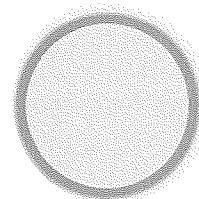


31 October 2008

The Chairperson  
Board of Inquiry  
P O Box 10362  
WELLINGTON 6143

**POWERCO**



Dear Sir/Madam

**Submission on Proposed National Policy Statement for Renewable Electricity Generation**

This submission contains Powerco's comments on the Proposed National Policy Statement for Renewable Generation (Proposed NPS), published for consultation on 6 September 2008 by the Board of Inquiry appointed by the Minister for the Environment.

**About Powerco**

Powerco is New Zealand's second largest gas and electricity distribution company. Our network areas spreads across the upper central and lower central North Island servicing over 400,000 consumers, which represents 46% of the gas connections and 16% of the electricity connections in New Zealand.

Powerco is pleased to make a submission on the Proposed NPS and welcomes the comprehensive section 32 evaluation which supports it. This consultation is of particular interest to Powerco for two reasons. Firstly, Powerco in general terms supports the vision and targets of the New Zealand Energy Strategy (NZES) and therefore has an interest in promoting renewable electricity generation. Secondly, moving to 90 per cent renewable generation has a range of impacts on our electricity network. Impacts include planning and designing network augmentation to allow for the intermittent nature of renewable generation and allowances for connecting the renewable resources from remote locations.

The focus of this submission is on those elements of the Proposed NPS which interface with, or impact on, the distribution of electricity.

**The role of distribution companies in delivering on the vision of the New Zealand Energy Strategy**

The Government's vision for the energy sector outlined in the NZES is for "a sustainable, low emissions energy system". The NZES sets a target of 90% of electricity being generated from renewable sources by 2025. This is an extremely challenging target and achieving it will require a high rate of investment in new renewable generation, reduced usage of existing fossil-fuelled plants,

decommissioning of older fossil-fuelled plants and slowing increases in demand through energy efficiency and demand-side management initiatives.

The new renewable electricity generation built to meet the NZES's target, will need to connect to either the transmission or local distribution networks to deliver electricity to consumers. Electricity generation and electricity distribution through transmission or distribution networks are interdependent. Promoting one, without the other, will not lead to the level of change in renewable electricity generation required. This interdependence is for example recognised in the work being undertaken by the Electricity Commission on the Transmission to Enable Renewables Project and in the National Policy Statement on Electricity Transmission<sup>1</sup> (Electricity Transmission NPS).

### **Gap in the regulatory framework**

An issue of ongoing concern for Powerco is that the regulatory framework does not overtly recognise and support the role of distribution networks and transmission assets provided by a party other than Transpower.

The Electricity Transmission NPS requires decision-makers under the Resource Management Act 1991 (RMA) to "*recognise and provide for the national, regional and local benefits of sustainable, secure and efficient electricity transmission*", and consider benefits of proposals including "*the facilitation of the use and development of new electricity generation, including renewable generation which assists in the management of the effects of climate change*".

The Electricity Transmission NPS only applies to the "*national grid*" which is defined in that NPS as "*assets used or owned by Transpower New Zealand Limited*". While the development of the Electricity Transmission NPS is a positive step, it does not address issues associated with connecting renewable generation to distribution networks or transmission assets owned by a party other than Transpower.

Powerco is an example of a company that owns, and is looking to build, distribution and transmission assets (through a subsidiary company) that connect renewable generation. Limiting regulatory support to assets owned by Transpower seems illogical and does not create a level playing field. The 90% renewable electricity generation target is ambitious and to be achievable all parties contributing to its delivery need recognition, and regulatory support where appropriate.

The current arrangements do not require RMA decision-makers to consider distribution assets and transmission assets owned by parties other than Transpower as assets of regional or national importance. This anomaly needs to be addressed.

Nevertheless, Powerco is working constructively with Regional Councils and Territorial Authorities to ensure appropriate recognition of distribution networks and transmission assets owned by parties other than Transpower in their planning documents.

Powerco submits that the Proposed NPS may provide a vehicle to address some of these concerns as detailed below.

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<sup>1</sup> Issued in the *Gazette* by the Minister for the Environment on 13 March 2008.

## **Objective**

Powerco supports the first part of the objective which reads:

*to recognise the national significance of renewable electricity generation by promoting the development, upgrading, maintenance and operation of new and existing renewable electricity generation activities*

We are not, however, convinced of the value or appropriateness of including the words “*such that 90 per cent of New Zealand’s electricity will be generated from renewable sources by 2025 (based on delivered electricity in an average hydrological year)*”. Our concern is that including the 90 per cent target in the Proposed NPS potentially blurs the boundaries between energy planning and resource management decision-making. We would not like to see the Environment Court put in the position of weighing up the precise contribution a particular renewable electricity generation proposal would make to the delivery of the 90 per cent target. This would require the Court to hear detailed evidence on the performance of the electricity system and potentially consider the impacts of the new generation on matters such as frequency keeping, the reserves market and security levels. These are matters which appropriately fall within the Electricity Commission’s jurisdiction and the operation of the electricity market.

## **Submission – Objective**

Powerco supports the Proposed Objective subject to the following amendment. For the reasons outlined above the following words should be deleted:

*such that 90 per cent of New Zealand’s electricity will be generated from renewable sources by 2025 (based on delivered electricity in an average hydrological year)*

## **Policy 1: Recognising the national significance of the benefits of renewable electricity generation activities**

Policy 1 makes the statement that “*The benefits of renewable electricity generation activities, at any scale, are of national significance*”. On first reading this seems anomalous in that some renewable generation is of such a small scale (for example photovoltaic cells for domestic use) that it is difficult to see how the benefits of such an installation could be of national significance. However, small-scale developments have the potential to make a significant cumulative contribution to reducing demand from other generation sources and reducing demand for network services.

In order to achieve the target of 90 per cent renewable electricity generation by 2025 all efforts large and small need to be recognised and encouraged. Powerco therefore supports the proposal to recognise the benefits of renewable electricity generation at any scale. To do otherwise would also create a regulatory framework which potentially favoured large-scale renewable electricity generation projects ahead of small-scale projects.

Policy 1 identifies two benefits of renewable electricity generation. The second of the two identified benefits is:

- ii maintaining or increasing security of electricity supply at local, regional and national levels by diversifying the type and/or location of electricity generation*

This statement is problematic in that it tells an incomplete story. Renewable electricity generation can maintain or increase security of electricity supply by diversifying the type and/or location of electricity generation, but because it is often intermittent, renewable electricity generation does not always bring increased security of electricity supply. The section 32 analysis acknowledges this as a potential cost with “*the need to provide more installed capacity than would be the case if New Zealand opted for thermal generation*”<sup>2</sup>.

### **Submission – Policy 1**

Powerco supports Policy 1 subject to the following amendment (amendment underlined). Policy 1(ii) be reworded to read:

*contributing to security of electricity supply at local, regional and national levels by diversifying the type and/or location of electricity generation.*

### **Policy 2: Acknowledging the practical constraints associated with development, upgrading, maintenance and operation of new and existing renewable electricity generation activities.**

Policy 2 requires local authorities to have particular regard to the constraints imposed by the nature and location of the renewable energy resource.

Powerco is pleased to see point *iv* provides for consideration of the location of **existing** infrastructure assets including the local distribution network, and the national grid. The Policy as drafted does not, however, recognise the potential difficulties associated with building **new** electricity distribution assets to connect new renewable electricity generation. Extensions to the national grid have the support of the Electricity Transmission NPS on but there is no equivalent support for new local distribution assets or new transmission built by a party other than Transpower. This is an unfortunate anomaly which Powerco would like to see addressed. One mechanism for doing this could be the inclusion of an additional matter for consent authorities to have particular regard in Policy 2, namely: “*the location of new electricity distribution assets*”

### **Submission – Policy 2**

Powerco supports Policy 2 subject with the addition of the following new clause:

- v. the location of new electricity distribution assets.*

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<sup>2</sup> See page xiii of the section 32 evaluation of costs and benefits.

**Policy 3: Having regard to the relative reversibility of adverse effects associated with particular generation types**

No comment.

**Policy 4: Enabling identification of renewable electricity generation possibilities**

No comment.

**Policy 5: Supporting small and community-scale renewable electricity generation**

Policy 5 requires local authorities to notify changes to “enable activities associated with the development and operation of small and community-scale distributed renewable generation” by 13 March 2012.

Developing distributed renewable generation is dependent on developing the distribution networks it connects to. The Proposed NPS does not overtly recognise this. The addition of the words “including the extension or upgrading of electricity distribution networks” would address this.

As an example of distributors working with local authorities to aid the development of small and community-scale renewable electricity generation, Powerco has been working with the Horizons Regional Council to define and enable micro-hydro generation. (More information on micro-hydro generation is provided in Attachment One).

**Submission – Policy 5**

Powerco supports Policy 5 subject to the following amendment. Policy 5 be amended to read (amendment underlined):

*By March 2012, local authorities are to notify in accordance with Schedule 1 of the Act, a plan change, proposed plan or variation to introduce objectives, policies and, where appropriate, methods, into policy statements and plans to enable activities associated with the development and operation of small and community-scale distributed renewable electricity generation including the extension or upgrading of electricity distribution networks.*

**Life after the restriction on fossil-fuelled thermal base load generation**

Both the restriction on base load fossil-fuelled thermal generation now in Part 6A of the Electricity Act 1992 (Restriction), and the Proposed NPS significantly advantage renewable generation, at the expense of fossil-fuelled generation.

The Proposed NPS will affect RMA planning documents (regional policy statements and district and regional plans) that may still be in place when the restriction is lifted. Powerco submits that it would be logical for the timeframe of the Proposed NPS to be consistent with the timeframe of the Restriction and recommends a review date to be put in place for the Proposed NPS to coincide with the Restriction.

If you have any questions with regard to this submission please contact the undersigned at (06) 759 6562 or [karen.frew@powerco.co.nz](mailto:karen.frew@powerco.co.nz).

Yours faithfully



PP Karen Frew  
TECHNICAL REGULATION MANAGER

## Attachment One

### Powerco's Submission to Horizons Regional Council in relation to its "One Plan" around Micro-Hydro Generation

*What is micro-hydro generation?*

A hydropower system captures the energy of flowing water and converts it to usable energy. Hydro generation is very scaleable but the fundamentals of any hydro system remain the same. Hydropower systems use the energy in flowing water to convert mechanical energy into electricity. The water flows via channel or penstock to a waterwheel or turbine where it strikes the bucket of the wheel, causing the shaft of the waterwheel or turbine to rotate. When generating electricity, the rotating shaft, which is connected to an alternator or generator, converts the motion of the shaft into electrical energy. The electrical energy may be used directly at the site, stored in batteries, or inverted to produce utility-quality electricity.

As with any hydro generation system, the potential for **micro**-hydro electric systems depends on the availability of suitable water flow. Where the resource exists it can provide cheap, clean reliable electricity. A well designed hydropower system can blend with its surroundings and have minimal negative environmental impacts. Micro-hydro systems complement photovoltaic solar energy systems because in many areas water flow and thus available hydro power is highest in the winter when solar energy is at a minimum.

There is no consensus as to when hydro generation becomes micro-hydro generation; however the Electricity Governance (Connection of Distributed Generation) Regulations 2007 have a different process and requirements for generation of a value of up to 10kW capacity so this would seem a sensible starting point. For the purposes of the One Plan it is not so much the definition that is important but the extent of the effects created by any hydro generation installation and the resulting planning controls to be applied.

The water flow required to generate electricity is dependant on the extent of the fall of water, called head. For example for micro-hydro with permitted flows at 3 l/s, the power able to generated in Watts will be about:

$$\text{Power (Watts)} = 3\text{l/s} \times \text{fall (m)} \times 5^3$$

This means to meet the needs of:

- an energy efficient home with a peak demand of 255W a fall/head of 17m would be required;
- a mid range home with solar hot water and a peak demand of 495W a fall/head of 33m would be required; and
- a standard New Zealand home with electric hot water and no energy efficiency modifications a 67m fall/head would be required.

#### *Key environmental planning issues for enabling micro-hydro generation*

- The distinction between a water diversion and a water abstraction needs to be recognised. Micro-hydro diverts small amounts of water over relatively short distances.

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<sup>3</sup> This constant takes hydraulic and electrical losses into account

- Waterfalls are natural fish barriers. In streams which have waterfalls greater diversions (or takes) should be provided for.
- Consent process needs to be as simple as possible. For example one consent rather than three should be required (diversion, structure at intake, structure at return point.)
- If a stream has endangered aquatic life then micro-hydro should not be a permitted activity.
- When is a stream a stream? Some councils have stated that if a stream dries up naturally over summer then consent is not required.

Micro-hydro systems complement photovoltaic solar energy systems because in many areas water flow and thus available hydro power is highest in the winter when solar energy is at a minimum. This is a practical way of mitigating the risk of low or no water flows.