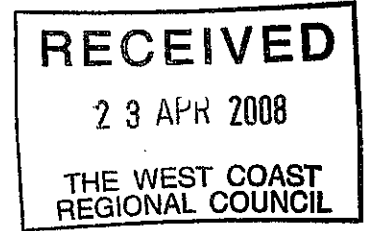




Energy Efficiency and  
Conservation Authority  
Te Tori Tiaki Pūngao

23 April 2008



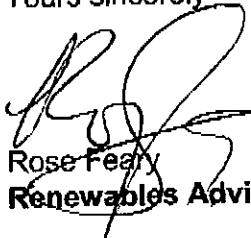
**West Coast Regional Council**  
PO Box 66  
Greymouth

Dear Sir,

**Mokihinui Hydro electric Power Station**

Please find attached the Energy Efficiency and Conservation Authority's submission in support of Meridian Energy's application for resource consents for the Mokihinui Hydro electric Power Station.

Yours sincerely



Rose Feary  
Renewables Advisor

Improving energy choices

## **SUBMISSION ON AN APPLICATION FOR RESOURCE CONSENT UNDER SECTION 96 OF THE RESOURCE MANAGEMENT ACT 1991**

**To:** West Coast Regional Council  
Buller District Council ("the Councils")

**Submitter:** The Energy Efficiency and Conservation Authority (EECA)

EECA is a Crown entity established by the Energy Efficiency and Conservation Act 2000. Its statutory mandate is to encourage, promote and support energy efficiency, energy conservation and the use of renewable sources of energy.

**Address:** The Energy Efficiency and Conservation Authority  
PO Box 388  
Wellington  
**Attn: Rose Feary**

**1. This submission relates to the following Resource Consent application:**

The application by Meridian Energy Limited to construct, operate and maintain a 65 to 85 megawatt (MW) hydro electric power scheme within the Mokihinui River valley, in the Buller District, to generate electricity and associated ancillary activities ("the proposal"). The proposal also includes the construction, operation and maintenance of a transmission line and substation to convey the generated electricity to the national grid.

**2. EECA supports the proposal for the following reasons :**

**2.1. New Zealand's Electricity Context**

As the New Zealand economy grows so will its demand for electricity. While it is essential that energy efficiency improves and energy consumption patterns change, it is clear that in the short term, ongoing economic growth will continue to place upward pressure on electricity demand. As a result, it is imperative that New Zealand has the electricity generation capacity in place in time to meet and allow demand growth.

A long term sustainable energy future will require New Zealand to use increasing amounts of renewable energy, such as electricity generated from hydro resources.

## 2.2. Central Government Energy Policy Context

The Government's ongoing commitment to a sustainable energy future and greater uptake of renewable energy, such as hydro energy, has been expressed in a number of policy documents and strategies over recent years. Those documents include:

- Energy Policy Framework (2000)
- Sustainable Development Programme of Action (2003)
- Government Policy Statement on Electricity Governance (2004)
- New Zealand Energy Strategy (2007)
- New Zealand Energy Efficiency and Conservation Strategy (2007).

Each of these policy documents highlights the government's commitment to an efficient, fair, reliable and environmentally sustainable energy supply for New Zealanders. The emphasis continues to be on developing and maximising New Zealand's renewable resources and on achieving an improvement in energy efficiency, while maintaining security of supply.

EECA submits that the proposal is consistent with the sustainable energy policies and strategies listed. EECA submits that the Councils are required to have regard to these policies and strategies pursuant to sections 104(1)(c) of the Resource Management Act 1991 (RMA).

### 2.2.1. The New Zealand Energy Strategy

Recently, the Government released its New Zealand Energy Strategy (NZES) and New Zealand Energy Efficiency and Conservation Strategy (NZECS). Both these documents are built upon previous government policy commitments to renewable energy. They provide an even clearer articulation of the goals of developing and maximising New Zealand's renewable energy resources, reducing greenhouse gas emissions, and achieving an improvement in energy efficiency, while maintaining security of supply.

The NZES provides comprehensive government direction on all aspects of energy in New Zealand against the background of the two major challenges facing New Zealand, which are:

- responding to climate change and the need to reduce carbon emissions from the energy sector; and
- the need to deliver secure, clean energy at affordable prices.

It is based on two underlying strategic principles, these being:

- for the foreseeable future, it is preferable that all new electricity generation be renewable, except to the extent necessary to maintain security of supply; and

- investment should occur in energy efficiency measures where this is cheaper than the long-term costs of building extra generation capacity, including environmental costs.

The development of a hydro electric power scheme, as proposed by Meridian Energy Limited in the proposal, is consistent with this first strategic principle.

The NZES sets out the government's vision for the energy sector, and a package of actions to respond to the challenges discussed above. The overarching vision of the NZES is for *"a reliable and resilient system delivering New Zealand sustainable, low emissions energy"*.

Achievement of this vision will be reached through a series of policy commitments. Two are relevant to the proposal. They are:

- maximising the contribution of cost-effective renewable energy resources while safeguarding our environment; and
- reducing greenhouse gas emissions, including through an emissions trading scheme.

The key NZES renewable electricity actions are as follows:

- the adoption of a target for renewable electricity generation of 90 per cent by 2025;<sup>1</sup>
- the development of a National Policy Statement (NPS) for renewable energy under the RMA;
- a decision to introduce an Emissions Trading Scheme; and
- regulatory options under the Electricity Act 1992 to support the government's objectives for limiting new baseload fossil fuel generation over the next ten years.

In response to the last two actions, the Climate Change (Emissions Trading and Renewable Preference) Bill has recently been introduced in to Parliament and referred to select committee. The bill's principal purpose is to amend the Climate Change Response Act 2002 to introduce a greenhouse gas Emissions Trading Scheme in New Zealand. It also amends the Electricity Act 1992 to create a preference for renewable electricity generation by implementing a moratorium on new fossil-fuelled thermal electricity generation, except to the extent necessary to ensure the security of New Zealand's electricity supply.

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<sup>1</sup> The renewable electricity target is a percentage of total annual generation in gigawatt hours from renewable sources in an average hydrological year.

### 2.2.2. New Zealand Energy Efficiency and Conservation Strategy

The NZEECS 2007 replaces the National Energy Efficiency and Conservation Strategy introduced in 2001. The NZEECS is the detailed action plan for increasing the uptake of energy efficiency and conservation, and renewable energy. The NZEECS is a requirement of the Energy Efficiency and Conservation Act 2000.

The NZEECS gives effect to a number of objectives set out in the NZES in particular the achievement of the renewable electricity target and recognises that meeting the target will require generating electricity from a diverse range of renewable sources such as wind, geothermal, hydro and biomass.

The NZEECS is authorised by the Energy Efficiency and Conservation Act 2000 which gives a strong mandate to the Minister responsible for that Act and to EECA to promote renewable energy. However, Section 6 (b) of that Act also requires all persons exercising responsibilities, powers or functions under that Act to take into account the need to maintain and enhance the quality of the environment. Sustainable management of all resources is the purpose of the Resource Management Act (RMA) and EECA leaves this balancing to the RMA process.

### 3.3 Resource Management (Energy and Climate Change) Amendment Act 2004

The Resource Management (Energy and Climate Change) Amendment Act 2004 introduced the following matters into Part II, section 7, of the RMA, which EECA considers to be relevant to the proposal:

- the effects of climate change [section 7(i)]; and
- the benefits to be derived from the use and development of renewable energy [section 7(j)].

The following definition of "*renewable energy*" was added to section 2 as part of the Amendment Act: "*energy produced from solar, wind, geothermal, hydro, biomass, tidal, wave, and ocean current sources*" [emphasis added].

EECA submits that there are two principal ways in which particular regard may be given to section 7 (i) and (j), these being:

- **when making decisions** on resource consent applications for renewable energy developments; and
- **by incorporating policies and provisions** in plans and policy statements which recognise and provide for renewable energy developments and their associated benefits.

### 3.3.1 The benefits to be derived from the use and development of renewable energy

The proposal will result in nationally significant benefits to New Zealand. With regard to section 7(j) and the particular benefits of hydro electric power schemes (such as the proposal), EECA submits that the Councils are required to have explicit regard to the following when considering whether or not to grant resource consent:

#### Contribution to achieving the 90% renewable electricity target

- a) The proposal will make a valuable contribution towards the target of generating 90% of electricity from renewable sources by 2025.
- b) Modelling undertaken by EECA, the Ministry for Economic Development and the Electricity Commission indicates that the target can be met through a combination of the decommissioning of thermal plant, demand side management and a range of new renewable generation (principally hydro, geothermal and wind). In this regard, maintaining and increasing the diversity of generation will assist in both enabling the target to be met and in maintaining security of supply into the future.
- c) Wind generation is expected to provide a significant proportion of new generation. However, the intermittency of the wind may place an upper limit on the amount that can be included economically and on the firm capacity that wind can provide to meet peak loads. Also, wind generation does not have the ability to provide rapid reserve response. Geothermal generation can provide valuable baseload generation, but does not have the flexibility to manage sudden variations to balance intermittent wind generation.
- d) Hydro storage generation, such as the proposal, is valuable because it provides fast response to demand changes and storage ability which enables it to be used to balance rapid changes in demand and the intermittency of the wind. Therefore, it not only provides more overall generation capacity, but it may also allow more wind generation to be incorporated into the electricity system.
- e) It is calculated that with an installation capacity of 65 to 85MW the proposal will generate between 310 and 360 gigawatt-hours (GWh) or 1.1 to 1.3 petajoules (PJ) of electricity per annum. This equates to 0.7% and 0.9% of New Zealand's present annual electricity production (enough electricity to supply between 37,000 and 43,000 average households per annum).
- f) As noted above, the modelling undertaken predicted that hydro electricity generation will play an important role in meeting the renewable electricity target with an extra 635MW of hydro electricity

generation capacity required. The 65 to 85MW of the proposal is 10% to 13% of the extra hydro electricity capacity required to meet the target.

- g) The additional 310 to 360GWh of electricity generated by the proposal will provide between 1.5% and 1.8% of the additional renewable electricity required to meet the 90% renewable electricity target by 2025.

#### **Security of supply benefits**

- h) Hydro electricity generation assists with long-term security of supply by adding to New Zealand's total generation base. In particular, schemes such as the proposal involving storage effectively allow energy to be stored in the water held behind the dam until required to meet demand.
- i) The proposal will contribute in a significant way to meeting demand for electricity in the West Coast region and, importantly, will make the region more self sufficient in electricity supply. The West Coast load demand is currently approximately 40MW and is predicted to rise to between 64 and 74MW by 2010<sup>2</sup>. Transpower's 2007 Annual Planning Report indicates that this demand may be even higher. It is clear that electricity demand on the West Coast will grow and the proposal, along with Trustpower's proposed Arnold River hydro electric power scheme, will contribute significantly to meeting this demand, and it will do so with renewable energy.

#### **Transmission benefits**

- j) The proposal includes a 28 kilometre transmission line which will assist in coordinating the hydro electricity generated with transmission requirements. This will also enable the electricity from the proposal to be more readily used on the West Coast and Upper South Island. Proximity to this load will improve the security of supply in particular security of rural supplies, and will also reduce losses from transmitting electricity on the national grid.

#### **Development benefits**

- k) The promotion and development of electricity generated from hydro resources may result in short and long-term employment opportunities, industry development, profitable business opportunities and regional development.
- l) Both the construction and operation of the proposal may create employment opportunities in the region, and have obvious positive flow-on effects for businesses in the region, including industry.

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<sup>2</sup> Electricity Commission, *West Coast Grid Upgrade Project* October 2007

### Synergy with wind

- m) Hydro electricity, particularly that having storage capacity, can complement New Zealand's growing wind generation portfolio. Hydro storage can be managed to be dispatched rapidly when required (i.e. when the wind stops blowing), or can be saved to be used later when demand is high and other forms of generation are scarce. It is this ability which accords hydro a more significant value than is immediately apparent from its capacity rating. In the future, with an increasing share of generation being met by renewables, this feature will become even more important.

### 3.3.2 The effects of climate change

With regard to section 7(i) of the RMA, EECA submits that the proposal will have a positive effect on climate change when compared to electricity generated from fossil fuels For the following reasons:

- It is widely accepted that one of the principal contributors to accelerated climate change are greenhouse gas emissions generated from human activities, such as the burning of fossil fuels for electricity generation. Accordingly, in order to minimise the adverse effects of greenhouse gas emissions, new generation needs to come from renewable energy sources (e.g. hydro) rather than fossil fuels (e.g. coal).
- The proposal will not only contribute 65MW to 85MW towards New Zealand's electricity requirements, but it will also not emit any greenhouse gases. Accordingly, the proposal will avoid between approximately 110,000 and 130,000 tonnes<sup>3</sup> of carbon dioxide (CO<sub>2</sub>) per annum if gas generation is avoided or between 290,000 and 340,000 tonnes<sup>4</sup> if coal generation is avoided. To put this into context, approximately 90,000 to 100,000 petrol cars would have to be taken off the road for one year to displace this amount of CO<sub>2</sub> from coal generation<sup>5</sup>.

### 3.4 Public Support for Renewable Energy

A public opinion survey of attitudes towards energy issues undertaken in 2004<sup>6</sup> indicates that New Zealanders overwhelmingly support renewable energy generation. The survey examined approval ratings for different types of energy resources and, although direct comparisons can not be drawn, the preliminary results of a more recent survey<sup>7</sup> indicate an increasing positive view on renewable energy from 2004 to 2008.

<sup>3</sup> 0.36 Gas emission factor ( CCGT on gas ) – Energy Data And Analysis Coordination Version 22 August 2007

<sup>4</sup> 0.95 Coal emission factor - Energy Data and Analysis Coordination Version 22 August 2007

<sup>5</sup> 3.28 car emission factor: Source :Ministerial (Hon David Parker) email 27 March 2007

<sup>6</sup> UMR Research, *Omnibus Results May 2004* <http://www.eeca.govt.nz/eeca-library/renewable-energy/wind/report/umr-omnibus-results-wind-research-report-04.pdf>

<sup>7</sup> EECA commissioned AC Nielsen to conduct a survey comprising a sample of 1,000 online interviews of the general public between January and March 2008. The survey is part of EECA's ongoing research strategy that will examine consumer attitudes to renewable energy and energy efficiency and will provide a benchmark to allow an analysis of public perceptions over time. Final results will be available on the EECA website in due course.

The preliminary results from the 2008 survey reveal that New Zealanders consider where their energy comes from as being important enough to personally do something about or think about what they could do (i.e. become actively involved) and consider that where energy comes from will have an increasingly significant impact over the next five years.

Renewable energy sources are favoured highly over fossil fuel sources with 80% of respondents viewing hydro as having a constant positive impact from now into the future. Fossil fuel sources are seen as having largely negative impact, both now and in the future.

### **3.5 Environmental Effects and EECA's Role**

EECA is a Crown entity established by the Energy Efficiency and Conservation Act 2000. The Act gives EECA a mandate to encourage, promote and support renewable energy, and energy efficiency and conservation.

EECA's role is not to comment on the local environmental effects but to put before the consent authority the benefits and positive effects of renewable energy to be weighed in the overall consideration of the achievement of sustainable management of natural and physical resources.

### **3.6 Summary**

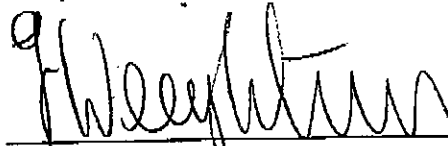
The reasons EECA believes the proposal should be approved by the Councils are summarised below:

- a) Hydro electric power schemes, such as the proposal, will play a vital role in New Zealand's sustainable energy future - a key government goal.
- b) The proposal will contribute to meeting current and future electricity demand, and will help to maintain a reliable, robust and sustainable electricity system.
- c) The proposal will avoid the emission of additional CO<sub>2</sub> from electricity generation assisting New Zealand to meet its international obligations under the Kyoto Protocol.
- d) The proposal will make an important contribution to New Zealand's renewable electricity target.
- e) The proposal is consistent with government sustainable energy policies and strategies, in particular the New Zealand Energy Strategy and the New Zealand Energy Efficiency and Conservation Strategy.

EECA submits that under section 104(1)(c) of the RMA, the Councils are required to have regard to such policies and strategies when considering the proposal.

- f) The proposal is particularly consistent with section (7) (i) and (j).
  - g) The development and use of energy from renewable sources, including the development of hydro electric power schemes (such as the proposal), creates national benefits and positive effects and is of national significance and value.
  - h) All of these factors should be given significant weight in the consideration of sustainable management of natural and physical resources pursuant to the Resource Management Act.
4. **EECA wishes the West Coast Regional Council and the Buller District Council to approve Meridian Energy Limited's application for resource consent.**
5. **EECA may wish to be heard in support of its submission.**
6. **If others make a similar submission EECA is prepared to consider presenting a joint case with them at the hearing.**

DATED at Wellington this 23 day of April 2008.



Fiona Weightman  
Energy Supply Manager  
Energy Efficiency and Conservation Authority

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