



Energy Efficiency and
Conservation Authority
Te Tari Tiaki Pūngao

70

3 November 2008

Hauāuru mā raki: Waikato Wind Farm Call In
Minister for the Environment
PO Box 10362
WELLINGTON 6143

Dear Sir,

Hauāuru mā raki: Waikato Wind Farm Call In

Please find attached the Energy Efficiency and Conservation Authority's submission in support of Contact Energy Limited's application for resource consents for the Hauāuru mā raki: Waikato Wind Farm.

Yours sincerely

for Fiona Weightman

Fiona Weightman
Energy Supply Manager



Improving energy choices

SUBMISSION ON AN APPLICATION FOR RESOURCE CONSENT UNDER SECTION 145 OF THE RESOURCE MANAGEMENT ACT 1991

To: Minister for the Environment

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 37 444
Auckland, 1151
Attn: Tania Hood

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

The application by Contact Wind Limited and Contact Energy Limited ("Contact") to construct, operate and maintain a wind farm located near Raglan on the west coast of the North Island (known as Hauāuru mā raki: the Waikato Wind Farm) to generate electricity and associated ancillary activities ("the proposal").

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.

New Zealand's reliance on hydro electricity means that it can be vulnerable to periods of low rainfall (often referred to as dry years). This, in combination with uncertainty over New Zealand's future gas supply (i.e. the rundown of the Maui gas field), means that other sources of energy for electricity generation need to be developed.

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

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 wind 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)
- New Zealand Energy Strategy (2007)
- New Zealand Energy Efficiency and Conservation Strategy (2007)
- Government Policy Statement on Electricity Governance (updated 2008).

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 Board of Inquiry is required to have regard to these policies and strategies pursuant to sections 104(1)(c) and 147(4) and (5) of the Resource Management Act 1991 (RMA).

2.2.1. The New Zealand Energy Strategy

The government released its New Zealand Energy Strategy (NZES) and New Zealand Energy Efficiency and Conservation Strategy (NZECS) in October 2007. 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 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 2025¹;
- a decision to introduce an Emissions Trading Scheme;
- consideration of regulatory options under the Electricity Act 1992 to support the government's objectives for limiting new baseload fossil fuel generation over the next ten years²; and
- the development of a National Policy Statement (NPS) for renewable electricity³ under the RMA.

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 gives effect to a number of objectives set out in the NZES in particular the achievement of the renewable electricity target.

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. Sustainable

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

² The Climate Change Response (Emissions Trading) Amendment Bill and the Electricity (Renewable Preference) Amendment Bill received Royal Assent on 25 September 2008. The Electricity (Renewable Preference) Amendment Act seeks to reduce the impact of fossil fuelled thermal electricity generation on climate change by creating a preference for renewable electricity generation through the implementation of a 10year restriction on new baseload fossil fuelled thermal electricity generation capacity, except where an exemption is appropriate (for example, to ensure security of supply).

³ A NPS on Renewable Electricity was notified by a Board of Inquiry on 6 September 2008 with the overall objective: *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, 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).*

management of all natural and physical resources is the purpose of the RMA. In lodging this submission, EECA has taken into account the sustainability principles in section 6 of the Energy Efficiency and Conservation Act including the principles of the Treaty of Waitangi, bearing in mind that the comprehensive analysis and balancing of all issues is completed by the consent authority.

2.3. 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.

2.3.1. The benefits to be derived from the use and development of renewable energy

With regard to section 7(j), the particular benefits of wind farms (such as the proposal), EECA submits that the Board of Inquiry is 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

- Modelling by EECA, the Ministry for Economic Development, the Electricity Commission indicates that to meet the predicted increase in electricity demand and to satisfy the target of producing 90% of electricity from renewable sources by 2025 would require an additional 20,700 gigawatt-hours (GWh) per year of renewable electricity, with approximately 6,300GWh being provided by wind power.
- The additional electricity generated by the proposal of up to 1,600GWh or 5.8 petajoules (PJ) of electricity per annum would

provide approximately 7.7% of the additional renewable electricity required to meet the 90% renewable electricity target by 2025. This equates to 3.7% of New Zealand's present annual electricity production (enough electricity to supply 190,000 average households per annum).

- In addition, in terms of generation capacity, the modelling predicted that an extra 1710 megawatts (MW) of wind power capacity would be required to meet the target. It is calculated that with a maximum installation capacity of 540MW the proposal represents 31.6% of the required increase.

Security of Supply Benefits

- As indicated above, the proposal with a maximum installation capacity of 540MW of generation will make a significant contribution to meeting New Zealand's annual electricity demand and is enough electricity to supply up to average 190,000 households per annum.
- The proposal will also promote resilience of electricity supply through its geographical location. Wind is an intermittent resource, and is currently concentrated around the Manawatu Gorge and Southland, and in the Wellington region where Meridian Energy's Project West Wind is currently under construction. Spreading wind farms across New Zealand reduces the risk to electricity supply if the wind is not blowing at a particular location.
- The proposal is also significant because its proximity to Auckland and Northland means it will be able to contribute vital electricity supply to these two regions.
- Wind electricity also assists with long-term electricity supply security by adding to, and diversifying, New Zealand's electricity generating base. In many respects, wind electricity complements New Zealand's existing renewable generation sources, typically allowing hydro resources to be stored for use when required, even during dry periods.
- Diversity in energy supply through the development of renewable energy, such as wind electricity, reduces exposure to energy supply disruptions or price shocks that are associated with fossil fuels. In contrast, fossil fuel powered thermal generation costs can rise sharply as a result of fuel supply interruptions and changing fuel prices.

Reduction in transmission losses

- A significant benefit of wind generation is that turbines may be installed relatively close to the source of electricity demand, thereby reducing losses from transmitting the electricity on the national grid.

The average losses due to transmission were 3.7%⁴ of the total electricity generated in 2007.

Reliability

- Wind is a relatively reliable natural resource over timeframes greater than one month. The inter-annual wind electricity variation is typically 10%, compared to rainfall variation which is approximately 20% for hydro.
- Wind is also a relatively reliable economic resource. Once a wind farm is built, the cost of producing electricity from the wind depends primarily on the average annual wind speed which is relatively constant from year to year. The cost of electricity produced is not affected by international fuel prices for scarce local fuel resources.

Development benefits

- The promotion and development of electricity generated from wind resources may result in short and long-term employment opportunities, industry development, profitable business opportunities and regional development.
- Wind farm developments can co-exist with other land uses such as agricultural activities creating sustainable, mixed land use. At the end of the economic life of a wind farm, turbines can be removed which may allow for the reversal of environmental effects.

2.4. The effects of climate change

With regards to section 7(i), EECA submits that the proposal will have a positive effect on climate change, by being benign in respect of greenhouse gas emissions compared with alternative sources of generation, as outlined below.

- 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. wind), rather than fossil fuels (e.g. coal).

⁴ New Zealand Energy Data File June 2008 (http://www.med.govt.nz/upload/59482/00_EDF-June2008.pdf).

- The proposal will not only contribute up to 540 MW towards New Zealand's electricity requirements, but it will also not emit any greenhouse gases. Accordingly, at 1,600GWh/yr, the proposal would avoid between approximately 610,000⁵ and 1,400,000⁶ tonnes of carbon dioxide (CO₂) per annum, depending on whether gas or coal generation is avoided⁷.

2.5. Resource Management Act – Section 141B(2)(e)

The principal international response to climate change is the United Nations Framework Convention on Climate Change, which in turn led to the development of the Kyoto Protocol. New Zealand is a signatory to the Kyoto Protocol, which came into force on 16 February 2005. As a signatory, New Zealand will be required to reduce its CO₂ emissions in the first commitment period (2008-2012) to 1990 levels or otherwise take responsibility for any surplus emissions. The challenge for New Zealand is to achieve these levels as it remains committed to meeting these obligations.

This proposal will play a significant role in reducing the impact of energy use on New Zealand's greenhouse gas emissions, i.e. by preventing CO₂ emissions (detailed above) that could have otherwise been created by generating electricity via fossil fuel resources.

2.6. Public Support for Renewable Energy

A public opinion survey of attitudes towards energy issues undertaken between January and March 2008⁸ indicated that New Zealanders overwhelmingly supported renewable energy generation. The survey examined approval ratings for different types of energy resources and, although direct comparisons can not be drawn, the results of similar survey undertaken in 2004⁹ indicate an increasingly positive view of renewable energy in general and in particular wind energy, between 2004 and 2008.

The 2008 survey reveals 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 impact on future generations.

⁵ 0.38 kt CO₂/GWh Gas generation emission factor *New Zealand's Energy Outlook to 2030*, p.41 footnote 86

⁶ 0.90 kt CO₂/GWh Coal generation emission factor *New Zealand's Energy Outlook to 2030*, p.41 footnote 86

⁷ Recent work by the Energy Data and Analysis Co-ordination cross-government group has predicted an average reduction of CO₂ equivalent emissions of 0.2 kt CO₂/GWh per annum, for the next 10 years, as a result of the installation of new renewable projects and energy saving measures. This reflects the expectation that a mixture of renewable and fossil-fuelled generators will be the marginal generator throughout any year and so the new generation of this proposal will displace a mixture of fossil-fuelled and renewable generation. Using this factor the predicted reduction in CO₂ emissions from this proposal would be 320,000 tonnes of CO₂ equivalent per annum. (<http://www.med.govt.nz/upload/55313/emission%20reduction%20effects.pdf>)

⁸ EECA commissioned A C Nielsen to conduct a survey comprising a sample of 1,000 online interviews of the general public. It is part of EECA's ongoing research strategy examining consumer attitudes to renewable energy and energy efficiency and provides a benchmark to allow an analysis of public perceptions over time.

⁹ <http://www.eeca.govt.nz/eeca-library/renewable-energy/wind/report/umr-omnibus-results-wind-research-report-04.pdf>

Renewable energy sources are favoured highly over fossil fuel sources and wind energy is identified as the most supported type of electricity generation, with 88% support. Of respondents, 91% consider wind energy will have a positive impact as an energy source for New Zealand in the future along with established energy sources like hydro and geothermal, all are perceived 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.

2.7. Summary

The reasons EECA believes the proposal should be approved by the Board of Inquiry are summarised below:

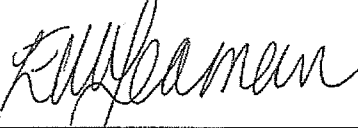
- a) Renewable energy developments, such as the proposal, will play a vital role in New Zealand's sustainable energy future - a key government goal.
- b) It will contribute to meeting current and future electricity demand, and will help to maintain a reliable, robust and sustainable electricity system.
- c) The proposal will make an important contribution to New Zealand's renewable electricity target.
- d) The proposal will avoid the emission of additional CO₂ from electricity generation assisting New Zealand to meet its international obligations under the Kyoto Protocol, and any subsequent international obligations.
- 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, and is therefore of national significance.
- f) The development and use of energy from renewable sources, including the development of wind farms (such as the proposal), creates national benefits and positive effects and is of national significance and value.

All of these factors should be given significant weight in the consideration of the achievement of sustainable management of natural and physical resources pursuant to the Resource Management Act.

- 3. EECA wishes the Board of Inquiry to approve Contact Wind Limited and Contact Energy Limited's application for resource consent, subject to any appropriate conditions to avoid, remedy or mitigate any adverse effects.**
- 4. EECA may wish to be heard in support of its submission.**

5. If others make a similar submission EECA is prepared to consider presenting a joint case with them at the hearing.

DATED at Wellington this 3rd day of November 2008


for _____
Fiona Weightman
Manager Energy Supply
Energy Efficiency and Conservation Authority

Address for Service: The Energy Efficiency and Conservation Authority
PO Box 37444
Auckland, 1151
Attn: Tania Hood

Telephone: 09 374 3812
Fax: 09 374 3809
Email: tania.hood@eeeca.govt.nz

