

Briefing to the incoming Minister:

Hon Gerry Brownlee

20 November 2008

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Key Contacts

Governance

The Electricity Commission is governed by a Board appointed by the Minister of Energy, comprising a full-time chair and five other members.

The Board Chair is Hon. David Caygill:

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Management

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1. Introduction

The New Zealand wholesale electricity market was created in 1996, based on a set of self governing multilateral contracts. In general the electricity system at that time had significant generation capacity and there was little pressure on the transmission system.

By the early 2000s there was an increasing awareness of the need for substantial new investment in both transmission and generation. There was a particular rising concern regarding what transmission investments should be made, who would pay for them, and under what methodology. Several years of ongoing debate and litigation failed to achieve a resolution.

Also the Rules governing the wholesale market were believed by some not to be evolving as they should, and there were concerns about lack of transparency regarding management of the grid. It was becoming increasingly apparent that there were difficulties in resolving the multiple and conflicting interests within the sector.

The long term nature of investments in the electricity market and system means that investors need a degree of certainty about the policy and rules under which the sector will operate. And once the rules are in place, they must be evolved in a manner which enables the market and power system to continue to operate fairly, balancing the interests of sector participants and consumers. This requires a core set of rules which all participants adhere to, and independence in the way the rules are developed and governed.

Under industry 'self governance', consumer organisations sought a greater influence in the decision-making process. Larger consumers wanted to be satisfied that monopoly investments were subjected to sound, independent, cost benefit analysis, and sought more involvement in what some saw as a 'supply side' managed industry.

In 2003 after an extensive process of negotiation and reformulating the market governing rules to achieve greater consensus, a vote on a new self-governance arrangement failed, largely because it failed to attract the support of most consumer organisations. Accordingly, in late 2003, the Electricity Commission (Commission) was established under the Electricity Act 1992 (Act).

The new Commission was given clear priorities in its significant workload. It was required to deal with long-standing issues, each of which was to be the subject of extensive consultation. These include:

- Implementation of a security of supply policy;
- Developing a grid reliability standard against which to measure and prioritise transmission investments;

- Developing a transparent cost-benefit test to assess transmission investment proposals;
- Approval of a transmission pricing methodology;
- Strengthening the operation of the wholesale market; and
- Completing a development plan for real time electricity system operations.

This immediate work is now largely completed but the sector, supported by the Commission, must continue to adapt to a changing energy environment. Not only is new investment required at most points along the supply chain – from generation to consumer metering – but these investment decisions must be taken in a market which is responding to major international influences including increased environmental sensitivity, new technologies, more assertive consumers, and a changing generation mix.

The electricity system is complex, highly interconnected, and facing significant change in the next decade. Electricity is a key input to the economy and connects to virtually every New Zealander. As the sector moves through its investment cycle it is essential that capital investment in the sector is both sufficient and efficient, and does not inappropriately divert capital from other areas of the economy. Within the boundaries of its formal role this changing environment requires the Commission to be a ‘problem solving’ regulator rather than a ‘compliance’ regulator.

This paper briefly outlines:

- The Commission’s principal functions;
- The Commission’s organisation;
- The Commission’s achievements to date;
- Major projects in progress; and
- Sector development issues.

Further background information is provided in the appendices and as attachments. There are some immediate issues to brief you on, and other in-depth briefings can be arranged as needed.

2. Functions of the Commission

2.1 Overview

The Commission took over responsibility for operating the electricity market under the Electricity Governance Rules 2003 (Rules) and Electricity Governance Regulations 2003 (Regulations) (collectively, the EGRs) from 1 March 2004.¹

The Commission's principal objectives are set out in the Electricity Act 1992 (Act), and via Government Policy Statements (GPS) issued in 2004, 2006 and 2008. These objectives are summarised in section 3..

To meet its objectives, the Commission carries out (or contracts with others to carry out) the following key functions:

- Operation of electricity markets;
- Real time system operation;
- Transmission: review of investment plans and pricing methodologies;
- Security of supply monitoring and reserve energy procurement;
- Promotion of electricity efficiency; and
- Modelling and information provision.

2.2 Operation of electricity markets

The electricity market comprises wholesale and retail markets.

The wholesale market comprises multiple parties carrying out various functions including bidding (purchasers), offering (generators), scheduling and dispatch (System Operator), pricing (Pricing Manager), and clearing and settlement (Clearing Manager). Each of these functions is governed by the EGRs. The management of the Rules requires both ongoing maintenance and the ability to introduce step changes.

In contrast, the retail market arrangements focus on operational tasks including registration of consumers, enabling consumers to switch easily between suppliers and counting of electricity purchases and sales. Around \$4.5 billion of electricity is purchased

¹ The Rules cover bidding and offering electricity, scheduling and dispatch, pricing, measuring and reconciling electricity flows at various points on the system, and financial settlement. A brief description of what is included in each Part of the Rules is provided in section 4.5.

by consumers each year, and almost 10% of customers switched suppliers in the year to 30 September 2008.

The Commission manages much of the direct operational work, in both the wholesale and retail markets, by contracting service providers. The Commission's own tasks to facilitate the operation of the markets are:

- **Market governance** – functions include:
 - Managing compliance with the Rules, Regulations and other relevant legislation, including investigating alleged breaches² and undesirable trading situations (UTS)³;
 - Monitoring the implementation of voluntary arrangements, model agreements and guidelines; and
 - Reviewing exemption applications;
- **Market administration** – functions include:
 - Annual audits of distributors' compliance with the reconciliation rules;
 - Annual certification of reconciliation participants and test houses (to certify compliance of equipment at metering sites);
 - Ensuring software audits are carried out and reviewing change management processes for software;
 - Agreeing the System Operator's plan for procurement of ancillary services, such as frequency keeping and instantaneous reserves;
- **Contracting service providers.** The five market service providers are:
 - Pricing Manager – calculates and publishes prices for each trading period at 249 locations across the national grid;
 - Clearing Manager – carries out processes for settling accounts, including monitoring prudential security requirements;

² The Commission carries out initial fact-finding on all breach investigations (approx. 200 per annum) and determines whether to proceed to formal investigation for the EGR Committee or Rulings Panel. Approximately 10% of cases are referred to the EGR Committee. The roles of these entities are outlined in Section 4.1.

³ UTS arise when there is a threat to orderly trading or settlement that cannot be resolved satisfactorily under the Rules.

- Wholesale Information and Trading System (WITS) provider – uses the WITS to carry out information transfers, especially the uploading of bids and offers;
- Reconciliation Manager – reconciles electricity volumes by location and retailer; and
- Registry – maintains a database of customers' points of connection, required for customer switching.

The Commission also carries out the following market enabling tasks:

- **Development of the Rules** – ensuring the Rules support the development of the sector and implementation of new technologies; and
- **Consumer protection** – including monitoring consumer protection guidelines, establishing a complaints resolution scheme, and developing retailer of last resort arrangements.

2.3 Real time system operation

The real time co-ordination of system operations is becoming more complicated as the need to integrate a wider range of generation types requires greater focus on system stability issues such as voltage, frequency, and the management of reserves.

The Electricity Governance Regulations⁴ require that Transpower is appointed System Operator for the physical operation of the grid. The Commission, in an independent role, develops Rules covering areas such as frequency and voltage management, integration of new generation technologies into the power system, and offer and dispatch processes. With many interconnected parties within the electricity system, the Rules for coordination need to be carefully managed. As the costs of some of these auxiliary functions have increased, consumers are becoming more interested in how these services are delivered and charged for.

2.4 Transmission functions

The Commission's main regulatory functions in the transmission area are reviewing, auditing and approving transmission upgrade proposals, and maintaining the regulatory contract framework.

⁴ Regulation 30(1)

Reviewing transmission plans – Transpower is responsible for planning the development of the national grid but, being a monopoly, must apply to the Commission for approval of its investment plans before consumers can be charged for these investments.

The Commission must audit these proposals against predetermined criteria, which are essentially a cost benefit analysis – the details of which are set out in the Rules – and a reliability standard. These reviews require auditing of Transpower’s analysis to confirm the business case for an investment.

The reliability standard sets a level of security of supply that must be achieved: it comprises a deterministic standard (for the core grid) and an economic standard for proposed investments outside the core grid. This means that cost and reliability can be traded off in some circumstances. The Commission has expended considerable effort over the last four years to develop this and other aspects of the transmission framework, including extensive consultation with industry, to support grid investment decisions. The approval process and criteria are broadly similar to those used by electricity regulatory authorities in other countries.

An outline of the transmission investment approval process is provided in Appendix 2.

The Commission’s other main ongoing transmission task is maintaining and monitoring the regulatory contracting framework, including the interconnection Rules, the Connection Code, and the transmission pricing methodology.

2.5 Security of supply monitoring and reserve energy

Stakeholders, including Government, became concerned about spot price volatility and security of supply following periods of low inflows in 2001 and 2003. Concern centred particularly around the risk of extended dry hydro periods, given New Zealand’s continuing reliance on hydro generation.

The Commission was made responsible for establishing a security of supply policy that would achieve targets set out in the GPS. The standards and monitoring process was established through extensive consultation with industry and major consumer stakeholders.

An assessment is made annually to determine whether available supply is likely to be sufficient to meet demand while maintaining a secure system. This assessment takes into consideration factors such as forecast demand and generation⁵, outage plans, and fuel and transmission availability.

⁵ The Commission maintains a list of possible, probable, and committed generation projects. This list is attached as Appendix 3.

In the event a dry hydro sequence does occur, the Commission has limited authority to intervene in normal market operations. The interventions currently available to it are:

- Determining the prices at which the Whirinaki reserve energy station is offered into the spot market; and
- To run a conservation campaign and/or seek to purchase load reductions, if the system enters what is termed the emergency zone. As a last resort, the Commission may initiate rolling power cuts.⁶

The period of low inflows in 2008 has been the most severe test to date of both the market design and security of supply arrangements. Although the winter saw high spot prices and a public conservation campaign lasting some weeks, there were no involuntary load reductions. The Commission is currently undertaking a review of the 2008 winter period to identify opportunities for improved market and policy design to ensure its objectives can be achieved (refer section 6.2). As part of this review, the Commission has commissioned NIWA to look at whether the inflow pattern may be changing over time.

2.6 Electricity efficiency

The Commission delivers energy efficiency programmes aimed at reducing demand and carbon dioxide emissions through more efficient electricity use. The Commission's criteria limit programmes to those that cost less on a per unit basis than the long run marginal cost of building extra generation capacity. The electricity savings will, to some extent, defer the need for new generation, which provides a direct benefit to levy payers. Based on current funding levels, the economic value that could be achieved by the Commission's electricity efficiency programmes by 2016 is estimated at \$70 million per annum in avoided cost of generation and generation investment.⁷

The Commission has three main programmes in place – efficient lighting, commercial sector efficiency, and industrial motors efficiency (refer section 5.4).

2.7 Modelling and information provision

In markets characterised by monopolies or oligopolies, and where the actions of one party affect others connected to the same system, it is particularly important that the parties can access accurate information and analysis, and that no one party has a monopoly on this. In some jurisdictions, access to information is considered preferable to regulation. In New

⁶ In addition, Section 172D(2)(a) of the Act enables the Commission to recommend Regulations to the Minister that require generators to hold reserve fuels (including water). The Commission has not developed any such Regulations.

⁷ The estimated \$70 million saving is based on an avoided generation at a cost of 8.5c/kWh. It does not include any savings that may result from deferred transmission or distribution investment.

Zealand, the Commission is required to use its powers of persuasion, promotion, and provision of information, in preference to recommending changes to the EGRs.

Information and analysis produced by the Commission includes:

- The Statement of Opportunities (SOO). The SOO is prepared every two years and covers a range of long term generation and demand scenarios. It provides reliable, unbiased information to guide investment in transmission and transmission alternatives. In addition:
 - The regional electricity demand forecasts contained in the SOO are used as the starting point for Transpower to prepare the business case for transmission investment proposals, for security of supply analysis, and for investment planning by other participants; and
 - Generation development scenarios provide information to investors in the industry and are a starting point for Transpower's preparation of the business case for proposed transmission investments;
- The Centralised Dataset (CDS) is a database of detailed historical energy modelling data, including network modelling data, historical demand and generation, and historical market bids, offers, and prices. Most of this information was not publicly available prior to the formation of the Commission;
- Models and datasets are published, and participants are increasingly using the Commission's models for their own purposes. This provides an important contribution to innovation during the current critical investment phase.

The Commission is continually working to meet the needs of participants and potential investors by improving accessibility of wholesale and retail market, generation, wind, hydrology and other data. It has also developed voluntary information publication arrangements with the industry including for hydro spill data and retail tariffs.

The Commission has also been asked to provide modelling support to a range of other government agencies and departments on energy sector issues. For example, the Commission has carried out analyses for the Ministry of Economic Development on the penetration of renewable generation and on the potential impacts of electric cars on the power system.

3. Commission objectives and outcomes

The Electricity Commission is established under the Electricity Act. The Act sets out the principal objectives and specific outcomes with which the Commission is charged.⁸ It also sets out the Commission's functions and lists the processes under which the Regulations and Rules are established and amended.

“(1) The principal objectives of the Commission in relation to electricity are—

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

(2) Consistent with those principal objectives, the Commission must seek to achieve, in relation to electricity, the following specific outcomes:

- (a) energy and other resources are used efficiently;*
- (b) risks (including price risks) relating to security of supply are properly and efficiently managed;*
- (c) barriers to competition in electricity are minimised for the long-term benefit of end-users;*
- (d) 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;*
- (e) the full costs of producing and transporting each additional unit of electricity are signalled;*
- (f) delivered electricity costs and prices are subject to sustained downward pressure;*
- (g) the electricity sector contributes to achieving the Government's climate change objectives by minimising 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 *Government Policy Statement on Electricity Governance* (GPS) sets out the Government's expectations of the Commission, including a detailed list of objectives and

⁸ Section 172N of the Act

outcomes that the Commission is expected to accomplish. It requires that the Commission use its powers of persuasion and promotion, and provision of information to achieve its objectives, in preference to recommending regulation and rule changes.⁹ The latest GPS was issued in May 2008, and is appended to this briefing as Attachment 1.

The Commission must also take into account broader government policy contained in other documents such as the *New Zealand Energy Strategy* (NZES)¹⁰; and the *New Zealand Energy Efficiency and Conservation Strategy* (NZECS)¹¹.

Responsibility for delivering the NZES and NZECS actions is shared across a number of departments and Crown entities including the Commission. The Government expects the Commission to contribute to programme design, delivery and monitoring. The Commission has made provision for delivering these actions in its planning processes and accountability documents, including the Statement of Intent.

⁹ Government Policy Statement on Electricity Governance, paragraph 2

¹⁰ Available on the MED website, www.med.govt.nz.

¹¹ Available on the Energy Efficiency and Conservation Authority (EECA) website, www.eeca.govt.nz.

4. Organisational overview of the Commission

4.1 Governance

The Electricity Commission is governed by a Board appointed by the Minister of Energy, comprising a full-time chair and five other part-time members (Commissioners).¹² The Chair is a full time role due to the extensive statutory requirements on the Commission, but is a non-executive role. The current Chair is cross-appointed to the Boards of the Commerce Commission and the Energy Efficiency and Conservation Authority. Though there are no specific qualifications to be a member of the Board, members have been appointed on the basis of their knowledge of, or experience in, the electricity industry, electricity markets, regulatory processes, public policy, law and economics, business management, and the public sector.

The current Board is: Hon. David Caygill (Chair), Richard Bentley, David Bull, Linda Constable, Peter Harris, and Hon. Stan Rodger. Commissioner profiles are provided in Appendix 4. Board members hold office for a term not exceeding three years, and may be reappointed. The Board normally meets for two days every three weeks.

In addition to its requirements under the Crown Entities Act, the Board also has substantial statutory decision making responsibilities. For instance, only the Board has legal authority to approve a transmission investment or to propose a rule change to the Minister of Energy.

The Board has established a number of Committees to which it has delegated certain of its responsibilities.

The **Electricity Governance Rules (EGR) Committee** was established to manage the introduction of the EGRs, and is now responsible for making decisions on exemption requests, appointing investigators to investigate rule breaches, making decisions on notified and investigated rule breaches, and making recommendations to the Board to either approve settlements or lay a formal complaint with the Rulings Panel.

The **System Operations Committee** considers monthly System Operator reports, identifies any emerging real-time security issues and addresses technical rule change proposals in the wholesale, retail, and common quality areas.

The **Undesirable Trading Situations Committee** manages the Commission's response to an Undesirable Trading Situation (UTS). The Commission may investigate any potential UTS and can take actions, as it considers appropriate, including suspending rule

¹² The Board must have at least five members (including the Chair) and may have up to nine members.

requirements and imposing new requirements on participants. The UTS Committee comprises all members of the Commission Board.

The **Risk and Audit Committee** advises the Board on overseeing, reviewing, and assessing the quality and integrity of financial reporting of the Commission, including managing the relationship with the external auditor. It also considers whether the Commission has established appropriate policies and put in place management processes to ensure risks are properly identified and managed, and oversees and assesses the internal audit process for evaluating the effectiveness of risk management, control and governance processes.

The **Remuneration Committee** advises the Board on remuneration policies and practices.

The Commission also appoints and funds the **Rulings Panel**, a body corporate established under the Electricity Governance Regulations 2003. The Rulings Panel is the dispute resolution and disciplinary body that determines complaints and disputes brought to it under the Rules and Regulations. It comprises five independent members.

4.2 Operational structure

Commission operations are led by a General Manager, which is the Commission's Senior Executive position. Given the complexity of work and relationships within the industry and government, the Chair and the General Manager work together closely.

The General Manager works with the management team, who are responsible for the following workstreams:

- Retail markets;
- Wholesale markets;
- Common quality and system operation;
- Security of supply, generation and distribution;
- Transmission;
- Electricity efficiency;
- Modelling and forecasting;
- Legal and market governance; and
- Corporate services.

The Commission has around 50 staff (including management) to deliver the core services. Because of the highly technical nature of much of the Commission's work, the Commission cannot always warrant the use of in-house resource and instead contracts additional specialist resources as required.

The General Manager's profile is provided in Appendix 4.

4.3 Advisory Groups

The GPS requires the Commission to make use of advisory groups wherever possible to develop industry arrangements and make recommendations concerning the Electricity Governance Regulations and Rules.¹³ These groups have no decision-making authority.

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

The Commission currently has six advisory groups, which are the first forum of discussion for most of the Commission's work issues. Technical project groups are also used on an ad hoc basis. Members of the advisory groups are listed in Appendix 6.

4.4 Relationships with other agencies and departments

The Commission works with other Government agencies and departments on various aspects of its work programme. These include the Ministry for the Environment, Commerce Commission, Ministry of Economic Development, Ministry for Consumer Affairs, and the Energy Efficiency and Conservation Authority.

The **Commerce Commission** and the Electricity Commission work closely to ensure that their respective roles are well coordinated, and to minimise any scope for uncertainties regarding jurisdictional issues. An example is the current Market Design Review, discussed in section 6.1 of this briefing.

The Commission has Memoranda of Understanding (MOUs) with both the **Commerce Commission** and the **Energy Efficiency and Conservation Authority (EECA)**. These define the functions of the respective organisations so that duplication of work is avoided and the organisations work together effectively. Copies of the two Memoranda are provided as attachments to this briefing.

¹³ Paragraph 7 of the GPS

4.5 Legislation administered by the Commission

The Commission has responsibility for monitoring compliance, investigating alleged breaches and if necessary, taking enforcement action in relation to regulations and rules, particularly:

- the Electricity Governance Regulations 2003 (Regulations);
- the Electricity Governance Rules 2003 (Rules);
- Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004;
- Electricity Governance (Connection of Distributed Generation) Regulations 2007; and
- any subsequent amendments to these Regulations and Rules.

The Regulations and the Rules, collectively known as the Electricity Governance Rules and Regulations (EGRs), set out some of the obligations and responsibilities of the Commission and electricity industry participants.

Amendments to the Rules are made by the Minister of Energy. The Minister's powers in relation to Rule changes are tightly limited. The Minister can make a Rule change only on the recommendation of the Commission and does not have the authority to make changes to recommendations. He can only approve them or send them back.

The Rules include the following sections:

Part	Title	Content
A	Interpretation	Interpretation of defined terms in the Rules and Regulations
B		Reserved for future use
C	Common quality	System Operator's Principal Performance Obligations (PPOs), Policy Statement, and Procurement Plan, Asset Owner Performance Obligations (AOPOs) and Technical Codes, and ancillary services arrangements
D	Metering arrangements	Participant obligations in relation to metering standards, including meter reading
E	Registry information and customer switching	Management of processes and information required to enable customers to switch between competing retailers
F	Transport	Establishment of transmission agreements between Transpower and its customers, framework for assessing and approving (or rejecting) grid upgrades, process for developing and approving a transmission pricing methodology, provision for development of financial transmission rights,

Part	Title	Content
		interconnection asset services (including service measures, service levels and grid configuration), outage protocol
G	Trading arrangements	Requirements for purchaser bids and generator offers, detail of the scheduling and dispatch processes carried out by the System Operator, and determination of wholesale prices by the Pricing Manager, including the inputs to each set of prices
H	Clearing and Settlement	Settlement for electricity and ancillary service sales and purchases, prudential security arrangements
I	Transition rules	Transitional arrangements (transition from previous arrangements)
J	Reconciliation	Process for reconciliation of electricity quantities, for each retailer (or generator) at each grid exit point (or grid injection point)

4.6 Funding arrangements

The Commission is funded by appropriations from Parliament, recovered by levies on electricity industry participants. Different rates are levied on generators, retailers, direct supply customers, lines companies, and Transpower, reflecting the allocation of costs to different activities the Commission undertakes. For example, Transpower pays different levies, and at different rates to generators, purchasers, and distributors.

The Commission consults annually with levy payers on its proposed appropriation requirements prior to making a request to Government for its appropriations.

The appropriations approved for the 2008/09 fiscal year are shown in the following table.

Appropriations	Approximate budget 2008/09	Comment
<p>Governance and market operations</p> <p>Service provider contracts for the operation of the electricity system and markets</p> <p>Commission operations core functions This includes: - monitoring compliance with regulations and rules, regulatory development, collecting and disseminating information, maintaining an overview of security of supply, decision-making on transmission investments, and consumer protection</p>	<p>\$28 million 32%</p> <p>\$20 million 21%</p>	<p>Costs incurred regardless of governance of the industry, self-governance or Commission</p> <p>Some of these costs were also incurred by the industry prior to the establishment of the Commission</p>
<p>Reserve energy—providing for the availability and operation (if necessary) of reserve energy measures (mainly the Whirinaki contract)</p>	<p>\$27 million 28%</p>	<p>Cost to assist low inflow years security of supply. This was not provided for under self-governance</p>
<p>Electricity efficiency programmes—funding will only be committed to economically justified programmes that will provide long-term savings and accelerate the uptake of new efficient technologies</p>	<p>\$18 million 19%</p>	<p>Programmes run at the cost of 1c to 5c per kWh saved as compared to the cost of new generation (long run marginal cost) of about 7c to 9c per kWh</p>
<p>Total</p>	<p>\$93 million</p>	<p>About \$17 p.a. for the average household, 1% of the average annual cost to the householder</p>

5. Achievements to date

The Commission's primary focus since its establishment in September 2003 has been in the following areas:

- Assuming responsibility for operation of the electricity system and markets, including developing and implementing Rules for operation;
- Facilitating transmission investment;
- Developing and implementing security of supply standards and policies; and
- Promoting electricity efficiency.

5.1 Development and operation of the electricity system and markets

The Commission is responsible for a number of ongoing tasks relating to the operation of the electricity system and markets.

- **Administering and developing the Regulations and Rules.** The Commission has:
 - Completed around 60 maintenance and development Rule changes¹⁴, and
 - Carried out a number of development projects, many of which have resulted or will result in Rule changes, for example:
 - Investigations into options for integrating wind generation into the power system and electricity market;
 - Improvements to the transparency of hedge contracts and to contract markets, improving liquidity and ability to manage electricity price risk;
 - Development of new reconciliation arrangements to improve the accuracy of allocation of electricity volumes to purchasers;
 - Adoption of the Common Quality Development Plan to address long-standing issues to do with power system security and quality;
 - Development of Guidelines to facilitate the transfer to advanced metering at minimal cost to the consumer;

¹⁴ A rule change may include revisions to a number of Rules.

- Development of Guidelines to protect vulnerable consumers in consumer disconnections; and
 - Development of model contracts for retailers and their customers.
- Carried out the administrative work required by the Rules, for example, reviewing and granting exemptions, monitoring compliance, and managing processes to ensure the integrity of metering data.
- **Contracting service providers** to carry out necessary market and system operation functions:
 - Five of the six service provider agreements were put to competitive tender for the first time in 2007,¹⁵ achieving improved services at reduced cost compared to under the self-governance arrangements;
 - The System Operator service provider agreement is currently being re-negotiated with Transpower.
- **Information provision** to support investment decision-making. The Commission has developed and published a number of documents and data sets, including:
 - The Statement of Opportunities, which provides a high level analysis of the system to assist with identification of investment opportunities; and
 - The Centralised Data Set, which includes detailed historical modelling data necessary for investment analysis.

5.2 Enabling transmission investment

When the Commission came into existence, there was no economic framework or explicit reliability standards for assessing grid investment proposals and issues around the service standards to be achieved and who should pay for the services were the subject of ongoing dispute.

Accordingly, one of the Commission's priority tasks was to establish a transmission framework, starting from the guidelines and processes set out in the Rules. The regime, which was consulted on widely with the industry and is similar to that used in other electricity systems, includes:

- Grid Reliability Standards (GRS) to underpin investment proposals – no formal standards previously existed;

¹⁵ Service provider agreements were previously agreed between incumbent providers and the Electricity Commission Establishment Unit (ECEU) in 2004, following negotiations with the incumbent providers only.

- A cost benefit test to enable assessment of transmission investment proposals against alternatives;
- A Transmission Pricing Methodology (TPM) – the issue of allocating the costs of transmission services had been unresolved for more than a decade; and
- Benchmark transmission agreements for Transpower and its customers, providing, for the first time, minimum enforceable and common contract standards for access to transmission services that reflect a reasonable balance of interests between Transpower and its customers, and also the interests of end use customers.

Since being established, the Commission has approved around \$2 billion in new transmission investments, the most significant being the North Island grid upgrade (\$824 million) and the HVDC upgrade (\$672 million). These are due to be commissioned in 2011 and 2012, respectively. Three further major proposals¹⁶ and a number relating to smaller projects are currently in the review process.

A full list of approved investments is provided in Appendix 1.

5.3 Security of supply

The Commission is responsible for establishing security of supply standards and policies to ensure that electricity demand can be met during periods of low hydro inflows¹⁷. It has:

- Developed a methodology, in consultation with industry stakeholders, for determining whether procurement of reserve energy (additional generation or load reductions) is needed to achieve the agreed standards; and
- Carried out annual 'needs' analyses to determine whether reserve energy is required.

This framework has improved the sector's ability to manage dry years with the result that winter 2008, a particularly dry year, was managed with limited disruption to consumers.

5.4 Electricity efficiency

The Commission has an explicit objective to seek efficient electricity use. Cost-effective electricity efficiency programmes provide a better return on investment to the consumer than expenditure on new generation and transmission assets while also contributing to New Zealand's wider environmental goals. The significant economic value of load

¹⁶ North Auckland and Northland, Lower South Island, and Wairakei Ring.

¹⁷ A description of the Security of Supply Policy is provided as Attachment 4.

management, including peak demand reduction and electricity efficiency, is recognised internationally.

The Commission has:

- Completed the first ‘bottom up’ analysis of the potential opportunities and priorities for electricity efficiency in New Zealand. This analysis indicates that 6,400 GWh per year of savings can be achieved at less cost than supply side alternatives and that the Commission could achieve 840 GWh of these savings by 2016 based on current funding levels. (840 GWh equates to the annual usage of a city the size of Dunedin)¹⁸;
- Led the development, in conjunction with the Lighting Council New Zealand and EECA, of a three year national strategy on efficient lighting; and
- Launched three major efficiency initiatives with the scope to produce, in aggregate, around 650 GWh of electricity savings (and 85,000 tonnes of CO₂) a year by the end of 2009/10¹⁹, at a cost less than the long run cost of new generation:
 - Efficient lighting: nearly five million efficient light bulbs have been sold through the Commission’s programmes to date, resulting in savings of around 390 GWh a year, the equivalent of the annual electricity usage of Rotorua;
 - Industrial sector: the Commission has established an accredited auditor programme for compressed air systems, the savings from which are forecast to reach 100 GWh a year by June 2010. Over 50 audits of major plant have been completed to date;
 - Commercial sector: a programme targeting inefficient refrigeration, heating, ventilation and air conditioning, lighting and other technologies is now achieving savings of 14 GWh a year. This figure is expected to increase to 100 GWh a year by June 2010.

The programmes are managed by a small team who operate under a deliberate strategy of developing capacity in the private sector, there is also a strong focus on enabling innovation.

¹⁸ The economic value of 840 GWh per annum of electricity savings is estimated at over \$70 million per annum in avoided generation costs (based on generation cost of 8.5c/kWh). Further savings will accrue from deferral of transmission and distribution investment.

¹⁹ Most programme providers have provided financial guarantees that savings will be achieved, so the Commission is, in effect, buying electricity efficiencies.

6. Major projects in progress

The Commission is currently engaged in four major projects in addition to its ongoing functions, roles and responsibilities.

6.1 The Market Design Review (MDR)

A key regulatory function is to ensure that the electricity system and markets operate fairly and efficiently, enabling investment in new generation to meet electricity demand at the lowest cost. Fair and efficient markets also support the achievement of Commission objectives such as demand-side involvement, integration of increasing renewable generation, and security of supply.

The Rules governing the New Zealand electricity market have been in place since the original market's establishment in 1996, and have evolved in response to issues and opportunities as they have emerged. However, it is timely to undertake a more comprehensive review and from this, develop a clear, coordinated plan for future market development.

The key areas of focus include:

- Improvements to the 'energy-only' market design to address potential capacity adequacy issues and to ensure the design remains appropriate as the generation mix changes;
- Offer and dispatch initiatives, such as investigating wind generation forecasting options (currently underway);
- Improving competition through initiatives such as developments in the frequency keeping and hedge markets, and reducing inefficient barriers to customer switching;
- Improving demand-side participation options and capability, for example, through information provision and removing artificial barriers to advanced metering; and
- Improving availability of market information.

The Commerce Commission is using its authority under the Commerce Act to gather information for a narrow but deep analysis of bidding behaviour and possible market power issues, with a particular focus on the wholesale market. This work is soon to be completed and the MDR is being paced to take account of it. It is likely that aspects of the winter review (refer section 6.2) will also feed into the MDR.

The timeline for completion of the MDR will depend on the complexity of work to be carried out following consultation on detailed options.

6.2 2008 Winter Review

Security of supply is a high profile issue, requiring a trade off between high levels of security and the additional costs imposed on consumers. There have been several periods of particularly low inflows into the hydro catchments in the past decade, with each one placing bigger demands on the system. While the system and the industry have shown resilience in dealing with these situations, there are concerns that the frequency of low inflow years may reflect a change in the pattern of inflows from that which is expected statistically and which is the basis on which security of supply decisions have been made.

The Commission is reviewing dry year risk management during the winter of 2008 with a view to identifying options to improve the policy framework or settings.

The review involves three stages:

- Establishing the facts:
 - assessing the severity of the drought in 2008, including whether 2008 inflows are indicative of a sustained change in inflow patterns²⁰;
 - assessing the market-based response to the droughts (in terms of thermal and other non-hydro generation, managing hydro storage, demand response, impact on consumers, etc);
 - reviewing the tools and options available to the Commission within the current policy framework, and how effectively the policy framework was communicated to stakeholders;
 - reviewing the Commission's response to the drought in terms of Whirinaki operation and other actions.
- Reviewing the effectiveness of the current framework, including:
 - the extent to which the actions of parties reflected the behaviours expected (for example, the policy anticipates that, when in the Minzone, spot prices will be high enough to bring on all thermal generation, enabling hydro resources to be conserved);
 - the extent to which security outcomes differed from those sought under the policy framework;

²⁰ The Commission has commissioned some work from NIWA to examine whether the series of low inflow years experienced since 2000 is indicative of a change in inflows from the statistical basis used for security of supply decisions.

- the extent to which the policy framework provided incentives for participants to act consistently with the security outcomes set out in the Government Policy Statement (GPS);
 - the extent to which options, beyond incentives, contributed to attaining the security outcomes set out in the GPS;
 - the extent to which the policy framework exposed participants to the consequences of their choices; and
 - stakeholder tolerance for spot price volatility.
- Determining what actions, if any, should be taken to modify the policy framework to improve management of dry year risk. Specific issues include:
 - the incentives on wholesale market participants to appropriately manage their exposure to dry year risk;
 - the approach for recovering reserve energy costs;
 - reserve energy dispatch policies; and
 - the point at which the Commission should undertake emergency management actions (as defined in the 2008 GPS) and the extent to which this should be signalled in advance.

A report is expected to be completed in December 2008. Following this, decisions will be made regarding proposals for change. Any proposed changes will be the subject of detailed options development and consultation with stakeholders.

6.3 Load management policy

Load management has largely been at the discretion of distribution companies and the System Operator and has been managed primarily for the benefit of industry participants. New metering technology will enable retailers to offer consumers greater involvement in managing their electricity use and costs.

Enabling this to happen will require a careful examination of the 'ownership of the load', including what parties have access to load management and under what conditions. Scoping work for this project is underway.

6.4 Metering review and administration

Metering Rules have not kept pace with developments in metering capability, services and standards over the last decade and are not well placed to accommodate emerging technologies.

The Commission therefore considered it timely to undertake a fundamental review of metering arrangements. The scope for the review is currently being consulted on, but is expected to comprise three key areas:

- Updating the Rules to reflect new trends in metering technology and allow innovation in delivery of metering and associated products:
 - The trend towards convergence of communications, metrology, data handling, and load control at consumers' premises requires a review of the way data is collected, transported, stored, and used (for reconciliation, switching, and regulation) to maintain integrity of the data chain from measurement through to settlement;
 - The Rules need to allow innovation to occur without detriment to the integrity of this data chain, and the responsibilities for roles need to be clearly identified and allocated so that they can be enforced.
- Addressing a number of pressing operational inconsistencies:
 - Issues with multiple owners of metering equipment at a metering installation, and unclear compliance obligations on those parties;
 - Issues with the demarcation between various parts of the Rules, i.e. where the metering installation ends and data handling commences;
 - Re-assessing the operational efficiency of the data chain, and the participants that should have obligations under the Rules and ensuring that these obligations are pragmatically placed and enforceable.
- Updating metering standards:
 - International metering standards and practices have changed, and the Rules need to be updated to reflect these changes;
 - Metering accuracy and standards need to be enforced to ensure the integrity of the clearing and settlement process.

Recommendations arising out of this process are approximately 18 to 24 months away.

7. Sector development

This section provides a broad view of some key influences on the electricity sector which will affect (or already are affecting) significantly the Commission's work. It provides background for other parts of this briefing, such as the section on major projects (refer section 6).

The electricity market is going through substantial change. This is being driven by a combination of factors including: demand growth; responses to climate change, and associated environmental concerns; the emergence of new technologies such as smart metering; changes in the generation mix prompted by changing cost structures; the limited ability to build major new hydro plant; and government policy.

The market is complex and has a number of distinctive characteristics that need to be considered when developing operating and trading arrangements:

- The electricity system is highly interconnected relative to many industries, so the actions of one party can often affect other parties creating a requirement for common rules;
- Investments are usually long term and investors need to have reasonable clarity about the conditions under which they will operate their assets to enable them to manage commercial risks; and
- Investors are highly sensitised to incentives and to a fair operating environment so making progress with system development usually requires the resolution of a range of conflicting interests.

Drivers of change in areas of current attention are:

Changing generation mix – The backbone of the New Zealand electricity system has historically been hydro generation but since the 1960s this has been complemented by thermal plant and more recently by geothermal and wind generation. Changes in the generation mix affect the System Operator's ability to schedule and dispatch generation, manage voltage, and procure the reserves needed to maintain a secure system. Rules should not create inefficient barriers to entry for new generation types, but must also ensure that appropriate standards are achieved so that costs are not inefficiently imposed on others.

Note that in some countries it was considered necessary to halt wind generation connections until studies could be carried out and regulatory arrangements installed to manage such effects.

Market competitiveness and security of supply concerns – Rising electricity prices are leading to increased anxiety about the competitiveness of the electricity markets. At the same time, questions are increasingly being raised about whether the market will deliver a secure supply in low hydro inflow years. These two factors are key drivers for the Market Design Review and the 2008 Winter Review (refer sections 6.1 and 6.2).

System operations – The real time co-ordination of system operations is becoming more complicated as the need to integrate a wider range of generation types requires greater focus on system stability issues such as voltage, frequency, and management of reserves.

At the same time, new control system technologies are enabling greater performance to be obtained from the grid but require sophisticated management.

Transmission investment – The high level grid planning/approval process for the highest priority transmission projects is nearly complete and Transpower is now focussing on the second tier. These projects tend to be smaller but are nevertheless important and the Commission is working closely with Transpower to ensure that investment proposals are assessed via an efficient approval process.

Because renewable generation is often remote from existing load and major transmission lines, and development timing differences can exist between renewable generation assets and transmission assets, some generators might be deterred from investing in renewable plant. The Commission is engaged in work to facilitate the coordination of renewable and transmission investment.

Load management – Enabling the widespread application of new technologies will require a review of load management. Traditionally this has been controlled by the transmission and distribution arms of the industry and they have managed it largely from a security of supply perspective (refer section 6.3).

Metering – Many of New Zealand's around 1.9 million meters are about 50 years old and are in the process of being replaced. The new meters will enable new retail products, greater choice for consumers and a wider range of load (demand) management options. However getting to this point requires major revision of the Rule framework for the administration of metering (refer section 6.4).

Appendix 1: Approved transmission investments

The following table summarises Transpower's proposed investments and the Commission's approvals to date.

Listed in approximate timing approved:	Transpower applications		EC approved (\$m)
	Initial (\$m)	Final (\$m)	
30 Tactical Transmission Upgrades	158	158	117.8
HVDC Interim Grid Expenditure (IGE)	6.3	6.3	6.3
Auckland CBD IGE	7.8	7.8	7.8
11 Grid Development Proposals (GDP)	129.9	126.9	104.8
Auckland CBD IGE stage II	9.4	16.5	9.4
HAY-TAK thermal upgrade	2.0	2.0	2.0
Upper SI Demand-side participation (DSP) trial	8.3	8.3	8.3
Upper SI reactive support	64.0	70.0	70.0
NI Grid Upgrade (400 kV) ²¹	824.0	824.0	824.0
Otahuhu substation	99.0	99.0	99.0
Central NI	18.0	18.0	18.0
West Coast	27.0	19.0	19.0
HVDC	728.0	672.0	672.0
Total	2,081.7	2,027.8	1,958.4

²¹ Transpower's initial application was rejected, as Commission analysis showed that, when compared to alternative upgrade options, the proposed upgrade had a net present value of negative \$150 million. The \$824 million approved project cost was 11% more than the original proposal, but delivered 33% more capacity.

Appendix 2: Transmission Investment Approval Process

Transmission investments follow a set process. Investment plans are developed by Transpower and are then assessed for approval by the Commission against prescribed criteria.

The Grid Vision

The 'Grid Vision' is Transpower's high level development strategy. Transpower refines this into specific investment objectives each year through its Annual Planning Report (APR). Once a proposal is in development, Transpower maintains close contact with the Commission to ensure that there is an early consensus on assumptions and on what factors should be taken into account. Note: Transpower is updating its Grid Vision through its Grid 2040 project.

The Grid Upgrade and Investment Review Policy (GUIRP)

The GUIRP was developed in 2007/08 by a joint Transpower/Commission working group to establish clarity about the approval process requirements and to expedite decision making. Transparency is important because the interconnected nature of the electricity system means that the actions of one party can have significant implications for other parties. Existing generators, for example, or those considering new generation, want to be informed of what is happening with grid proposals.

The GUIRP confirms Transpower as the grid planner and the Commission as the auditor and reviewer.

Approvals criteria

There are two central considerations in the development and review task, the Grid Reliability Standard and the Cost Benefit Analysis²².

The Cost Benefit Analysis is calculated on the dollar cost of the investment against a range of benefits such as reduction in fuel use due to more efficient generation, or reduction in line losses. Benefits vary according to the particular investment.

The Grid Reliability Standard sets the minimum standard for the supply of electricity to any part of the grid. Investments required to meet this standard are known as 'reliability' investments. Other investments are 'economic' investments, where the benefits must exceed the costs: these include investments to relieve transmission constraints which have the effect of reducing electricity generation costs.

²² Called the Grid Investment Test in the Rules

Timeframes

Timeframes for investment decisions are reducing as experience with the process builds. With each completed approval, the bank of common knowledge and of technical analytical work increases – making future proposals easier.

The Commission has taken 3 months, on average, for investments greater than \$20 million in value, and about 1.4 months for investments of less than \$20 million. These times run from when the Commission receives Transpower's final proposal to when the notice of intent is issued.

Final decisions take several weeks to several months depending on the complexity of the issues raised by interested parties in the input and consultation stages.

Appendix 3: List of possible/probable/committed new generation plant

These tables have been prepared using information available in the public domain and in-house knowledge; they do not use any material supplied by generators under confidentiality. All information presented is subject to uncertainty and will change as more data comes to light. The Commission updates these tables regularly and publishes them on its website.

The following tables are provided:

- Table 1 presents a high level summary of the current generation projects, sorted by status (under construction, consented, consented under appeal, applied for consent), owner, generation type, and region;
- Table 2 lists the details of projects which are currently under construction, or have received consent, or applied for consent, sorted by generation type;
- Table 3 shows the same list of projects, sorted by earliest possible commissioning date;
- Figure 1 plots the data presented in Tables 2 and 3.

Generation projects with capacity less than 5 MW are not shown.

It should be borne in mind that some types of new projects (particularly thermal peakers) can be consented and constructed relatively rapidly. The projects listed in this document, therefore, should not be seen as an exhaustive list of all generation that could be constructed in the next few years.

The data presented in italics in Tables 2 and 3 are speculative as no data was available at the time of this update.

Status

Under construction	367
Consented	1570
Consent under appeal	1267
Applied for consent	2430

Owners

Contact Energy	1583
Meridian Energy	1305
TrustPower	565
Genesis	498
Mighty River Power	492
Others	1191

Generation types

Geothermal	502
Hydro	494
Wind	3524
Diesel	23
Marine	2
Gas	1089

Regions

Northland	16	Marlborough	73
Auckland	898	West Coast	131
Waikato	1217	Canterbury	64
Bay of Plenty	45	Waitaki	240
Hawkes Bay	552	Otago	863
Taranaki	354	Southland	240
Manawatu	726	Fiordland	0
Wellington	215	Tiwai	0

Table 1 Summary of potential projects which have begun the consenting process: capacities in MW

	Region	Location / Name of Project	Owned by	Capacity (MW)	Earliest commission date	Status
Diesel	Canterbury	Bromley, Belfast	Orion	23	2010	Consented
Gas	Taranaki	McKee - cogeneration	Todd Energy	9	2008	Under construction
	Taranaki	Stratford	Contact Energy	200	2010	Consented
	Auckland	Otahuhu C	Contact Energy	400	2012	Consented
	Auckland	Rodney	Genesis	480	2013	Applied for consent
Geothermal	Bay of Plenty	KA24 Kawerau	Geothermal developments	10	2008	Under construction
	Waikato	Poihipi	Contact Energy	20	2008	Consented
	Northland	Ngawha	Top Energy	15	2009	Under construction
	Waikato	Centennial Drive - Tauhara	Contact Energy	20	2010	Under construction
	Waikato	Nga Awa Purua	Mighty River Power	132	2010	Under construction
	Waikato	Te Mihi	Contact Energy	220	2011	Consented
	Bay of Plenty	Rotoma	Rotoma No. 1 Corporation	35	2015	Applied for consent
	Waikato	Poihipi - Tukairangi Rds	Geotherm	60	2015	Consented
Hydro	Otago	Deep Stream	TrustPower	6	2008	Under construction
	Otago	Benmore refurbishment	Meridian Energy	11	2009	Under construction
	Waikato	Waipa	Hydro Energy Ltd	7	2010	Under construction
	West Coast	Arnold (Dobson)	TrustPower	46	2011	Applied for consent
	Marlborough	Wairau	TrustPower	73	2012	Consented
	Otago	Hawea Control Gate Retrofit	Contact Energy	16	2012	Consented
	West Coast	Mokihinui	Meridian Energy	80-100	2013	Applied for consent
	Taranaki	Mokau	King Country Energy	10	2015	Applied for consent
	Waitaki	North Bank Tunnel	Meridian Energy	200-280	2015	Applied for consent
	West Coast	Matiri	New Zealand Energy Ltd	5	2015	Applied for consent
Marine	Wellington	Cook Strait Marine Energy pilot	Neptune Power	1 (pilot)	2009	Consented
	Northland	Kaipara Harbour pilot	Crest Energy	1 (pilot)	2011	Consent under appeal
Wind	Manawatu	Te Rere Hau Stage 2	NZ Windfarms	14	2009	Under construction
	Wellington	West Wind	Meridian Energy	143	2009	Under construction
	Hawkes Bay	Te Waka	Unison/Roaring 40s	102	2010	Consent under appeal
	Hawkes Bay	Titiokura	Unison/Roaring 40s	48	2010	Consented
	Hawkes Bay	Te Pohue wind farm	Hawkes Bay Wind Farm Ltd	225	2011	Consented
	Otago	Project Hayes	Meridian Energy	630	2011	Consent under appeal
	Otago	Mahinerangi	TrustPower	200	2011	Consented
	Waikato	Hauāuru mā raki	Contact Energy	540	2012	Applied for consent
	Hawkes Bay	Waitahora (Puketoi)	Contact Energy	177	2013	Applied for consent
	Auckland	Awhitu	Genesis	18	2015	Consented
	Canterbury	Mt Cass	MainPower	41	2015	Applied for consent
	Manawatu	Te Rere Hau Stage 3	NZ Windfarms	17	2015	Consented
	Manawatu	Te Rere Hau Stage 4	NZ Windfarms	15	2015	Consented
	Manawatu	Motorimu	Allco Wind Energy	110	2010	Consent under appeal
	Manawatu	Central Wind (Moawhango)	Meridian Energy	130	2015	Applied for consent
	Manawatu	Turitea	Mighty River Power	360	2015	Applied for consent
	Manawatu	Pori	Allco Wind Energy	80	2011	Applied for consent
	Southland	Kaiwera Downs	TrustPower	240	2015	Consent under appeal
	Taranaki	Waverley	Allco Wind Energy	135	2011	Applied for consent
	Waikato	Taharoa	Taharoa C / PowerCoast	100	2015	Consent under appeal
	Waikato	Taumataorara	Ventus	44	2015	Consented
	Waikato	Te Uku	WEL Network	84	2015	Consent under appeal
	Wellington	Mill Creek	Meridian Energy	71	2015	Applied for consent

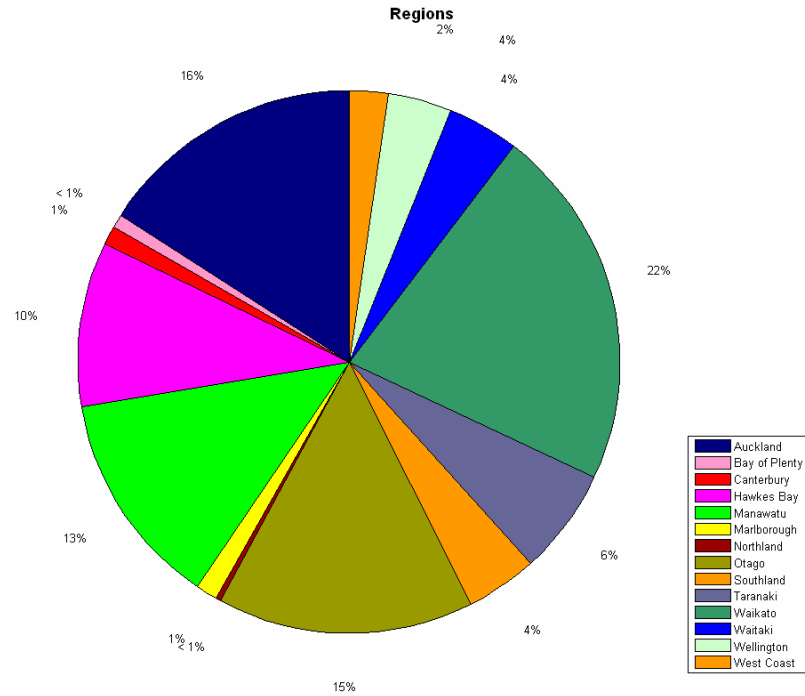
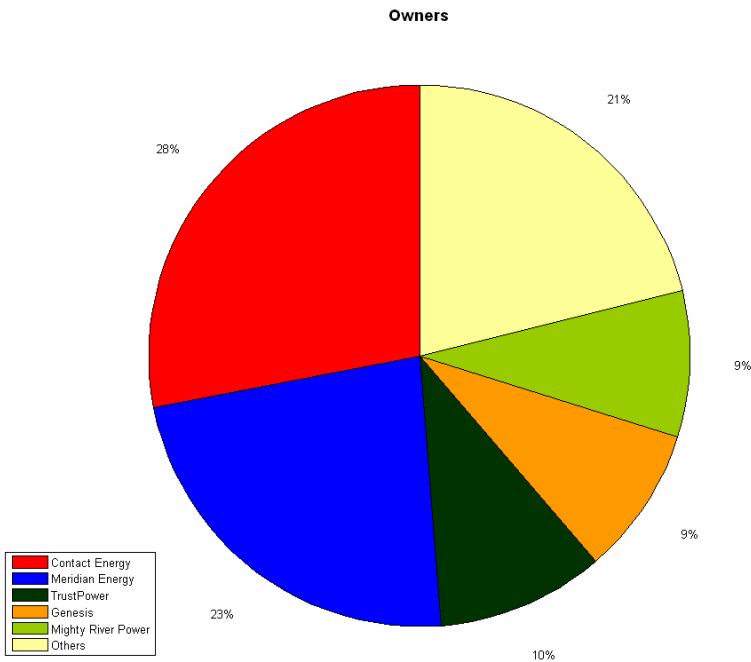
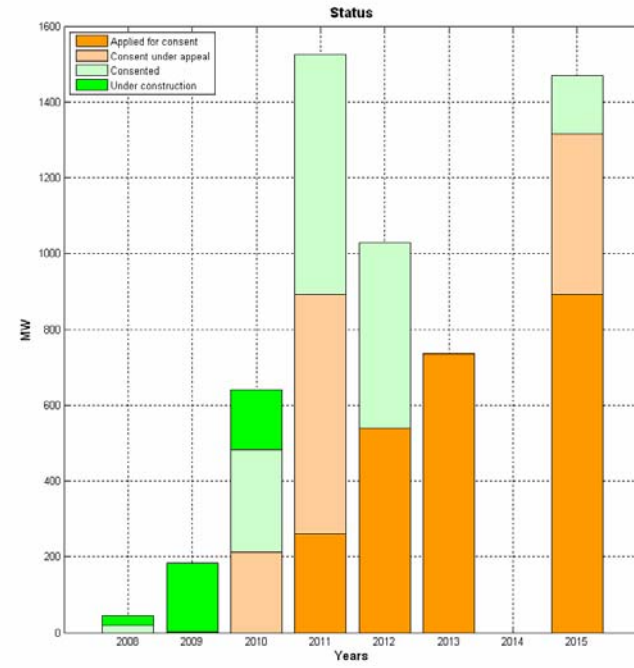
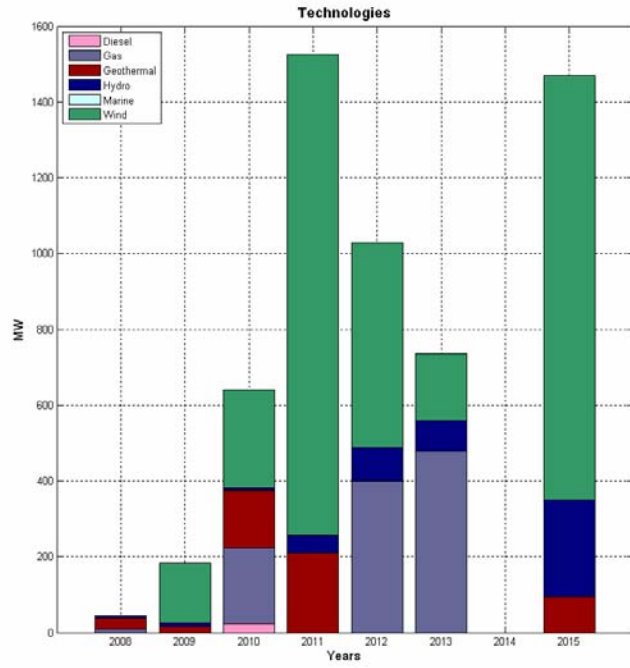
Total	5634
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Table 2. Projects which are currently under construction, have received consent or have applied for consent – sorted by generation type

	Region	Location / Name of Project	Owned by	Capacity (MW)	Earliest commission date	Status
Gas	Taranaki	McKee - cogeneration	Todd Energy	9	2008	Under construction
Geothermal	Bay of Plenty	KA24 Kawerau	Geothermal developments	10	2008	Under construction
	Waikato	Poihipi	Contact Energy	20	2008	Consented
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Geothermal	Waikato	Centennial Drive - Tauhara	Contact Energy	20	2010	Under construction
	Waikato	Nga Awa Purua	Mighty River Power	132	2010	Under construction
Hydro	Waikato	Waipa	Hydro Energy Ltd	7	2010	Under construction
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	Southland	Kaiwera Downs	TrustPower	240	2015	Consent under appeal
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	Waikato	Taumatatorara	Ventus	44	2015	Consented
	Waikato	Te Uku	WEL Network	84	2015	Consent under appeal
	Wellington	Mill Creek	Meridian Energy	71	2015	Applied for consent

Total	5634
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Table 3. Projects which are currently under construction, have received consent or have applied for consent – sorted by earliest date



Appendix 4: Commissioner and General Manager profiles

Hon David Caygill (appointed 8 October 2007 for a three year term) is a former Cabinet Minister and Member of Parliament (MP). He graduated B.A., LL.B (Hons) from the University of Canterbury. He served three terms on the Christchurch City Council and as an MP for 18 years. During the Lange and Palmer governments he was Minister of Trade and Industry (1984-88), Minister of Health (1987-88), and Minister of Finance (1989-90). Following his retirement from politics he returned to his former profession as a lawyer, becoming a partner in Buddle Findlay, specialising in public law. In December 2003, David was appointed Deputy Chair of the Commerce Commission.

His governance experience includes chairing the Grid Security Committee, the Electricity Governance Establishment Group, and the ACC. In 2000 he chaired the Ministerial Inquiry into the Electricity Industry. He also chairs the Education New Zealand Trust and the Advisory Committee on Official Statistics. As Chair of the Electricity Commission, David has also been appointed as an Associate Member of the Commerce Commission, and a Board Member of the Energy Efficiency and Conservation Authority. David lives in Christchurch.

Richard Bentley (appointed 10 November 2007 for a three year term) CNZM is a Wellington-based company director and management consultant. Previous positions include management roles in Fletcher Challenge, and for 12 years to 2001 he was CEO of the Natural Gas Corporation. He has served on a number of boards including the Natural Gas Corporation to 2005, and as Chairman of listed farmer-owned Wool Equities Limited, CRI Crop and Food research, sheep and beef genetics company Rissington Breedline Limited and the Carter Observatory. He is currently Chairman of the Karori Sanctuary Trust, and Senior Advisor, Strategic Management Services with Opus International Limited. Richard is a professionally qualified civil engineer and has a Masters degree in Economics. He is a Distinguished Fellow of the NZ Institution of Professional Engineers, and a Fellow of the Institute of Directors. Richard lives in Wellington.

David Bull (appointed 10 November 2007 for a three year term) has 21 years experience as a power system engineer with ECNZ and its predecessor organisation. He was a Wellington City Councillor or Regional Councillor for 15 years, followed by five years as General Manager Local Government and Community in the Department of Internal Affairs. David's governance experience includes chairing numerous city and regional council committees, and as a member of Wellington Polytechnic Council, Wellington International Airport Limited Board, and the NZ Fire Service Commission. David lives in Martinborough.

Peter Harris BCom(Hons) (appointed 10 November 2006 for a three year term) is an economist and has an extensive background in research, analysis, and advocacy. He is a former academic and trade-union economist and has been a member of several government advisory boards. He was a director of PSIS Ltd, chair of the Savings Product Working Group (that designed the architecture for what became the Kiwisaver scheme) and a former economic adviser to the Finance Minister, the Hon. Dr Michael Cullen.

Peter was an inaugural member of the Electricity Commission. He has chaired its Security Advisory Group, its Audit and Risk Management Committee, and its Electricity Governance Rules Committee. He acted as Chair of the Commission for just over a year between the end of the tenure of the previous Chair and the appointment of David Caygill as his replacement. Peter lives in Wellington.

Linda Constable (appointed 10 November 2007 for a three year term) is a professional director. She was Chair of the electricity lines company Orion for seven years until retiring from the Board in 2006. Her current directorships are with KiwiRail, the Christchurch Arts Festival Trust, and Ngai Tahu Holdings Corporation (Director of the Holdings Company and Ngai Tahu Fisheries, Ngai Tahu Tourism, and Chair of Ngai Tahu Property). Linda lives in North Canterbury.

Hon. Stan Rodger (appointed 31 August 2006 for a three year term) is a former public servant, Member of Parliament, cabinet minister, and university administrator. He has been involved in public and private sector governance roles and participated in several administrative reviews. He is a former director and deputy chairman of the national grid company, Transpower. He is a director of New Zealand Post Limited. Stan lives in Dunedin.

Mervyn English (MBA dist) is the Commission's General Manager and senior executive. He has worked in multiple roles close to and within the electricity sector. He has been the Principal Advisor for shareholding Ministers in CCMAU, with the responsibility for the oversight of the Crown's energy related companies. Following a role as General Manager Corporate Affairs for TransAlta, a major electricity retailer, he took up a similar role in NGC who had multiple interests in the energy sector. He was involved in the governance of the sector under the self regulatory arrangements, being a member of the Grid Security Committee and the Transport Working Group, amongst other responsibilities. He has significant experience working close to government in senior official roles along with other commercial roles including experience in the agricultural sector.

Appendix 5: Commission work plan – tier one projects

The Commission's work plan is developed with a view to addressing existing and expected future issues. Most projects listed in the following table arise from the sector development factors discussed in section 7 of this briefing. Examples include:

- The intermittent generation rule changes and the offer and dispatch rule development task. These tasks are being carried out to address wind generation integration issues in order to enable wind generators to connect to the power system and participate in the electricity market in a manner which contributes to Commission objectives and outcomes;
- A number of the items in the Common Quality Development Plan aim to increase the number of providers of instantaneous reserves and frequency keeping reserves. This is needed because changes in the generation mix (more wind generation and a lesser proportion of highly flexible plant) have reduced the supply of these services (or are expected to in future) while the amount of them needed to maintain a secure system has increased. Increasing competition in supply of these services will create downward pressure on price, and ensure that sufficient services are available to maintain system security.

Project/Task Name	Programme	Description
Market Design Review (MDR) - wholesale	Wholesale – market design	Broad look at potential improvements to the design of the wholesale market
Market information and analysis	Wholesale – market design	Potential initiatives from MDR to improve market information and analysis
Demand side initiatives following from MDR	Wholesale – market design	Potential initiatives from MDR to improve levels of demand response
Offer and dispatch rule development	Wholesale	Continuation of a project to improve the offer and dispatch Rules to overcome operational restrictions and ensure fairness. Wind integration issues are a key part of this work, which will also address recommendations from the MDR.
Electricity hedge market development	Hedge market development	Continuation of a project to develop and implement effective and liquid hedge arrangements

Project/Task Name	Programme	Description
Transmission hedge market development	Hedge market development	Continuation of a project to develop and implement an effective mechanism that would allow participants to manage locational price risk via transmission hedges
Advanced metering policy implementation	Retail – load management	Implementation of rule changes, publication of technical standards, publication of guidelines as necessary to facilitate introduction of advanced meters
Review of Part D of the Rules	Retail	Fundamental review of rules and compliance arrangements relating to electricity metering. No significant changes have been made since 1994, and changes are needed due to technical advances in metering, updates in international metering standards, data ownership and security issues related to advanced meters, resolving metering equipment ownership issues, managing issues of interim certification in 2012 and 2015, etc
Market design review - retail	Retail – market design	Addressing issues arising from the MDR under Energy poverty, Competition and pricing in the retail market
Consumer complaints resolution scheme	Retail	Approval of a single, dual-fuel consumer complaints resolution scheme (working closely with the Gas Industry Company)
North Auckland and Northland grid upgrade proposal	Transmission	Assess proposed North Auckland and Northland grid upgrade proposal
Other grid upgrade proposals	Transmission	Assess grid upgrade proposals
Enabling renewables	Transmission	Part 2 of the project, which will focus on possible solutions. (Part 1 focussed on economics and location)
Commerce Act Review – possible implications for Commission – pre transfer work only	Transmission	Identifying possible implications of transfer of Commerce Commission work to the Commission for exercising what previously fell under part 4 of the Commerce Act
New connection process	Transmission	Investigate and consider options (if necessary) for regulating the process and requirements for new connections to the grid

Project/Task Name	Programme	Description
New investment contract	Transmission	Investigate and consider options (if necessary) for regulating the process and requirements for new investment contracts
Establish distribution pricing methodology	Transmission	Complete development of model distribution pricing methodologies, including implementing formal monitoring regime (rural and urban line charges) and, if necessary, developing regulations
Implement reserve energy review recommendations	Security of supply	Resource allocation for implementation of any recommendations from the review to be implemented
Correlation of intermittent generation	Security of supply	Stage 1: gain an understanding of the correlation, if any, between periods of low hydraulic inflows and wind
Thermal moratorium dispensation process	Security of supply	Complete development of thermal moratorium dispensation process
Load Control Policy	Load management	Complete development and documentation of the Commission's load control policy. The policy will set out the Commission's expectation of equipment ownership, minimum specification, access and use, control rights, and multiple system schemes on a common network
Guidelines or standards for domestic scale distributed generation		Investigate whether the provision of guidelines or standards for domestic scale distributed generation would reduce the compliance costs and improve safety of connection to local networks
Expand normal frequency band	Common quality – development programme	Review of normal frequency bands and immediately adjacent bands and corresponding approach to specifying frequency keeping procurement needs with a view to reducing overall costs
Multiple frequency keepers	Common quality – development programme	Develop a system to coordinate multiple frequency keepers along the lines of an automatic governor control system but tailored to NZ requirements
Optimise emergency management	Common quality – development programme	Review of emergency management, including under frequency and voltage management and the need for a standby reserves scheme to ensure least overall cost over time. Stage 2: develop proposals and rule changes

Project/Task Name	Programme	Description
Frequency keeper offer selection	Common quality – development programme	More efficient means of the System Operator selecting a service provider in each half hour
Intermittent generation rule changes	Common quality – wind	Project purpose is to allow anticipated wind generation to be successfully integrated into the electricity system over the next 5-10 years
Automatic Under Frequency Load Shedding (AUFLS) rule changes	Common Quality – AUFLS	Investigation and rule changes arising out of direct connect parties automatic under frequency load shedding exemptions and Commission exemption process
Generation scenario development	Modelling	Further development and improvement of the generation expansion model (GEM)
Improved tools for Grid Investment Test (GIT) analysis: Market simulation modelling: GEM, market simulation and dispatch	Modelling	Build capability to investigate market issues. Models released into public
Workstream support – transmission, security of supply	Modelling	General modelling support
Electricity Efficiency Programmes	Electricity efficiency	Ongoing development and management of programmes to deliver electricity savings at a cost less than the supply side alternatives
Compliance framework review	Market governance	‘Fit for purpose’ review of the market compliance framework

Appendix 6: Commission Advisory Groups

Transmission Advisory Group

The members of the Transmission Advisory Group are:

- Bill Heaps Chair (Strata)
- Bob Simpson (Transpower)
- Dick Whitelaw (New Zealand Steel)
- Michael Whaley (Powerco)
- Ralph Matthes (Major Electricity Users Group)
- Peter Calderwood (TrustPower)
- Tas Scott (Orion)
- Tim George (Transpower)
- Clive Bull (Vector)
- James Collinson-Smith (Contact Energy)
- Russell Longuet (Exergi Consulting)

Common Quality Advisory Group

The members of the Common Quality Advisory Group are:

- Toby Stevenson, Chair (Law and Economics Consulting Group)
- Tim Chatterton (Vector)
- Bryan Leyland (Consulting Engineer)
- Terrence Currie (T C Associates)
- Chris Ewers (Meridian Energy)
- Pauline Buckley (Mighty River Power)
- John Clarke (Transpower—System Operator)
- Nalin Pahalawaththa (Transpower—grid owner)

Retail Market Advisory Group

The members of the Retail Market Advisory Group are:

- David Russell, Chair (Independent)
- Keith Tempest (TrustPower)
- Rob Jamieson (Orion)
- Nigel Barbour (Powerco)
- Neil Barton (Federated Farmers)
- Peter Rutledge (Grey Power)
- Anne Herrington (Smart Power)
- Cory Franklin (Contact Energy)
- Raewyn Fox (New Zealand Federation of Family Budgeting Services)
- John Scott (Consultant)

Wholesale Market Advisory Group

The members of the Wholesale Market Advisory Group are:

- Bill Heaps, Chair (Strata)
- Grant Sullivan (Meridian Energy)
- Therese Thorn (TrustPower)
- Doug Goodwin (Transpower)
- John Scott (Consultant)
- Kit Wilson (King Country Energy)
- Rod Boyte (Smart Power)
- Bob Weir (Genesis Energy)

Hedge Market Development Steering Group

The members of the Hedge Market Steering Group are:

- Tony Baldwin, Chair (Independent)
- James Moulder (Mighty River Power)
- Mark Trigg (Contact Energy)
- Ralph Matthes (Major Electricity Users Group)
- Russell Longuet (Exergi Consulting)

Security Advisory Group

The members of the Security Advisory Group are:

- Richard Bentley, Chair (Electricity Commission)
- Duncan Head (Vector)
- Kevin Small (Transpower)
- Peter Kimber (Genesis Power)
- Peter MacIntyre (Contact Energy)
- Barbara Elliston (Elliston Power Consultants)
- Grant Smith (Meridian Energy)

File attachments

Attachment 1: Government Policy Statement on Electricity Governance, May 2008

Attachment 2: Commission's Statement of Intent 2008-11

Attachment 3: Commission Annual Report 2006-07

Attachment 4: Security of Supply Policy, October 2008

Attachment 5: Memorandum of Understanding between the Electricity Commission and the Commerce Commission

Attachment 6: Memorandum of Understanding between the Electricity Commission and EECA