

# Determining outcomes or facilitating effective market processes: a review of regulation and governance of the electricity sector

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# 1 Executive summary

Electricity resides at the top of any list of critical infrastructure. An electricity sector performing below its capability will make it harder to lift economic performance. Unfortunately, New Zealand has no consistent or coherent measure of electricity sector performance against which to measure the results of policy changes. None of the many regulatory agencies which routinely comment on the electricity sector has developed, or report in a structured way indicators of electricity sector performance.<sup>1</sup> This lack of *systematic* review is in contrast to the broad suite of indicators covering social, economic, cultural and environmental outcomes developed by other agencies.<sup>2</sup>

There have, however, been successive reviews of the sector by the previous Government and government agencies. Examples of reviews in the past three years include the electricity market review by government officials for the Minister of Energy in 2006, the Winter Review, the current 'Market Design Review' by the Electricity Commission and the yet to be released review of market conduct by the Commerce Commission. The completed reviews, and the Electricity Commission's preliminary reports, conclude that the current market framework, of competing generators and retailers, serves the country better than alternative arrangements.

Each review, however, identified specific problems and proposed interventions in addition to those listed in the 30 page Government Policy Statement (GPS) prepared by the former Minister of Energy. The GPS was itself revised and expanded in 2002, 2003 (draft), 2004, 2005 (draft), 2006, and 2008.<sup>3</sup> Previous Ministers of Energy have clearly felt it necessary to amend and extend, year after year, the regulatory interventions in the sector, suggesting that the Government believed the sector continued to under-perform and/or its previous interventions did not produce the expected results.

<sup>1</sup> The Electricity Commission is required to report on its progress in achieving the Government Policy Statement and the Parliamentary Commissioner for the Environment comments on that report. However, these reports are not assessments of sector performance, but progress statements on implementing specific interventions.

<sup>2</sup> Programmes to develop performance indicators in other sectors to help assess the effectiveness of policy include: Economic development indicators (Ministry of Economic Development); Linked indicators (Statistics New Zealand); Knowledge-based economy indicators (Statistics New Zealand); ICT statistics (Statistics New Zealand); Environmental performance indicators (Ministry for the Environment); Social performance indicators (Ministry of Social Development); Tourism data (Ministry of Tourism); Quality of life indicators (local government); Cultural indicators (Ministry for Culture and Heritage).

<sup>3</sup> The current and earlier versions of the GPS are available at [http://www.med.govt.nz/templates/ContentTopicSummary\\_\\_\\_\\_21482.aspx](http://www.med.govt.nz/templates/ContentTopicSummary____21482.aspx)

A perceived need for continuing interventions by Ministers and government regulatory agencies in the production and sale of electricity should concern policy-makers. There is a high opportunity cost to these constant regulatory adjustments – there are obvious and pressing issues for Ministers and officials to address in terms of the broader performance of the New Zealand economy. Perhaps of more consequence, there is also a heightened prospect that changes are being made to regulations in the electricity sector to overcome the effects of previous regulations, at the risk of ever-mounting distortions to sector performance. If this is occurring, then there is little hope of the current arrangements converging to a stable set of regulations.

The focus of this review is not whether more or less regulation is required; typically, market rules become more extensive and more complex in liberalised markets and the regulatory functions, such as competition monitoring, may increase in significance as a result. The policy shift required for successful regulation of market activities is how to refocus regulatory tasks, away from determining market outcomes and towards facilitating effective market processes. At the risk of over-simplification, effective regulation of markets should become less executive, and more judicial and more legislative, in character. Measured against this test, the track record of the GPS alone suggests fundamental weaknesses in the existing regulatory and governance structures.

We organise our review of electricity sector governance and regulation around the key policy objectives for the sector. Looking back over the two to three decades of electricity sector reform and the experience of electricity reform worldwide, five broad policy goals seem enduring. These five goals are:

- Security of supply – in the sense of supply meeting demand without involuntary cutting supply, or a heightened threat of cuts to supply.
- Economic efficient investment and operation in the wholesale and retail sectors, with competition a primary tool for achieving efficiency.
- Efficient use of, and investment in, long life assets (including transmission and distribution), guided by economic regulation.
- Meeting community or social minimums, including universal access to electricity and support for those who can't pay (as opposed to won't pay).
- Integrating and mitigating the impact on the industry of achieving environmental objectives with a current focus on climate change.

Enduring performance gains will be achieved in the electricity sector if the regulatory framework provides a clear path to better outcomes across all of these objectives. Undue focus on one or a few goals risks policy swings which undermine the confidence necessary to invest efficiently in the long-life assets of electricity production and delivery. By contrast, a well designed governance and regulatory structure should deliver constant improvements in performance without the need for continuing changes to interventions by the Minister and government agencies to compensate for perceived problems that should have been attended to within a stable framework of regulations, governance, and market competition.

For each policy goal, we summarise key characteristics, or design components, for the governance or regulatory arrangement to achieve that goal. Because the goals sought from the electricity sector are not novel in terms of public policy, we can draw on experiences in New Zealand and elsewhere to identify what matters most in terms of the design of effective governance and regulatory oversight. These design characteristics include assessing whether the parties who take decisions and actions under those structures are the parties with the best information, incentives and capabilities in relation to that action or decision. We explain why some regulatory decisions should be independent of Ministerial direction, and why Ministers should be directly accountable for other types of regulatory interventions.

Using these design characteristics, we consider whether decision-making and regulatory tasks are assigned to the administrative, regulatory or industry entity best placed to make the decision or undertake the activity so that problems are identified early and dealt with effectively. The decision-making activities considered includes those taken by regulatory agencies, and the functioning of joint activities by sector participants, for example, input into market trading rules and decisions on transmission service levels.

The results of our analysis are summarised in the following table. This table lists down the left hand side the five key policy goals. The next column lists some of the key characteristics or design components for effective governance or regulatory oversight of that goal. We then identify existing regulatory institution(s), or alternative administrative processes, with the best fit to these design parameters. The last column on the right of the table shows the current allocation of roles and responsibilities.



**Table 1 Allocation of regulatory roles and responsibilities to achieve policy objectives**

Policy objective	Key design components	Institution with best fit	Current arrangement
<b>Security of supply</b>	Non-partisan supply and demand forecasting	System Operator	Electricity Commission
	Barriers to supply matching demand identified	System Operator	Electricity Commission
	Unambiguous intervention mechanisms in a supply shortage	Minister of Energy appointment & defined powers	Unclear powers and roles
<b>Efficient market transactions</b>	Trading rules developed by parties with information & incentives	Industry-based working groups	Electricity Commission
	Assessing competitive effects of rules	Commerce Commission	Electricity Commission
	Efficient service provision (rule making, pricing, settlement, information)	Service providers under contestable contracts	Electricity Commission (some services tendered)
<b>Efficient investment and use of long life assets (including networks)</b>	Efficient pricing and allocation of risk	Customer engagement on investment & pricing	Electricity Commission
	Independent economic regulator	Economic regulator (Commerce Commission)	Electricity Commission/Commerce Commission
	Predictable regulatory decisions	Decisions based on precedent, merits review	Inconsistent and limited appeals provisions of Electricity Commission and Commerce Commission decisions
<b>Community and social objectives</b>	Policy advice by appropriate agency	MSD, MED	MSD, MED, Electricity Commission (for disconnection, fixed charges, etc)
	Intervention subject to regulatory impact statement	MED/MSD/Treasury	Electricity Commission
	Enforce regulatory requirements	MED	Electricity Commission
<b>Environmental objectives (including energy efficiency &amp; climate change)</b>	Policy advice by appropriate agency	MFE, EECA, MED, Treasury	MFE, EECA, Electricity Commission
	Implementation of programmes by specialist delivery agent	EECA	EECA, Electricity Commission (energy efficiency)
	Stable investment environment	MED, Treasury	MED, Treasury

The table shows that current arrangements do not achieve the necessary refocus of regulatory tasks, away from determining market outcomes and towards facilitating effective market processes. The current mechanisms centre on regulatory agencies making executive decisions which impact directly on market outcomes and leave underdeveloped the critical ‘judicial’ and governance elements of successful market regulation. There is little prospect of such a structure converging to a stable and predictable set of regulations necessary to support long life investments needed in the sector.

There is a clear mismatch in the current arrangements between an allocation of roles and responsibilities for effective problem solving, and the current allocation of regulatory functions. Decisions are taken by the Electricity Commission in circumstances where it is clearly less expert and has a poorer information base and confused incentives; for example, the System Operator is better placed than the Electricity Commission to assess supply and demand conditions, and industry processes would be more effective at designing efficient wholesale and retail market trading rules. The Commerce Commission is the nation’s expert competition body and should assess the rules for anti-competitive effect, not the Electricity Commission. A core Ministry, such as the Ministry of Economic Development, should be responsible for regulations to achieve the Government’s social and equity objectives.

The Electricity Commission does not have the independence from short-term political considerations to administer economic regulation (setting of price and service levels), or to make credible assessments of security of supply. Policy coherence, credibility and accountability are critical elements of effective regulation in capital intensive industries with long-life assets, such as the electricity sector, and these elements are undermined in a structure where the regulator is subject to short-term and non-transparent political objectives which may differ from long-term goals.

Under the structure that emerges from allocating roles and functions to the institution best suited to that role or function:

- The System Operator would be tasked with providing independent evaluations of supply and demand conditions and assessing publicly without fear or favour the constraints and barriers to supply meeting demand.
- The Minister of Energy would have clearly defined powers to act and appoint an administrator should supply fail to meet demand (the administrator would direct curtailment and dispatch and set wholesale prices for the period that supply cannot meet demand).
- Industry processes, including consumers, would refine the wholesale and retail market trading rules to lower trading costs, subject to explicit competition assessments of the rules by the Commerce Commission.
- Economic regulation (price and service levels) would be administered by an independent regulator, currently the Commerce Commission.

- Transmission customers would approve transmission investment decisions under an organised decision process, subject to rights to appeal to the economic regulator (Commerce Commission) that the decision to proceed, or not to proceed, with the investment would not result in a net public benefit.
- Responsibility for electricity efficiency objectives would be transferred to the Government's primary entity for such activities, EECA.
- Regulations to achieve community or social obligations should be transferred to and administered by the core government department, the Ministry of Economic Development, accountable to a Minister and Parliament.

Many, if not most of these changes, could have been implemented by the Electricity Commission without legislative change. For instance, the Electricity Commission could have established a structured decision process to empower transmission customers in deciding transmission service changes (investments), and it could have drawn from nearly a decade of experience with industry processes in evolving market trading rules to determine a process for guiding market design. However, the Electricity Commission has pursued an 'executive' approach and an orientation toward determining market outcomes rather than facilitating effective market processes. The Electricity Commission emerges as a part of the problem considering its orientation, its authorising legislation, and the complexity of its roles and functions and the unsatisfactory allocation of roles in the industry generally.

For the Government and the industry to address the many issues that we see as undermining performance in the industry a strategy of change is required that makes a logical and sensible set of steps to address the weaknesses that are apparent. There is clear evidence and lot of agreement on some of the issues and action could be taken immediately. Other issues may be conceptually easy to grasp but the implementation needs to be thought through and will take a little more time to get right. Then there are some issues where some further hard thinking and discussion are needed. In other words, it is not practical to address all the issues summarised in the table above in one package of changes and a kind of 'triage' would help to determine a practical and achievable strategy for change. A staged process permits immediate action on some issues and further time to consider other issues.

## 2 Current regulatory structure explicable by its history

The electricity value chain takes various sources of fuel including water, gas, coal and wind and produces electrical energy; this electrical energy is produced and transported to match demand instantaneously at (virtually) all locations in the country. The performance of the electricity sector over this entire value chain is influenced, constrained and encouraged by a host of regulatory requirements and governance arrangements.

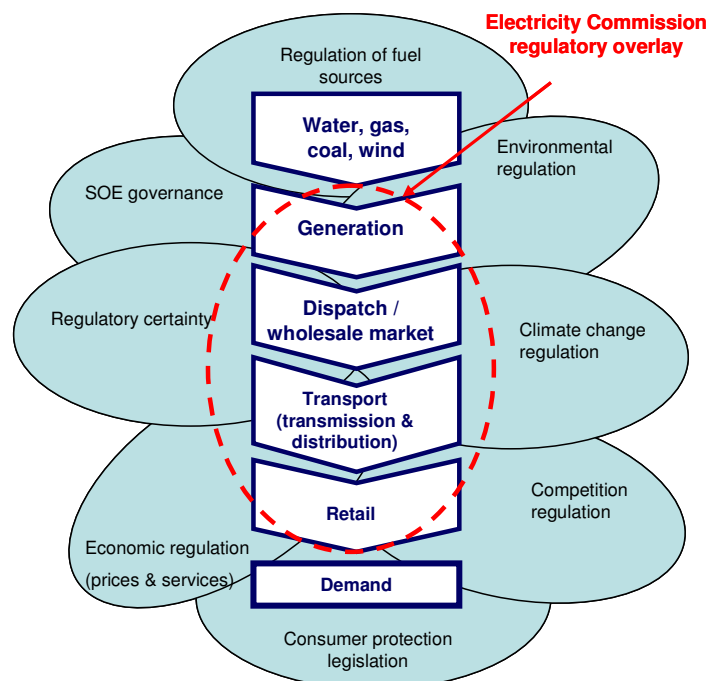
This regulatory framework includes the regulation of fuel supplies (e.g. gas sector regulation, water rights, the Resource Management Act, etc); the competition and price control provisions of the Commerce Act, climate change initiatives and consumer protection legislation (e.g. Consumer Guarantees Act and Fair Trading Acts). Given the dominant role of state owned entities (SOEs) in the generation, transmission, and retailing of electricity, sector performance is also inextricably linked to the performance of these state-owned trading organisations. This paper focuses on electricity sector specific regulation and governance. However, sector performance will clearly be affected by other regulatory elements, including the regulation of fuels such as gas (including the Gas Industry Company) and water. The approach taken in this paper could be applied to regulatory structures in those sectors.

In 2001, the Government introduced legislation requiring the electricity sector to merge the then existing industry arrangements governing wholesale market trading (NZEM), quality standards for transmission (MACQS) and the metering and reconciliation agreement (MARIA). The MARIA agreement had been implemented in 1994, NZEM operated from 1996 and MACQS was in the process of being implemented. The legislation provided for a regulatory body which would be implemented were the arrangements not merged and adapted in a form acceptable to the government.

The industry could not agree a structure that met the Government's requirements and the Government established the Electricity Commission in 2003 under the Electricity Act 1992. Hence, the origin of the Electricity Commission as the sector's primary regulatory body was a legislative threat to achieve a particular objective (merger of industry rule books), rather than a purposefully designed regulatory institution. In implementing its regulatory threat, the Government expanded the role of the Electricity Commission and altered some aspects of its design.

As a result, the roles and responsibilities of the Electricity Commission are broader than the industry arrangements that it absorbed. The Electricity Commission has a regulatory mandate which provides an additional regulatory overlay over much, but not all, of the electricity value chain. This additional regulatory power is shown stylistically in the figure 1.

**Figure 1. Regulatory overlay provided by the Electricity Commission**



The budget appropriation for the Electricity Commission is also much larger than the former industry arrangements. The Electricity Commission has a budget appropriation for 2008/09 of \$93 million, including the costs of Whirinaki station built by the Government (\$27 million was appropriated in 2008/09 for reserve energy, primarily Whirinaki).<sup>4</sup> The cost of the Electricity Commission is recovered from industry levies (this funding arrangement is discussed in section 8.2 below). The total cost of the former industry arrangements was \$39.2 million per annum.<sup>5</sup> A breakdown of the Commission's annual appropriation is contained in annex 1.

Just under \$500 million has been appropriated to the Electricity Commission since it was established. To assess whether this has been a good use of electricity consumers' money or a poorly conceived regulatory framework that invites 'regulatory creep'

<sup>4</sup> Electricity Commission, Briefing to the Incoming Minister, Hon Gerry Brownlee, 20 November 2008, page 20.

<sup>5</sup> Recovering the Costs of the Electricity Commission, discussion document prepared by CRA for Ministry of Economic Development, 10 July 2003, page 20. This amount includes recovery of market development costs and one-off projects.

beyond the original intent of Parliament can only be determined from insights into the purpose of the regulatory regime. These insights can be gained by looking at the policy objectives for the sector.

## 3 Policy objectives

### 3.1 Shifting focus of electricity policy

The design of a regulatory institution depends not only on the regulatory task but also on the objective for that regulatory activity.<sup>6</sup> Looking back over the past two to three decades, electricity policy appears unstable with significant changes in the focus of policy initiatives. For example, in the 1970s electricity initiatives included embarking on construction projects to keep a specialised work force employed.<sup>7</sup> The Government no longer intervenes to maintain a hydro dam construction force, but it has intervened recently to pursue an efficient lighting strategy.<sup>8</sup> While these initiatives are sharply different, they share a common goal as the authors of these interventions believed they would result in lower energy costs over time than would be achieved through ‘market forces’.<sup>9</sup> Another example from last year is the legislative ban on new thermal base load generation. This ban was introduced because the Government was concerned that this form of generation might be least cost and favoured by market processes (after allowing for the Emissions Trading Scheme), whereas the Government placed greater weight on climate change objectives than increased energy costs.

Clarity of the policy objectives and some stability in the instruments used to achieve those goals is critical for electricity sector performance. Electricity production and delivery is capital intensive, with returns on investments spread over many years – asset lives in excess of 25 to 50 years are typical in transmission, distribution and generation. These long-life assets embody the economic and regulatory conditions at the time of construction; hence inappropriate investment decisions due to poor regulatory policy

<sup>6</sup> An example discussed further below is how the objective determines the degree of independence required by the decision entity.

<sup>7</sup> See Galvin B, Secretary to the Treasury, *Review of Electricity Planning and Electricity Generation Costs*, (Treasury Paper to the Minister of Finance, Wellington, March 1985 [the McLaughlin Report]).

<sup>8</sup> <http://www.electricitycommission.govt.nz/opdev/elec-efficiency/programmes/lighting/index.html>

<sup>9</sup> Maintaining a dam building work force was perceived to lower construction costs over time, and efficient lighting was perceived to lower consumer electricity bills over time.

settings or signals may go on influencing the efficiency and effectiveness of the electricity sector for long periods after initial construction. If construction is delayed or abandoned, because of regulatory uncertainty, the costs are greater still because consumers may be denied services for which they would have been willing to pay.

With these concerns in mind, there has been significant policy convergence internationally on a number of key principles for regulating market activities, especially in industries with long-life assets. These principles include regulators withdrawing from direct controls on market conduct/outcomes, and strengthening the application of general competition policy and law. Economic regulation (price and services) should be undertaken by regulators that are independent of short-term political pressures which may be at odds with long-term objectives; interventions to achieve equity, distributional, or other social objectives should be undertaken by core Ministries accountable to elected Ministers (independence and political accountability are discussed further in section 6.2 below).

Regulation and regulators will of course continue to have major, indirect influences on markets. Typically, market and regulatory rules become more extensive and more complex in liberalised markets and the regulatory functions such as competition monitoring may increase in significance as a result.<sup>10</sup> The policy shift required for successful regulation of market activities is to refocus regulatory tasks, away from determining market outcomes and towards facilitating effective market processes. At the risk of over-simplification, effective regulation of markets should become less executive, and more judicial, more legislative and more contractual in character.

Against this backdrop, the former Ministers' of Energy conclusion that that the GPS needed to be revised and expanded in 2002, 2003 (draft), 2004, 2005 (draft), 2006, and 2008 is illuminating; it suggests a much more fundamental problem than the particular symptoms addressed by each change.

## 3.2 Enduring policy goals

To provide stability to support the long-life investments needed to address industry performance, regulatory settings should support enduring and broadly based policy goals for electricity. If policy is aimed at short-term political considerations or narrow sector interests, then lurches are inevitable. Sifting the 30 page GPS through a filter of 20 years of reform and the experience of electricity reform worldwide, five broad policy goals seem enduring. These five goals are:

- Security of supply – in the sense of supply meeting demand without involuntary cutting supply, or a heightened threat of cuts to supply.

<sup>10</sup> See for example, S.K.Vogel, *Freer Markets, More Rules: Regulatory Reform in Advanced Industrial Countries*, Cornell University Press, 1998

- Economic efficient investment and operation in the wholesale and retail sectors, with competition a primary tool for achieving efficiency.
- Efficient investment, operation and use of network assets (transmission and distribution), guided by economic regulation.
- Meeting community or social minimums, including universal access to electricity and support for those who can't pay.
- Integrating and mitigating the impact on the industry of achieving environmental objectives with a current focus on climate change.

Enduring performance gains will be achieved in the electricity sector if the regulatory framework provides a clear path to better outcomes across all of these objectives.

None of the five primary policy objectives described above is novel. All are sought to varying degrees from other sectors, and all have been the explicit aim of policy interventions in the electricity sector. Because the policy objectives are common place, we can draw on experience in New Zealand and elsewhere to identify what matters most in terms of the design of effective governance and regulatory oversight.

## 4 Security of supply

### 4.1 The Electricity Commission cannot ensure supply

The Electricity Act 1992 sets the principal objectives of the Electricity Commission:

- to ensure that electricity is produced and delivered to all classes of consumers in an efficient, fair, reliable, and environmentally sustainable manner; and*
- to promote and facilitate the efficient use of electricity.*

The Electricity Commission can promote and facilitate the efficient use of electricity (that is, objective (b)). However, the Electricity Commission cannot *ensure* that electricity is produced and delivered (that is, objective (a)). The Electricity Commission operates just one generation station (Whirinaki), does not own fuel sources, transmission, distribution, retail or other electricity related assets. Only if the Electricity Commission controlled sufficient fuel and electricity production and transport assets to meet demand, could it hope to “*ensure that electricity is produced and delivered to all classes of consumers...*”.



To ensure supply meets demand, the Electricity Commission would require much greater central planning powers.<sup>11</sup> The extent of those powers would mean abandoning the current structure of competing generators, and hence the model supported by every recent review as being the best option for the country. Centrally planned systems of this type face overwhelming problems in terms of information, ineffective management of risk and dulled incentives. To our knowledge no centrally managed electricity system has ever delivered security of supply – the last time New Zealand consumers faced involuntarily curtailment of electricity because of a shortage in supply was in 1974, when the New Zealand system was largely centrally controlled.<sup>12</sup>

In a market based system, no one party can *ensure* security of supply. A regulatory institution or entity can promote or support security of supply by:

- Creating conditions in which investors are willing to spend large sums of money to bring forward fuel supplies, generation capacity, transmission and distribution capacity and demand management.
- Producing credible projections of supply and demand balances so that all parties can plan for eventualities or rely on the planning of others.
- Identifying barriers or constraints (physical, regulatory, political, etc) to increased fuel supply, generation or network capacity, so that these barriers can be addressed by policy-makers.
- Providing a mechanism for managing any shortage of supply event that might arise.

The critical elements of regulatory institutions necessary to support investment decisions are discussed in chapter 6 below. In the following sections we discuss the key design characteristics or parameters for institutions to be effective in providing supply and demand projections, identifying barriers to entry and managing shortages.

## 4.2 Need independent voice on security of supply

No market (or any other organisational form for producing and delivering a service) works perfectly. Disruption of supply in electricity markets, however, can be very costly. The possibility of disruption can be reduced by a reporting body that assesses and reports publically without fear or favour:

<sup>11</sup> For completeness, the market rules provide a “central process” in relation to reliability. Part C Schedule C3 Technical Code B of the EGRs obliges participants to make available Automatic Under Frequency Load Shedding (AUFLS) in response to a significant drop in frequency. This mechanism is confined to temporary restoration of frequency and has only been activated once in the past 15 years. The discussion here focuses on sustained energy shortages.

<sup>12</sup> Department of Prime Minister and Cabinet, *The Report of the Electricity Shortage Review Committee, 1992*, Appendix 3, A Brief History of Electricity Shortages in New Zealand.

- A medium term outlook for the balance of supply and demand.
- An assessment of the main constraints (physical, regulatory, political etc) to:
  - Improved fuel supply
  - Investment in generation capacity
  - Investment in transmission and distribution capacity

Credible, forward looking assessments of this nature provide all parties with the opportunity to adjust plans and respond. Under the current regulatory arrangements, the Electricity Commission is tasked with assessing future supply and demand conditions. However, no matter how well the Electricity Commission operates, it cannot with its current functions achieve the independence and credibility to provide meaningful assessments.

The Electricity Commission's legislative roles and responsibilities include it being a:

- Policy adviser.
- Proposer of regulations and rules.
- Purchaser and/or provider of market operations.
- Purchaser of reserve power.
- Seller of electricity in dry years.
- Adjudicator of fines and penalties
- Industry facilitator.
- Promoter and funder of energy efficiency.
- Decision-maker over the investment, services and prices of Transpower.

In addition to these competing and irreconcilable objectives, the Electricity Commission must act as directed by the Minister.<sup>13</sup>

The introduction last year of a major new regulatory constraint on supply meeting demand, in the form of the ban on the use of thermal fuel for new base load generation plant, provides an example of the conflicted position of the Electricity Commission. Given its position, the Electricity Commission could not be relied upon by electricity consumers or investors to provide an independent (and public) assessment of the impact of that policy on security of supply. The Commission appears unconcerned or unaware of these conflicts; in its briefing to the incoming Minister the Commission observes that it provided modelling support to government departments in advising the Government

<sup>13</sup> The Electricity Commission must give effect to the Government Policy Statement, which is a document issued by the Minister of Energy.

on its renewable energy policy, seemingly unaware of the conflict with its role in providing clear and frank assessments to the market of future demand and supply.<sup>14</sup> The recently concluded Winter Review also found a lack of confidence in the information provided by the Electricity Commission because of concerns about overlapping views of the Minister.<sup>15</sup>

### 4.3 System operator better placed to provide outlook

The entity best placed to provide the outlook for supply and demand and to offer frank views on the constraints on supply meeting demand is, in our view, the System Operator. The System Operator monitors the ability for supply to meet demand in order for it to deliver its core function. The System Operator has good access to information and established processes for working with the industry to enhance its understanding of current and future events. The System Operator has the competency to identify impending imbalances, and has strong incentives to monitor the situation and to alert all parties early.

The System Operator may have a tendency to be too cautious; however, the consequences of failure are likely to greatly outweigh the costs of caution. Voluntary but premature demand reduction, or if necessary planned outages, are much less disruptive to domestic consumers and the economy as a whole than unplanned cuts to supply.

Were the System Operator to take over the reporting functions in relation to security of supply, all parties must be confident that it would call the situation without fear or favour, especially when the concerns it identifies relate to government policy or actions of the transmission owner. For industry participants to be confident that the System Operator would speak without fear or favour, the System Operator may need further independence or statutory authority.<sup>16</sup>

<sup>14</sup> Electricity Commission, Briefing to the Incoming Minister, Hon Gerry Brownlee, 20 November 2008, page 12.

<sup>15</sup> David Hunt (Concept Consulting), et al, Review of 2008 Winter and the period leading into winter, page 45.

<sup>16</sup> Examples of how this independence has been achieved elsewhere include the appointment of an industry council to oversee this aspect of the System Operator's work. Some jurisdictions have formed a structurally separate Independent System Operator, though structural solutions would require careful evaluation which is beyond the scope of this report.

## 4.4 A supply failure demands a political response

Should supply not meet demand, for whatever reason, the market (defined broadly) would clearly have failed. The economic, social and ongoing reputational damage of actual or threatened rolling power cuts or large scale outages is so pronounced, that a security of supply failure is a recurring probability that evokes demands for a political response.

Former central planning measures such as maintaining sufficient capacity to meet demand if inflows fall to the lowest level in 1 in 60 years did not reflect political realities; the myth of such a measure is that it implies the Minister who happens to hold the energy portfolio in a 1 in 60 year inflow sequence would accept the lights going out, if it happened to be a low inflow year. The political reality is that, faced with the prospect of an extended failure to supply, Ministers will not stand aside. Investors must therefore factor into account what will happen when Ministers intervene. A transparent and predictable policy for addressing supply disruptions is needed to remove needless risk from the calculations of investors.

In the New Zealand electricity sector there is a progression of steps taken by market participants whenever the possibility of supply shortages arises. From the public's perspective there is no clarity as to roles and responsibility as supply becomes tight relative to demand. There is even less clarity as to the steps that will be taken and at what stage in the process those actions will be initiated. The Electricity Commission's interventions and the timing of them have at best been confused and unhelpful. For example, this winter the Electricity Commission sought additional funding so that it could run Whirinaki at below fuel cost.<sup>17</sup>

We suggest that there should be a clearly specified mechanism for the Minister of Energy to appoint an 'administrator', on the recommendation of the System Operator, when the market is on the verge of ceasing to work (that is, supply no longer meets demand or is unlikely to meet demand without outages). The administrator could have specified powers to:

- Direct lines companies to curtail electricity (rolling outages).
- Direct generators/System Operator to dispatch plant.
- Set the wholesale market price for the period that supply cannot meet demand.

<sup>17</sup> In energy only markets, such as the New Zealand electricity wholesale market, prices must rise during periods of scarcity to induce and compensate investors for maintaining expensive peaking plant and encourage demand reductions. By running Whirinaki at below its fuel cost and recovering the amount by a compulsory levy, the Electricity Commission discouraged measures to balance supply with demand and penalised parties who hedged risks.

Investors, participants, and consumers would seek to be confident that these provisions were not enacted either prematurely or too late. In some circumstances a Minister may wish to activate these provisions before all of the measures taken by participants, consumers, and the System Operator have run their course; this is the scenario where the Minister doesn't trust the market to 'do the right thing'. Alternatively, another Minister may wait too late by trying to avoid the political accountability that goes with taking direct action; this is the scenario where a Minister might just 'hope it rains'.

A possible starting point for defining when the market may be about to cease to function is contained in the 2008 regulations that provide for the Electricity Commission to require forced outages (rolling outages executed by lines companies).<sup>18</sup> Under these regulations, the Electricity Commission may declare a supply shortage if it considers that the normal operation of the wholesale market is unlikely to ensure that supply matches demand and that if planned outages are not implemented, unplanned outages are likely. The definition in the regulations is not sufficiently clear, but it is a starting point.

The more clearly the threshold for declaring a supply shortage is defined, the less likely the System Operator would ever need to recommend that the Minister declares a shortage situation. Collectively, industry participants have little incentive to allow a shortage to be declared. Individual organisations would likely intensify efforts to augment supply or voluntarily reduce demand as such a point became closer, rather than face the consequences of an action that would be interpreted as 'market failure'.<sup>19</sup>

## 5 Efficient market transactions

### 5.1 Competition and economic efficiency

Economic efficiency was an early driver for the major reforms of the electricity sector which commenced in the late 1980s.<sup>20</sup> Centrally mandated investment decisions had led to large cost overruns, prices that did not cover costs and regular mismatches between

<sup>18</sup> s 9 (2) Security of Electricity Governance (Security of Supply) Regulations 2008

<sup>19</sup> Electricity industry participants comprise a relatively small group, with reasonably common interests, and 'dry years' are not one-off occurrences. In these circumstances, groups can act in the collective interest of the whole, see for example, Elinor Ostrom, *Governing the Commons: the evolution of institutions of collective actions*, Cambridge University Press, 1990.

<sup>20</sup> See for example, *Alternating Currents or Counter-Revolution? Contemporary Electricity Reform in New Zealand*, Lewis Evans and Richard Meade, page 138.

supply and demand (that is, periods of shortage and periods of excess capacity). Competition was expected to lead to more efficient decisions over time.

Economic *efficiency* can be defined broadly as the effectiveness with which a community uses its resources. Economists generally break this definition of efficiency into a number of aspects:

- *Allocative efficiency* involves allocating scarce resources to their most valuable use.
- *Productive or technical efficiency* involves firms supplying any given product at least cost.
- *Dynamic efficiency* involves the efficient allocation of resources to the development and adoption of new products and processes.

Competition drives markets towards efficient outcomes in all these dimensions. Allocative efficiency, in industries with significant fixed costs, is characterised by prices which tend towards long-run marginal cost, including a risk adjusted return on capital. Prices that trend toward long-run marginal costs align the value consumers place on products with the opportunity cost of the resources used to supply them. In a workably competitive market, prices will tend towards these levels as excess margins are competed away through rivalry of competitors and the redirection of resources to their most profitable use. Competitive discipline drives firms to adopt the most cost efficient supply arrangements in order to offer consumers cheaper and/or better products in competition with their rivals. While innovation may provide firms with above average returns in the short-run, those returns are the very reward for innovative activity and risk-taking, providing a signal and incentive for other firms to imitate or innovate themselves. Hence, competition also drives dynamic efficiency.

Market power is essentially the inverse of competition. At its core, market power is the ability of one or more suppliers in a market to sustain prices above long-run costs, including a return on capital and accounting for risk, without margins being eroded by the competitive activity of rivals and/or entry.

## 5.2 Organised markets require detailed rules

In common with other organised commodity exchanges, electricity markets regulate in great detail the activities of those who trade in the market – the times at which offers can be made, the form in which offers are made, the responsibilities of the parties, the terms of settlement, and so on. Such exchanges all provide mechanisms to settle disputes and impose sanctions on those who infringe the rules of exchange. In *The Firm, the Market and the Law*, Ronald Coase gives an account of the nature, development and benefits of organised markets.<sup>21</sup> He begins with the following fundamental observation:

<sup>21</sup> Ronald Coase, *The Firm, The Market and The Law*, Chicago University Press, 1988, at pp 7-10.

*Markets are institutions that exist to facilitate exchange, that is, they exist in order to reduce the cost of carrying out exchange transactions.*

Coase observes that:

*It is not without significance that these exchanges, often used by economists as examples of a perfect market and perfect competition, are markets in which transactions are highly regulated (and this is quite apart from any government regulation that there may be). It suggests, I think correctly, that for anything approaching perfect competition to exist, an intricate system of rules and regulations would normally be needed.*

Minimising the costs of exchange transactions requires care and attention to the design of the detailed market rules and constant pressure to reduce the costs of market operating functions (rule development, pricing, clearing and settlement, etc).

The task of designing market trading rules is quite separate from the design of regulations which have a social or community objective. Regulations which have a social or community objective, rather than an efficient trading objective, should be explicit regulatory interventions and subject to regulatory cost-benefit analysis by officials (these issues are discussed in section 6 below).

In addition to care and attention by rule-makers to reducing the costs of market transactions, electricity markets also require particular diligence on the part of competition authorities. This is because electricity markets differ from other organised exchanges by the degree of cooperation or coordination required from parties who are in competition with each other. Because electricity supply must match demand at each point on the grid, and electricity cannot be stored economically, electricity markets operate with a high degree of coordination. Cooperation among competitors can risk collusion. When supply is tight relative to demand, generators can also be in a strong position to exercise market power, because both supply and demand are very inelastic.<sup>22</sup>

A well designed governance structure for leading the design of the market rules (as distinct from regulation for social objectives or to curb market power), and operating and monitoring the market, should therefore result in:

- A continuous search for improved market rule design.
- Effective competition scrutiny.
- Pressure to minimise the cost of service provision.

We review the current rule making process against these design features.

<sup>22</sup> Additional capacity cannot be added to the system at short notice, and most consumers do not experience time varying electricity prices.

### 5.3 Need to engage participants in market design

The rules of wholesale electricity market are largely unchanged from the rules designed and agreed under the former industry processes.<sup>23</sup> Government officials took the industry rulebook and with a few modifications turned the rules into the Electricity Governance Regulations and Rules.<sup>24</sup> These rules have been retained by the Electricity Commission mostly unmodified.

The rate of adaptation of the rules to meeting the changing needs of the sector appears to be slowing. Sixteen changes were made to the wholesale market rules in each of the last two years of the industry process (2002 and 2003), and an average of 16 rule changes a year occurred between market start in 1996 and 2002; in 2007 the Electricity Commission made ten changes to the market rules, and in the past year it made just five changes to the market rules.

This lack of vibrancy does not reflect a view that the wholesale rules are as good as they can be; the Electricity Commission's own wholesale market design study pointed to a large number of improvements that could or should be made to the market.<sup>25</sup> Rather, allocating responsibility for market design to the Electricity Commission has substantially reduced innovation in market design because:

- Evolving the electricity market design has not been a priority for the Electricity Commission – the 30 page GPS to which the Commission must give effect, does not propose or discuss a single change to the wholesale market trading rules.
- Market participants who have the best information and incentives to design rules that reduce the costs of transacting through the electricity market and hence maximise the gains from trade are largely excluded from the rule-making process. Officially imposed rules, after a bit of consultation, are no substitute for an industry drive for efficient exchange.
- The entity recommending the rules, the Electricity Commission, is also a participant in the market, is responsible for operating the market, for enforcing the rules and is subject to political direction. The Electricity Commission's motivation for any rule

<sup>23</sup> In testimony to the New Zealand Commerce Commission in 2002, Professor Bill Hogan of Kennedy School of Government at Harvard University described the rules designed by the industry as "at the forefront of best practice." Professor Hogan was appearing for Transpower and argued in favour of an independent industry regulator.

<sup>24</sup> The most significant changes implemented by officials were to remove the option of trading via bilateral contracts and to require mandatory trading through the wholesale market, and to provide the system operator with legislative protection from competition for the services it provides to the wholesale market.

<sup>25</sup> Electricity Commission, Market Design Review – Options Paper, July 2008.



change is therefore not transparent and distances it from the parties who must implement any rule change.

The current allocation of roles and responsibilities therefore relegates to a secondary role the parties with the expertise and incentives relevant to the design of an efficient market (industry participants, including consumers); in the place of participants is substituted an entity with multiple and conflicting objectives and which was directed to focus its efforts on other matters.

A better approach would be to reengage industry participants in a structured industry decision process for rule-making adapted from that which existed under NZEM and MACQS. Under these former industry processes, rule changes were developed by technical working groups, and recommended to a rules committee. The rules committee could approve or reject the proposals based on a set of guiding principles, which were primarily aimed at economic efficiency.

Lessons were learned over the ten years of rule design and operation, and these lessons should be reflected in a newly constituted industry decision process. These lessons included the role of independent chairs of the rule making processes, the benefits of wide representation in the rule making process (including participation by consumers), and the need for conscious consideration of competition matters.

## **5.4 Competition expert excluded from current process**

The second limb, discussed in section 5.2, to achieving economic efficiency gains is the requirement for effective competition scrutiny. Electricity markets are especially difficult for competition authorities to monitor because these markets are complex, require a high degree of coordination, and prices are volatile.

The current allocation of roles and responsibilities make the task of effective competition scrutiny more difficult. New Zealand's competition expert body, the Commerce Commission, is excluded from supervising the rule-making process; the market rules are set by the Minister of Energy on the recommendation of the Electricity Commission.

A better approach would be to have the wholesale market trading rules and retail (reconciliation, metering, etc) rules designed by an industry process as outlined above, with the rules subject to scrutiny from the Commerce Commission for any anti-competitive effects.

The allocation of resourcing between the two Commissions also seems out of balance. The Electricity Commission is appropriated \$20 million for developing rule changes (including the five rule changes implemented in 2008), monitoring compliance with the

rules and approving decisions on transmission investment.<sup>26</sup> The Commerce Commission is appropriated a total of \$13.6 million to monitor and enforce the competition provisions of the Commerce Act across all industries in New Zealand.<sup>27</sup>

## 5.5 Market operation

For a period of about ten years, services were provided to the wholesale market on commercial terms. These services, such as clearing and settlement, pricing, reconciliation etc, were for the most part provided by private firms (such as M-co) or by Transpower as a commercial service. The services were provided under fixed-term contracts, which were let by tender every five years or so.

Most services for the wholesale market are still provided on this basis. The exceptions are rule development, investigations of market rule breaches and the provision of market information. These later services have in part or in full been absorbed by the Electricity Commission. The Electricity Commission also has the statutory power to bring in-house the services currently let to private firms, such as clearing and settlement.

There is no public policy rationale to support the statutory enforced takeover by a Crown entity of services which had been provided effectively by private sector or by state owned firms on commercial terms. No case was ever made that the former approach of commercial provision of these services resulted in service failures that would best be corrected by a Crown entity providing the service, or maintaining a threat of providing the service, and recovering the cost by a mandatory levy.

A better approach is to allow the industry to organise and contract for the services it needs to transact electricity, and for the service to be paid for by the parties using the service.

<sup>26</sup> Electricity Commission, Briefing to the Incoming Minister, Hon Gerry Brownlee, 20 November 2008, page 20.

<sup>27</sup> Output Agreement between the Minister of Commerce et al and the Commerce Commission, for the period to June 2008, Output *Enforcement of General Market Regulation*, page 9.

## 6 Efficient investment and use of long-life assets

### 6.1 Delegated regulatory or quasi-regulatory powers

In addition to the power to recommend regulations governing wholesale trading, the Electricity Commission is responsible for recommending regulations or rules for a broad suite of activities and interventions. There are two main reasons for delegating regulatory or quasi-regulatory powers from Parliament to government agencies such as the Electricity Commission. These two reasons are:<sup>28</sup>

- To reduce decision-making costs, for example by taking advantage of agency expertise; or
- To enhance the credibility of long-term policy commitments.

Each of these motivations for delegating decisions share a number of common features. In both cases, Parliament remains interested in the competence of the entity making the decision and in the costs of the decision process. However, these two motivations require quite different governance structures.

Where the purpose of the delegation is to reduce decision-making costs, the key problem to be addressed in the governance design is ensuring that the agent makes decisions that represent the preferences of the delegating principal. Hence the governance arrangement should contain various controls that *align* as much as possible the preferences of the principal and of the agent.

The situation is very different if the main reason for delegating the decisions is to enhance credibility of long-term policy commitments. In these circumstances, the policy preferences of the party to which decisions are delegated should *differ* from the (short-run) preferences of the delegating principal. Hence, for example, it has been shown that the ‘optimal’ central banker should value ex post inflation less than the government or the median voter. This suggests that the banker must be independent because otherwise his or her decisions could be overruled, and his or her policy preferences would be irrelevant.<sup>29</sup>

<sup>28</sup> See Giandomenico Majone, ‘Strategy and Structure the Political Economy of Agency Independence and Accountability, in Designing Independent and Accountable Regulatory Authorities for High Quality Regulation, OECD Working Party on Regulatory Management and Reform, Proceedings of an Expert Meeting in London, 10-11 January 2005, p 126.

<sup>29</sup> Rogoff, K. (1985), ‘The Optimal Degree of Commitment to an Intermediate Monetary Target’, Quarterly Journal of Economics, 100, pp 1169-1190.

## 6.2 Economic regulation should be independent

Independence therefore is not a policy objective in itself but a means for achieving higher-level objectives such as policy coherence, credibility and accountability. These policy objectives are at risk in circumstances where a government's long-run policy differs from its short-run objectives, so that the government has an incentive to renege on its long-term commitments. Without a binding commitment to the long-term policy, the government may use its discretion to switch to what appears a better policy (in the short-term).

Achieving policy credibility is the single most important characteristic for the success of *economic regulation*, including revenue setting, service standards and investment approvals. This is because the success of economic regulation depends on its success in changing the behaviour of the regulated firm in a manner that is welfare enhancing. But behaviour and incentives will not be modified in ways that improve welfare unless policies are credible and predictable.

The electricity sector is particularly vulnerable to behavioural uncertainty by regulators because of three particular factors:

- Technology is characterised by large specific, fixed investment.
- Increasing returns to scale for network assets (and for generation assets to a minimum size).
- Services that are consumed by almost everyone.

Taken together, these characteristics make electricity pricing inherently political for three reasons:

- Almost the entire population consumes the services and hence politicians and interest groups are sensitive to price and service levels.
- Large economies of scale raise the prospect of limited competition for some services.
- Significant fixed costs provide regulators and political stakeholders considerable leeway to act opportunistically.

These characteristics mean governments face strong incentives to adopt short-run policies that may harm long-run policy. In the absence of a safeguard against regulatory appropriation, businesses will protect themselves from this risk by under-investing. Investment that does occur will require higher rates-of-return, or will be undertaken from entities well connected 'politically'. Sustained under investment will imply higher costs in the future and/or potentially capacity constraints and other symptoms of a deterioration in service levels.

To avoid these long-run costs decisions by the regulator that impact on pricing and investment need to be free from direction or influence of political interests.<sup>30</sup> Hence an important criterion for choosing between governance arrangements when policy credibility is important is the degree of independence of decision-making from short-run Ministerial influence.

The politics of appointment should also be considered in connection with agency independence, since the government may change the policies of an agency not by micromanaging it, but through the appointment of its Commissioners.

### **6.3 Comparison of Commerce and Electricity Commission governance arrangements**

Currently, both the Commerce Commission and the Electricity Commission are allocated roles in setting prices and service levels in the electricity sector. The governance and accountabilities of the Electricity Commission and the Commerce Commission are quite different. In this section we compare and contrast the governance and accountabilities of these *existing* organisations to assess which is best placed to undertake economic regulatory functions.

The differences in the governance and accountability of the two organisations arise from their status under the Crown Entities Act 2004 (Schedule 1 of the Act lists the Commerce Commission as an Independent Crown Entity, whereas the Electricity Commission is a Crown Agent) as well as specific requirements under the Commerce Act 1986 (with respect to the Commerce Commission) and Electricity Act 1992 (for the Electricity Commission). These differences are summarised in Table 2.

<sup>30</sup> See for example P. Spiller and Volgelsang, I., “The Institutional Foundations of Regulatory Commitment in the United Kingdom: The Case of Telecommunications“, *Journal of Institutional and Theoretical Economics*, Vol. 163, December 1997, pp 607-629; and Brian Levy and Spiller, P. T., “The Institutional Foundations of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation, 10 *Journal of Law, Economics, and Organization*, N.1, 1994 pp 202-246; and Spiller, P.T., “Institutions and Regulatory Commitment in Privatizations,” *Industrial and Corporate Change*, (1993).

**Table 2 Comparison of governance of Commerce Commission and Electricity Commission**

	Commerce Commission	Electricity Commission
<b>Statutory objectives</b>	<p>The Commerce Commission's objective is "to promote competition in markets for the long-term benefit of consumers within New Zealand." (s 1A of Commerce Act)</p> <p>"to promote the long-term benefit of consumers in markets where there is little or no competition and little or no likelihood of a substantial increase in competition by promoting outcomes that are consistent with outcomes produced in competitive markets such that the suppliers of regulated goods and services-</p> <ul style="list-style-type: none"> <li>• Have incentives to innovate and to invest, including in replacement, upgraded and new assets; and</li> <li>• Have incentives to improve efficiency and provide services at a quality that reflects customer demands; and</li> <li>• Share with consumers the benefits of efficiency gains in the supply of the regulated goods or services, including through lower prices; and</li> <li>• Are limited in their ability to extract excessive profits. (s 52A Part 4)</li> </ul>	<p>The Electricity Commission's objective is "to ensure that electricity is produced and delivered to all classes of consumers in an efficient, fair, reliable, and environmentally sustainable manner" (s 172N(1)(a)); and</p> <p>"to promote and facilitate the efficient use of electricity." (s 172N(1)(b))</p>
	Commerce Commission	Electricity Commission
<b>Relationship to the government</b>	<p>Section 8(2) of the Commerce Act states: "Except as expressly provided otherwise in this or any other Act, the Commission must act independently in performing its statutory functions and duties, and exercising its statutory powers." This independence is also a requirement that arises from its status as an Independent Crown Entity under the Crown Entities Act 2004.</p>	<p>Under s 172O of the Electricity Act 1992, the Commission's functions include:</p> <p>Recommending and administering governance regulations and rules.</p> <p>Giving effect to government policy statement objectives.</p> <p>Giving advice to the Minister of Energy.</p>
<b>What members must take account of when making decisions</b>	<p>The Commerce Commission must have regard to the economic policies of the Government as transmitted from time to time to the Commissioner by the Minister of Commerce (s 26(1) of the Commerce Act). However, every such statement must be published in the Official Gazette (s 26(2)).</p>	<p>Section 172O of the Electricity Act requires the Commission to give effect to government policy statement objectives.</p>

**Table 2 Comparison of governance of Commerce Commission and Electricity Commission**

<b>Appointment of members</b>	Under s 9 of the Commerce Act, the Minister of Commerce is to appoint members of the Commission. These are to number between 4 and 6.	The Minister of Energy appoints between 5 and 9 members (see s 172R of the Electricity Act 1992).
<b>Type of organisation under the Crown Entities Act</b>	Independent Crown entity.	Crown agent.
<b>Term of office</b>	5 years or any shorter period stated in the notice of appointment (s 32(1)(b)).	3 years or any shorter period stated in the notice of appointment (s 32(1)(a)).
<b>Conditions for removal of members</b>	The Minister of Commerce may only remove a member for “just cause” (e.g. misconduct or inability to perform duties) (s 39).	The Minister of Energy may remove a member at any time at his or her discretion (s 36).
<b>Remuneration determined by</b>	The Remuneration Authority (s 47(1)(b)(i)).	Minister of Energy (s 47(1)(a)).

As the above table shows, the Commerce Commission has much greater independence in reaching its decisions than the Electricity Commission. Other things being equal, the Electricity Commission can therefore be expected to give much greater weight to the short-run political concerns of the government, than would the Commerce Commission. In these circumstances, the Electricity Commission’s briefing to the Minister of Energy that it is a “problem solving regulator” is especially concerning, as are its comments that it is required to “use its powers of persuasion”.<sup>31</sup> The implication is that the Electricity Commission gets to define the problems it works on as it goes along, which creates huge regulatory risk to investors in the industry and breaks all conventions about good regulators being transparent, principled and predictable.

From the perspective of maintaining policy coherence, credibility and accountability, the governance structure of the Commerce Commission is clearly superior to the Electricity Commission. As these long-run features of policy are critical to the success of economic regulation (regulation of prices and services), a comparison of the governance structures strongly favours locating all economic regulation within the Commerce Commission rather than the Electricity Commission.

<sup>31</sup> Electricity Commission, Briefing to the Incoming Minister, Hon Gerry Brownlee, 20 November 2008, pages 6 and 12.

## 6.4 Economic regulatory functions of Commerce Commission need rethink

The conclusion that the Commerce Commission is better placed to undertake economic regulation than the Electricity Commission is a comparative recommendation; it is not intended to suggest that the Commerce Commission is well or less well organised for the tasks delegated to it or that there are not better ways of implementing economic regulation. In recent years, the economic regulation activities of the Commerce Commission have expanded significantly to include:

- The regulation of telecommunication, for example local loop unbundling.
- The price control of gas pipelines.
- The implementation of the price control regimes for electricity distribution and transmission.

There are a number of potential advantages of having one entity responsible for economic regulation of more than one industry. These advantages include:<sup>32</sup>

- Reduced risk of economic distortion as the same regulatory approach is more likely to be applied across sectors (industries compete for resources).
- Reduced risk of political and industry capture as any change to approach must be applied across multiple industries.
- Boundaries between regulated industries can be managed more effectively.
- Expert staff can work across industries (New Zealand has a limited pool of economists, financial analysts, engineers and other professions required for well informed economic regulation).

These advantages, and others, argue for locating the economic regulatory functions within a single entity – that is, a cross-sector regulator. This cross-sector regulator might either be within the Commerce Commission, or within a separate and new agency. The design of a cross-sector economic regulator (or regulatory function with the Commerce Commission) is beyond the scope of this paper.

## 6.5 Economic regulation of transmission

### 6.5.1 Pricing methodology

The primary economic regulatory functions currently undertaken by the Electricity Commission concern transmission investment and pricing. With regard to transmission

<sup>32</sup> See for example, Warrick Smith, *Utility Regulators – Roles and Responsibilities, Public Policy for the Private Sector*, World Bank Group, October 1997.



pricing, the Electricity Commission largely wrote into regulations the pricing method in place at the time it was formed. The Electricity Commission gave considerable weight to not changing the then existing pricing arrangements. As such, the Electricity Commission never addressed the tensions inherent in the pricing structure. The Electricity Commission has recently announced a “wide ranging” review of the transmission pricing guidelines that it approved in 2006.<sup>33</sup>

It is not evident why the Electricity Commission would be more effective in finding a solution acceptable to the industry in its second review. The purpose of the pricing methodology is to allocate a given amount of revenue in a manner that is economically efficient. Economically efficient pricing methods require information about the cost of providing a service and the benefits of the service and costs of alternatives to customers. Transpower is the best source of information on the cost of the service, and transmission customers are the best source of information on the benefits of services and the alternatives available to customers. The Electricity Commission has again proposed an approach where it will decide the pricing guidelines. A better approach would be for the Electricity Commission to provide a mediation service to help Transpower and its customer arrive at a robust solution, but so could an entity or person selected by the industry (and hence has the confidence of the industry).

### 6.5.2 Transmission investment

The Electricity Commission has approved 13 transmission projects (or sets of projects) with a total cost of \$1.958 billion, compared to Transpower’s applications which totalled \$2.081 billion, a difference of 5.9%. Much of this difference in costs is accounted for by design changes which may involve differences in service specifications to customers. No information is available yet on the actual cost of these investments, which given the lead times and uncertainties might be expected to vary significantly from these estimates.<sup>34</sup> Transpower may spend a \$3 to \$5 billion over the next 10 years.<sup>35</sup> Hence, achieving a sound process to govern transmission decisions is vital to sector performance.

In normal market processes, the customer usually decides the services it requires and whether there are alternatives that provide greater benefits, and the supplier determines the level of investment required to deliver the services. A transition from centrally controlled monopoly provider to a process involving customers generally results in

<sup>33</sup> Electricity Commission Update 28 November 2008, page 2.  
<http://www.electricitycommission.govt.nz/pdfs/opdev/market-updates/28Nov08.pdf>

<sup>34</sup> The differences relate to three sets of projects – the HVDC, 30 tactical upgrades, and 11 grid development proposals. There is little or no variation between approval and application figures for the other ten projects. See Electricity Commission, Briefing to the Incoming Minister, Hon Gerry Brownlee, 20 November 2008, pages 31.

<sup>35</sup> Dr Patrick Strange, ‘The State of the National Grid’, Waikato Regional Energy Forum, 17 October 2008.

higher quality (that is, greater levels of investment). Transitions of this nature were experienced in New Zealand during the 1980s when former state-owned monopoly providers (Telecom, NZ Post, ECNZ) were required to engage with customers, rather than officials and Ministers in setting service levels and prices. The reason is that setting service levels requires huge amounts of information on the preferences of customers and the alternatives available to them. This information is of such scale and scope that it cannot feasibly be processed by a single decision-making unit.<sup>36</sup> Centralised decision processes therefore tend to focus on ‘headline’ cost information and under invest.

Under current regulations, the Electricity Commission:

- Defines the services to be provided by Transpower.
- Specifies how those services should be priced.
- Approves investments to deliver the specified services.
- Provides information relating to transmission investment in the form of the Statement of Opportunities.

There are a number of reasons why normal market processes need to be modified for decisions relating to transmission services. The challenges to effectively and timely decision-making on transmission services spill-over effects (a decision by one customer affecting benefits derived by another); issues of joint consumption; and the nature of the benefits expected from investment in transmission (transport of energy, increased competition at generation and retail, and improved security of supply).

However, the Electricity Commission processes go beyond modifying normal market processes to address the particular features of transmission investment decision-making. The Electricity Commission processes remove transmission customers almost entirely from the approval procedures.<sup>37</sup> The Electricity Commission relies on the Grid Investment Test (GIT) to reflect the preferences of customers. The Electricity Commission describes the GIT as a form of cost-benefit test.<sup>38</sup> However, the scope of the benefit/cost assessment in the GIT has been defined narrowly. The Electricity Commission excludes from its assessment the impact of transmission investments on non-electricity sectors of the economy, and hence the externalities and ‘public good’ aspects of transmission services; it excludes most non-quantifiable benefits; and it excludes most competition benefits. Annex 2 provides further comment on the GIT.

<sup>36</sup> See F. von Hayek, ‘The pretence of knowledge’, Nobel Memorial Lecture, published in the American Economic Review, December 1989.

<sup>37</sup> Transmission customers do have an opportunity to provide submissions.

<sup>38</sup> Electricity Commission, Briefing to the Incoming Minister, Hon Gerry Brownlee, 20 November 2008, page 10.

Removing customers from decisions for which they will be obliged to pay is undesirable and unnecessary, and risks over time Transpower adjusting its investment proposals to those that it predicts the Electricity Commission will approve. The current approach will result in transmission investment decision-making within an institutional framework that no serious adviser would have recommended.

The first step to engaging customers in transmission investment decisions should be improving the specification of transmission services from the perspective of the customer. Transmission services are currently defined with respect to reliability only (and only for the core grid part of the network), and other dimensions of the service that provide benefits to transmission customers or the public (for example, transport of electricity and competition benefits) are left undefined.

Ambiguity and questionable distinctions in the specification of the transmission services is a major barrier to effective decision-making. If Transpower, its transmission customers and the Commission are uncertain as to the transmission services that Transpower is to provide, it is very difficult for anyone to determine whether it is sensible to invest to maintain or increase those services. In the absence of soundly specified transmission services that Transpower is accountable to deliver, the Electricity Commission has tended to become increasingly involved in shadow-planning the transmission system to place some form of accountability on Transpower.

A better approach would be for Transpower to specify its transmission services and service levels, subject to clear principles and processes set by the economic regulator (either the Commerce Commission or an entity that takes over the economic regulatory functions of the Commerce Commission). Current service delivery could form the baseline for a set of service definitions, service measures and service levels.

Transmission customers should determine with Transpower directly the transmission services they purchase, and approve the investments Transpower proposes to make to deliver those services. These customers are typically well informed as to the transmission services they require to operate their businesses effectively (as generators, distributors or large direct-connected users) and usually have strong incentives to secure those desired services.

These decisions would need to be coordinated through a structured or collective decision process, rather than unilateral negotiations, because of the common service nature of transmission.<sup>39</sup> The structured decision process would need to protect the interests of existing users of the service, and appeals to the economic regulator against a decision to proceed or not proceed should be allowed on the basis that the decision would not result in a net public benefit. The New Zealand electricity sector has experience in designing

<sup>39</sup> Unilateral negotiations conducted by Transpower prior to the Electricity Commission arguably failed to resolve transmission investment decisions.

such decision processes (for example, the former MACQS process) and there are examples in other jurisdictions.<sup>40</sup>

### **6.5.3 SOO should be a forecast tool, not a central planning instrument**

The Electricity Commission publishes a Statement of Opportunities (SOO) in relation to transmission. In other jurisdictions (such as Australia, the UK, and Ireland) the SOO aims to inform the supply side of generation opportunities and their possible location (including as transmission alternatives), and thereby provides information to assist coordination between generation and transmission investment paths.

However, the Electricity Commission implements the SOO as if its role was to shadow-plan the transmission system. It puts forward scenarios of what the future system “should” look like (given particular modelling assumptions), rather than facilitating market-based decision-making processes and allowing those processes to determine the location and timing of generation investment. The central planning approach adopted in the SOO is incompatible with competitive market processes to guide the timing and location of generator investments.

However, projections of transmission system requirements are important to facilitating a competitive market in generation and efficient investment in transmission. Transmission customers will require much of this information to effectively engage in approving proposed investments or service changes. A better approach would be to have the System Operator collate and publish the forecasts currently incorporated into the SOO, as part of its role in making projections available to the market discussed earlier in the paper.

## **7 Community and social obligations**

The Electricity Commission is currently responsible for a range of regulatory interventions to reflect the Government’s social and community objectives. Implementation of regulations under the Electricity Act is now divided between the Ministry of Economic Development (MED) and the Electricity Commission. The MED, for example, monitors and enforces various safety and access regulations for the operation of electricity distribution networks. However, other regulatory requirements, for instance relating to the process electricity retailers should follow in disconnecting electricity supply, are overseen by the Electricity Commission.

<sup>40</sup> In Argentina, for example, the users or beneficiaries of a transmission expansion vote to determine whether the expansion should proceed; for an investment to proceed at least 30% of those benefiting from the service must support the investment and no more than 30% oppose the investment (this decision structure also requires costs to be allocated to those who benefit from the transmission investment).

It is not evident what benefit is derived from having two separate entities implement regulations promulgated under one Act. As noted earlier, the key problem to be addressed in the governance design - for non-economic regulation - is to ensure that the administering agent makes decisions that represent the preferences of the delegating principal. Hence, the governance arrangement should contain various controls that *align* as much as possible the preferences of the principal and of the agent. These arrangements are likely to be managed better under the core government department structure, than in a loosely governed Crown entity such as the Electricity Commission.

We propose therefore that all non-economic regulations should be transferred to, and administered by, the MED.

## 8 Environmental and efficiency obligations

### 8.1 Commission duplicating the role of ECCA

The Electricity Commission is charged with a number of electricity efficiency objectives. In the year to June 2008, the Electricity Commission was appropriated just over \$13 million for electricity efficiency programmes.

In its 30 September 2008 report against the *Government Policy Statement on Electricity Governance 2008*, the Commission reported the following accomplishments for its electricity efficiency work programmes:

Table 3 Electricity Commission electricity efficiency work programmes			
Project	Status as at 30 June 2008	Performance standard for 2008/2009	Progress to 30 September 2008
General requirements, interagency coordination	Ongoing requirements met	Ongoing requirements	Progress to 30 September 2008
Electricity efficiency potentials study	Potential study completed and published	Updates to model developed and made available	Information about study made available
Memorandum of understanding with EECA	MOU signed in August 2005 and published on Commission's website	MOU update to address new requirements in 2008 GPS	The updated MOU has been approved by both boards

In addition to its 'electricity efficiency' programmes, the Electricity Commission also lists a number of related activities under the heading 'End use'. These activities include:

- Efficient lighting; compact fluorescent lamps programme.
- Compressed air, best practice for air operation and maintenance.
- Electric motors bounty scheme.
- Commercial building programme.
- Energy wise home loans project – Electricity Commission to fund programme implemented by the Energy Efficiency Conservation Authority (EECA).

EECA says on its website that its objective is to encourage, promote and support the uptake of energy efficient initiatives and renewable energy in three key ways:

- Helping businesses and consumers to get more from their energy dollar.
- Improving our lifestyles through warmer, drier homes and better personal transport choices.
- Protecting the environment by supporting the use of renewable sources of energy.

There is no obvious benefit from asking the Electricity Commission to undertake essentially the same tasks as EECA, though the Electricity Commission limits its activities to electricity while EECA takes a wider perspective. The Electricity Commission risks either duplicating the work of EECA, or undertaking activities viewed by EECA as lower priorities. Resources are evidently spent by both EECA and the Electricity Commission to mitigate the worst of these risks – two of the three electricity efficiency projects reported by the Electricity Commission in the table above concern coordination with other government entities, primarily EECA.<sup>41</sup>

A better approach would be to transfer all responsibility for electricity efficiency objectives to the Government's primary entity for such activities, EECA. At a minimum, concentrating the activities with the EECA would save the resources currently spent by the two organisations in coordinating their activities. The bigger gain would be more effective service delivery.

## 8.2 An unauthorised tax?

The Electricity Commission recovers its costs via a levy on the industry. The funds raised by this levy are used for a range of purposes, including funding energy efficiency

<sup>41</sup> The Electricity Commission's Annual Report for 2007/2008 lists additional activities not covered in its report against the GPS objectives.

programmes undertaken by ECCA.<sup>42</sup> The use of the levy to fund programmes carried out by other government agencies looks more like a tax than an industry levy.

The Crown cannot levy taxes without the explicit authority of Parliament. This principle was enshrined in the Bill of Rights of 1688, and has more recently been restated in the Constitution Act 1986. Furthermore, successive reports by the Regulations Review Committee have endorsed the definition of a ‘tax’ set out by the High Court of Australia in *Air Caledonie International and others v Commonwealth of Australia*:

*... a compulsory and enforceable exaction of money by a public authority for public purposes will not necessarily be precluded from being properly seen as a tax, merely because it is described as a ‘fee for services’. If the person required to pay the exaction is given no choice about whether or not he acquires the services and the amount of the exaction has no discernible relationship with the value of what is acquired, the circumstances may be such that the exaction is, to the extent it exceeds the value, properly to be seen as a tax.*

The Legislation Advisory Committee’s guidelines advise that Parliament should delegate the power to impose taxes or a financial charge in the nature of a tax only in exceptional circumstances. Parliament may delegate the setting of a fee for services. But where the amount of the fee exceeds the cost of the services, that fee should be considered a tax and requires distinct authority and possibly confirming legislation. Parliament’s Regulation Review Committee (RRC) has also established clear guidelines for setting of charges and levies.<sup>43</sup>

*If a user of a service is required to pay a fee then, as a general rule, the user must receive the benefit of that service. If the user is paying for something that he or she does not receive then the regulation setting the fee may be considered to have been an unusual or unexpected use of the regulation-making power.”*  
*Regulation Review Committee Guidelines.*

These guidelines are drawn from constitutional principles and from The Treasury and Audit Office Guidelines.<sup>44</sup> The Electricity Commission’s practice of using funds raised

<sup>42</sup> The Electricity Commission, in its report against the Government Policy Statement on Electricity Governance to 30 September 2008, notes that the Commission had allocated provisional funding to EECA, subject to ECCA preparing a revised business case proposal to be provided to the Commission in the second quarter, page 7.

<sup>43</sup> For a summary of the Committee’s approach to reviewing fee increases, see Report of the Regulations Review Committee, “*Activities of the Regulations Review Committee during 2001*”, April 2001, pages 9 to 10. Further developments of the Committee’s approach are contained in Report of the Regulations Review Committee, “*Activities of the Regulations Review Committee during 2002*”, page 9.

<sup>44</sup> The latest version is the New Zealand Treasury report, “Guidelines for Setting Charges in the Public Sector”, Dec 2002; Audit Office Guidelines on Charging for Public Sector Goods and Services 1989.



by the levy to fund programmes undertaken by another government agency seems to breach these guidelines.

## 9 Transition

The discussion above suggests that the major functions currently carried out by the Electricity Commission can be done better by other government agencies or industry processes. This is not because we have comparative information about specific current capability of the Commission or the alternative providers we are proposing. Rather it is because our proposals clarify roles and accountabilities, improve information, make greater use of market knowledge of participants, provide better incentives for efficiency and effectiveness and other matters and are more acceptable and transparent in terms of various quasi-constitutional conventions.

Since it was established in March 2003, the Electricity Commission will have built up information bases and institutional knowledge. The transition to new arrangements should be managed so as to retain as much of that information and knowledge as possible for the benefit of the industry. The institutional knowledge and information built up by the Electricity Commission might be best preserved from a staged reduction in the Electricity Commission's activities.

There do not appear to be any 'show stoppers' in a managed transition:

- The transfer of the energy efficiency activities to ECCA, and the (non-economic) regulatory functions to the MED, is consistent with these organisations core functions.
- Transferring the role of projecting supply and demand to the System Operator would be an extension of the System Operators' current activities and should not be difficult; there would need to be some thought given as to how to assure industry participants that the System Operator would act independently.
- Industry decision processes could be re-established reasonably quickly, as long as it was left to the industry to design the process (subject to competition oversight).
- The transfer of the economic regulation functions to the Commerce Commission may be more complex, as it may give rise to an evaluation as to whether the Commerce Commission is the right institution for undertaking the sector specific economic regulation.

Many, if not most of the changes, proposed in this report could be implemented by the Electricity Commission without legislative change. A managed transition is therefore feasible, avoiding major shocks to the system. Indeed, if the Electricity Commission were of a mind, it could have implemented many of the changes. For instance, the



Electricity Commission could have established a structured decision process for involving transmission customers in deciding transmission service changes (investments), and it could have drawn from nearly a decade of experience with industry processes in evolving market trading rules to determine a process for guiding market design. The Electricity Commission has instead pursued an 'executive' approach and an orientation toward determining market outcomes rather than facilitating effective market processes.

## Annex 1 Electricity Commission budget

Table 4 Electricity Commission budget						
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Total</b> <sup>45</sup>	26.5 <sup>46</sup>	81.4	101.2 <sup>47</sup>	88.6	98.5 <sup>48</sup>	93
<b>Governance &amp; Market Operations</b>	n/a	46.4	47.8	49.0	49.0	48
<b>Electricity Efficiency</b>	n/a	8.1	8.8 <sup>49</sup>	9.1 <sup>50</sup>	13.1 <sup>51</sup>	18
<b>Reserve Energy/Security of Supply</b>	n/a	26.9	44.2 <sup>52</sup>	30.0	36.0 <sup>53</sup>	27
<b>Electricity Commission Litigation Fund</b>	n/a	n/a	0.4	0.4	0.4	n/a

<sup>45</sup> Any difference between sum of categories and total figure due to rounding.

<sup>46</sup> Crown revenue reported in annual report, not differentiated by category of spend.

<sup>47</sup> Includes a five-year appropriation: security of supply – procurement costs for \$14.222 million spread over five years.

<sup>48</sup> Includes reserve energy and emergency measures – variable; an appropriation for \$6 million spread over five years.

<sup>49</sup> Budgeted appropriation (8.776) significantly greater than expenditure (1.378).

<sup>50</sup> Budgeted appropriation (9.111) significantly greater than expenditure (4.958).

<sup>51</sup> Budgeted appropriation (13.074) significantly greater than expenditure (5.957).

<sup>52</sup> Budgeted appropriation (29.281) significantly greater than expenditure appropriated for this year (23.514). Includes the 'Performance of Security of Supply Functions, and 'Five-year appropriation: security of supply – procurement costs' categories. The later appropriation is for \$14.222 million spread over five years, with only this year's portion of the allocation included in underspend figures.

<sup>53</sup> Includes the 'Reserve Energy and Emergency Measures – availability', and 'Reserve Energy and Emergency Measures – variable' categories. The later appropriation is for \$6 million spread over five years.

## Annex 2 GIT should be a net public benefits test

The GIT is currently the centre piece of the investment approval procedures and carries the weight of inadequately specified transmission services and limited involvement of transmission customers in the current procedures. We agree with the intent of the GIT, which is to provide a benefit/cost assessment for weighing decisions on proposed investment or changes in service levels that cannot be resolved directly between Transpower and its customers, or for testing whether a proposed action is in the public interest.

However, the scope of the benefit/cost assessment in the GIT has been defined narrowly. The Electricity Commission excludes from its assessment the impact on non-electricity sectors of the economy, and hence the externalities and ‘public good’ aspects of transmission investment; most non-quantifiable benefits; and it excludes most competition benefits.

Competition benefits (clause 27.11), are defined in the GIT test as follows:<sup>54</sup>

*Competition benefits mean the direct or indirect effects of greater **competition between generators** resulting from a proposed investment or alternative project, including as a result of the associated introduction of additional demand-side management initiatives, on:*

- 22.1 the cost of dispatch
  - 22.2 forecast demand growth, and
  - 22.3 the timing of modelled projects
- (emphasis added)

Oddly, the competition benefits are defined to focus solely on competition between generators and hence exclude any benefits of retail competition from transmission investments.<sup>55</sup> Transmission is a major factor for retailers as it affects price and volume risk.

In addition to excluding entire segments of the market, the definition of competition benefits excludes most of the benefits economists generally attribute to competition. Competition is a process of rivalry; the primary benefits are dynamic efficiency gains

<sup>54</sup> Competition benefits are defined in Part F, Section III, Schedule F4, clause 22.

<sup>55</sup> It seems unlikely that the Commission concluded that retail competition was unimportant. A possible explanation is that the Commission appears to have largely copied the Australian equivalent of the GIT. At the time of drafting of Part F in 2003 and early 2004, retail competition was in its early stages in Australia. Full retail competition in the electricity sector was introduced in South Australia in January 2003 and in Victoria in 2002. Retail competition commenced nearly a decade earlier in New Zealand in 1994, and deemed profiling had been introduced in 1999.

which result from the sequence of future decision-making relating to the allocation of resources, production technologies of firms and investment in new knowledge. The Commission's test concentrates on the static aspects of economic efficiency such as changes in the cost of dispatch (productive efficiency), or shifts in demand (allocative efficiency).

The specification and implementation of the GIT test is in contrast to the normal net public benefits (or economic efficiency) test used internationally by competition and regulatory authorities. The net public benefit test acknowledges wider economic benefits and costs (including those of a public good nature), and which admits quantitative and qualitative evidence. This change would enable the use of international experience and precedent related to such tests.