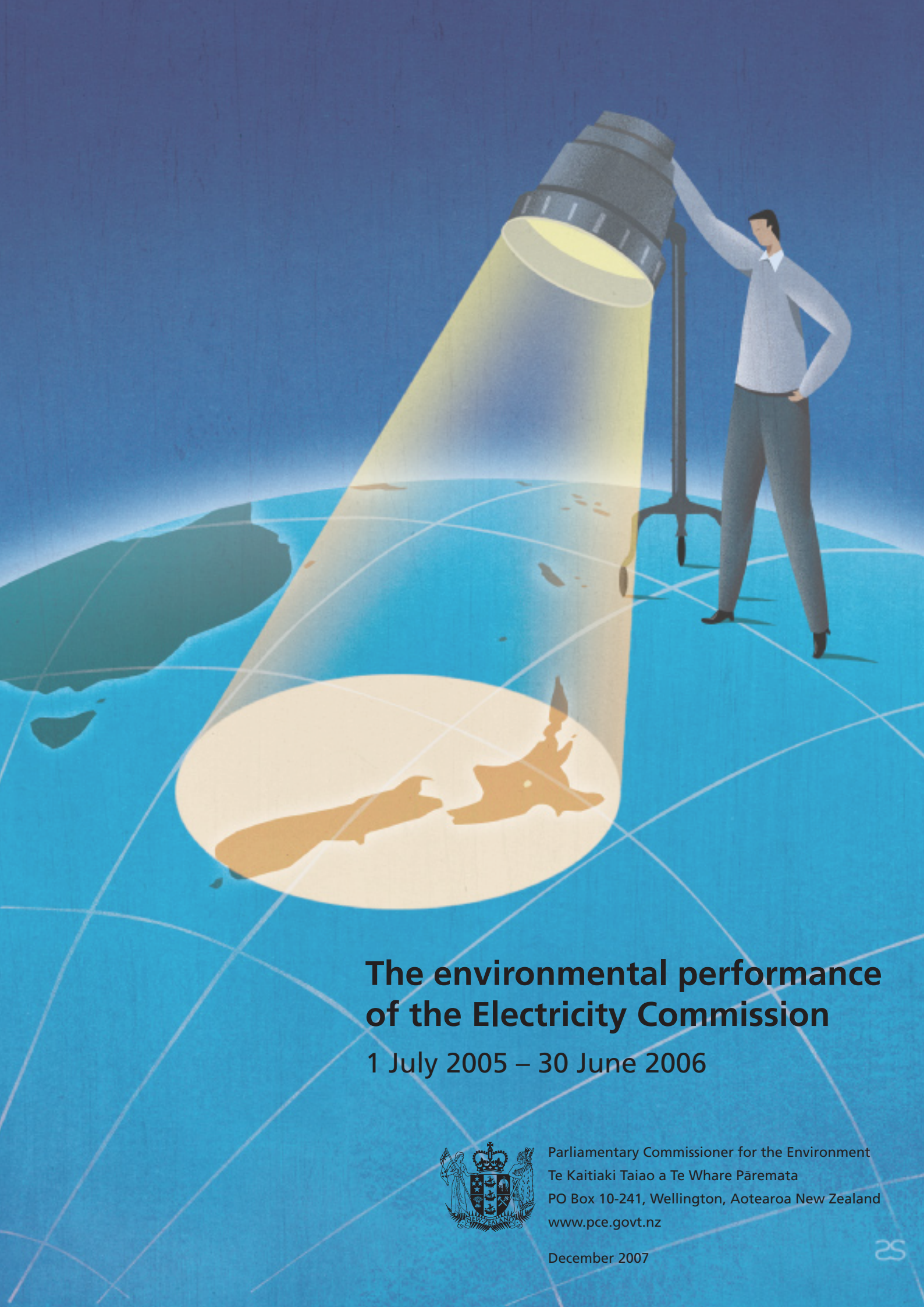

The environmental performance of the Electricity Commission

1 July 2005 – 30 June 2006

Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a Te Whare Pāremata
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Contents

Preface

This report is an assessment of how well the Electricity Commission is contributing to improved environmental management in New Zealand for the year July 2005 to June 2006.

The Electricity Commission has certain powers and its influence on the production and consumption of energy in New Zealand is necessarily limited. In thinking how the Commission might contribute to better environmental outcomes, it is important to consider what is within their direct control and what might be within their sphere of influence. With regard to the latter, with its thorough knowledge of the New Zealand electricity system, the Commission must play an important supportive and advisory role assisting the move toward increasing the efficiency with which electricity is produced, transmitted, distributed, and consumed, and the move toward greater use of renewable sources.

There are two recommendations concerning smart meters in this assessment. Smart meters can empower consumers to understand and control their electricity consumption. With such information, consumers can conserve electricity, invest in energy-efficient technologies, and switch to other forms of energy with much greater confidence. Time-of-use pricing will be needed to unlock the full potential of smart meters. The Commission is uniquely placed to ensure that the roll out and functionality of smart meters is optimal from a national perspective.

Many of the Electricity Commission's environmental programmes discussed here were initiated during this reporting period, and it was too early to assess their effectiveness. These work programmes have moved on substantially over the last 18 months and will be evaluated in the next assessment report.

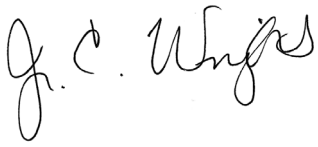
There are several fundamental issues that I expect will also be addressed in the next assessment.

In section 172N(1)(a) of the Electricity Act 1992, the Electricity Commissioner is to "ensure that electricity is produced and delivered to all classes of consumers in an efficient, fair, reliable, and environmentally sustainable manner". In his 2004–05 assessment, my predecessor, Dr Morgan Williams, recommended that the Commission complete its environmental sustainability framework and demonstrate how it will be incorporated into the Commission's operations and decision making. In future assessments, I will be inquiring into how the Commission explicitly addresses environmental issues.

The legislative requirement for this assessment requires the Electricity Commission's "environmental performance" to be assessed against the Government Policy Statement on Electricity Governance (GPS). In the GPS, the Commission is required to seek a range of outcomes. Some, such as "sustained downward pressure on costs and

prices" may sometimes work against the attainment of environmental outcomes; win-wins are not always possible. Consequently, it will be important to understand and assess how the Commission is making trade-offs.

The arguments for investing in technologies that will enable electricity to be used more efficiently are very strong. However, there is a long-standing thorny problem in retailers at the same time selling both more electricity and less electricity to their customers, the latter through selling products that increase the efficiency with which electricity is used. It may be valuable to look at ways in which this conflict is being resolved overseas, and how the Electricity Commission can assist with resolving it in New Zealand.



Dr Jan Wright
Parliamentary Commissioner for the Environment

1 Introduction

1.1 The roles and organisational structure of the Electricity Commission

The Electricity Commission (EC) was established in 2003 as a Crown entity to oversee New Zealand's electricity industry and market. Its primary function is the development and operation of the rules and regulations of the electricity market. Unlike electricity regulators in some other countries, it does not have statutory independence from the government and it cannot set electricity prices. Many of its decisions require approval from the Minister of Energy.

The Minister of Energy sets the objectives and outcomes for the EC through the Government Policy Statement on Electricity Governance (GPS). The Minister has the power to change the GPS, and did so in October 2006.

The EC can recommend (to the Minister of Energy) and subsequently administer electricity governance rules for the wholesale and retail markets, and for transmission services.

The EC has multiple roles, including:

- policy advice
- regulation
- enforcement
- arbitration
- market administrator
- managing contracts for the provision of services to allow market operation
- managing contracts for the provision of reserve energy
- overseeing transmission investment, transmission pricing methodology, and grid reliability standards.

The EC is governed by a Board, appointed by the Minister of Energy, comprising four to eight commissioners, including an executive chair. Board members are appointed for a term not exceeding three years and may be reappointed.

The EC is funded from a levy on the electricity industry. A team of managers runs day-to-day operations, and a Rulings Panel is responsible for dispute resolution and handling complaints.

A number of advisory groups provide advice and expertise to the EC's workstreams. These advisory groups are predominantly populated by established industry players.

There is more information on the EC at www.electricitycommission.govt.nz.

1.2 Purpose of the assessment

This assessment fulfils the Parliamentary Commissioner for the Environment's (PCE) functions under the Electricity Act 1992.

Section 172ZP of the Electricity Act requires the PCE to "examine the extent to which the [Electricity] Commission is meeting the Government Policy Statement objectives and outcomes concerning the environment".

This assessment covers the period 1 July 2005 to 30 June 2006 and is based on the then operative version of the Government Policy Statement (GPS).[1] The GPS was subsequently amended in October 2006.[2]

1.3 The Electricity Commission's statutory responsibilities under the Electricity Act

The Electricity Act (1992) and the GPS set out the following *principal objectives* for the EC:

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

Consistent with the principal objectives, the Act requires the EC to seek the following *specific outcomes* in the GPS:

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 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.

1.4 Approach to the assessment

This report is structured around the EC's workstreams as they are set out in its 2005–08 Statement of Intent and 2006 Annual Report.[3] Information for the assessment is primarily based on these documents and from material published on the EC's web site.

The EC's workstreams are:

1. Electricity efficiency
2. Security of supply
3. Modelling
4. Wholesale market
5. Retail market
6. Common quality and system operation
7. Market governance
8. Transmission.

In this assessment the progress reported by the EC in its Annual Report is set out against the activities in each of its workstreams in its Statement of Intent. Then the extent to which these activities are delivering on the environmental objectives and outcomes in the GPS is considered.

Many of the objectives and outcomes contained in the GPS that relate to environmental outcomes are defined at a high level and measuring performance is difficult. Therefore, the following questions are addressed in this assessment:

- Is the EC undertaking programmes of work that will enable it to deliver on its environmental obligations in the GPS?
- Where the EC reports on its environmental objectives and outcomes, does it do so in a clear and informative manner?

Many of the Electricity Commission's environmental programmes discussed here were initiated during this reporting period: July 2005 - June 2006. These work programmes have moved on substantially over the last 18 months and will be evaluated in the next assessment report.

Although it is not part of this assessment, the GPS itself does contain internal inconsistencies that may be impeding the EC's ability to deliver on the environmental objectives and outcomes. An example of this might be reconciling the environmental outcomes (e.g. minimising hydro spill) and the economic requirements "[that] delivered electricity costs and prices are subject to sustained downward pressure". The spot market is designed to deliver lowest wholesale price on the entire tranche of demand at any point in time, but this can conflict with best environmental outcomes.

2 Workstream One: Electricity efficiency

In the GPS, the EC is required to seek the following outcomes:

a) Energy and other resources are used efficiently

d) Incentives for investment in … energy efficiency … are maintained or enhanced

g) The electricity sector contributes to the government's climate change objectives.

Using electricity more efficiently reduces both the need for additional generation and the associated environmental impacts.[4] Overseas comparisons have identified slow progress in improving energy efficiency in New Zealand.[5]

2.1 Electricity efficiency pilot programmes

The EC has initiated a series of pilot studies in which it is testing strategies to deliver electricity efficiency gains. It is too early to tell how effective these programmes will be in achieving this potential, but it is important that the EC clearly reports the criteria it will use to assess their effectiveness.

Given the time line of these projects, this will be considered in the next assessment.

2.2 Electricity efficiency potentials study

The aim of the EC's electricity efficiency potentials study is to assess the efficiency gains across all sectors of the economy, including reductions at peak times and overall consumption, by region, by sector, and by end use technology. This is the first time such an ambitious study on this scale has been carried out in New Zealand.

It is essential that this potential is clearly quantified so that it will be possible to compare the costs and benefits of supply-side investment in the sector versus demand-side investments.

This study of the technical, economic, and market potential for electricity efficiency in the New Zealand economy will enable the EC to clearly set out its long-term strategy and objectives for electricity efficiency. This in turn will enable the EC to make an informed review of progress.

Given the time line of the study, this will be considered in the next assessment.

2.3 Memorandum of Understanding between the Electricity Commission and EECA

The completion of the Memorandum of Understanding (MoU) with the Energy Efficiency and Conservation Authority (EECA) satisfies a requirement of the GPS. It is important for the EC to provide evidence that the MoU is effective, and that specific work programmes have clear lines of accountability.

2.4 Disclosure of hydro spill

The EC must aim to ensure that the electricity sector contributes to the government's climate change objectives by minimising "unnecessary hydro spill". Disclosure of information on hydro spill is expected to help avoid unnecessary waste of resources. Hydro generators are expected to report spill information to the EC, including the reasons for spill events.

Table 1 Hydro spill categories

Category		Comment
1.	Plant	Hydro spill was due to a plant malfunction including plant owned by a third party, or from plant testing, or from planned or unplanned outages.
2.	Obstruction	Hydro spill was due to physical obstructions preventing normal operation of generating plant. Such obstructions include weed, logs, silt, public, etc.
3.	High flow	Hydro spill was due to high inflow events. This code applies when the flows exceed the ability of the generation scheme to generate at that level. This code applies only when the operator has no discretion over avoiding the release.
4.	Regulatory	Hydro spill was due to regulatory obligations. It includes statutes, resource consents, use permits, bylaws, etc. This code applies only when the operator has no discretion over avoiding the release.
5.	Contractual	Hydro spill was due to contractual obligations. This code applies only when the operator has no discretion over avoiding the release.
6.	Recreational	Hydro spill was for recreational use. That is where recreational, social or cultural interests have negotiated hydraulic profiles, and hydro release has occurred as a result.
7.	Cost	Hydro spill was due to the cost of generation exceeding the spot price.
8.	Economic	Hydro spill was for other commercial reasons such as price support in the market.
9.	Transmission constraint	Hydro spill was due to transmission or distribution constraints.
10.	Hydraulic constraint	Hydro spill was due to capacity differences within some hydraulically coupled schemes, requiring additional water bypass to maintain output.
11.	Other	Hydro spill was due to any other reason. When this code is used, an appropriate description and explanation must also be included.

NB Different generators describe these categories slightly differently, but the above short definitions are consistent with those in use by the companies.

Each of the hydro generators publishes their hydro spill information under a voluntary reporting regime. The EC has collated and assessed hydro spill data.[6]

Defining the term "unnecessary hydro spill" is a challenge. The companies report hydro spills under 11 categories, of which 8 are arguably beyond the control of the generator (see Table 1).

Of the remaining three categories, two are largely due to the operation of the spot market ('cost' and 'economic'), and the third is 'other'. Hence it seems logical to conclude that the definition of "unnecessary" hinges around these three remaining categories, as well as the spot market system that operates for electricity generators. Clearly a tension exists between the economic and environmental requirements on the EC both within the Act and internally in the GPS.

Recommendation

That the Electricity Commission quantifies the hydro spill from the 'cost', 'economic', and 'other' hydro spill categories, to establish a basis for considering whether the potential loss from "unnecessary hydro spill" is significant.

3 Workstream Two: Security of supply

Under the GPS, the EC must seek to ensure that risks (including price risks) relating to security of supply are properly and efficiently managed.

The EC is responsible for contracting for reserve generation to ensure adequate security of supply. Currently, the main source of reserve electricity is the Whirinaki diesel power station in Hawke's Bay. The EC is also responsible for publishing information on security of supply to help market participants and to oversee risks. Security of supply is evaluated up to three years in advance.

The EC must also consider contracted demand response. This is an arrangement whereby an end user commits to shift or shed part of their electricity load under an agreed set of circumstances. For example, the owners of an industrial plant might agree to shut down some production if there is a shortage of supply, or arrangements are made to provide local distributed generation as an alternative to grid-supplied generation.

For issues relevant to security of supply, the GPS indicates that, from an environmental perspective, the EC is obliged to:

- ensure energy efficiency contributes to meeting ongoing demand growth, i.e., it is not just met by supply-side investments.
- ensure that contracted demand response should form part of its portfolio of reserve energy, provided this is practicable, and that it is confident the reduction in demand is additional to normal demand-side responses to higher prices.

- minimise the impact of reserve energy on the market. Reserve energy is inefficient, expensive, and produces high carbon dioxide (CO_2) emissions per MWh. It is therefore important that it is not used unnecessarily, and that it does not reduce incentives to invest in cost-effective energy efficiency instead.
- ensure, if appropriate, that contingency plans are in place for use of ripple control in extreme shortages.

3.1 Operation of Whirinaki reserve power station

The diesel-fired Whirinaki reserve power station is relatively inefficient and thus the electricity it generates is CO_2 intensive. To minimise its environmental impacts, reserve energy must be effectively ring-fenced from the electricity market to prevent the power station from being used, except in times of power shortage.

Currently a combination of the 'minimum hydro zone' and the price trigger of 0.20 NZ$ kWh^{-1} are used to ring-fence Whirinaki. The price trigger is intended to ensure that Whirinaki is 'clear' of the market except in times of significant outages or plant breakdowns.

Given that generation from Whirinaki power station is expensive both in monetary and environmental terms, there is very little incentive for use except in emergencies.

3.2 Ripple control

This area is dealt with by the EC under their retail workstream. Accordingly, although it is a method for increasing security of supply, this report deals with it under the retail workstream.

3.3 Review of reserve energy policy

The EC's review of reserve energy policy should consider the effectiveness of the ring-fencing and the extent to which Whirinaki's operation affects energy efficiency objectives and demand-side participation.

The published information on the minimum hydro zone provides clarity on when Whirinaki operates and what triggers it. The EC appears to be meeting its basic reporting requirements on reserve energy.

In the longer term, there will be a transition from the current high supply security and low energy costs scenario to a future with higher energy costs and less security.[7] This is just one reason why methods of regulation and/or incentivisation of demand-side energy efficiency measures are now important.

3.4 Contracted demand response

Contracted demand response to provide additional security of supply is a requirement set out in clauses 47 and 54 of the GPS, with the provisos that it is additional to

normal demand-side responses to higher prices, and that it is isolated from any demand reduction from emergency conservation campaigns.

The EC reports that Whirinaki has so far provided sufficient back up for security of supply, so no demand response has been contracted. In addition, the EC is still considering the potential role of contracted demand response as a means of contributing to security of supply.[8]

If the use of contracted demand response could further reduce the use of Whirinaki then it becomes incumbent on the EC to pursue this. Since the EC has the power to directly contract for reserve power generation, it also may be able to enter into demand response agreements.

4 Workstream Three: Modelling

The EC compiles forecasts of load growth and new generation scenarios. The GPS states that:

> ***The objective is to provide well-researched information on short and long term security of supply, including likely availability of fuels, new generation options, and likely price trends under different scenarios.***

From an environmental perspective, it is important that this modelling is based on a wide range of scenarios that take full account of the potential of demand-side management to smooth peaks, and of end-use efficiency investments to reduce demand.

Although the EC's modelling does not direct future investment, it is important that all possible solutions (supply- and demand-side) are included in the modelling exercises. Predictions of future CO_2 emissions under various scenarios should also be made, even though it is not an explicit requirement of the GPS.

The results of the modelling workstream will be considered in the next assessment.

5 Workstream Four: Wholesale market

Among the EC's main responsibilities in the wholesale market workstream are:

- ensuring that there are low entry barriers
- establishing a clear price signal
- accurately forecasting prices for different demand situations.

Low entry barriers to demand-side participation in the wholesale markets are particularly important for delivering environmental benefits. For example, the selling back of excess electricity by a co-generator should be encouraged.

Most of the activities outlined under this workstream are in their early stages so they will be considered in the next assessment.

6 Workstream Five: Retail market

The GPS states that the EC must promote and facilitate retail competition, and must work closely with the Commerce Commission to manage their respective roles.

Retailers are expected to diversify beyond selling electricity as a commodity and begin to offer additional energy services to customers. These services potentially include time-of-use pricing, energy efficiency technologies (such as insulation upgrades and efficient appliances), and contracts where consumers agree to reduce their electricity demand on request in return for lower tariffs or rebates.

From an environmental perspective, the retail market is pivotal in:

- promoting and facilitating the efficient use of energy and electricity
- maintaining or enhancing incentives for investment in energy and electricity efficiency and demand-side management.

Two key elements in achieving these objectives are:

- that retail prices and tariffs should encourage consumers to use energy more efficiently
- that there should be a widespread roll out of smart meters that support time-of-use pricing.

Both of these elements provide important information for consumers to make more informed energy choices. Clear price signals can incentivise load shifting and shedding.

In general, price signals should reflect the real cost of supplying electricity at any particular time (e.g. summer versus winter or night versus day). Potential also exists to develop tariff structures based on consumption that would incentivise more efficient use of energy, although current tariff differentials are not sufficient to persuade consumers to take them up.[9] The establishment of a carbon market should assist, provided the carbon component of electricity prices is not 'averaged out'.

6.1 Retail tariffs

Recent evidence suggests that the range of electricity tariffs offered by retailers has decreased. The apparent lack of competition in the electricity retail market remains an ongoing concern.[10] It raises questions about current electricity market structures, and the extent to which they may be discouraging the uptake of energy efficiency and other demand-side measures.

However, in the absence of any detailed analysis by either the Ministry of Economic Development (MED) or the EC, there is no way to quantify how the decrease in the range of tariffs on offer has occurred and the effect of this on customer choice and electricity consumption.

As the EC already collects and reports on the uptake of the low-user fixed-charge tariff option, there is further scope for the wider collection and monitoring of available retail tariffs and to build on the work the EC has already commissioned.

Small- and medium-sized customers have limited opportunity to access tariff options that more accurately signal the cost of electricity and provide incentives to use energy more efficiently.

While recognising that the EC does not set prices, retail tariffs are of interest to it because of its role in incentivising the efficient use of energy.

Recommendation

That the Electricity Commission establishes a publicly accessible database that records the tariff classes provided by each retailer, their pricing characteristics (e.g. fixed or variable, price differentials), and the degree to which they are being used in the market, to provide a basis for assessing the degree to which tariffs incentivise efficient use of electricity and offer consumer choice.

6.2 Smart meters

During this assessment period there was significant activity in the sector with respect to smart meters. The most notable were the announcement by Arc Innovations (a Meridian Energy subsidiary) that it planned a widespread roll out of smart meters in the Christchurch area, and a Genesis Energy initiative to provide some customers with smart meters.[11]

These initiatives are pleasing, but these potential risks need addressing:

- variable technical standards could lead to administrative difficulties and patchy national coverage
- smart meters may be developed that give benefits to retailers, but do not allow for time-of-use pricing
- unless electricity retailers allow the easy and cheap transfer of the meter ownership when a customer changes suppliers, then the cost of replacing a meter will act as a barrier to retail competition, i.e., retail company ownership of the smart meters may in itself be problematic to the operation of a free market.

Early development of a set of national mandatory standards for smart meters could reduce future problems. The EC's load management and metering project is expected to address these issues in the next assessment period. It is also vital that the EC integrates this work with an assessment of retail tariffs.

In the UK, the government and electricity industry are co-funding a two-year trial of smart meters that display real time energy use in several thousand households.

Subject to the trial results, the government intends working with energy companies to roll out smart meters to all UK households over the next decade. From May 2008 any new meters fitted will have a real time electricity display, and between 2008–2010 real time displays will be free to any household that requests one. Smart meter suppliers and manufacturers are also examining the scope for commercial arrangements to share communications systems and data between companies.[12] Information from this and other international examples should be used to address the New Zealand issues highlighted above.

Recommendations

- That the Electricity Commission develops a set of minimum performance criteria for smart meters, which include real-time display information for retail customers.
- That the Electricity Commission works with the electricity industry to develop a plan for the roll out of smart meters to all consumers in New Zealand.

6.3 Ripple control

Ripple control is a useful way of reducing electricity demand during peak periods, and it has a relatively minor impact on the consumer.

Clause 31 of the GPS requires the EC to promote the efficient use of ripple control. Clause 73 also requires the EC to examine if the use of ripple control is an appropriate part of a conservation campaign during security of supply situations, with the caveat that using ripple control for this purpose should not preclude its use for other purposes.

The EC considered the use of ripple control under Clause 73 requirements in a 2005 report and drew the following conclusions:

> *That extended water heating cuts are likely to produce less than 2% national electricity savings, and probably much less than this… To achieve even this level of national savings, water heating cuts would need to be very extended, of the order of 16 to 18 hours per day nationwide, and the effects would be uneven across society.*
>
> *That preference should be given to encouraging retailers and/or distribution line companies to implement water heating cuts as part of the normal market response to a developing security of supply situation, and to encourage voluntary savings in hot water use as part of any national energy savings campaign.*[13]

The efficient use of ripple control is now being considered as part of an EC work programme. This work should quantify its potential to reduce peak electricity use.[14]

6.4 Regulations for distributed generation

The EC has a responsibility to remove barriers to investment in new generation technologies, renewables, and distributed generation, where these have the potential to result in lower carbon emissions and improved system efficiency.[15]

The EC is also responsible for administering distributed generation regulations, but these have not yet been completed.[16]

There is a link between removing barriers to distributed generation and the EC's roles in transmission investments. New transmission investments can facilitate distributed generation or create more barriers. The EC should take these connections into account in both the retail and wholesale market workstreams.

It is vital that the regulations for distributed generation are completed soon to assist the EC in ensuring that barriers are removed.

6.5 Investment by lines companies in distributed generation

The Electricity Industry Reform Act 1998 limits the extent to which lines companies can invest in distributed generation. This was enacted on the grounds that if lines companies are involved in both generating and selling electricity to their customers this will give them unfair advantage over their competitors.

However, investment by line companies in generation could actually provide the least cost solution to ensuring network reliability.[17]

Recommendation

That the Electricity Commission works with the Commerce Commission to consider how lines companies can be involved in cost-effective demand-side or distributed generation options as alternatives to new investment in lines.

7 Workstream Six: Common quality and system operation

The EC is accountable for developing policies and standards that define appropriate levels of quality for power system services that are common to all grid-connected parties.

From an environmental perspective, it is important that the uptake of wind energy and other renewable energy sources (both remote and local generation) are not constrained by current market structures. The technical standards for integration of renewables into the grid also need examination.

The EC is currently engaged in work in this area, so this will be considered in the next assessment.

8 Workstream Seven: Market governance

The EC manages the electricity sector's compliance with the Electricity Governance Rules and Regulations.

It is not immediately obvious how ensuring competition and a functional free market leads to the best environmental outcomes.

The extent to which the Electricity Governance Rules and Regulations assist the delivery of environmental outcomes has not been analysed in this assessment.

9 Workstream Eight: Transmission

The EC's responsibilities for transmission under the GPS are:

- to develop a sound framework for transmission, pricing, contracting, and investment
- to improve incentives to use the grid more efficiently
- to promote pricing structures to manage losses and constraints (this also applies to distribution losses)
- to provide information on opportunities for investment in transmission and transmission alternatives through the regular publication of the Statement of Opportunities
- ongoing review and, if appropriate, approval of major new investments in the transmission system.

Transmission is a key component of the electricity system. It can influence patterns of investment in remote and distributed generation, and in electricity efficiency. Transmission losses could be a significant issue in the supply of electricity to remote areas where local generation may be a more efficient and environmentally sustainable alternative.

The GPS requires the EC to assess the cost-effectiveness of proposed transmission investments, including the assessment of transmission alternatives. This assessment is known as the grid investment test (GIT).[18]

A key concern is whether the GIT takes sufficient account of environmental issues. This includes assessing the role of alternatives to transmission and their environmental impacts.

9.1 Grid investment test

The former Parliamentary Commissioner for the Environment has expressed concern that the GIT used to assess new transmission proposals may not adequately consider transmission alternatives with potentially better environmental outcomes.

The example of the June 2005 Transpower bid to upgrade the Auckland grid to 400kV, [19] and the subsequent events that saw the proposal called in under the RMA, demonstrates the issues around the various objectives set out in legislation and the GPS with regard to the GIT.

The EC has prepared a consultation paper on transmission alternatives to Transpower's proposal.[20] Of particular interest from an environmental perspective, is how transmission (and distribution) pricing influences demand management. Can transmission capacity investments displace distributed generation, energy efficiency, and conservation alternatives?

Several countries are apparently pursuing demand-side options to reduce transmission requirements. While mobilising the demand side may indeed be difficult, it is not impossible.[21]

Recommendation

That the Electricity Commission examines the grid investment test with respect to the environmental objectives set out in relevant legislation and the Government Policy Statement on Electricity Governance.

10 Summary of findings

A number of general observations have emerged from this assessment.

While the Electricity Commission has been able to show that it is progressing a number of activities relating to the GPS's objectives and outcomes, it is unclear how effective some of these activities have been. There are two main reasons for this.

First, many of the environmental programmes discussed here were initiated during this reporting period – July 2005 to June 2006 – and it was too early to assess their effectiveness. These work programmes have moved on substantially over the last 18 months and a full evaluation will be covered in the next assessment report.

Second, the electricity sector generally suffers from a lack of, or poor quality, data, especially on electricity consumption. Much of this is outside the EC's responsibility. A particular focus by the EC on demand side information would address, in part, the lack of data.

In respect of maintaining or enhancing incentives for investment in energy efficiency and demand-side management, more could be done to unlock the potential of smart meters and retail tariffs.

11 Recommendations

The PCE has six recommendations for the Electricity Commission.

Electricity efficiency

- That the Electricity Commission quantifies the hydro spill from the 'cost', 'economic', and 'other' hydro spill categories (as described in Section 2.4) , to establish a basis for considering whether the potential loss from "unnecessary hydro spill" is significant.

Retail market

- That the Electricity Commission establishes a publicly accessible database that records the tariff classes provided by each retailer, their pricing characteristics (e.g. fixed or variable, price differentials), and the degree to which they are being used in the market, to provide a basis for assessing the degree to which tariffs incentivise efficient use of electricity and offer consumer choice.
- That the Electricity Commission develops a set of minimum performance criteria for smart meters, which include real-time information for retail customers.
- That the Electricity Commission works with the electricity industry to develop a plan for the roll out of smart meters to all consumers in New Zealand.

Distributed generation

- That the Electricity Commission works with the Commerce Commission to consider how lines companies can be involved in cost-effective demand-side or distributed generation options as alternatives to new investment in lines.

Transmission

- That the Electricity Commission examines the grid investment test with respect to the environmental objectives set out in relevant legislation and the Government Policy Statement on Electricity Governance.

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