

**Submission to an application for resource consent under section
96 of the Resource Management Act 1991**

To: Palmerston North City Council
Name: Ministry of Economic Development
Address: P.O. Box 1473, Wellington.

1. The Ministry of Economic Development (MED) supports the application of New Zealand Windfarms Limited for land use consent , in so far as it contributes to national energy objectives, to enable it to erect a wind energy development referred to as Te Rere Hau, at the northern end of the Tararua Ranges.

2. The particular parts of the application MED supports are:

The whole of the application.

3. The reasons for making this submission are:

The Te Rere Hau Wind Farm Development is well aligned with the government's objectives, particularly the energy objectives to deliver security of supply with an increasing focus on renewable energy sources.

The Ministry considers that wind power is a viable alternative energy source, that its development will help ensure security of supply through "diversification" in electricity production methods, and that it is an environmentally responsible alternative to using fossil fuels for generation.

Wind Energy in New Zealand

New Zealand is ideally situated to generate electricity from wind. Located directly across the path of prevailing westerly winds, many regions of New Zealand have a wind resource that is among the best in the world, with annual average wind speeds of approximately 10 m/s.

In 2002 the Ministry commissioned a study, *Availability and Costs of Renewable Sources of Energy for Generating Electricity and Heat*, which identifies that wind energy has the potential to contribute significantly to meeting New Zealand's energy needs. The table below identifies the contribution wind power could make to consumer energy, compared with hydro-generation, at less than 15 cents per kilowatt-hour (c/kWh).

Total Resource Available (Consumer Energy) at less than 15c/kWh

(GWh/y)

Resource	2012			2025		
	High confidence	Medium confidence	Low confidence	High confidence	Medium confidence	Low confidence
Wind	4095	9550	13645	4285	10005	14300
Hydro	5940	11370	17990	5940	11370	17990

NB. High confidence resources are those that are well proven and readily able to be permitted and developed. Achievable development rate has been taken into account. High confidence resources represent an 80-90% confidence that the uptake will occur. Medium confidence estimates represent a median estimate of uptake. Generally these are associated with a more liberal consenting environment. Low confidence estimates represent resources that can be developed but difficulties are expected in terms of permitting and access. They represent a 10-20% confidence that the uptake will occur. Confidence levels are cumulative e.g. the medium confidence resource available will include both the high and medium confidence bands.

The study identifies that the technology associated with wind power continues to mature, which in turn continues to reduce the unit cost of generation. By 2012, generation in the 4-6c/kWh band will be possible, with the largest resource available in the 6-10c/kWh band. By 2025, considerably more of the resource could be available for generation in the 4-6c/kWh band.¹ Technological advancement, when combined with New Zealand's wind resource, provides a potentially major opportunity to utilise this renewable resource for electricity generation.

Wind energy, as with other renewable energy sources, is an environmentally responsible alternative to energy derived from fossil fuels because generation does not produce carbon dioxide. Carbon dioxide emissions could be significantly reduced if the potential of wind energy was fully exploited. By contributing to the reduction of greenhouse gases, the Te Rere Hau wind farm would assist New Zealand in meeting its commitments under the Kyoto Protocol.

Contribution to Government's Policies and Objectives

As stated above, the proposed Te Rere Hau development contributes to the government's stated objectives for the energy sector (energy efficiency and security of supply with an increasing focus on renewables) and is consistent with the principles for sustainable development.

Security of Supply

Ensuring security of electricity supply is a critical issue for all New Zealanders and for the government. There are two aspects to security of supply. Firstly, it is imperative to minimise the risk associated with dry years and secondly to ensure that New Zealand has the generation capacity over the long term to meet the projected growth in energy demand.

Dry Year Risk

Heavy reliance on hydro-generated electricity leaves New Zealand vulnerable to the effects of dry years. 2001 was very dry in the South Island hydro catchments and

¹ A similar study by the Energy Efficiency and Conservation Authority (EECA), *Review of New Zealand's Wind Energy Potential to 2015*, identifies that wind energy currently provides approximately 0.5% (150 GWh/y) of New Zealand's electricity and could potentially provide 23% (7,900 GWh/y) of present electricity needs at costs of up to 10 c/kWh within 10-15 years.

2003 was similarly severe, necessitating public electricity conservation campaigns. Dry years indicate the dependence of both consumers and industry on energy as a key element of infrastructure and, consequently, how essential security of supply is.

One of the considerable advantages of electricity generated by wind is that supply is not dependent on rainfall. The Te Rere Hau development could help ensure continued electricity supply for both New Zealand consumers and industry during dry periods to reduce the likelihood of future energy crises. Given the possibility that New Zealand has entered an extended dry period, it is highly desirable that additional generating capacity is developed, particularly in the next few years.

Growth in Energy Demand

A further aspect of security of supply is ensuring that New Zealand has the generation capacity to meet the forecasted growth in energy demand. The most recent *Energy Outlook* provided by the Ministry of Economic Development projects that the composition of energy demand will change as the demand for energy increases, the Maui gas field declines and new technologies for the production, delivery and use of energy become more economically viable.

The reference (baseline) scenario projects that total consumer energy demand will increase by 0.6% p.a. between 2000 and 2025 for 2.5% p.a. GDP growth. Residential sector consumer energy is projected to grow, on average, at 1% p.a. during this period, the industrial and commercial sector to decline by 0.1% p.a., and the transport sector to grow by approximately 1.3% p.a. Over the same period electricity consumption is projected to increase by around 1.2% p.a.²

It is important that, as the means become available, New Zealand undertakes the transition to renewable energy sources to ensure that we have the capacity to accommodate the growth in demand and to compensate for the inevitable decline in non-renewable sources, such as the Maui gas field. The Te Rere Hau project would contribute to the increased generation capacity required to satisfy demand while at the same time reducing New Zealand's dependence on non-renewable energy sources.

² Ministry of Economic Development, *Energy Outlook to 2025*, October 2003.

Assumptions of the Energy Outlook's Reference Scenario:

- 2.5% p.a. GDP growth from 2007
- Oil prices rising from US\$20/bbl in 2004 to US\$25/bbl by 2020 and constant thereafter
- Constant exchange rate of NZ\$1.00 = US\$0.50 out to 2025
- Pohokura gas available from 2007 and Kupe from 2008
- New gas available from discoveries averaging 35 PJ p.a. for 2011-2013 and 60 PJ p.a. from 2014 onwards
- North Island delivered coal prices at \$3.59/GJ in 2004 and at \$4.00/GJ from 2013 onwards and South Island delivered coal prices about \$3.00/GJ
- As a result of the National Energy and Efficiency and Conservation Strategy, additional energy efficiency uptake above the normal rate of 0.5% p.a. for 2002-2005, 1.0% p.a. for 2006-2015 and 0.5% p.a. for 2016-2025
- Forest industry growth, with the harvest rate increasing from 19 Mm³ in 2001 to 33 Mm³ in 2025 and the total amount processes increasing from 13 Mm³ in 2001 to 19 Mm³ in 2025.

Sustainable Development Programme of Action for Energy

The Sustainable Development Programme of Action is one of the Government's major overarching documents designed to guide and underpin policy development. Energy has been identified as one of the target areas for sustainable development because of its correlation to economic growth, potential environmental impact, and because both consumers and industry are heavily reliant on its supply.

The major objective of the programme of action for energy is to ensure continued delivery of energy services to New Zealanders. It acknowledges that renewable energy sources, such as wind power, will become increasingly important in providing security of supply and in mitigating harmful effects that energy use can have on the environment. Three desired outcomes are identified:

- a) energy use in New Zealand becomes progressively more efficient and less wasteful;
- b) renewable sources of energy are developed and maximised; and
- c) New Zealand consumers have a secure energy supply.

Specific actions to achieve these outcomes are set out in the government's National Energy Efficiency and Conservation Strategy, the climate change initiatives and the electricity policy statement. The Te Rere Hau proposal is consistent with the actions outlined in these documents.³

National Energy Efficiency and Conservation Strategy

The National Energy Efficiency and Conservation Strategy (NEECS) is the government's primary means to achieve outcomes sought in the sustainable development programme of action. The purpose of the NEECS is to facilitate the move towards a sustainable energy future for New Zealand by promoting energy efficiency, conservation, and a transition to the use of renewable energy sources.

The NEECS identifies two key policy directions that support New Zealand's movement towards a sustainable energy economy.

- a) Ongoing improvement in our energy efficiency

Target: By 2012, energy efficiency throughout the economy will improve by at least 20 percent. This target is equivalent to a continual improvement rate of two percent per annum to 2012.

- b) Progressive transition to renewable sources of energy

Target: By 2012, renewable energy sources will generate an additional 30PJ of energy above 2000 levels. In 2000, renewable energy sources provided 133.5PJ, or 29% of consumer energy. The target means that by 2012, renewable sources should

³ While Te Rere Hau would contribute to the outcomes identified in the Sustainable Development Programme of Action, we acknowledge that the load factor for a wind turbine means that wind power is not a predictable energy source over short time periods, such as a specific day or hour. However, New Zealand's considerable wind resource, relative to most other countries, means wind energy will be more reliable here than overseas.

generate a minimum of 163.5PJ of consumer energy, which would equate to approximately a 30-35% market share.

It is estimated that a wind farm development, like that proposed at Te Rere Hau, could provide 180 million kilowatt hours of electricity a year, or 0.65 petajoules, which is approximately 2% of the renewable target.

Government Policy Statement on Electricity Governance

The Government's overall objective for the electricity industry is to ensure that electricity is delivered in an efficient, fair, reliable and environmentally sustainable manner to all classes of consumer. To meet this objective, the Government favours industry solutions that satisfy consumers' electricity requirements in a manner which is least-cost to the economy and in accordance with the principle of sustainable development.

The government has identified a number of desired outcomes consistent with the above objective. The New Zealand Windfarms proposal would particularly contribute to achieving the following outcomes:

- a) the electricity sector contributes to achieving the government's climate change objectives by minimising hydro spill, efficiently managing transmission losses and constraints, promoting demand-side participation and energy efficiency and removing barriers to investment in new generation technologies, renewables and distributed generation.
- b) risks relating to security of supply are properly managed.

Resource Management (Energy and Climate Change) Amendment Act 2004

The Resource Management (Energy and Climate Change) Amendment Act 2004 has recently been passed by parliament. It seeks greater alignment between local government plans and national energy objectives, outlined in the NEECS and climate change policies, and aims to ensure that councils consider the contribution their regions can make to meeting New Zealand's commitments under the Kyoto Protocol.

Specifically the Act has amended section 7 (other matters) of the RMA to require decision-makers to have particular regard to the efficient use of energy, the effects of climate change, and the benefits associated with the use and development of renewable sources of energy.

Climate Change Policy

The utilisation of renewable resources for energy generation is heavily dependent on the incentives provided by the government's climate change policies.

The Projects to Reduce Emissions mechanism seeks to provide incentives for firms to undertake emissions reductions prior to and during the first Kyoto commitment period (2008-2012). The government intends that the mechanism will promote growth in the renewable energy sector and encourage business practices that are less greenhouse gas intensive. In order to qualify, 'Projects' must be uneconomic without payment of an incentive and emissions reductions must be over and above business-as-usual. The incentive for the first tender round was a share of four million Kyoto Protocol 'carbon credits'.

Significant renewable energy developments have already secured government support being awarded carbon credits under the 'Projects' mechanism. In the first tender round 15 initiatives were successful recipients of a portion of the government's credits.

The Government has allocated up to 518,000 emission reduction credits for the proposed Te Rere Hau development. This indicates the contribution the development could make to meeting New Zealand's Kyoto commitments.

4. The Ministry of Economic Development requests that the consent authority make the following decision:

Approve the application for land use consent.

5. The Ministry of Economic Development may wish to be heard in support of its submission, if any clarification of its position is required.

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Ministry of Economic Development

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Attention: Stuart Calman