend on the will of consumers to pay a premium for the service. If there is no demand, or demand is too elastic, there is no commercial case for the UFBI.

These four elements seem to have been largely overlooked in New Zealand. The Ministry of Economic Development refers to only two studies, neither of which analyse New Zealand's specific situation or the impact of ultra-fast broadband (UFB).¹⁴³ Other studies exist, but they have tended to focus on the supply side, providing models for developing the fibre network rather than discussing potential demand and economic benefits. Only very recently, at the instigation of the Commerce Commission, has consumer willingness to pay been discussed. It appears that 77 per cent of New Zealanders are not ready to pay more than \$10 extra a month for the increased speed.

11.5.3 *The studies*

(a) *The McKinsey and company report*

The first study to which the Ministry of Economic Development refers in its discussion document is the 2011 McKinsey & Company report.¹⁴⁴ As the executive summary explains, "little is known about how much value the Internet contributes to national economies. To help fill this gap, McKinsey has conducted extensive research on the contribution of the Internet to GDP and economic growth in the G8 economies and five other key countries at various levels of development: Brazil, China, India, South Korea, and Sweden".¹⁴⁵ New Zealand was not surveyed. This study proved that the "Internet is contributing strongly to wealth".¹⁴⁶ Just to give the five main numbers the study shows, Internet counts two billion users worldwide, accounts for 3.4 per cent of the GDP in the countries analysed, brought 21 per cent of GDP growth in the last five years in mature countries, accounts for 2.6 jobs created for every one job lost, and 75 per cent of Internet impact arises from traditional industries.

¹⁴³ Ministry of Business, Innovation and Employment "Fast broadband: Research about broadband" (7 December 2011) <www.med.govt.nz>.

¹⁴⁴ See Ministry of Business, Innovation and Employment "Fast broadband: Research about broadband" (7 December 2011) <www.med.govt.nz>.

¹⁴⁵ McKinsey & Company *Internet Matters: The Net's Sweeping Impact on Growth, Jobs, and Prosperity* (McKinsey Global Institute, May 2011) <www.mckinsey.com/insights/mgi/research/technology_and_innovation/internet_matters> at 1.

¹⁴⁶ McKinsey and Company *Internet Matters: The Net's Sweeping Impact on Growth, Jobs, and Prosperity* (McKinsey Global Institute, May 2011) <www.mckinsey.com/insights/mgi/research/technology_and_innovation/internet_matters> at 2.

What the study does not say, however, is whether UFB is a necessary investment for the future. In fact, it does not mention UFB at all. It does discuss the effect of public spending and policy, and recommends investment in infrastructure; but this could also mean investing in enhancing the copper network, extending it, or even improving the wireless network. Further, infrastructure is but one area where public funds could be spent:¹⁴⁷

Public spending can be used as a catalyst to boost both usage and ecosystem. ... Public policy leaders could work to stimulate Internet usage among individuals, businesses, and government bodies. This can be accomplished by providing government-sponsored training sessions that instruct individuals and businesspeople on how to access the advantages offered by the Internet, offering incentives to the private sector to expand and improve infrastructure, and encouraging public agencies to develop e-government applications ...

The “incentives to the private sector to expand and improve infrastructure” are illustrated by the examples of Sweden and South Korea. In Sweden, efforts were made to “bring broadband Internet services to small towns and areas with low population densities ... and ... subsidies [were offered] to promote broadband expansion”. In other words, it focused on bridging the digital divide between urban and rural areas. In South Korea “the government also encourages infrastructure investment, for example through certification programmes for buildings larger than 3,300 square meters ... and creating a broadband backbone between Seoul and Taejon using a mix of public and private financing”.¹⁴⁸ While this points to broadband investment, and it is true that South Korea is a leader in fibre development, the study itself does not talk about high speeds and UFB.

(b) *The World Bank report – IC4D*

The second study is the World Bank report: *Information and Communications for Development 2009: Extending Reach and Increasing Impact*. It is not much more relevant to the UFB than the previous one. This study was conducted in 150 economies and:¹⁴⁹

... takes a close look at mobile and broadband connectivity. It analyzes the development impact of high-speed Internet access in developing countries and provides policy options for rolling out broadband networks and addressing the opportunities and challenges of convergence between telecommunications, media, and computing. The report also presents a framework of e-government applications ...

¹⁴⁷ McKinsey and Company *Internet Matters: The Net’s Sweeping Impact on Growth, Jobs, and Prosperity* (McKinsey Global Institute, May 2011) <www.mckinsey.com/insights/mgi/research/technology_and_innovation/internet_matters> at 33.

¹⁴⁸ McKinsey and Company *Internet Matters: The Net’s Sweeping Impact on Growth, Jobs, and Prosperity* (McKinsey Global Institute, May 2011) <www.mckinsey.com/insights/mgi/research/technology_and_innovation/internet_matters> at 34.

¹⁴⁹ The World Bank *Information and Communications for Development 2009: Extending Reach and Increasing Impact* (IC4D, 2009) <<http://web.worldbank.org>> at 3.

While the report does mention “Next Generation Access” networks (NGAs), it does not discuss the need for, or the opportunity of, public investment.¹⁵⁰ It does state the numerous benefits of Internet and broadband, and does point out that broadband deserves a central role in development strategies.¹⁵¹ But it also shows the increased competition created by mobile networks, the importance of e-government and the necessity of bridging the digital divide. Ironically, it concludes by stating:¹⁵²

One area that is receiving increasing attention in all countries, but that remains weak in most, is impact evaluation. ... Impact evaluation is essential to ensure that ICT strategies are relevant and to be able to hold governments accountable for their implementation.

More research is needed on the socioeconomic impact of ICT on development, the cost-effectiveness of ICT strategies and programs, and the economic justification of public sector intervention. Are these investments cost-effective in meeting social and development goals? How do they compare with alternative uses of public resources; for example, education and health? Rather than relying primarily on anecdotal evidence, there has been a clear call for rigorous and robust impact evaluation as a basis for guiding policy development and public investment decisions.

In conclusion, neither the McKinsey report nor the World Bank report refers specifically to the New Zealand context, or to the need of public investment in UFB. Neither report points out the incremental benefits which would flow from enhanced speed.

(c) *The New Zealand institute report*

One study did investigate the New Zealand context, and concluded that urgent public investment in broadband infrastructure was needed: the New Zealand Institute report.¹⁵³ This report became an influential document and appears to have framed the development of the UFBI.¹⁵⁴ The report is, in fact, the sum of a series of discussion documents on the UFB, its advantages for New Zealand’s economy and a proposed path to accelerate the development of a fibre network.¹⁵⁵

The premise of the report was the conclusion that in order to overcome the tyranny of geographic isolation and to position itself in new competitive global

¹⁵⁰ “Next Generation Access” is the term used to describe the upgrade of part, or all, the copper network to fibre. As such it does not exactly correspond to the UFBI because it could also cover upgrades limited to FTTN.

¹⁵¹ The World Bank *Information and Communications for Development 2009: Extending Reach and Increasing Impact* (IC4D, 2009) <<http://web.worldbank.org>> at 4–5.

¹⁵² The World Bank *Information and Communications for Development 2009: Extending Reach and Increasing Impact* (IC4D, 2009) <<http://web.worldbank.org>> at 15.

¹⁵³ The New Zealand Institute *Delivering on the Broadband Aspiration: A Recommended Pathway to Fibre for New Zealand* (April 2008) <www.nzinstitute.org>.

¹⁵⁴ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 44.

¹⁵⁵ See the papers listed in The New Zealand Institute “The Weightless Economy” <www.nzinstitute.org/index.php>.

markets, New Zealand should develop a “weightless” economy.¹⁵⁶ The key document was the report entitled *Defining a Broadband Aspiration: How Much Does Broadband Matter and What Does New Zealand Need?*¹⁵⁷ This report identified that “national economic benefits from broadband in the range of \$2.7–4.4 billion per year”.¹⁵⁸ It explained that “[c]apturing many of these economic benefits increasingly requires high speeds and so New Zealand’s policy ... [should focus on investing] in a fibre network”.¹⁵⁹ Finally, it concluded by saying that “[t]here is a significant cost to waiting. The longer that New Zealand waits, the more economic value it will forego and so New Zealand should approach the investment in fibre with urgency”.¹⁶⁰

The report was then followed by a “Recommended Pathway” paper, which described “a regulatory model and a proposed funding mechanism, called Fibre Co, that we believe will deliver against the Institute’s proposed aspiration of fibre to the premises (FTTP) to 75 per cent of the population within a decade.”¹⁶¹ Both the economic findings and the proposed pathway had a great influence on the policy adopted. Prime Minister John Key referred to the economic benefits identified by the Institute; and the UFBI reflected in many ways the proposals of the discussion documents.¹⁶²

Broadly speaking, the study identified seven main areas where high speed broadband could bring economic benefits: reduction in travel costs (\$95 million); increased sales productivity (between \$165 and \$335 million); benefits to the digital media sector (between \$600 and \$1030 million); storage and manipulation of data (between \$0.2 and \$0.5 billion); remote working (between \$610 and \$810 million); healthcare (between \$620 and \$1,100 million); education (between \$350 and \$500 million); and potential for innovation and business retention.

These numbers are impressive; but the study has several flaws. The method by which those estimates are found is unclear – no calculation is presented in the report, only final numbers. Further, the numbers are based on two presumptions: first, that the proposed savings do actually require enhanced speed; and second, that individuals and firms will adopt them. The only area which is incontestable is the benefits to the digital media sector. Reduction in travel costs and increased sales supposes greater reliance on teleconferencing; but teleconferencing is already widely available, so what is the basis for expecting enhanced speed to change this?

¹⁵⁶ See The New Zealand Institute “Creating a Weightless Economy: Positioning New Zealand to Compete in the Global Economy” (September 2007) <www.nzinstitute.org>.

¹⁵⁷ The New Zealand Institute “Defining a Broadband Aspiration: How Much Does Broadband Matter and What Does New Zealand Need?” (September 2007) <www.nzinstitute.org>.

¹⁵⁸ The New Zealand Institute “Defining a Broadband Aspiration: How Much Does Broadband Matter and What Does New Zealand Need?” (September 2007) <www.nzinstitute.org> at 2.

¹⁵⁹ The New Zealand Institute “Defining a Broadband Aspiration: How Much Does Broadband Matter and What Does New Zealand Need?” (September 2007) <www.nzinstitute.org> at 16.

¹⁶⁰ The New Zealand Institute “Defining a Broadband Aspiration: How Much Does Broadband Matter and What Does New Zealand Need?” (September 2007) <www.nzinstitute.org> at 24.

¹⁶¹ The New Zealand Institute “Delivering on the Broadband Aspiration: A Recommended Pathway to Fibre For New Zealand” (September 2007) <www.nzinstitute.org> at 6.

¹⁶² John Key, Prime Minister of New Zealand “2008: Achieving a Step Change – Better Broadband for New Zealand” (Wellington, 22 April 2008) <www.national.org.nz>.

The same argument holds for remote working – the copper network already enables it, so why would it increase because of fibre? Other areas such as healthcare and education suppose a strong set of additional policies. E-health is a popular concept, but would require a large investment in training and marketing, and a revolution in the way we understand healthcare. Benefits in the education sector similarly are likely to require large investments in training and development.

Also, the estimates are based on very low broadband speeds. For example, estimates in the health sector are based on:¹⁶³

- Many distributed providers [having] xDSL connections with maximum upload speeds of 128kps (ADSL) to 1Mbps (ADSL2+)
- Sending a file to another health professional e.g. specialist would take 32 minutes plus depending on connection

While it is true that these are shockingly slow speeds, they simply reflect the chronic underinvestment of Telecom in the network in 2006, and specifically in FTTN. After the 2006 reforms, Chorus took the engagement of providing “broadband speeds of 10Mbps to eighty percent of New Zealanders by the end of 2011.”¹⁶⁴ Speeds have greatly increased without having to invest in a FTTH programme.

Overall, the study does not explain how enhanced speed will bring benefits different from other programmes, such as FTTN. It is essential to distinguish the specific benefits of FTTH from general advantages to justify the government initiative. While the importance of this report should not be diminished, there should not be excessive reliance upon it either. It is significant that the ministry does not explicitly refer to it.

(d) *InternetNZ*

Another study relevant to the New Zealand context is that of InternetNZ in 2008 on the broadband strategy options for New Zealand.¹⁶⁵ This study took place in two stages and is interesting from a development of the network point of view, but it takes as a given that faster speeds are required without explaining exactly what benefits those speeds will bring to the economy. Its main concern is that by not investing in a fibre network New Zealand could be left behind by other OECD countries, and “there is a distinct possibility that applications being developed for faster networks overseas may have limited relevance in New Zealand”.¹⁶⁶ Another issue is that the copper network could not meet the increasing demand led by

¹⁶³ The New Zealand Institute “Defining a Broadband Aspiration: How Much Does Broadband Matter and What Does New Zealand Need?” (September 2007) <www.nzinstitute.org> at 19.

¹⁶⁴ Chorus “Fibre to the Node: Cabinetisation and the ADSL2+ Rollout” <www.chorus.co.nz>.

¹⁶⁵ InternetNZ *Broadband Strategy Options for New Zealand: Stage One – Research and Analysis* (Network Strategies Report Number 28034, 20 September 2008); InternetNZ *Broadband Strategy Options for New Zealand: Analysis of Possible Infrastructure Models* (Network Strategies Report Number 28040, 10 December 2008).

¹⁶⁶ InternetNZ *Broadband Strategy Options for New Zealand: Stage One – Research and Analysis* (Network Strategies Report Number 28034, 20 September 2008) at 17.

“triple play” services (voice, Internet and video) and specifically digital video.¹⁶⁷ Because private investment on a commercial basis is likely to be insufficient, and to under-serve rural areas, there is a need for public intervention.

While those are real concerns, they are forward-focused and therefore uncertain. Applications requiring the higher speeds of fibre are yet to be developed. They will certainly be one day, but no one knows when and therefore no one can predict that the network will evolve sufficiently quickly through commercial development alone. Further, in order to induce public investment there is a need for large economic benefits to derive from the initiative; benefits which are not explained in the study.

(e) *The Castalia report*

This report was commissioned by three telecommunication firms – Telecom, TelstraClear and Vodafone.¹⁶⁸ It was published in 2008 and provided a critique of the UFB, more specifically of the FTTH extent. The report identified several issues:¹⁶⁹

- (1) Consumers’ unwillingness to pay and uncertainty as to the levels of demand. It was argued that consumers would not want to pay the higher costs required for UFB: “the majority of broadband users mainly use the Internet for applications such as email and web surfing that do not require high speed broadband connections. As a result most are not willing to pay even for the faster broadband packages that are available now.”
- (2) High costs. The study identified not only the roll-out of the network, but also in-house rewiring and equipment upgrade as areas requiring considerable investment.
- (3) Lack of applications requiring UFB. The report argued that the value of broadband depended upon the applications it allowed users to access and that “most existing and emerging applications would not require the speed and consistency made possible by fibre to the premises”
- (4) Private investment: there was a risk that Government policies would displace private investment.

Overall, given the upgrades already made on the network the report argued that FTTH would not deliver sufficient benefits in light of the considerable investment. Instead, fibre could be deployed to priority users such as businesses, schools and hospitals. The most efficient approach would be to allow the market to provide a fibre network in due course and use public funding to address areas of market failure, such as low willingness to pay, user equipment and wiring, the high cost of international data capacity and peering and the insufficient development of rural areas.

¹⁶⁷ InternetNZ *Broadband Strategy Options for New Zealand: Stage One – Research and Analysis* (Network Strategies Report Number 28034, 20 September 2008) at 13.

¹⁶⁸ Castalia *Getting the Most from High Speed Broadband in New Zealand: Investing in Productivity Growth* (Report to Telecom, TelstraClear, and Vodafone, December 2008) at 32.

¹⁶⁹ Castalia *Getting the Most from High Speed Broadband in New Zealand: Investing in Productivity Growth* (Report to Telecom, TelstraClear, and Vodafone, December 2008) at i; see also at 24.

The report attracted widespread criticism and was rejected by the government.¹⁷⁰

(f) *The need for speed*

Finally an independent study was conducted in New Zealand in 2009.¹⁷¹ It studied the impact of Internet speed on firm productivity. It found that adoption of broadband increased on average productivity by 10 per cent; but found no difference between fast (cable) broadband and slower broadband, asymmetric digital subscriber line (ADSL). The study, however, proposed five alternative explanations to this result:¹⁷²

- (1) faster broadband does not affect production;
- (2) cable broadband offers very different sets of speed, meaning that considering “cable broadband” as a whole as representing *faster broadband* may be inadequate;
- (3) some respondents may not have been aware of their connectivity type;
- (4) firms having recently adopted cable broadband may not be exploiting it fully yet; and
- (5) the benefits of cable broadband may currently be available to a small number of firms, and that only in the future will the other average firms derive benefits from it.

Overall, the study does not make a case for governmental investment in a faster network. While the second potential explanation does undermine the findings, the other proposed reasons do not militate in favour of UFB.

(g) *Commerce Commission: e-Health and e-Education*

This paper is the result of a demand side study ordered by the Commission for high-speed broadband services for primary and secondary schools and the health sector. The aim is to “provide a valuable basis for public discussion of these issues”.¹⁷³

The first part of the report analysed the health sector and potential applications of UFB. It found that the health sector is “one of the few sectors yet to maximise the transformation the Internet can deliver”. It identified three main challenges for the sector: adapting to an ageing population; increasing self-management of health;

¹⁷⁰ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 51. For an example of critique on this issue see <www.tuanz.org.nz>.

¹⁷¹ Arthur Grimes, Cleo Ren and Philip Stevens *The Need for Speed: Impacts of Internet Connectivity on Firm Productivity* (Motu Working Paper 09-15, October 2009) <www.motu.org.nz/wpapers/09_15.pdf>.

¹⁷² Arthur Grimes, Cleo Ren and Philip Stevens *The Need for Speed: Impacts of Internet Connectivity on Firm Productivity* (Motu Working Paper 09-15, October 2009) <www.motu.org.nz/wpapers/09_15.pdf> at 37.

¹⁷³ Arthur Grimes, Cleo Ren and Philip Stevens *The Need for Speed: Impacts of Internet Connectivity on Firm Productivity* (Motu Working Paper 09-15, October 2009) <www.motu.org.nz/wpapers/09_15.pdf> at 2.

and rendering rural health services more efficient.¹⁷⁴ The paper argues that high speed broadband can help answer those challenges, and gives 12 potential areas. The main ones are:

- (1) The development of Shared Care Records, described as “a form of personal electronic health record for every New Zealander”. They would be accessible to both the patient and health providers. UFB would help in that respect because those files, spread over a life-time, can become very heavy.
- (2) Aged care could be improved through UFB: smart homes with electronic configurations could give the aged patient more security and independence, requiring fewer visits to the doctor (remote monitoring). Quality of life and contact with family could be facilitated through teleconferencing.
- (3) Better online health information, through reputable sources, would allow patients to rely less on their doctors.
- (4) Primary-care reform: a patient could, through video from his or her own home, be given a first diagnostic. This alternative to costly patient and clinician travel requires reliable and high quality resolution, offered by UFB.
- (5) Telehealth is a similar application to the above, except that instead of merely a first diagnostic it would enable a doctor to conduct a virtual visit.
- (6) Remote surgery.

The second part of the paper reviews demand from primary and secondary schools, arguing that UFB has great potential application in the education sector. The author concludes that there is strong latent demand for UFB, at a reasonable price. Overall, the main reason for schools to adopt UFB is to adapt to a changing world. Students are increasingly using the Internet and teaching should reflect it. Among the advantages identified, several stand out:

- The boundaries between learning and play are becoming blurred, so learning can take place anywhere. This empowers students, giving them control over their lives and learning at their own pace.
- Multimedia is becoming a core teaching tool. It enables video lectures, digital storytelling, and much larger access to information.
- Most children already have access to wireless notebooks, iPads and tablets and increasingly schools require them to bring such devices as learning tools.
- Social networking could be a part of teaching and communication with students.
- FTTH is needed to enable bandwidth-hungry homework to take place outside of school.
- It could enable remote teaching saving small rural schools through a “one school, many sites” concept.

To enable these changes, the author argues that schools and, incidentally, residential homes must have access to high speed broadband.

Those affirmations are of course relatively contentious. This is an informative document, meant to serve as a basis for discussion. e-Health would require nothing

¹⁷⁴ Arthur Grimes, Cleo Ren and Philip Stevens *The Need for Speed: Impacts of Internet Connectivity on Firm Productivity* (Motu Working Paper 09-15, October 2009) <www.motu.org.nz/wpapers/09_15.pdf> at 5–7.

short of a revolution in the way people understand healthcare. As the author points out, the health sector has yet to realise all the potential the Internet has to offer. To allow the development of those applications, a large amount of money will have to be invested in training and marketing. Similarly, it is probable that e-Learning will require considerable financial investment and evolution in our understanding of education. While the Internet is a part of every student's life, and plays an increasing role in education, we are still far from a world where every student will have his or her own portable electronic device, enabling a blend between ordinary teaching and multimedia learning.

(h) Commerce Commission: content, applications and willingness to pay

As above, this is a Commerce Commission Issue paper aiming at studying the demand side for high-speed broadband.¹⁷⁵ The purpose of this document is mainly informative; and it asks several unanswered questions to provoke debate.

It presents the results of surveys over the interest and willingness to pay of both consumers and Small to Medium Enterprises (SMEs). It shows that consumers are most interested in HD movies and videos/DVDs (50 per cent of those interviewed), followed by virtual education (41 per cent) and video conference calls (29 per cent). Overall "72 per cent of survey respondents stated they were interested in at least one high speed broadband service".¹⁷⁶ The Commission admitted that "many forms of content and applications do not require high speed broadband, at least in their current form", but pointed out that "as high speed broadband becomes more widely spread, content will evolve to use this high speed capability".¹⁷⁷ It took cloud computing as an example of such evolution.

The Commission also surveyed SMEs, looking at their degree of satisfaction with current broadband service. It found that overall 75 per cent of SMEs were satisfied, while around 25 per cent were dissatisfied with price, download/upload time and mobile broadband coverage. It also surveyed their degree of interest in high-speed broadband applications: telecommuting, security surveillance, teleconferencing and online sales and marketing. "Around 40 per cent of SMEs indicated some level of interest in these applications."¹⁷⁸

The Commission then explains that the two most probable drivers behind consumer's uptake are long form video content (over seven minutes) and gaming.¹⁷⁹

¹⁷⁵ Commerce Commission *High Speed Broadband Services Demand Side Study* (Project No 13.07/12813, 29 June 2012) <www.comcom.govt.nz>.

¹⁷⁶ Commerce Commission *High Speed Broadband Services Demand Side Study* (Project No 13.07/12813, 29 June 2012) <www.comcom.govt.nz> at 9.

¹⁷⁷ Commerce Commission *High Speed Broadband Services Demand Side Study* (Project No 13.07/12813, 29 June 2012) <www.comcom.govt.nz> at 10.

¹⁷⁸ Commerce Commission *High Speed Broadband Services Demand Side Study* (Project No 13.07/12813, 29 June 2012) <www.comcom.govt.nz> at 13.

¹⁷⁹ Commerce Commission *High Speed Broadband Services Demand Side Study* (Project No 13.07/12813, 29 June 2012) <www.comcom.govt.nz> at 17 and 29.

The Commission also surveyed willingness to pay. It finds that “while 4 per cent of consumers (64,000 households) say they are willing to pay more than \$20 extra per month, 37 per cent (592,000 households) said that they were willing to pay between \$5 and \$10 extra per month and 40 per cent of consumers (640,000 households) said that they are willing to pay up to \$5 extra per month”.¹⁸⁰ This means that broadly 75 per cent of the population would pay a maximum of \$10 extra, one-half of what retail service providers expect.¹⁸¹

The results for SMEs are relatively similar, with “10% of SMEs (saying) that they would be willing to pay more than 20% more for a high speed broadband service. Overall, 26% of SMEs said they would be willing to pay more than 10% more, 34% up to 10% more, and 35% no more, for a high speed broadband service.”¹⁸²

The Commission placed an important caveat on those results. They are largely influenced by the capacity to imagine new forms of services made possible by the enhanced speed. The Commission draws from those results a question:¹⁸³

Given the additional services that will be available using high speed broadband, will consumers be willing to pay the additional amount required to provide high speed broadband services?

The mere fact that this question ends the paper is indicative of a demand side issue. There is uncertainty as to the willingness of consumers to adopt high-speed broadband at a sufficient price. While the survey shows that they would probably not, there is a hope that future currently unimagined applications will be sufficiently compelling.

(i) *Summary of reports and studies*

As the studies detailed above show, there are conflicting views on the deployment of the fibre network. Overall, basic questions have not been answered. The economic benefits remain insufficiently explored and the utility of creating an FTTH network has not been demonstrated. To use the words of the World Bank report:¹⁸⁴

More research is needed on the socioeconomic impact of ICT on development, the cost-effectiveness of ICT strategies and programs, and the economic justification of public sector intervention. Are these investments cost-effective in meeting social and development goals? How do they compare with alternative uses of public resources; for example, education and health? Rather than relying primarily on anecdotal evidence, there has been a clear call for rigorous and robust impact evaluation as a basis for guiding policy development and public investment decisions.

¹⁸⁰ Commerce Commission *High Speed Broadband Services Demand Side Study* (Project No 13.07/12813, 29 June 2012) <www.comcom.govt.nz> at 31.

¹⁸¹ Commerce Commission *High Speed Broadband Services Demand Side Study* (Project No 13.07/12813, 29 June 2012) <www.comcom.govt.nz> at 31–33.

¹⁸² Commerce Commission *High Speed Broadband Services Demand Side Study* (Project No 13.07/12813, 29 June 2012) <www.comcom.govt.nz> at 34.

¹⁸³ Commerce Commission *High Speed Broadband Services Demand Side Study* (Project No 13.07/12813, 29 June 2012) <www.comcom.govt.nz> at 34 and 36.

¹⁸⁴ The World Bank *Information and Communications for Development 2009: Extending Reach and Increasing Impact* (IC4D, 2009) <www.worldbank.org> at 15.

To promote discussion a few more prominent arguments against the adoption of an FTTH network are developed below.

11.5.4 Critiques of fibre

(a) High marginal cost for no “fibre-only” applications

Fibre has an expensive marginal cost. The telecommunications network is at its third upgrade, after the development of dial-up Internet and then DSL. It has been estimated that dial-up Internet required an investment of around \$200. This development enabled “email, functional e-commerce, User-Generated Content, online news and social networking”.¹⁸⁵ DSL required an investment of around \$150, and “enabled always-on, reliable Internet and brought us YouTube, Flickr, Skype, Hulu and iPlayer, cloud computing and much more”.¹⁸⁶

Those upgrades were low-cost because they enhanced, rather than replaced, the existing network. This means that applications requiring those innovations rapidly made the investment worthwhile. FTTH is the converse: it requires the whole network to be changed, at considerable cost. It will only be worthwhile if the applications that require the enhanced speed are particularly useful. This is why the absence of any actual fibre-only application is so problematic. The argument that the “possibilities are unlimited”, and that “applications will be developed once the network is in place” appear as very uncertain assertions in regard of the amounts at stake.

(b) Hidden costs

Further, there may be issues with the equipment used by private individuals. A key issue is that of in-house wiring.¹⁸⁷ As the ITU report explains, “most New Zealand houses and premises have simple copper in-house wiring ... the cost of refitting houses and premises with higher quality cabling, therefore, represents a major barrier”.¹⁸⁸ Other equipment, such as computers and routers, can have a detrimental effect on speed and will also have to be changed. Those costs are described as “hidden” because they are not part of the public policy. Yet, for households to really benefit from the new network they will have to be met.

¹⁸⁵ Robert Kenny and Charles Kenny “Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 9–10.

¹⁸⁶ Robert Kenny and Charles Kenny “Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 9–10.

¹⁸⁷ The Telecommunications Carrier Forum (TCF) recently produced two pamphlets for home-owners and cable installers, providing information and advice on the wiring requirements for telecommunications and other wired services: TCF “For Consumers: Wiring Your Home?” (May 2011) <www.tcf.org.nz>.

¹⁸⁸ Sean Mosby and Jerome Purre *Case Study: Toward Universal Broadband Access in New Zealand* (Mikan Consulting Ltd, November 2010) at 75; this issue was also clearly pointed out in the Castalia report.

(c) *Gaming and entertainment are the primary uses for FTTH*

Gaming and entertainment have been identified as the main uses for FTTH.¹⁸⁹ This is the case in early mover countries.¹⁹⁰ This was also showed in the survey conducted by the Commerce Commission.¹⁹¹ As Winseck put it, serious uses of the Internet are important, “but it is pleasure and play, the sociality of life online, that will be the real drivers of broadband use”.¹⁹² Similarly, there is a strong argument in favour of triple-play offering and simultaneous video streams over the fibre network. While this means cable operators, the gaming industry and indeed the entertainment industry at large would benefit from the new network, it is unclear if the benefits for society as a whole are compelling enough for publicly funded roll-out.

(d) *Healthcare*

It is strongly argued that fibre will have a positive impact on healthcare. Part of these benefits is “primarily about linking medical practitioners at different sites, not about reaching the patient at home, and thus they are not relevant to the case for FTTH”.¹⁹³ It does seem relatively undisputable that a faster network between hospitals, if associated with proper training of staff would bring important rewards.

The advantages of FTTH in relation to medicine are relatively unclear, however. Broadly speaking, it would enable telemedicine, where to a varying extent the doctor’s visit would be conducted virtually rather than physically; better aged-people care and monitoring; and greater control by the patient through online access to health records and general information. Further, it would remove distance as a barrier for patients accessing healthcare.

There are four critiques to those arguments. The first is that distance is an issue concerning primarily rural settings, which will not have access to fibre anyway. The second is that videoconferencing is already possible under actual ADSL coverage, and therefore does not require FTTH. The third is that “remote home health care is primarily for the elderly. However, this is one of the demographics least likely to be online”.¹⁹⁴ And of course, widespread telemedicine would require a revolution in the way we approach and understand healthcare, and massive investment in health service providers training.

¹⁸⁹ Robert Kenny and Charles Kenny “Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 9.

¹⁹⁰ Bronwyn Howell and Arthur Grimes “Productivity Questions for Public Sector Fast Fibre Network Financiers” (2010) 78(2) Communications and Strategies 127.

¹⁹¹ Fifty per cent of the consumers interviewed answered they were most interested by HD movies and video/DVD demand: Commerce Commission *High Speed Broadband Services Demand Side Study* (Project No 13.07/12813, 29 June 2012) at 9.

¹⁹² Dwayne Winseck “New Zealand’s Ultrafast Broadband Plan: Digital Public Works Project for a Network Free Press in the 21st Century or Playfield of the Incumbent Interests?” (Presentation to the New Zealand Competition Commission’s “The Future with High-Speed Broadband Conference”, Auckland, February 2012) at 31.

¹⁹³ Robert Kenny and Charles Kenny “Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 11.

¹⁹⁴ Robert Kenny and Charles Kenny “Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 12.

Finally, it is true that access to health records and reputable online health sources would probably considerably empower patients, and impact positively on health in general; just why this requires FTTH is unclear. The only argument is the size of health record files; but only a very small minority of the population will have files so large that they are unmanageable via ordinary broadband. Alternative and less costly solutions could be imagined for this limited category, such as access to a physical copy for example.

(e) *Education*

Another area where fibre is strongly advocated is education.¹⁹⁵ Once again it is useful to point out that making out a case for rolling out fibre to schools does not justify FTTH. While it is certainly true that the Internet and multimedia are a growing part of students' lives and should be integrated in teaching, this does not establish a need for having fibre access at home. The only use could be for homework; but it is difficult to see what school content necessary for homework would require the speed offered by fibre.

An argument is made for university lectures, which already now are becoming available on the Internet. Not only is this irrelevant for primary and secondary schools, but those lectures do generally not require UFB. Another point is that many lecturers are opposed to having their teaching put on the Internet, because of the effect on the university community.

Finally, if multimedia is such a necessary tool for education it may be more appropriate to increase the funding for computers and laptops than for fibre.

(f) *Future-proofing the country*

A political argument is that fibre will "future-proof" the country. This argument immediately gives rise to three critiques.¹⁹⁶ The first is that it can only hold if it is guaranteed that no new technology will appear that renders fibre obsolete. In a rapidly evolving sector it is impossible to be sure of this. Second, it assumes that the technology will be useful, enhance economic growth and productivity. As has been discussed above, this is not at all certain. Finally, "a future-proof solution isn't necessarily the right answer immediately, even if it will be in time".¹⁹⁷ It may be more efficient to wait until the investment becomes necessary than rush into public spending.

(g) *OECD rankings*

New Zealand has a strong tendency to compare itself to other OECD countries, often negatively, to justify the need for investment or reform. This argument does

¹⁹⁵ Robert Kenny and Charles Kenny "Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 13.

¹⁹⁶ Robert Kenny and Charles Kenny "Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 16.

¹⁹⁷ Robert Kenny and Charles Kenny "Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 16.

not make sense. As Plum Consulting put it in their review for the broadband Stakeholder Group of the costs and benefits of fibre in the United Kingdom:¹⁹⁸

Investing in something simply because others have does not make economic sense. The case for investment should rest on the resource cost and expected returns within the UK. If others invest in next generation broadband, the UK is not necessarily getting left behind in terms of economic and social progress, because others may be investing prematurely or for reasons that make sense locally.

Comparing to other countries will only make sense once it is clear that fibre is worth the investment.

(h) Consumer demand

The success of fibre will depend on the willingness of consumers to pay for its faster speed.¹⁹⁹ It appears that demand for Internet services is very elastic – willingness to pay a premium for increased speed is limited.²⁰⁰ As the Castalia report explained, uncertainty as to future demand and willingness to pay are the primary reasons why telecommunications providers have not invested in the fibre network. If the consumers choose not to pay the premium for fibre, the development will be a failure.

Pro-fibre contenders generally argue that applications will be developed which will entice consumers to switch. Not only is this argument feeble because of its inherent uncertainty, but those applications will have to be very enticing indeed. Despite the considerable advantages offered by ADSL over dial-up Internet, only in 2007 did the ADSL number of connections equal those of dial-up.²⁰¹

(i) Competition from alternative platforms

This lack of public demand is aggravated by the risk of competition from alternative platforms. Many other high-speed infrastructures exist, many of which could potentially undermine the commercial viability and necessity of fibre. The obvious first is the copper network. It is probable that for many years still copper will be

¹⁹⁸ Robert Kenny and Charles Kenny “Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 18.

¹⁹⁹ Robert Kenny and Charles Kenny “Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 16.

²⁰⁰ An American survey showed that on average American households were ready to pay only USD 3 to move from *fast* to *very fast* connection speeds. Similarly, in six of the nine European countries where FTTH is available, fibre is priced at the same level or less than ADSL2 products. “In Korea, despite many years of investment, substantial government support and a minimal price premium for fibre, [just] more than half of all households with broadband are still connecting via cable or ADSL. ... In Australia, where the government’s NBN Co has started to roll out fibre in Tasmania, reportedly only half of premises have agreed to allow the necessary access to their property, even though this stage of the install is free and carries no obligation to take high speed services. As a result NBN Co has extended its deadlines for response, and the government is considering a switch from a contract-in to a contract-out model”: Robert Kenny and Charles Kenny “Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 17.

²⁰¹ Commerce Commission *Annual Telecommunications Monitoring Report 2009* (April 2010) at 38.

able to provide sufficient speed for normal Internet usage. It will therefore be a direct competitor of fibre and will probably be priced aggressively to retain market share. In Australia, this was taken into account and the government bought the historic network. This was not the case in New Zealand.

Another likely candidate is cable broadband, currently offered by TelstraClear in Wellington, Christchurch and on the Kapiti Coast.²⁰² While the speed offered is currently unimpressive (up to 15Mbps downstream and 2Mbps upstream), it is possible to upgrade the network to reach speeds of 100Mbps.²⁰³

Finally, wireless will likely play an even greater role than it already does. Vodafone is the main competitor and currently provides speeds of up to 5Mbps.

(j) Alternative investment areas

Another argument against fibre is the possibility of investing in many other areas related to Internet growth. The first of course is competing infrastructure, such as wireless. The danger of over-reliance on fibre was made out by the Telecommunications Commissioner in 2008, where he advised for technological neutrality.²⁰⁴

More significantly, however, there are other areas such as training which could be a more significant investment than fibre. Bringing more people to use the Internet and to be able to use it productively could be more important than the speed itself.

11.5.5 Summary of ultra-fast broadband

Fibre will certainly bring many benefits. There is no doubt that higher-speed Internet will have positive externalities and that, in time, relevant applications will be developed. Social networking, gaming and entertainment are areas which will certainly be important drivers for UFB uptake. It is quite clear that businesses, health-service providers and schools will benefit from the new network. But this was never the problem. The real question is whether the advantages are such that the government had to use public money to accelerate the roll-out.

Because of uncertainty as to future demand and consumer willingness to pay a premium for the new service, telecommunication service providers had decided not to invest in the Fibre-to-the-Premises network. Significant up-grades had already taken place with the Fibre-to-the-Node programme; and the market expected that this would be enough to cater demand in the future. Eventually, further fibre roll-out would have been made in urban areas, once demand would have been more established.

²⁰² See TelstraClear "Internet: Broadband" <www.telstraclear.co.nz/residential/inhome>.

²⁰³ Robert Kenny and Charles Kenny "Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 17.

²⁰⁴ Ross Patterson, Telecommunications Commissioner "Broadband the Highway to the Future: Panel Discussion" (NZCID Building Nations Symposium, Auckland, 14 August 2008).

It was part of the government's policy to accelerate the roll-out, however. FTTH would enhance New Zealand's economic growth and competitiveness, would future proof the country and would, at last, bring it to the top of the OECD rankings. It decided to rush through the process, because there was urgency: the country might miss the coach, and there would be significant foregone profits. In doing so it relied on broad economic assumptions, and overlooked demand side studies. Of the different possible options the most wide-sweeping and therefore expensive was adopted: FTTH.

The studies have shown that evidence is mixed as to the FTTH scheme's efficiency. Residential users are only mildly attracted to UFB, they are most interested in gaming and entertainment, and are not prepared to pay a significant premium for higher speed. Certainly, interesting new applications will be developed which will increase uptake, but was it really so urgent that the government had to invest in it?

To the contrary, roll-out to priority users seems to rest on much stronger arguments. Businesses are the drivers of our economy, and health-service providers and education are essential services for society. The benefits derived from those higher speeds will certainly make the investment worthwhile.

Of course, public investment has enabled the government to impose open access and non-discrimination obligations, and limits on ownership. It has even provided sufficiently compelling arguments to induce Telecom's voluntary structural separation. But regulation of a private sector is always possible, even without public investment.

As a concluding thought, the lack of economic studies prior to the decision should be emphasised. Not only did the government not explore in sufficient detail the economic benefits it hoped for; it decided to invest even before any demand side study was made, despite the fact that demand will condition the success of the initiative. The government deprived itself of essential economic indicators, leading it to make decisions based on assumptions rather than facts.

The decision to accelerate the roll-out and adopt a Fibre-to-the-Home policy was a matter of political choice; but policy should be guided by relevant economic studies and debate, especially when the stakes are so high. "Governments should be wary of stepping where telecommunications companies fear to tread."²⁰⁵

We suggest that for telecommunications the two key questions are as follows:

- (1) Were there policy problems that justified the changes?
- (2) Were these problems well identified?

For the 2000 reforms the government determined a new policy objective to ensure that the regulatory environment delivers cost efficient, timely and innovative telecommunications services on an ongoing, fair and equitable basis to all existing and potential users.

The Ministerial Inquiry concluded that the "existing regulatory regime is, and will continue, to be inadequate to meet the Government's objective".

²⁰⁵ Robert Kenny and Charles Kenny "Superfast Broadband: Is It Really Worth a Subsidy? (2011) 13(4) Info 3 at 20.

Four main concerns prompted the review:

- (a) there was a perceived lack of competition with the historic incumbent retaining high market shares;
- (b) interconnection prices were significantly above cost;
- (c) courts were not seen as acting as efficient regulators; commentators did not like the Privy Council's endorsement of the Baumol-Willig rule; and there were concerns about delays and litigation costs; and
- (d) the kiwi share obligation led to inefficient cross-subsidisation.

Two unaddressed problems subsequently became apparent:

- (i) vertical integration – this was subsequently addressed by the operational and then structural separation of Telecom; and
- (ii) a lack of investment in infrastructure.

(a) What options were considered? What solutions were adopted and against what criteria?

The lack of competition was addressed by a discussion over local loop unbundling (LLU). The Inquiry concluded that they were facing a natural monopoly, where access to the local loop was necessary to access all related telecommunications market. Yet they advised against LLU: a cost-benefit analysis showed that efficiency gains would be negligible; competition from alternative platforms (for example, wireless) would develop; and it could affect dynamic efficiency (reducing incentives for investment). Instead, interconnection and data-tail access became a designated service. The matter was to be re-analysed by the newly created Telecommunications Commissioner in 2004; he too advised against LLU.

The interconnection issue was solved by the creation of a new system of specified and designated services. Private parties were expected to negotiate agreements between themselves, and turn to the Telecommunications Commissioner if they could not reach an agreement. This would allow the regulator to make binding determinations on problems of interconnection – which would facilitate entry for potential competitors.

A new industry specific regulator was created: the Telecommunications Commissioner. While the Ministerial Inquiry report advised a stand-alone basis, the legislative reform established the Commissioner as a member of the Commerce Commission. The Commissioner received regulatory powers and was helped by new information disclosure requirements.

The problem of compensation for welfare obligations was addressed in the report by advising Telecom not to include them in its interconnection pricing – which would make the process much more transparent. Instead, Telecom should rely on the “unreasonable impairment” clause, whereby it could apply to the government for relief should its overall profitability be unreasonably impaired. This approach would force Telecom to bear alone the costs of the welfare obligations. This view was not adopted in the reform. The government chose to renegotiate the agreement with Telecom, creating the Telecommunication Service Obligation (TSO). Under this new regime Telecom would receive compensation through a levy paid by

all industry participants. The amount of the new levy would be determined by the Commission.

The report also recommended that an industry forum be created to advise the Commission on the development of key industry standards and codes of practices.

The report analysed the status quo alternative and also conducted a counterfactual analysis. However, the discussion failed to include the likely evolution of the sector should no reform be adopted.

The report also ignored the possibility of merely regulating interconnection prices while maintaining an unchanged light-handed regulatory regime.

(b) Did the chosen solution address the perceived problem adequately? What were the effects of the regulatory change?

The chosen solutions failed to solve the issues of the telecommunications industry.

The decision not to adopt LLU meant that no solution was brought to the vertical integration of the natural monopolist (the local loop being the natural monopoly element of the network), despite this being at the source of the lack of competition. As long as no separation programme was adopted the incentive to discriminate between access seekers remained. In 2006, full LLU and operational separation of Telecom was decided upon. The UFBI, drawing on the lessons of the past, decided to enforce separation in the new fibre network, which led to the structural separation of Telecom.

Specified and designated services appear to have provided useful tools to the Commissioner to regulate the market. Arguably they had largely detrimental effects on investment in new infrastructure. In particular, Telecom failed to develop the FTTN network because of the decision that a single wholesale price would apply independent from downstream speed. This single price meant that investment in a new technology, increasing download speed, would be unprofitable.

The industry-specific regulator appears to have an unfinished move – the reform of 2006 which granted larger investigation powers to the Commissioner proves this. It also failed to solve the delay and litigation cost issues. The *0867* case opposing the Commission and Telecom started in 2000 and was only resolved in 2010 by the Supreme Court – in favour of Telecom. Not only did the reform not address the problem of court remedy; it appears that the main responsibility for the abnormal litigation length lies with the Commission.

The issue of welfare obligations was largely a failure. The Commission interpreted the compensation mechanism as focusing solely on the losses caused by providing services in unprofitable areas, while the other industry actors claimed that those losses should be compensated by Telecom's profits. Disputes over calculation issues led to five different law suits. Information disclosure mechanisms were largely insufficient, and the exact cost of providing those loss-making services remained unclear. The reform failed to take into account the fact that Telecom was under its deed allowed to increase line rental prices according to the Price Consumer Index rather than the Industry Price Index. This would only be addressed in the Rural Broadband Initiative in

2010, with the implicit recognition that Telecom had been overcompensated for the last decade.

11.6 Electricity

11.6.1 *Liberalisation and privatisation*

Mladenovic²⁰⁶ in chapter 13 of the first volume of this project set out the history of reform in the electricity industry.

It is worthwhile to recapitulate briefly²⁰⁷ before the mid-1980's central government ran the industry. The Ministry of Energy was responsible for electricity generation and transmission. It also was responsible for policy advice and regulation. In 1985, 61 Electricity Supply Authorities (ESAs) were responsible for local distribution and supply. The Ministry, via the New Zealand Electricity Department, set the wholesale prices for the ESAs. The ESAs were statutory territorial monopolies and exclusively controlled local prices. Although the ESAs were electorally oriented there was a resulting inefficiency, lack of consumer choice and cross-subsidies.

In the early 1980s, an inter-departmental review of the government's role in the electricity industry took place. Its aim was to separate operational from other functions and improve commercial performance by introducing commercial disciplines for trading activities.

In 1986, the then Labour Government decided to reform the generation and transmission sectors of the electricity industry. The first stage was in 1987 when the government turned the Electricity Department into the Electricity Corporation of New Zealand (ECNZ). This was a company under the State-Owned Enterprises Act 1986. Its purpose was to own and operate the generation and transmission assets of the Ministry of Energy.

The government separated policy and regulatory activities – although the Ministry of Energy retained responsibility, these responsibilities diminished. For example, the Electricity Amendment Act 1987 removed the need for the Minister of Energy to approve all new hydro generation proposals. In April 1988, ECNZ set up a subsidiary called Transpower to run the transmission network of ECNZ. ECNZ became sole generator. 1990 saw a flurry of activity. The government abolished the Ministry of Energy. It also announced its policy to corporatise the ESA's which local Trusts would own. Local authorities would still own local Municipal Electricity Departments. Transpower was converted into a state owned enterprise which later became separate from ECNZ.

²⁰⁶ Alec Mladenovic "Network Industries" in Susy Frankel (ed) *Learning from the Past, Adapting for the Future: Regulatory Reform in New Zealand* (LexisNexis, Wellington, 2011) 339 at 340.

²⁰⁷ Rex Ahdar "The New Zealand Electricity Industry and the Limits of Competition Law" (2010) 18(2) Util LR 51; Ministry of Economic Development *Chronology of New Zealand Electricity Reform* (MED1196204, Energy Markets Group, June 2012).

The government then turned to the generation sector. A private sector initiative called the Wholesale Electricity Study recommended a major change to existing market arrangements to provide a predictable price path for wholesale electricity and to enable trading at marginal prices. The study also envisaged competition for ECNZ. The government independently reviewed the study. This critique identified further areas for further development including pricing of tradeable contracts, and ground rules of market operation with the threat of heavier regulatory oversight. The Electricity Act 1992 implemented these proposals. It removed distributors' statutory monopolies and obligation to supply. It provided for information disclosure particularly for natural monopolies.

In 1993, the government established the Electricity Market Company to support the electricity market framework for wholesale trading. This saw the start of an online secondary market in trading ECNZ's hedge contracts. It also designed the Metering and Reconciliation Information Agreement (MARIA) which recorded and reconciled flows to meet the needs of parties contracting in the wholesale and retail market. In 1994 the Electricity Information Disclosure Regulation came into force. These required disclosure of separate audited financial statements for natural monopoly and potentially competitive businesses, prices and other main terms and conditions of contracts, financial performance measures based on standard asset values, efficiency and reliability performance measures and line changes.

In 1995, the government announced it would split ECNZ into two competing SOEs (ECNZ and Contact). Contact would receive ECNZ's Maui gas contract. It would also sell some of ECNZ's assets.

In 1996, the competitive wholesale electricity market started. M Co acted as market administrator while Transpower was the scheduler and dispatcher.

Further reforms came with the Electricity Industry Reform Act 1998. This required full separation of distribution (lines) businesses from supply (retail and generation) businesses. The reason was to encourage competition in generation and retailing and to prevent cross-subsidisation of generation and retailing from lines customers. The Act allowed for price control of lines businesses if they did not deliver best possible prices to consumers. The Act also strengthened the disclosure regulations and stipulated the decision in principle to split ECNZ into three SOEs.

In 1998, the government decided to sell Contact Energy, which it did in 1999. In 1999, the government split ECNZ into three competing SOEs: Genesis Power Ltd, Meridian Energy Ltd and Mighty River Power Ltd. New disclosure regulations also came into force in 1999.

In February 2000, the government announced a Ministerial Inquiry into the electricity industry, which reported back in June 2000. It supported continuing self-regulation but also recommended targeted price controls for electricity lines businesses. The report led to the government introducing the Electricity Industry Bill. This became an Act in 2001. It allowed the Commerce Commission to institute price control over electricity lines businesses if they breached price thresholds set by the Commission. The Commission also took over administering the electricity information disclosure regime including reviewing the appropriate asset valuation

methodology. The Act also provided for the creation of an Electricity Complaints Commission.

In 2003, the government announced that a new Electricity Commission would be created. This was to take over governance of the electricity industry. This was the end of self-regulation. The government received further reports which culminated in the Commerce Amendment Act 2008. This included a new Part 4 of the Commerce Act 1986 which put in place new regulatory regimes for electricity lines businesses. It replaced the former Parts 4 and 4A and targeted lines businesses which were not subject to competition. It required the Commerce Commission to develop rules, requirements and procedures for regulation – these were known as input methodologies. The Act provided that the Commission set input methodologies for electricity lines businesses by 30 June 2010. The Act exempted 100 per cent consumer-owned lines businesses from price control. They are subject to information disclosure regulations. The rest of the lines businesses are subject to the new default customised regime.

11.7 Network industries and regulation

Although it is similar in effect to telecommunications, one can describe the electricity network as a network for slightly different reasons. As Posner notes a network is a market that is subject to economies of scale in consumption.²⁰⁸ The more people who use the product or service the more valuable the network becomes. The classic example is telecommunications. A telephone network is of more value to a consumer the higher the number of other consumers who are connected to it.²⁰⁹

Electricity, while a network, owes its status to the fact that it is often a natural monopoly. A telecommunications network can become a natural monopoly but that eventuates because the more valuable it becomes, the more consumers join it and it grows up until it dominates and a single network saturates the market.²¹⁰

After starting out with light-handed regulation with competition law as the only check, New Zealand has resorted to regulation of its electricity industry. Ahdar has comprehensively outlined why competition law was not an adequate check.²¹¹ However, one reason was that New Zealand's monopolisation section (Commerce Act 1986, section 36) never made it a breach to charge consumers high prices. Unlike article 102 of the Treaty for European Union, section 36 never made excessive pricing an illegal act.

So for natural monopolies, which some electricity providers are, there was no competition law liability for pricing highly to consumers and they were, and are,

²⁰⁸ Richard A Posner *Antitrust Law* (2nd ed, University of Chicago Press, Chicago, 2001) at 246.

²⁰⁹ Patrick Bolton, Joseph Brodley and Michael Riordan "Predatory Pricing: Strategic Theory and Legal Policy" (2000) 88 *Georgetown LJ* 2239 at 2280–2281.

²¹⁰ Herbert Hovenkamp *The Antitrust Enterprise: Principle and Execution* (Harvard University Press, Cambridge, 2005) at 228.

²¹¹ Rex Ahdar "The New Zealand Electricity Industry and the Limits of Competition Law" (2010) 18(2) *Util LR* 51.

natural monopolies. As Hovenkamp notes, a retail electricity company can serve additional customers more cheaply by expanding an existing grid than by producing an extra grid.²¹²

This means a sensible regulatory scheme cannot seek to eliminate such natural monopolies. Doing so, would mean foregoing cost savings. It would be more expensive to have two electricity grids than one and prices to consumers would increase.²¹³ Thus, the choice was made to regulate prices the natural monopolist would charge. This price would be the monopoly price, which would cause deadweight loss and allocative inefficiency. Thus, the monopolist was allowed to keep its monopoly but the regulator regulated its prices.

The incentive for the natural monopolist is to enjoy its market power (as a natural monopolist a single firm can most efficiently provide services) and earn economic profits by decreasing output. Thus, the aim of regulation of natural monopolies is to preserve the efficiency of large-scale production while preventing the higher prices and economic profits of monopoly; that is, the deadweight loss and allocative inefficiency.²¹⁴

With price (and profit) control, regulation aims to produce larger output (and lower prices) than would occur with an unregulated monopoly. It also leads to reduced profit and a lower rate of return on investment.

While sound in theory there are always problems with price regulation. Theoretically effective regulation would result in prices being at marginal cost. However, this will not wash. It will not cover the cost of constructing the network. To stay in business, the monopolist needs more funds. It needs more funds to meet the minimum investment to support a given level of output.

It is also difficult to determine the optimal level and growth of service. If regulation allows a company to charge excessive prices, the company will expand at more than the optimal rate. Also when regulation allows the rate of return to exceed the cost of capital firms are incentivised to over-expand fixed assets and shift to capital intensive means of production.

Conversely, if regulation allows for too low a price, consumers will over-consume. If the price offers producers too low a rate of return on capital, this will thwart innovation and necessary expansion.²¹⁵

Indeed, basing price regulation on costs can cause problems. A monopolist has little incentive to reduce costs if the price regulation it is permitted to charge is based on cost. Regulation can thus reduce the profit incentive for efficiency. Thus, the need for regulation is to correct what is called a “market failure”. This is the conditions which prevent a market performing with optimal efficiency.²¹⁶ This

²¹² Herbert Hovenkamp *The Antitrust Enterprise: Principle and Execution* (Harvard University Press, Cambridge, 2005) at 241.

²¹³ Herbert Hovenkamp *The Antitrust Enterprise: Principle and Execution* (Harvard University Press, Cambridge, 2005) at 241.

²¹⁴ Mark Hirschey and James L Pappas *Fundamentals of Managerial Economics* (6th ed, The Dryden Press, Chicago, 1998) at ch 13.

²¹⁵ Louis Kaplow and Steven Shavell *Microeconomics* (Foundation Press, New York, 2004) at 55.

²¹⁶ Louis Kaplow and Steven Shavell *Microeconomics* (Foundation Press, New York, 2004) at 55.

requires knowledge of the asset valuations on input methodologies. As with all regulation based on these concepts, the regulators require accurate information about the regulated firms, which requires information disclosures to the regulators.

11.7.1 Social welfare obligations

In relation to social welfare obligations in the electricity sector, distribution companies are obliged to maintain connections to customers in isolated areas even if this is not economically viable for them.²¹⁷ Also, the Electricity Authority is bound by the Electricity Industry Act 2010 and the administering of the Electricity Industry Participation Code (EIPC) to administer vulnerable and medically dependent consumer's guidelines and monitoring compliance.²¹⁸ The strengthening of guidelines and the monitoring of them by the Electricity Authority came about after the death of a Mercury Energy customer in 2007 who was reliant on power for her oxygen machine and did not survive when the power was disconnected due to non payment of \$168.40.²¹⁹ If vulnerable and medically dependant customers cannot pay their power accounts they are now encouraged to let their power retailer know so they can be considered for official "vulnerable consumer" status. They are then advised to follow a process for assistance including being referred to Work and Income.²²⁰ This came about with Parliament passing the Electricity (Disconnection and Low Fixed Charges) Amendment Act 2008.

While there would be a cost to the power retailer from delayed consumer payments with this social obligation, and no doubt to the taxpayer via government assistance, it is the distribution companies maintaining connections to isolated customers who bear a greater cost.

Another social welfare obligation was the Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004. These compelled electricity regulators to make available a domestic tariff, the fixed charges portion of which must not exceed 30 cents per day. This benefitted consumers who used less than 8,000 kWh of power per year.

11.7.2 Parliamentary uncertainty

One of the issues Mladenovic identified as ripe for investigation was regulatory uncertainty.²²¹ It almost goes without saying it is a concern for regulated entities. However, it can mean different things in different contexts.²²²

²¹⁷ Mark Bennett and Joel Colón-Ríos "Public Participation in New Zealand's Regulatory Processes" (ch 6) in this volume.

²¹⁸ See Electricity Industry Act 2010, s 105.

²¹⁹ David Eames "Muliaga Tubes Sensitive Issue, Court Told" *The New Zealand Herald* (New Zealand, 24 May 2008).

²²⁰ See Electricity Authority "Fact Sheet: Vulnerable Consumers" (November 2010) <www.ea.govt.nz/consumer>.

²²¹ Alec Mladenovic "Network Industries" in Susy Frankel (ed) *Learning from the Past, Adapting for the Future: Regulatory Reform in New Zealand* (LexisNexis, Wellington, 2011) 339 at 361.

²²² Edward Willis "On Regulatory Uncertainty" [2012] NZLJ 232.

One type of regulatory uncertainty involves how Parliament has provided for regulation.²²³ In New Zealand the path to regulation has, as Ahdar notes, been tortuous.²²⁴ As Mladenovic shows, it has moved from a state-run affair to light-handed relying on general competition law and then on to regulation with specialist regulators.²²⁵ This is not optimal. As Ahdar notes citing Joskow “a continuing stream of reforms rather than one comprehensive package is not conducive to the sort of large, long-term investment the sector needs.”²²⁶

This history of pragmatic piecemeal reform has done nothing to improve regulatory certainty. Indeed, the recent reform is the fifth Act of Parliament in the name of reforming industry since the Electricity Industry Reform Act 1998.²²⁷ It does nothing to attract investment into the industry.

11.7.3 *Appeals and reviews*

One way uncertainty may eventuate is via the legislation which establishes regulation. Part 4 of the Commerce Act 1986 deals with electricity regulation. It is worthwhile to examine it.

Part 4 establishes a regime for the “regulation of the price and quality of goods or services in markets where there is little or no competition and little or no likelihood of a substantial increase in competition”.²²⁸ Section 52A sets out the purpose of Part 4 which is to “promote the long-term benefit of consumers” in the markets for regulated goods and services by “promoting outcomes that are consistent with outcomes produced in competitive markets” such that suppliers of those goods and services have incentives to innovate and invest, improve efficiency and share the benefits of efficiency gains with consumers and are limited in their ability to extract excessive profits.

Part 4 has four types of regulation:

- (1) information disclosure;
- (2) negotiate/arbitrate;²²⁹
- (3) default/customised price – quality regulation;²³⁰ and
- (4) individual price quality.²³¹

²²³ Edward Willis “On Regulatory Uncertainty” [2012] NZLJ 232.

²²⁴ Rex Ahdar “The New Zealand Electricity Industry and the Limits of Competition Law” (2010) 18(2) Util LR 51 at 51.

²²⁵ Alec Mladenovic “Network Industries” in Susy Frankel (ed) *Learning from the Past, Adapting for the Future: Regulatory Reform in New Zealand* (LexisNexis, Wellington, 2011) 339 at 361.

²²⁶ Rex Ahdar “The New Zealand Electricity Industry and the Limits of Competition Law” (2010) 18(2) Util LR 51 at 59–60; Paul Joskow “Lessons Learned from Electricity Market Liberalization” (2008) 29 Energy LJ 9 at 11–12.

²²⁷ Rex Ahdar “The New Zealand Electricity Industry and the Limits of Competition Law” (2010) 18(2) Util LR 51 at 60.

²²⁸ Commerce Act 1986, s 52.

²²⁹ Commerce Act 1986, s 53G.

²³⁰ Commerce Act 1986, s 53K.

²³¹ Commerce Act 1986, s 53ZC.

Electricity lines services are specifically subject to Part 4 regulation by subparts 9–11 of Part 4 as follows:

- (a) all electricity lines services, including Transpower — information disclosure regulation;
- (b) non-consumer-owned electricity line services, other than Transpower — default/customised price quality regulation;
- (c) all gas pipeline services — information disclosure and default/customised price quality regulation; and
- (d) specified airport services — information disclosure regulation.

Under section 52P(3) the Commerce Commission must make determinations setting out each of the four types of the regulation:

- (i) the requirements that apply to each regulated supplier;
- (ii) any timeframes that must be met or applied; and
- (iii) the input methodologies that apply.

The Act provides for input methodologies. These are the methodologies, procedures and rules pursuant to which the various types of regulation are applied to suppliers of regulated goods and services. Section 52R says their purpose is to promote certainty for suppliers and customers. Under section 52T input methodologies related to particular goods or services must include, to the extent applicable to the type of regulation under consideration.²³²

- (1) Methodologies for evaluating or determining the following matters in respect of the supply of goods or services:
 - (a) cost of capital;
 - (b) valuation of assets;
 - (c) allocation of common costs; and
 - (d) treatment of taxation.
- (2) Pricing methodologies;
- (3) Regulatory processes and rules, such as the specification and definition of prices, including identifying any costs that can be passed through to prices and identifying circumstances in which price-quality paths may be reconsidered within a regulatory period; and
- (4) Matters relating to proposals by a regulated supplier for a customised price-quality path.

Under section 52U, the Commission initially had until 30 June 2010 to determine the input methodologies for the regulation of (inter alia) Electricity. The Minister of Commerce granted the Commission a six-month extension.

Section 52V provided the process the Commission was obliged to follow in determining input methodologies, as follows:

52V Commission process for determining input methodologies

- (1) When the Commission begins work on an input methodology, it must publish a notice of intention to do so that—
 - (a) outlines the process that will be followed; and

²³² Commerce Act 1986, s 52T.

- (b) sets out the proposed time frames.
- (2) During the course of its work on an input methodology, the Commission—
 - (a) must publish a draft methodology; and
 - (b) must give interested person a reasonable opportunity to give their views on that draft methodology; and
 - (c) may hold 1 or more conferences; and
 - (d) must have regard to any views received from interested persons within any time frames set.

The Commission published a notice of intention on 11 December 2008, advising it had started work on input methodologies. It determined the input methodologies in three phases, as follows:

- (a) Phase I: Development of Guidelines.
- (b) Phase II: Draft Determinations.
- (c) Phase III: Determinations.

In December 2010, after the process, the Commission published the input methodologies determinations. At the same time the Commission published its reason for the determinations.

Section 52Z provides that input methodology determinations are subject to merits appeals. This provides for:

52Z Appeals against input methodology determinations

- (1) Any person who gave views on an input methodology determination to the Commission as part of the process under section 52V, and who, in the opinion of the court, has a significant interest in the matter, may appeal to the High Court against the determination.
- (2) In this section and section 52ZA, **input methodology determination** means any of the following:
 - (a) the initial determination of an input methodology;
 - (b) any determination by the Commission that amends the input technology;
 - (c) any determination by the Commission of an input methodology following a review of the input methodology.
- (3) In determining an appeal against an input methodology determination, the court may do any of the following:
 - (a) decline the appeal and confirm the input methodology set out in the determination;
 - (b) allow the appeal by—
 - (i) amending the input methodology; or
 - (ii) revoking the input methodology and substituting a new one; or
 - (iii) referring the input methodology determination back to the Commission with directions as to the particular matters that require amendment.
- (4) The court may only exercise its powers under subsection (3)(b) if it is satisfied that the amended or substituted input methodology is (or will be, in the case of subsection (3)(b)(iii)) materially better in meeting the purpose of this Part, the purpose in section 52R, or both.
- (5) If the court allows an appeal, the Commission may seek clarification from the court on any matter for the purpose of implementing the court's decision.
- (6) There is a right of appeal under section 97 to the Court of Appeal from any decision or order of the High Court under this section on a point of law only.

Input methodology determinations are also subject to appeals on a point of law under section 92(B), and to challenge by judicial review. Needless to say the parties have appealed against the Commission’s input methodologies determinations. These include the following:

- (a) Vector has appealed the Cost of Capital, Asset Valuation, Cost Allocation and Regulatory Rules and Processes input methodologies for Electricity Distribution, Gas Distribution and Gas Transmission Services; and
- (b) Transpower has solely appealed the Cost of Capital IM for Transpower, both as regards information disclosure and its individual price-quality regulation.

At the time of writing the High Court is hearing these cases. The firms subject to these decisions have challenged them by appeal and judicial review. For example, *Vector v Commerce Commission*²³³ involved the issue of whether the Commission was required to set an input methodology for starting price resets under section 53P(3)(6) of the Act. The Commission said “Yes” and did so. Vector said “No” and applied for judicial review. The High Court agreed with Vector.²³⁴ The Commission appealed. The Court of Appeal agreed with the Commission and allowed the appeal.²³⁵ The Supreme Court granted Vector leave to appeal and subsequently dismissed the appeal.²³⁶ This state of flux does nothing for regulatory certainty.

The parties also sought judicial review of the Commission’s processes in reaching its input methodologies determinations. They argued the Commission should have consulted on a sector-specific basis. The Commission consulted on a cross-sector basis. The High Court ordered that the Commission consult again on one matter with Transpower only.²³⁷ No party appealed.

This system of initial determinations by a regulator and subsequent appeals is not unusual, however. One can expect it with a new regulatory Act. For example, in the United States, Congress passed its Telecommunications Act 1996 requiring the Federal Communications Commission to make a number of regulatory decisions and rules. One was to mandate that unbundled network elements be priced on the basis of “forward looking” incremental costs called TELRIC (Total Element Long-Run Incremental Cost). Needless to say affected companies challenged virtually all of the Federal Communications Commission’s rules and the substantive merits of TELRIC as a cost methodology.²³⁸ It took the Supreme Court to provide the final certainty by blessing most of the rules and TELRIC in *Iowa Utilities Board*.²³⁹ Similarly, it was a High Court of Australia decision²⁴⁰ to determine the meaning of the phrase “it would be uneconomical for anyone to develop another facility to

²³³ *Vector Ltd v Commerce Commission* HC Wellington CIV-2011-485-536, 26 September 2011.

²³⁴ *Vector Ltd v Commerce Commission* HC Wellington CIV-2011-485-536, 26 September 2011.

²³⁵ *Commerce Commission v Vector Ltd* [2012] NZCA 220, [2012] 2 NZLR 525.

²³⁶ *Vector Ltd v Commerce Commission* [2012] NZSC 99.

²³⁷ *Vector Ltd v Commerce Commission* CIV-2011-485-1042, 22 December 2011.

²³⁸ Glen Robinson “On Refusing To Deal With Rivals” (2002) 87 Cornell L Rev 1177 at 1218.

²³⁹ *AT&T Corp v Iowa Utilities Ltd* 525 US 366 (1999).

²⁴⁰ *Pilbara Infrastructure Pty Ltd v Australian Competition Tribunal* [2012] HCA 36, (2012) 290 ALR 750.

provide the service” under section 44H(4)(b) in Part IIIA of the then Trade Practices Act 1974 (Cth).²⁴¹

This concerned whether third parties could obtain access to an owner’s infrastructure. Here it was railway lines. Third parties could have access if (inter alia) the section 44H(4)(b) criterion was met. One party argued that “uneconomical” meant “unprofitable”.²⁴² The other said “uneconomical” meant “wasteful of society’s resources” in the sense of being allocatively inefficient.²⁴³ The Australian Competition Tribunal held that “uneconomical” meant “wasteful of society’s resources”. The Full Federal Court held it meant “unprofitable”.²⁴⁴ The High Court by majority agreed.²⁴⁵ There, as the different Tribunals showed respectable arguments for both interpretations existed, it needs a final court decision to determine the matter definitively.

This will be the case with all new regulation aimed at promoting efficiency. Thus, the existence of appeals against the regulator does not show regulatory uncertainty. There is a need for a court decision to bed things down.

This is particularly so with Part 4 of the New Zealand Commerce Act 1986. The wording is unique and thus far not subject to interpretation. The purpose statements in sections 52A and 52R require a court’s interpretation. How they fit together, with section 52A requiring that regulations should promote the long-term benefit of customers by promoting outcomes consistent with competitive markets and section 52R saying they should promote certainty for suppliers and consumers, is not entirely clear.

Further, as we have seen, section 52Z(4) provides:

- (4) The court may only exercise its powers under subsection (3)(b) if it is satisfied that the amended or substituted input methodology is (or will be, in the case of subsection (3)(b)(iii) materially better in meeting the purpose of this Part, the purpose in section 52R, or both.

This requires judicial elucidation. The High Court may have to develop its own test for what is “materially better”. As yet there is no precedent.

Asset valuation in the electricity industry is a prime example. There are a number of possible asset valuation methodologies. These include opportunity cost, historical cost, optimised replacement cost, optimised depreciated replacement cost and optimised deprivation cost. There are arguments in favour of each and one cannot say that there is one right answer. There is a choice for the regulator. Given that there are intellectually respectable arguments for each methodology, it is no wonder there will be appeals on the methodology the regulator chooses. Ultimately, a court will have to make the decision.

²⁴¹ Now renamed the Competition and Consumer Act 2010.

²⁴² *Pilbara Infrastructure Pty Ltd v Australian Competition Tribunal* [2012] HCA 36, (2012) 290 ALR 750 at [157].

²⁴³ *Pilbara Infrastructure Pty Ltd v Australian Competition Tribunal* [2012] HCA 36, (2012) 290 ALR 750.

²⁴⁴ *Re Fortescue Metals Group Ltd* [2010] A Comp T 2, (2010) 271 ALR 256.

²⁴⁵ *Pilbara Infrastructure Pty Ltd v Australian Competition Tribunal* [2011] FCAFC 58, (2011) 193 FCR 57, (2011) 277 ALR 282.

Interestingly, the New Zealand Supreme Court in a telecommunications case, *Vodafone v Telecom*,²⁴⁶ criticised the Commission for using Optimised Replacement Cost.²⁴⁷ This is despite the Commission having held hearings on what method to use and no one complaining. The issue only arose on the last day of hearing. The Commission used this methodology for electricity so it will be intriguing to see what the High Court does on the current appeals.

In short, one should expect appeals and reviews with regulatory decisions over new legislation. They are inevitable until the Act becomes embedded, and that will only occur when the courts have the final say. Given the High Court has blessed the Commission's consultation process one will not see further challenges on that. The same will be true once the courts have finally dealt with all appeals and merits review. There is initial uncertainty – but it will be resolved. Given the sums of money involved one cannot be surprised the parties exercise all appeal rights. It is not a situation of unavoidable uncertainty. It is inevitable.

11.8 Conclusion

The New Zealand experience with deregulation and then re-regulation has not been a happy one. Respective governments have made large changes that have done nothing to encourage investment. Why invest, when a new government could radically reshape the industries?

In terms of electricity, the most recent reforms have introduced new concepts and procedures. Given the novelty and the sums of money involved, market participants were incentivised to test what these concepts mean. That was also the experience with the United States telecommunications industry. One cannot be surprised that the same is now happening in New Zealand. Once courts have definitively defined concepts and commented on the regulators procedures the amount of litigation should steadily decrease and certainty increase.

What this New Zealand history of experimenting with different regulatory regimes shows is that network industry regulation best requires a fixed regulatory framework that does not change with various governments. This would likely improve certainty and consequently investment and innovation.

²⁴⁶ *Vodafone New Zealand Ltd v Telecom New Zealand Ltd* [2011] NZSC 138, [2012] 3 NZLR 153.

²⁴⁷ *Vodafone New Zealand Ltd v Telecom New Zealand Ltd* [2011] NZSC 138, [2012] 3 NZLR 153 at [72]–[74].