Briefing to the Incoming Government
October 2005

Electricity Commission
Te Komihana Hiko

INTRODUCTION

This briefing provides an introduction to the electricity sector and the role and work of the Electricity Commission. The briefing will be supplemented by further information and reporting as you require.

The briefing is divided into the following sections for ease of reference:

Section A: Electricity Commission key contacts

Section B: Legislative framework

Section C: Objectives and outcomes

Section D: Overview of the New Zealand electricity industry

Section E: Approach and responsibilities

Section F: Commission's work programme

Section G: Commission's funding.

Detailed reference material:

- Appendix 1: Commissioners' profiles
- Appendix 2: Governance and operational structure
- Appendix 3: Industry advisory groups
- Appendix 4: GPS
- Appendix 5: Part F
- Appendix 6: Market Design Report

Immediate Issues

The immediate issues we would like to discuss with you are:

- Board appointments
- Progress with the assessment of Transpower's 400kV grid upgrade proposal, including assessment on alternatives (*briefing*)
- A proposed regulation change to enable commercial contracting of auxiliary services to support the national grid (*briefing*)
- Electricity efficiency
- Transmission investment framework (part F of the Rules)
- Industry adjustment to regulation.

A. Electricity Commission key contacts

1. Governance

A Board comprising a full-time chair and four Commissioners appointed by the Minister of Energy governs the Commission. The Board[1] is: Roy Hemmingway, chair (Wellington); David Close (Christchurch); Doug Dell (Auckland); Peter Harris (Wellington); and Graham Pinnell (Cambridge).

Roy Hemmingway's contact details are:

04 460 8860

email: info@electricitycommission.govt.nz

2. Management

A general manager, Mervyn English, and a core professional team of forty people run the day-to-day operations. A senior advisor heads up each of the specific work areas. The Commission work areas are retail, wholesale, system operation, security of supply, transmission, electricity efficiency, and modelling and forecasting.

Mervyn English's contact details are:

04 460 8860
email: info@electricitycommission.govt.nz

[1] See Appendices 1 and 2 for profiles of Commissioners and the governance and operational structure

B. Legislative framework

The Electricity Commission is a Crown entity, under the Crown Entities Act, established under the **Electricity Act**, as amended. The Act provides for the establishment of the Commission and outlines its basic objectives, functions, and organisation. Among these functions is to recommend and subsequently administer electricity governance rules for the wholesale market, the retail market, and the transmission of electricity. The Act also provides for the Minister of Energy to set the objectives and outcomes the government expects the Commission to give effect to in relation to the governance of the electricity industry.

The Minister has set the initial objectives and outcomes by giving the Commission the **Government Policy Statement on Electricity Governance**. The GPS was published in the *Gazette* and presented to the House of Representatives in October 2004. The GPS sets out the government's expectations of the Commission, including a detailed list of objectives, actions, and outcomes the Commission is expected to accomplish.

The **Electricity Governance Regulations 2003** set out in detail some of the obligations and responsibilities of the Commission. The regulations include provisions relating to service provider contracts, undesirable trading situations, rule breaches and exemptions, and the establishment and proceedings of the Rulings Panel.

The **Electricity Governance Rules 2003** (EGRs) set out the various authorities and responsibilities of the Commission to carry out market and system governance functions, as well as to make a number of decisions relating to Transpower and the transmission grid (part F of the Rules). The Rules (parts A, C, D, E, G, H, and I) were approved by the Minister of Energy on 18 December 2003, and took effect in February and March 2004. Part F, dealing only with transmission issues, came into force in May 2004. Part B is reserved for future use and part J, the retail reconciliation process, is under development. There are frequent technical amendments to the EGRs requiring action by the Minister.

C. Objectives and outcomes

The Electricity Commission is a Crown entity, set up under the Electricity Act, to oversee New Zealand's electricity industry and markets. It began operating in September 2003.

The principal objectives of the Electricity Commission are:

- 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.

Consistent with the principal objectives of the Electricity Act, the Commission is required to seek to achieve the following outcomes:

- energy and other resources are used efficiently;
- risks (including price risks) relating to security of supply are properly and efficiently managed;
- barriers to competition in electricity are minimised for the long-term benefit of end-users;
- incentives for investment in generation, transmission, lines, energy efficiency, and demand-side management are maintained or enhanced and do not discriminate between public and private investment;
- the full costs of producing and transporting each additional unit of electricity are signalled;
- delivered electricity costs and prices are subject to sustained downward pressure;
- the electricity industry contributes to achieving the government's climate change objectives by:
    - minimising unnecessary hydro spill;
    - efficiently managing transmission and distribution losses and constraints;
    - promoting demand-side management and energy efficiency; and

- removing barriers to investment in new generation technologies, renewables, and distributed generation.

The GPS foreword notes that there are other factors that will impact on the electricity sector for which the Commission does not have accountability. These include:

- Climate change policy
- The Resource Management Act 1991 and related processes
- Policy and regulatory settings for the gas sector, including measures to encourage petroleum exploration
- The National Energy Efficiency and Conservation Strategy.

D. Overview of the New Zealand electricity industry

1. Introduction

The New Zealand electricity industry accounts for approximately $4 billion in retail sales.

The electricity sector has a number of characteristics that create a need for ongoing government regulatory oversight:

- Electricity is essential to a modern economy and society.
- Electricity cannot be stored. Generation and demand have to be matched instantaneously, necessitating operational and market complexity.
- New Zealand's electricity system is exposed to risk of dry sequences because of its high dependence on hydro systems (over 60%) and limited lake storage capacity. The uncertainty about supply in the market creates volatility in spot prices and risks for buyers and sellers.
- New Zealand cannot deal with shortages and surpluses by short term importing or exporting of electricity.
- Everyone connected to the national grid benefits, without necessarily bearing all the costs, and what one large party does impacts on other users. This makes it difficult to agree on appropriate levels of transmission investment and prices.
- The country is long and thin, resulting in significant constraints and losses in the transmission system. This creates difficulties for all retailers to compete in all regions.
- Self-governance of electricity markets resulted in disagreements about market rules and how transmission investment should move forward and be paid for.
- Transmission investment, by necessity, must be centrally planned, affecting electricity markets and signals for generation investment.

2. Demand for electricity

In the year to March 2005, offtake of electricity from the national grid amounted to 37,439 GWhs.

Demand from residential customers amounts to about 34.2% of total demand. Commercial electricity users account for about 20.6% of total demand, and the figure for industrial electricity users is 45.1%.

One large customer, the New Zealand Aluminum Smelter at Tiwai Point in Southland, was responsible for 14% of total offtake. The smelter's current contract with Meridian Energy has complicated negotiation and renewal provisions. It expires in 2012, and the uncertainty around its renewal makes decisions on the appropriate levels of future investment in generation and transmission more difficult.

Other large industrial users of electricity include wood processing, pulp and paper manufacturing, steel manufacturing, and agriculture and related processing industries.

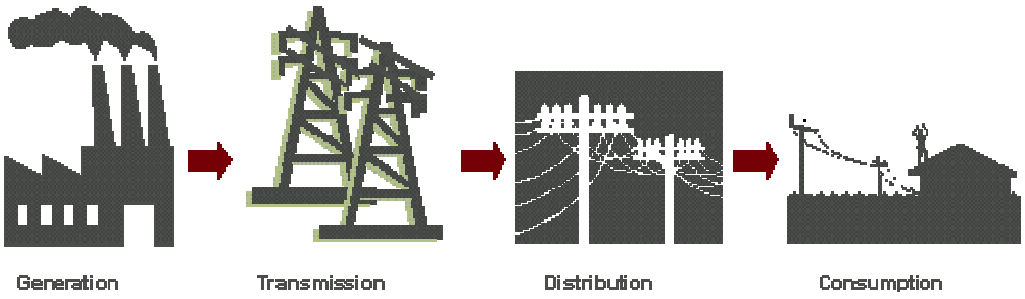
The Electricity Commission's mean forecast for future national electricity demand growth is for annual growth around 2.7% for the next few years, falling slowly to 2.0% annual growth by 2015, and 1.3% annual growth by 2030. Forecasts are highly driven by the levels of economic growth and immigration.

There are substantial opportunities in New Zealand to improve the efficiency of electricity use, so that the same output or service can be produced using less electricity. One of the Electricity Commission's functions is to promote and facilitate the efficient use and conservation of electricity, including funding programmes that provide incentives for cost-effective energy efficiency and conservation. The Commission's activities in this area will be discussed further below.

3. The physical supply system

The supply system consists of: power stations (generators), high voltage power lines (transmission), and low voltage power lines (local lines companies also called distribution companies or networks) that link together to carry power to electricity users.

Electricity Physical Supply System



There are five major generation companies in New Zealand and a number of smaller generators. The national transmission grid is owned by Transpower New Zealand Ltd. There are 28 local lines businesses that distribute electricity to consumers.

4. Generation

The five major generators (Genesis, Mighty River Power, Meridian, Contact, and TrustPower) produce over 90% of New Zealand's electricity. Three of these companies (Genesis, Mighty River Power, and Meridian) are state-owned and supply over 60% of the combined production of the large companies.

The following table summarises the major generation assets and generation market share of those companies.

Generator	Major generation assets	Generation share (as at March 2004)
Genesis	***North Island***: primarily thermal (e.g. Huntly) with some small hydro generation	17%
Mighty River Power	***North Island***: hydro generation on the Waikato River and Southdown cogeneration plant	13%
Meridian	***North Island***: Te Apiti windfarm; ***South Island***: most hydro generation	31%
Contact	***North Island***: NZ's largest geothermal plant at Wairakei, two large gas-fired combustion turbines at Stratford and Otahuhu; ***South Island***: assets on the Clutha (e.g. Clyde Dam)	27%
TrustPower	Smaller wind, co-generation and hydro generators nationwide	5%

The remaining electricity is generated by some industries through self-generation (particularly wood products) and independent operators of small generators.

5. Transmission

Transpower is the state-owned enterprise that owns the national high-voltage transmission system. The transmission system was largely built in the 1950s and now requires investment to meet future needs. The grid comprises approximately 12,000 kilometres of transmission lines and transports electricity from some 40 power stations to connect with distribution networks at over 200 grid exit points all over New Zealand.

There is a high voltage direct current link (HVDC) that connects the South Island and the North Island. The HVDC runs from Benmore on the Waitaki river to Haywards in the Hutt Valley. HVDC cables have been laid on the sea bed across Cook Strait. During normal hydrological conditions, the HVDC link tends to transport electricity from south to north. However, the HVDC link can also transport electricity from north to south, which can be particularly useful during an extended dry period in the South Island.

Transpower has recently proposed two major transmission investments. It has proposed a North Island 400kV upgrade from Whakamaru to Otahuhu, and an upgrade of the HDVC link. The role of the Electricity Commission in approving such investment proposals is discussed below.

6. Distribution

28 distribution companies (set out below) own the local low-voltage power lines that connect with the national grid to carry electricity to customers.

Distribution companies:	
Alpine Energy	Network Waitaki
Aurora Energy	Northpower
Buller Electricity	Orion
Centralines	OtagoNet
Counties Power	Powerco
Eastland Network	Scanpower
Electra	The Lines Company
Electricity Ashburton	The Power Company
Electricity Invercargill	Top Energy
Horizon Energy	Unison
Mainpower	Vector
Marlborough Lines	Waipa
Nelson Electricity	WEL Networks
Network Tasman	Westpower

The distributor plays an important role in ensuring that electricity is supplied in a reliable way to consumers. The distributor can arrange for faults in the network (e.g. caused by falling trees) to be repaired. It can also play an important role in managing network loads (e.g. automatically switching off electrical load from hot water cylinders during peak times) and in responding to various emergencies.

Three of these distribution companies (Vector, PowerCo, and Orion) jointly service 60% of New Zealand customers. Distribution companies are usually owned by community trusts or local government, although some distributors are privately owned (e.g. PowerCo and Horizon).

7. Targeted control of lines businesses

The services provided by lines businesses (distributors and Transpower) are subject to a "targeted control" regime, administered by the Commerce Commission under Part 4A of the Commerce Act. The Commerce Commission monitors the performance of lines businesses against two "thresholds", namely:

- a price path threshold in a "CPI minus X" form; and
- a quality threshold.

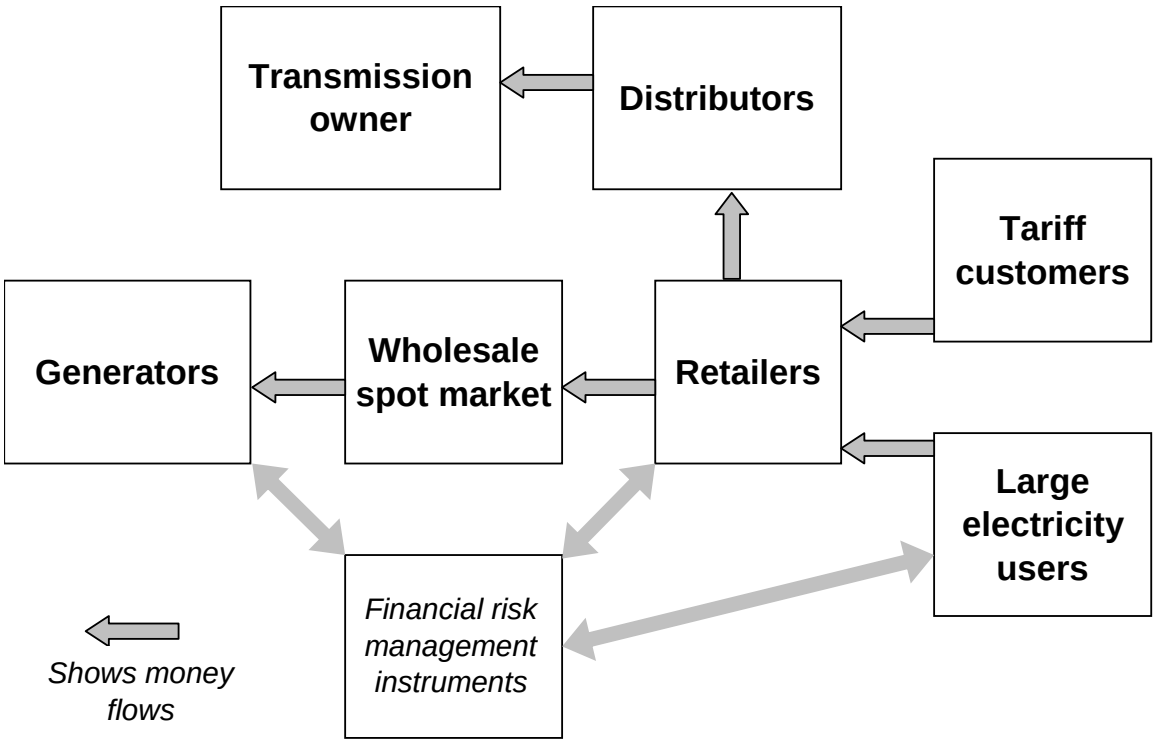
In effect, the thresholds are a screening mechanism to identify lines businesses whose performance may require further examination. If one or more of the thresholds is breached by a lines business, the Commerce Commission can further examine the business through a post-breach inquiry and, if required, control their prices, revenue, or quality.

There is legislative provision in the Commerce Act 1986 for the government by order in council to transfer the administration of the thresholds regime from the Commerce Commission to the Electricity Commission. Responsibility for the regime for Transpower can be transferred at any time. Responsibility for the regime for distributors can be transferred at any time after 30 September 2009.

8. Structure of industry relationships

While physical electricity assets (generation plant and lines) enable electricity to be delivered to households, there are also important contractual and regulatory relationships that establish rights and responsibilities between the parties. Financial payments are made as part of those relationships.

Key Industry Financial Flows



Electricity users contract with retailers for their electricity needs. Retailers purchase electricity from the wholesale spot market, which pays generators for their generation. Retailers also contract with distributors for access to lines services, and distributors pay Transpower as grid owner for access to transmission. Retailers and large electricity users manage their exposure to wholesale spot prices by entering bilateral “hedge” contracts with generators.

9. Retailers

Electricity retailers play a central role in the electricity market. In order to sell electricity to users, they purchase electricity from the wholesale market, manage the risks arising from spot market volatility through appropriate hedge contracts (or vertical integration – see below), and purchase lines services from distributors.

There is a high degree of vertical integration between retail businesses and generation businesses. The five major generators are also the five largest retailers.

The following table shows the retail market share and generation market share of each of the major generator-retailers. Those five companies are responsible for over 95% of retail customers in New Zealand.

Market share of generator-retailers

Owner	No. of Customers	% Total Customers	% Total Generation
Contact Energy	619,000	33%	27%
Genesis Power	450,000	24%	17%
Meridian Energy	230,000	12%	31%
Mighty River Power	299,208	16%	13%
TrustPower	230,000	12%	5%

Note: This information was collated by M-co in March 2005 from information provided by the companies listed above.

10. Retail prices and competition

Retail prices increased by 6.8% in 2002, 8.0% in 2003, and 9.4% in 2004 according to data published by the Ministry of Economic Development.

Retail prices are not subject to price controls, apart from regulations that require retailers and distributors to offer tariffs with low *fixed charges*.

Domestic and small business customers usually buy their power at a fixed price per kilowatt hour from their chosen retailer regardless of the wholesale price.

When retail businesses began competing with each other to supply consumers (following the Electricity Industry Reform Act 1998), consumers experienced widespread problems with the process of switching from one retailer to another. These problems have now been resolved. Rules are in place covering the switching process, and compliance by retailers is high. However, the majority of consumers still remain with the “incumbent” (original) retailer on their network.

Large industrial electricity users have more sophisticated metering equipment that records electricity usage over short intervals of time (e.g. half hourly). Typically they have an arrangement with a retailer to purchase electricity at the wholesale “spot” price, which can vary substantially depending on market conditions. Processes for managing this risk are discussed below.

11. The wholesale market

The wholesale spot market provides a mechanism to facilitate dispatch of the least cost generation (in the short term) and provides longer term signals for investment in generation and transmission. It also sends signals for appropriate investment in electricity intensive industry and the efficient use of electricity throughout the economy.

Almost all electricity generated in New Zealand is sold in the wholesale spot market.[2] Generators offer their electricity into the market and compete to be dispatched. Generators with the lowest offers are generally dispatched first.

The market establishes prices every half hour that reflect the marginal cost of supply. The market price at any one time reflects the bid price of the highest cost generation needed at that time. All power is priced at the same price in the wholesale market. Those prices can vary substantially over time. They can range from less than 2 cents per kilowatt-hour when hydro water is plentiful, to more than 20 c/kWh during hydro shortages. There are no regulatory price caps, although the Crown's Whirinaki reserve energy plant enters the market at prices above 20 c/kWh, which may have some effect in limiting high prices. Prices tend to average around 6 to 9 c/kWh.

Prices also vary across different parts of the country to reflect transmission constraints and electrical losses in transmission lines. When transmission lines into a region become congested, spot prices in that region can become very high. When the HVDC line between the North and South Islands was out of commission in August 2004, wholesale prices in Wellington reached $12 per kilowatt hour for a brief period.

The Electricity Commission is responsible for monitoring and enforcing wholesale market rules embodied in the Electricity Governance Rules 2003. The Commission is also responsible for recommending to the Minister changes to those Rules. In particular, the Commission is currently developing proposals to amend the Rules to ensure that the market deals appropriately with intermittent generation (such as wind generation). Proposals are also being developed to improve the operation of the market for instantaneous reserves, which is integrated with the wholesale spot market.

12. Risk management markets and long-term price signals

Retailers and major users face a risk that electricity spot prices will be high. Generators face a risk which is, broadly speaking, the opposite (i.e. that spot prices will be low). Retailers and generators manage these risks, to a significant extent, by

[2] A minor exception is electricity that is generated and sold within the same distribution network. In these circumstances, the parties are free to establish their own arrangements for determining the price at which the transaction is settled.

vertical integration. Within a vertically integrated company, the financial risks to generation and retail businesses cancel out.

Although vertical integration can reduce risk, generator-retailers do not always generate the same quantity of electricity as they sell to electricity users. Companies that have a “net retail” or “net generation” position will retain some risk to be managed. Major electricity users will also want to manage their risk.

Bilateral financial hedge contracts (e.g. contracts for differences) are the most common method for managing the risk that remains after vertical integration. They enable parties with opposing risks to cancel out those risks by making offsetting cash payments, depending on the level of spot prices.

The strike prices of bilateral hedge contracts effectively convert short term spot prices into longer term price signals for investors. In order to send robust longer term price signals to investors, it is desirable for hedge markets to be transparent and liquid. The Commission is currently considering ways to improve the operation of the hedge market.

13. Service providers

The Electricity Commission contracts service providers to provide various support services for the day-to-day operation of the market.

A key service provider role is that of the system operator. The Commission contracts Transpower as the system operator. The system operator is responsible for the real-time coordinationof the electricity system. It instructs generators when to generate electricity and how much electricity to generate (i.e. it “dispatches” generation) so that injections of electricity into the system match offtake by electricity users at each moment in time.

Dispatch is largely determined by the outcome of the wholesale market, which identifies the least-cost pattern of dispatch given generators’ competing supply offers, the level of demand, and the available transmission capacity.

The Commission’s contract with Transpower as the system operator establishes arrangements to manage any potential conflict of interest that Transpower has arising from its ownership of transmission assets.

The Commission also has service provider contracts with The Marketplace Company Ltd (clearing manager, pricing manager, and information system provider), Energy Market Services Ltd (reconciliation manager), and Jade Direct NZ Ltd (registry).

The Marketplace Company Limited has been sold to Energy Market Services Ltd, a subsidiary of Transpower.

E. Approach and responsibilities

1. Introduction

The objectives and outcomes required of the Commission by the GPS are set out in Section C. This section overviews the Commission approach and comments on important responsibilities.

The Commission's approach to its role has also been shaped by its own guidelines on what makes a good regulator. A good regulator:

- Seeks best information and sound analysis
- Consults broadly and recognises limits of acceptability
- Respects evidence
- Operates openly, transparently, and comprehensively in its decision-making
- Shares information with stakeholders
- Responds quickly to events
- Focuses on long-term public benefit
- Limits intervention to only when necessary for preservation or enhancement of market functioning
- Is consistent in decisions so that participants know the rules and what to expect
- Maintains ethics and the highest standards without favour to any interest in the electricity sector.

2. Important relationships

The Commission works closely with other government, Parliamentary, and industry organisations involved in the electricity industry. These include:

- the Ministry of Economic Development, which assists the Minister of Energy monitor the Electricity Commission's performance. The Commission also liaises with the Minister of Economic Development on important policy matters;

- the Energy Efficiency and Conservation Authority, on issues relating to electricity efficiency, demand-side management, and the facilitation of renewable energy;

- the Commerce Commission, on the connections between the "targeted control" regime for lines businesses under the Commerce Act, and the Electricity Commission's work (especially transmission work). The chair of the Electricity Commission acts as an associate Commerce Commissioner for regulation of lines business and Transpower;

- the Parliamentary Commissioner for the Environment, on his annual assessment of the Commission's performance against the GPS objectives and outcomes concerning the environment;

- the Ministry of Consumer Affairs on issues directly affecting consumers; and

- the Electricity and Gas Complaints Commission, on electricity retail and distribution consumer issues.

3. Giving effect to the Government Policy Statement

The GPS directs the Commission to develop electricity markets that reduce barriers to competition, maintain and enhance incentives for investment in generation and demand-side management, and facilitate retail competition. The Commission's approach is to promote efficient competitive markets and foster a climate for investment. Its aim is to maintain long-term public confidence in the electricity networks and markets.

The GPS also requires the Commission to use its powers of persuasion and promotion and provide information and modelling to achieve its objectives rather than recommending regulations and rules. The Commission has taken this guidance seriously and set up seven advisory groups to help develop and implement policy and rules. Those advisory groups are discussed in more detail in Appendix 3. The Commission also consults widely with industry, stakeholders, and the public on major decisions.

The GPS also requires the Commission to give a high priority to making available relevant information to market participants and the public at large. Quality information for all parties is regarded as essential for efficient markets.

The Commission is also asked to keep in mind the importance of encouraging innovation within the sector. Ready access to information can be an important enabler of innovation. Within the Rules, there are requirements to establish and maintain a central dataset. This information has not been available in the past. Its availability now makes it easier for parties to assess opportunities for investment in the grid or for generation.

The Statement of Opportunities is also an important document for making available to a wide range of people an assessment of options for investment that may be solved in a range of innovative ways. The Commission is initiating other projects regarding the provision of information which will enhance stakeholders either on the supply side or the demand side to function in a constructive way within the sector.

The remainder of this section explains what the Commission does in more detail.

4. Security of supply

Government concern about security of supply and increased sensitivity following the two significant threats of hydro shortage in 2001 and 2003 provided the background to government action on security during 2003. Concern centred, in particular, around the risk of extended dry hydro periods, given New Zealand's reliance on hydro generation (over 60% of generation).

The Electricity Commission was established with one of its functions being to use reasonable endeavours to ensure security of supply (including contracting for reserve energy), while minimising distortions to the normal operation of the market. The GPS establishes the target of ensuring security of supply in a 1-in-60 dry year.

The Commission is expected to provide early warning of any material risk that current policy settings are unlikely to stimulate sufficient investment, particularly in generation and the national grid.

The Commission does not have the authority to approve new generation projects or to decide whether gas, geothermal energy, coal, wind, hydro energy, LNG, or any other fuel or energy efficiency is the best option to meet increased demand. But the Commission is concerned that electricity markets operate to send the appropriate signals so new investment in generation is made in time to meet the national needs.

In addition to establishing the Commission, the government also built a 155MW reserve generation facility at Whirinaki to help manage the dry year risk. The Commission contracts with the Crown for the availability of reserve energy from this plant. The Commission continually assesses the future need for additional reserve generation.

5. Transmission

Prior to the establishment of the Electricity Commission, there was no regulatory framework for making critical transmission investment decisions. New transmission could be built only if it was financed by a group of market participants who could agree about how to share the costs of the investment between them. Transpower experienced significant legal and practical difficulties in enforcing a pricing methodology to recover the costs of the existing network, aside from any new investment.

The Commission is now charged with recommending for the Minister's approval a transmission pricing methodology so that Transpower can be assured of cost recovery. The Commission also assesses Transpower's plans for grid upgrades against transmission alternatives (e.g. local generation, load management, and/or energy efficiency) and can approve transmission investments so that their costs can be recovered from the industry.

The role of the Commission in Transmission and detailed consultation processes are set out in part F of the Electricity Governance Rules.

Transmission contracts and pricing

The Commission determines the structure of, and counterparties for, transmission agreements. It also establishes benchmark transmission agreements to facilitate commercial arrangements and to act as a default contract in the event that Transpower and a customer cannot agree on the terms of a transmission contract.

The Commission determines transmission pricing guidelines to be used by Transpower in developing a proposed transmission pricing methodology for consultation and subsequent recommendation by the Commission to the Minister.

Transmission investment

A critical task for the Commission is to determine the optimum balance between investment in new transmission and alternatives without resorting to central planning or undue interference in the market.

The framework in part F of the Rules provides for the Commission to determine grid reliability standards that act as a basis for transmission planning and investment.

The Commission also publishes a grid investment test (GIT), which explains how the Commission will evaluate transmission investment proposals against transmission alternatives. Transmission investments are proposed by Transpower in a grid upgrade plan (GUP).

While transmission can enable a diverse range of generation plants to deliver a reliable supply of electricity into a region, it is possible that transmission alternatives may be able to deliver economic and reliability outcomes at a lower cost.

The Commission facilitates efficient investment by providing information to the industry. The Commission is required to publish a Statement of Opportunities (SOO) at least once every two years. The first SOO was released in July 2005. It contained a range of possible future generation and demand scenarios and presented an analysis of the ability of the transmission grid to meet grid reliability standards under each of those scenarios. The SOO helps the industry to identify opportunities for investment in transmission or transmission alternatives, such as generation, demand-side management, and energy efficiency.

Transpower has recently submitted its first GUP to the Commission.

6. Electricity efficiency

One of the functions of the Electricity Commission is to promote and facilitate the efficient use and conservation of electricity, including by funding programmes that provide incentives for cost-effective energy efficiency and conservation.

Cost-effective electricity efficiency can benefit consumers by:

- reducing energy consumption while maintaining the same or better lifestyle and productivity outcomes;
- helping defer more expensive investment in new generation and transmission; and
- contributing to New Zealand's wider environmental policy.

The Commission's approach is to work closely with industry partners to make electricity efficiency products and services a more "mainstream" part of the industry.

The Commission is seeking to measure the benefits of electricity efficiency across all sectors and then to implement a programme that supports mainstream uptake of electricity efficiency to complement transmission and generation. It has already established a range of pilot electricity efficiency programmes.

Commission policy is to work closely with the Energy Efficiency and Conservation Authority (EECA) in developing programmes. The Commission and EECA have signed a memorandum of understanding detailing shared working principles and arrangements to avoid duplication of effort.

7. Market operation, development, and governance

Market operation

The role of service providers such as the system operator has been discussed above. The Commission contracts service providers to provide day-to-day operation of the market. The Commission establishes performance targets for service providers and monitors performance on an ongoing basis.

Service provider costs account for more than 40 percent of the Commission's total budget, as discussed below.

Market development

The Commission is carrying out a number of projects to develop and improve market rules and arrangements. These projects are being carried out principally within the wholesale, retail, and common quality workstreams discussed below.

These projects cover issues such as model retail contracts, broad wholesale market design, improving the transparency and liquidity of hedge markets, developing financial transmission rights, and demand-side management.

Extensive use is made of advisory groups, as discussed in Appendix 3.

Market governance

The Commission investigates alleged breaches of the market regulations and rules and can lay a complaint if necessary with the Commission appointed Rulings Panel, which is able to make various orders including penalties and compensation.

The Commission also has the power to grant exemptions from compliance with the Electricity Governance Rules.

F. Commission's work programme

During its first 18 months of operation, the Commission concentrated on delivering the following specific projects, determined by the government, as priorities:

- establishing the policy and regulatory framework for transmission investment;
- establishing the security of supply policy and developing and implementing the minzone assessment tool;
- initiating an electricity efficiency programme; and
- initiating work to improve the transparency and liquidity of hedge markets.

Detailed information on the Commission's current work, both in the previous and current quarters, can be found in the quarterly reports provided to the Minister of Energy. In the last 12 months, the Commission has completed in excess of 60 consultations and decision papers. This has been a very substantial work load.

The remainder of this section overviews the Commission's strategic priorities and the key projects for the period to 2005/07.

1. Strategic priorities

The Electricity Commission is in the process of discussing strategic priorities with the industry. At this stage, the Commission has grouped its key strategic issues under the following four headings:

- efficient investment
- market design
- security of supply
- electricity efficiency.

2. Efficient investment

- *Transmission investment framework*

  Completing the grid reliability standards, completing the benchmark transmission agreement, finalising a transmission pricing methodology for ministerial approval, and developing arrangements that enable appropriate transmission alternatives to compete against transmission investment.

- *Decision on Transpower's grid upgrade proposal*

  Reviewing Transpower's proposed 400kV transmission line from Whakamaru in South Waikato to Otahuhu in South Auckland, including considering transmission alternatives, consulting with interested parties, and deciding by mid-2006 whether to approve Transpower's proposal.

- *Wind generation*

  Developing stable policy and market rules for investors to ensure that wind generation can play a full role in the electricity system. This work is expected to extend through 2005/06 and into 2006/07.

- *Information for prospective investors*

  The Commission has released a centralised data set of historical information; for example, energy flows and hydrological information. The Commission has also released its initial SOO outlining opportunities for investment in transmission of transmission alternatives. There has been feedback from interested parties on these initial information documents. The next version of the SOO in the centralised data set will be updated in light of this feedback.

3. Market design

- *Competition*

  Encouraging appropriate investment in electricity generation, enhancing wholesale and retail competition, and causing downward pressure on prices. The Commission considers these goals can be progressed by a range of measures including improved hedge market liquidity and transparency, streamlined agreements between lines companies and retailers and between retailers and customers, and improved market information, such as supply and demand forecasts.

  Generally, the Commission is of a view that the wholesale market arrangements today are adequate, but that retail competition is in need of improvement.

- *Assessing markets*

  Assessing market design development proposals, appraising market design options, and completing a report on market design, including elements such as gross versus net-pool arrangements, energy and transmission hedges, nodal versus zonal pricing, and improving the bidding and offering processes.

- *Intermittent/co-generation issues*

  Considering issues arising from intermittent and co-generation projects, such as their impacts on the operation of the power system and interaction with the wholesale market.

- *Demand-side management*

  The Commission has initiated a load management work programme to determine the optimal load management infrastructure for New Zealand by identifying and mitigating barriers to load management.

4. Security of supply

- *Reserve energy policy*

  Using reasonable endeavours to ensure New Zealand has an adequate supply of electricity, even in emergencies and in dry years and, where possible, using market mechanisms to achieve this. The Commission considers an effective reserve energy policy underpins the integrity of the electricity network and markets.

5. Electricity efficiency

- *A cheap resource*

  New Zealand has a history of limited investment in electricity efficiency. Electricity efficiency is a major potential resource for the country and, with appropriate programme design, the cost of a mega watt saved can be significantly cheaper than the cost of new generation. Energy efficiency is potentially a large untapped resource for the New Zealand economy, which can reduce (but not completely replace) the need for new generation and transmission.

- *Pilot programmes*

  Developing strategies, including further efficiency programmes for expanding and “mainstreaming” existing pilot programmes to deliver cost-effective and sustained downward pressure on electricity use and peak demand.

- *Fostering innovation*

  Developing systems to foster investment in technologies by ensuring cost-reflective price signals and the removal of barriers to competition.

- *Better delivery*

  Encouraging efficient delivery of electricity through appropriate use of metering and load control.

- *Improved market signals*

  Provide information on the positive effect demand management can have on electricity prices, thereby encouraging more effective demand response.

6. Current workstreams to deliver the strategic priorities

The Commission has developed eight core workstreams that contribute directly to converting its long-term objectives to outcomes. Each workstream is listed below along with some key projects currently underway or planned for that workstream out to 2006/07.

Common quality and system operation

- Monitor performance of the system operator
- Investigate the impact of wind generation on the New Zealand power system and develop policy that will identify an appropriate level of wind penetration
- Implement a long term plan for developing enhancements to market rules for common quality and system operation

Demand modelling and forecasting

- Develop national and regional demand forecasts
- Develop future generation scenarios

Electricity efficiency

- Carry out investigation programme to determine potential for electricity efficiency improvements
- Complete and evaluate pilot electricity efficiency programmes
- Develop longer term programmes for electricity efficiency (subject to funding approval)

Market governance

- Improve compliance with industry rules

Retail market

- Ensure widespread industry uptake of model contracts for domestic consumers
- Develop model use of system agreements and model approaches to distribution pricing
- Facilitate improved load management
- Improve the reconciliation process (which determines how much electricity each generator and retailer has produced or purchased)

Security of supply

- Review the efficiency and effectiveness of the reserve energy policy

Transmission

- Develop benchmark transmission agreements
- Recommend a transmission pricing methodology for ministerial approval
- Decide whether or not to approve transmission investments proposed by Transpower, and in particular the Whakamaru-Otahuhu 400kV upgrade proposal
- Develop financial transmission rights

Wholesale market

- Improve the transparency and liquidity of hedge markets
- Improve information available to market participants
- Improve the level of participation of the demand side in the market.

G. Commission's funding

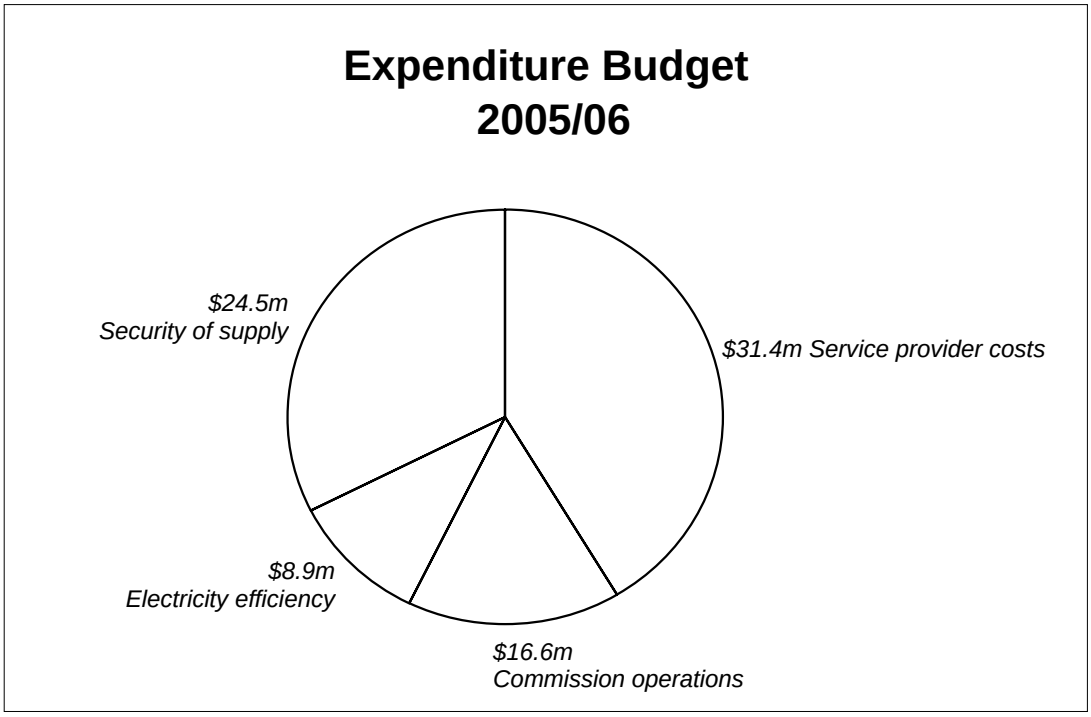
The Commission is funded by appropriations from Parliament, which cover the range of services the Commission provides.

The funding approved by Cabinet in 2004 for the Commission included stepped reductions to the operating funding over three fiscal years on the basis of reduced work in the transmission area. Due to the newness of the regulatory regime, it was difficult to make a sound assessment of the workload and, therefore, the required funding base for the Commission. The step reduction was seen as a conservative approach and could be revisited if need be. Currently, the Commission is assessing its workload against these reductions.

The Commission has also been in discussion with officials regarding the level of capital funding provided to the Commission in its first years of operation. The Commission is incurring the last of the capital start-up costs that relate to accommodation and IT systems. The level of expenditure puts pressure on the working capital of the Commission, and further discussions are also required in this area.

The Minister of Energy wrote to the Commission in April 2005 emphasising a need for the Commission to carry out a robust analysis and consultation regarding alternatives to Transpower's proposed 400kV line into Auckland. The Commission indicated that, in the first instance, it would seek to meet the costs of the additional work from within its current appropriation, although this was unlikely to be possible.

This graph shows the broad areas of the Commission's budgeted spending for 2005/06, which totals $81.4 million.



The following is a breakdown of the costs:

Commission operations—costs incurred for all operational costs of the Commission. Also in this area is work related to policy and rule work for System Operator (live time coordination of grid), transmission investment, market governance, retail, wholesale, advisory groups, etc.

Security of supply (Crown originally purchased Whirinaki)—predominantly costs for the Commission's contract with the Crown for the Whirinaki reserve energy plant. Also included is the cost for tendering for reserve energy, if needed.

Electricity efficiency (new)—costs for six pilot programmes, research, and longer-term projects being established in this area.

Service provider costs (historically based)— these costs existed prior to the establishment of the Commission. They cover the agreements between the Commission and the companies that provide services to keep the electricity markets operating. These are as follows:

- ***Clearing manager—***Energy Clearing House Ltd

  (guarantor—Energy Market Services Limited (EMS))

  Monitors prudential security requirements, and invoices and settles electricity and ancillary service payments.

- ***Information system—***EMS

  Manages the software system to upload bids and offers as required by the Rules.

- ***Pricing manager—***EMS

  Calculates and publishes final prices.

- ***Reconciliation manager***—EMS

  Reconciles the quantities of electricity produced and consumed in the electricity markets.

- ***Registry***—Jade Direct NZ Ltd

  Manages the database that contains every point of electricity connection. This enables customers to switch from one retailer to another.

- **System operator**—Transpower New Zealand Ltd

  Schedules and dispatches electricity in a manner that avoids fluctuations in frequency or disruption of supply.

7. Commission's recovery of costs through industry levy

The Crown is reimbursed for the cost of the Commission by way of a levy on the electricity industry. The Commission collects the levy on behalf of the Crown. Before the establishment of the Commission in September 2003, the industry paid for the operation of the electricity market under self-regulation. These costs amounted to approximately $41 million in 2001.

Various components of the Commission's funding are levied on different sectors of the electricity industry. Electricity retailers recover their share of the levy by billing consumers. Some retailers choose to show the levy as a separate charge on consumers' accounts, while others include it within their overall price.

APPENDIX 1: COMMISSIONERS' PROFILES

Roy Hemmingway, Chair *BA JD (term expires September 2006)*

Before coming to New Zealand, Roy Hemmingway had an extensive background in electricity issues in government and the private sector in the United States. His most recent position was chair of the Public Utility Commission in the state of Oregon, the agency which regulates the electricity sector. He also served as a policy adviser to three Oregon governors and was a key figure in establishing the Northwest Power Planning Council, a four-state electricity planning body. Mr Hemmingway lives in Wellington.

David Close *MA(Hons) MA (Essex) (term expired September 2005)*

David Close is a former Christchurch city councillor and, until recently, was a director of the national grid company, Transpower. He has a sound knowledge of the electricity industry and extensive experience as a local body politician and as a board member of commercial, voluntary, Māori and charitable organisations. Living in Christchurch, Mr Close remains deputy chairman of Canterbury Community Trust.

Doug Dell *BE(Hons) DPA (term expired September 2005)*

Doug Dell trained as an engineer and has worked in the electricity industry throughout his career. His experience includes pricing, infrastructural development, marketing and operational management in the public and private sectors. He was previously assistant general manager of the former electricity division of the Ministry of Energy, and since 1990 has been an energy consultant. He was formerly a director of the electricity lines company Vector. Mr Dell lives in Auckland.

Peter Harris *BCom(Hons) (term expires September 2006)*

Peter Harris is a former academic and trade union economist with an extensive background in research, analysis and advocacy. He has been a member of a number of government advisory boards, and has been involved in national and international industry and economic development projects. His most recent appointment was as economic adviser to the Finance Minister, the Hon. Dr Michael Cullen. He is also a director of PSIS Ltd and chair of the Savings Product Working Group. Mr Harris lives in Wellington.

Graham Pinnell *BE(Hons) (term expires September 2006)*

Graham Pinnell is a sheep and cattle farmer and former professional engineer. He has a strong understanding of electricity industry governance, having been a consumer nominee for a number of electricity industry bodies. He has been a national board member of Federated Farmers of New Zealand, and has been involved in a number of agribusiness and public policy issues. Mr Pinnell lives in Cambridge, Waikato.

APPENDIX 2: GOVERNANCE AND OPERATIONAL STRUCTURE

1. Governance

- Board members (five commissioners)

2. Committees

- *Electricity Governance Rules Committee*
  (Roy Hemmingway and David Close)

  The Commission's new electricity governance rulebook largely came into effect in March 2004. The Electricity Governance Rules Committee managed this work and is now responsible for: initial fact-finding on rule breaches, formal investigations into rule breaches, oversight of the informal settlement process, recommending that alleged breaches be referred to the independent Rulings Panel, granting of exemptions, and advancing minor rule changes.

- *System Operations Committee*
  (Doug Dell and Graham Pinnell)

  Deals with the technical issues to do with the day-to-day operation of the power system.

- *Undesirable Trading Situations Committee*
  (All members)

  Manages the Commission's response to an Undesirable Trading Situation (UTS). The Commission is able to investigate any potential UTS and can take actions, as it considers appropriate, including suspending rule requirements and imposing new requirements on participants.

3. Rulings Panel

The Commission appoints the members of the Rulings Panel, a body corporate established under the Electricity Governance Regulations 2003, and is responsible for its funding. The Rulings Panel is the industry dispute resolution and disciplinary body that determines industry complaints and certain disputes brought to it under the EGRs and the Rules. The Rulings Panel comprises five independent members.

4. Commission operations and staff

Commission operations are led by a general manager and a group of senior advisors who take responsibility for activities within individual workstreams.

APPENDIX 3: INDUSTRY ADVISORY GROUPS

The Government Policy Statement on Electricity Governance requires the Commission to make extensive use of advisory groups, wherever possible, to develop industry arrangements and make recommendations concerning the Electricity Governance Regulations and Rules. The Commission is concerned to ensure that advisory groups cover a wide range of interests and views in the sector. One important way the Commission encourages wide participation in advisory groups is by providing remuneration for consumer representatives on advisory groups and people or organisations not otherwise remunerated for their involvement.

Members are generally appointed to advisory groups for a period of two years, with half the group rotating off each year. This provides the Commission with regular opportunities to review the balance of membership on each group across stakeholders. Representatives of small consumers and providers of demand-side solutions are able to put their names forward for participation on a group.

The Commission has appointed industry, consumer, and independent representatives, to the seven advisory groups listed below:

- Common quality
- Retail market
- Security
- Transmission
- Transmission pricing
- Wholesale market
- Hedge market development

The groups' responsibilities and functions include the following.

- Considering and advising on the Commission's work programme and strategic direction.
- Advising on proposed regulation and rule changes, including all practicable alternatives and the relative cost benefit trade-off of each alternative.
- Providing technical advice and industry expertise in the preparation of such outputs as:
    - system operator policy statement;

  - system operator procurement plan;
  - grid investment test;
  - grid reliability standards;
  - grid planning assumptions;
  - statements of opportunities;
  - transmission alternatives; and
  - transmission pricing methodology.

- Advising on the development of the retail, wholesale, and energy hedge and transmission hedge markets.
- Advising on how the Commission may use reasonable endeavours to ensure security of supply in a one-in-60 dry year, without assuming any demand reduction from emergency campaigns, while minimising distortions to the normal operation of the electricity market.
- Providing general advice to the Commission on other matters raised.