**IN THE MATTER OF** the Resource Management Act 1991

**AND**

**IN THE MATTER OF** an application by Contact Wind Limited and Contact Energy Limited for resource consents for a wind farm, known as Hauãuru mã raki: the Waikato Wind Farm.

## INTRODUCTION

1. My name is Steve Torrens. I am a Senior Policy Analyst with the Energy Efficiency and Conservation Authority (EECA) in Wellington. I have completed a Post Graduate Diploma in Public Policy, a Master of Engineering (with distinction) and a Bachelor of Engineering (mechanical, with first class honours). Before joining EECA I practiced as a mechanical engineer for ten years working mainly in the power generation industry. At EECA I have worked as a technical advisor for one and half years and as a policy analyst for around four years. As a policy analyst I have specialised in electricity and gas issues relevant to renewable electricity and demand side management. I am a member of the American Society of Mechanical Engineers.

2. I am here today following EECA's written submission, dated 3 November 2008 in support of Contact's proposal to construct, establish, operate and maintain a wind farm located near Raglan on the west coast of the North Island, known as Hauãuru mã raki: the Waikato Wind Farm ("the proposal"). EECA's support for the proposal lies in the fact that it is a renewable energy development that will result in significant benefits associated with improving security of electricity supply and reducing greenhouse gas emissions.

3. The evidence will cover the following matters that EECA believes should be given due consideration in the Board's decision making processes:

   - The Resource Management Act 1991 – Section 7 Considerations;
   - The Resource Management Act 1991 – Section 104 (1)(c) Considerations; and
   - Public Support for Renewable Energy.

4. Before further examining these matters, I will briefly outline the role of EECA.

## THE ENERGY EFFICIENCY AND CONSERVATION AUTHORITY

5. EECA is a Crown entity established by the Energy Efficiency and Conservation Act 2000. EECA's statutory mandate is to encourage, promote and support energy efficiency, energy conservation and the use of renewable sources of energy. EECA's work includes helping businesses to implement energy efficiency measures, improving New Zealander's quality of life by increasing the supply of warmer, drier homes, by increasing the energy efficiency of products and by promoting better personal transport choices, and protecting the environment through energy efficiency and renewable energy supply.

6. In supporting this proposal, EECA has taken into account its statutory goal to promote and support renewable energy, and the sustainability principles in section 6 of the Energy Efficiency and Conservation Act, including the principles of the Treaty of Waitangi, acknowledging that the comprehensive analysis and balancing of all issues is to be completed by the decision maker.

## THE RESOURCE MANAGEMENT ACT 1991 – SECTION 7 CONSIDERATIONS

7. Part 2 of the Resource Management Act 1991 (RMA) includes section 7 which contains matters to which particular regard must be had by decision makers in achieving the purpose of the Act. This includes matters such as:

*(b) The efficient use and development of natural and physical resources*

*(ba) The efficiency of the end use of energy*

*(f) Maintenance and enhancement of the quality of the environment*

*(g) Any finite characteristics of natural and physical resources*

*(i) The effects of climate change*

*(j) The benefits to be derived from the use and development of renewable energy.*

8. I will now illustrate how the proposal will create a range of benefits and positive effects consistent with these matters. In particular it will assist in ensuring security of electricity supply, reducing the impact on climate change and contributing towards long-term economic development.

***Security of supply – meeting electricity demand***

9. New Zealand's electricity demand is predicted to continue to grow over the long term while over the short term, increases in demand will fluctuate. Over the long term, if electricity demand continues to grow at the recent historical rate of 2% per annum (simple growth not compound growth rate), between 105[1] – 240[2] megawatts (MW) of new capacity will be required per annum to meet New Zealand's increased electricity demand in 2030 (this is without replacing current generation capacity which may be retired for reasons of age or fuel source by 2030).

10. In an average hydrological year, New Zealand generates about 70% of its electricity from renewable energy resources, with the balance being made up by fossil-fuelled thermal generation as required. Most of the renewable generation comes from hydro and geothermal with smaller but increasing amounts from wind. Electricity generated from biogas, waste heat and wood (including cogeneration) also make small but valuable contributions.

11. Despite this, over the past few decades a large proportion of demand growth has been met using fossil fuel power stations. This has resulted in a long term decline in the proportion of electricity generated from renewable sources. This is in contrast to some OECD countries, like Germany and Denmark, which have seen marked increases in the proportion of renewable generation.

12. In more recent times new wind farms in the North Island and in Southland have helped to meet new electricity demand with a current capacity from wind of approximately 335 MW. If we continue to build a mixture of fossil-fuelled and renewably-sourced electricity generation, as we have done over the last 25 years, the rate of increase of New Zealand's electricity related emissions will continue to escalate.

13. This fact, in combination with uncertainty around the supply and price of future gas resources[3,4], means it is now imperative that new renewable electricity generation capacity is developed, while also implementing energy efficiency and conservation

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[1] Based on a capacity factor of 90%.

[2] Based on a capacity factor of 40%.

[3] Regarding future supplies of gas, the Ministry of Economic Development state in their 2008 Briefing to the Incoming Minister (page 9) *"on the basis of existing known gas reserves, a supply/demand gap is likely to emerge toward the end of the next decade. Given the long lead times from exploration to development, this timeframe is tight but manageable".*

[4] Regarding the future supplies of gas, Contact Energy state in their Interim Financial Results (six month period ended 31 December 2008, slide 37) *"… [new] base-load gas-fired generation is highly unlikely given that NZ's gas supply position provides no assurance of domestic gas availability beyond the middle to the end of the next decade"*

measures, in order to help New Zealand to meet its future demand for electricity and to ensure security of electricity supply.

14. In this regard, the proposal will contribute to meeting demand for electricity and with an installed capacity of up to 540 MW, will generate 1,600 gigawatt hours (GWh) of electricity to supply approximately 190,000 households per annum. It will contribute in a significant way to meeting local demand for electricity along with demand in the Auckland and Northland regions.

15. The proposal will also significantly contribute to ensuring that sufficient electricity can be generated to meet demand over the winter season; and ensuring there is enough generation capacity to meet instantaneous peaks in demand[5]. These issues are key to ensuring security of electricity supply in New Zealand.

16. In this regard, the proposal will contribute 108 MW[6] to the North Island capacity margin (an indicator of the ability of the system to meet peak demand) which in 2012 is forecast[7] to be 1,187 MW. The Electricity Commission has estimated that an optimal capacity margin for the North Island should be 780 MW.

17. The proposal will also contribute 961 GWh of electricity over the winter season. In 2012 the winter energy margin for New Zealand (the difference between demand and supply capability over the winter season) is forecast[8] to be 7121 GWh or 31.2%. The Electricity Commission has estimated that an optimal winter energy margin for New Zealand should be 17%.

18. The optimal capacity margin and optimal winter energy margin both trade-off the cost of demand curtailment and the cost of 'reserve' generation capacity[9]. Therefore if the capacity margin or winter energy margin is at the optimal level there is still a risk that demand curtailment could occur. Furthermore, if the capacity margin or winter energy margin is greater than the optimal level the risk of demand curtailment will be reduced. Also, some headroom above the optimal level allows for unforeseen events[10] such as

[5] www.electricitycommission.govt.nz/pdfs/opdev/secsupply/policy/ASA-2008-InfoPaper.pdf.
[6] All security of supply data and information has been taken from the Electricity Commission, Annual Security Assessment 2008 www.electricitycommission.govt.nz/pdfs/opdev/secsupply/policy/ASA-2008.pdf
[7] Taking into account committed and highly likely projects only. If medium probability projects included the capacity margin is forecast to be 1,398 MW.
[8] Taking into account committed and highly likely projects only. If medium probability projects are included the winter energy margin is forecast to be 8364 GWh.
[9] For example, if less investment is made in reserve capacity, the cost of reserve capacity (to the economy) decreases. This increases the risk of demand curtailment and hence increases the cost of demand curtailment (to the economy). There is an optimal level where the total cost of reserves and demand curtailment is minimized.
[10] Beyond that accounted for in the Electricity Commission's modeling.

high demand growth, major equipment failure or delays in the construction of new equipment.

***Security of supply – other considerations***

19. Wind is a relatively reliable natural resource. The annual wind energy variation is typically 10%, compared to rainfall variation of 20%.

20. Wind is also a relatively reliable economic resource. While all primary fuels for thermal-powered electricity generation (oil, coal, and natural gas) have been subject to significant price increases and volatility over the last few years, there is no cost for the primary fuel of a wind turbine (i.e. wind). Therefore, once a wind farm is built, it has no ongoing fuel price issues, and the cost of producing electricity from the wind depends primarily on the average annual wind speed which, as noted, is relatively constant from year to year. The only economic volatility that wind power faces is the price of wholesale electricity.

21. Diversity in energy supply through the development of renewable energy, such as electricity generated from wind resources, therefore reduces exposure to energy supply disruptions or price shocks that are associated with fossil fuels. Consistently lower priced energy is a key component of national economic growth necessary to maintain our standard of living.

22. The proposal will also contribute to the geographic diversity of the electricity system as a whole, adding to its resilience. As mentioned previously, it will provide wind generation in the Waikato region, contributing to a more even spread of wind generation throughout New Zealand. To date the majority of New Zealand's wind development has occurred in the Manawatu region, although the White Hills wind farm located in Southland was added in 2007. Geographic spread of wind generation throughout New Zealand will help to offset the issue of intermittency i.e. with wind generation spread throughout the country the effect of the wind not blowing in any one location is reduced. Geographic diversity is crucial if wind generation is to play a significant and more consistent production role in the electricity system.

23. Wind electricity assists with long-term electricity supply security by adding to, and diversifying, New Zealand's electricity generating base. Wind electricity complements New Zealand's existing renewable generation sources. When the wind is blowing and generation of electricity from the wind is high, hydro generation can be reduced and

water can be stored in the hydro lakes. When the wind stops blowing, or demand increases, hydro generation can be quickly increased to compensate. Hydro helps to reduce the impact of the short term (hour to hour or day to day) variations in wind electricity output, while wind helps to reduce the impact of seasonal variations in hydro electricity output.

***The effects of climate change and New Zealand's international obligations***

24. A large and increasing body of evidence indicates that due to climate change, the world is likely to experience a rise in temperature, resulting in increasing sea levels, more frequent extreme weather events and a change in rainfall patterns. These climatic changes will potentially impact on New Zealand's native ecosystems, industries, infrastructure, health, biosecurity and economy. In the long term, if unchecked, climate change increases the risk of major and irreversible changes to the Earth. The cost of doing nothing about climate change could be severe and the impacts on our environment, economy and society are likely to get steadily worse if greenhouse gas emissions are not reduced significantly over the coming decades.

25. New Zealand is a signatory to the Kyoto Protocol, which came into force on 16 February 2005. The protocol is the principal international response to climate change, following on from the United Nations Framework Convention on Climate Change. As a signatory to the protocol, New Zealand has agreed to reduce its carbon dioxide ($CO_2$)[11] emissions in the first commitment period (2008-2012) to 1990 levels or otherwise take responsibility for any surplus emissions.

26. However, in recent years New Zealand's emission levels have continued to increase. For example, in 2007, approximately 6.6 million tonnes of $CO_2$ were emitted into the atmosphere from electricity generation, compared with approximately 3.5 million tonnes of $CO_2$ in 1990[12]. This represents almost a doubling of New Zealand's $CO_2$ electricity related emissions over the past 17 years.

27. Each year New Zealand publishes a statement of the difference between 1990 emission levels and the levels predicted to arise during the Kyoto commitment period (2008 – 2012). The 2008 Net Position Report[13] projects a deficit of 21.7 million units predicted deficit.

[11] The commitment relates to greenhouse gases of which $CO_2$ is the major contributor.
[12] Ministry of Economic Development, *New Zealand Energy Greenhouse Gas Emissions 1990-2007, August 2008 p12*
[13] Ministry for the Environment, *Net Position Report , September 2008*

28. As previously mentioned, New Zealand must take responsibility for any surplus greenhouse gas emissions. It is also expected that the world economy will move towards devolving the cost of reducing emissions to emitters. Unlike many parts of the New Zealand economy, there are significant economic opportunities to reduce electricity sector emissions.

29. The proposed wind farm will avoid between approximately 610,000 and 1.4 million tonnes of $CO_2$ per annum, depending on whether gas[14] or coal[15] generation is avoided[16]. At $25 per tonne of $CO_2$, the reduction amounts to between approximately $15 million and $35 million avoided liability.

30. The amount of $CO_2$ savings attributable to this proposal will make a significant contribution to reducing New Zealand's overall predicted deficit and will help New Zealand to take a step towards achieving its goal of reducing emissions to 1990 levels. Maximising electricity generated form renewable sources now, rather than using fossil fuel resources, will help New Zealand meet its current Kyoto Protocol commitments as well as any future international commitments (should they occur), will avoid liability for surplus emissions, and will prepare the economy for devolving costs of reducing emissions assisting businesses to remain competitive in the future.

***Other benefits***

31. The development of electricity generated from wind resources will result in short and long-term employment opportunities, during the construction period and in maintaining and operating the wind farm after construction.

32. The proposal will utilise an untapped resource to produce electricity by a process which does not emit pollutants, at a location close to a major electricity load centre, and in a manner which allows for continued use of farmland. As such, the proposal and its use of wind power will promote the efficient use and development of natural and physical resources consistent with RMA section 7 (b).

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[14] 0.38 kt $CO_2$/GWh Gas generation emission factor *New Zealand's Energy Outlook to 2030*, p.41 footnote 86

[15] 0.90 kt $CO_2$/GWh Coal generation emission factor *New Zealand's Energy Outlook to 2030*, p.41 footnote 86

[16] Recent work by the Energy Data and Analysis Co-ordination cross-government group has predicted an average reduction of $CO_2$ equivalent emissions of 0.2 kt $CO_2$/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 $CO_2$ emissions from this proposal would be 320,000 tonnes of $CO_2$ equivalent per annum. At $25 per tonne of $CO_2$, this reduction amounts to approximately $8 million . (http://www.med.govt.nz/upload/55313/emisison%20reduction%20effects.pdf)

33. A significant benefit of wind generation is turbines may be installed relatively close to the source of electricity demand, thereby reducing losses from transmitting the electricity on the national grid. This will result in an efficient end use of electricity consistent with RMA section 7 (ba) and also an efficient use of natural and physical resources in terms of section 7(b). The average losses due to transmission were 3.7%[17] of the total electricity generated in 2007. This proposal is located in the proximity of the Auckland region, the largest centre of electricity demand, and so will help to meet this region's growing electricity demand requirements with reduced transmission losses.

34. As the proposal will utilise sustainable and renewable energy, it will contribute to maintaining and enhancing the quality of the global and national environment, by encouraging and facilitating a move towards renewable energy and by reducing the emission of greenhouse gases, consistent with RMA section 7 (f). It is also benign in regards to air quality, avoiding the emission of contaminants into the air such as particulates, sulphur dioxide, nitrous oxides and carbon monoxide.

35. As a sustainable resource, the utilisation of wind does not deplete other finite natural and physical resources, such as fossil fuels, and may slow the rate of decline of burning fossil fuels for electricity consistent with RMA section 7 (g). Largely, the underlying character of the wind farm site will remain, at the end of the economic life of a wind farm, turbines can be removed which may allow for the reversal of environmental effects.

36. To summarise, the proposal will result in a range of benefits and positive effects. The development of renewable electricity is essential to meet demand growth and to maintain security of supply. The proposal will also make a valuable contribution towards meeting the renewable electricity target (which I explain later in my evidence) and reducing $CO_2$ emissions.

**THE RESOURCE MANAGEMENT ACT 1991 – SECTION 104 (1)(c) CONSIDERATIONS**

37. Section 104 of the RMA includes matters to which regard must be had by decision makers when considering resource consent applications in achieving the purpose of the Act. This includes any other matter which is considered relevant and reasonably necessary to determine the application for resource consent (section 104 (1)(c)).

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

38. The New Zealand Energy Efficiency and Conservation Strategy (NZEECS) is a statutory document formed pursuant to section 10(1) of the Energy Efficiency and Conservation Act and while not a RMA document, it is my opinion that it, along with the 90% renewable electricity target, and the Proposed National Policy Statement on Renewable Electricity Generation, are all particularly relevant considerations to the determination of this application because they are recognition of the national level at which renewable energy is being addressed.

**The New Zealand Energy Efficiency and Conservation Strategy and the renewable electricity target**

39. The NZEECS is a detailed action plan for increasing the uptake of energy efficiency, conservation and renewable energy programmes across the economy and to make doing so part of the normal behaviour of New Zealanders. It recognises that there is significant scope to improve the operation of the electricity generation, transmission and distribution system to make it more efficient and increase the proportion of electricity generated from renewable energy resources.

40. The NZEECS sets a target that 90 percent of New Zealand's electricity will be generated from renewable sources by 2025 provided it does not compromise security of supply. Achievement of the target should lead to increased economic productivity in the energy sector by encouraging new industry and business development, and creating a more diversified electricity supply portfolio. It will also help to return New Zealand's greenhouse gas emissions back to 1990 levels and thereby assist New Zealand to meet its obligations under the Kyoto Protocol and future international agreements.

***Meeting the target***

41. To meet the 90% renewable electricity target, to maintain security of supply, and to reduce New Zealand's electricity related greenhouse gas emissions will require a significant increase in renewable electricity generation. In meeting the target sufficient generation capability can be maintained to meet electricity demand both in dry years and during the increasing electricity demand peaks, without incurring substantial costs.

42. New Zealand has world-class developed and undeveloped renewable energy resources and in the short term, the demand for electricity will be met by a mixture of more wind, hydro and geothermal. All renewable energy resources, including biomass

energy and emerging technologies such as wave, tidal and photovoltaics, will contribute to the target in the long term. Distributed generation, including small-scale renewable generation, will also continue to make useful contributions to electricity supply in the future.

43. Modelling lead by EECA, jointly commissioned with the Ministry of Economic Development and the Electricity Commission[18] was instrumental in setting the renewable electricity target. The electricity system was modelled for the period 2007 to 2030. A number of different scenarios were modelled, ranging from no target or no constraints to 95% renewable electricity by 2030. All scenarios required the maintenance of sufficient generation to meet dry year and system peak requirements. While indicative only, and subject to change depending on actual growth rates, economics of proposals and private investment decisions, the modelling predicts that to achieve 90% renewable electricity an increase in renewable generation of 3,750 MW is required by 2025. This is an installation rate of approximately 200MW per annum. In terms of generation, the modelling predicts that by 2025 an additional 20,700 GWh of electricity generated from renewables will be needed per annum.

44. As previously mentioned, over recent years New Zealand has relied heavily on demand growth being met by fossil fuel generation. It is clear that significant new renewable generation, from a base of 6,100 MW, will need to proceed in order for New Zealand to achieve the renewable electricity target. The proposal will contribute towards the achievement of this target.

***The role of wind generation in meeting the target***

45. New Zealand is fortunate in that it is able to maximise use of its excellent wind resources, chiefly because wind generation integrates well with its hydro based electricity system. Wind generation allows hydro resources to be stored while the wind blows, to be used later when demand increases, or when the wind is not blowing. Equally, hydro generation works well with wind, because hydro generation can be rapidly ramped up or down in response to fluctuations in wind electricity output.

46. In 2008, wind generated only 2.5%[19] of New Zealand's electricity. There is potential for much more; both EECA's scenario modelling and the Electricity Commission's

[18] The Energy Efficiency and Conservation Authority, Ministry of Economic Development , Electricity Commission, *Understanding the Implications of the Higher Proportion of Renewable Electricity by 2030*.
[19] Ministry of Economic Development, New Zealand Energy Quarterly, December 2008

Statement of Opportunities modelling shows approximately a 14% share for wind generation by 2030[20].

47. EECA's modelling indicates that wind generation is predicted to provide almost 30% of the *new* annual generation to meet the renewable electricity target, or approximately 6,300 GWh of the total 20,700 GWh new annual renewable electricity generation required[21].

48. The wind resource in New Zealand is currently relatively undeveloped with approximately 325 MW of installed wind capacity. To put this in the global context, worldwide the total installed wind generation capacity as at 2008 is approximately 121,000 MW, an increase of 29% over 2007. In 2008, approximately 27,000 MW of new wind generation was installed worldwide. [22]

49. The United States has the largest installed wind generation capacity, with 25,100 MW, followed by Germany at approximately 23,900 MW, Spain at 16,700 MW, China at 12,200 MW and India at 9,600 MW. Australia has about 1,300 MW. [23]

50. Wind generation is becoming an accepted and increasingly favoured form of electricity generation globally. Clearly New Zealand can do more to utilise its high quality wind resource. In New Zealand, wind, in particular, is the one renewable energy resource expected to take a greater share in the future than it does now.

51. It is accepted that there can be an issue with the intermittency of wind - wind farm output over the short term can be highly variable and integrating large quantities of wind into New Zealand's existing electricity system does pose some technical challenges, as there are with integrating any generation technology. However, while there are a range of operational issues which need to be managed, there are no fundamental technical issues that cannot be addressed which would set an upper limit on the amount of wind generation that could be installed[24] which would substantially hinder the economic development of New Zealand's wind resource.

52. To summarise, while there is a range of expected share of electricity generation to be borne by wind, it is clear that wind energy will play a major role in meeting the

[20] Concept Consulting, NZEECS Renewable Electricity Target; Modeling Results June 2007.
[21] This figure includes Tararua 3 and White Hills.
[22] Global Wind Energy Council
[23] Global Wind Energy Council
[24] Transpower's Annual Planning Report 2008 (page 25) http://www.gridnewzealand.co.nz/f72,3530/3530_annual-planning-report-2008.pdf

renewable electricity target and will be required initially to grow quickly from a relatively small base.

***Effects of the renewable electricity target on emissions***

53. As stated previously, if demand and supply continue growing in the same way that they have done in recent years, electricity related greenhouse gas emissions are predicted to double by 2030.

54. The achievement of the renewable electricity target will enable New Zealand's to reduce electricity related emissions to 1990 levels. Modelling completed by EECA[25] shows that to return annual electricity related emissions to 1990 levels, the proportion of renewable electricity needs to be over 90% by 2025. The modelling also illustrates that a lower renewable electricity generation share of 80% by 2025/30 will maintain emissions at or below 2005 levels, but this will not be sufficient to reach 1990 levels as agreed to under the Kyoto Protocol.

***The role of energy efficiency***

55. In addition to increasing the proportion of renewable energy, maximising the contribution of cost-effective energy efficiency and energy conservation is vital if New Zealand is to realise its goal of delivering electricity in an efficient, secure and affordable manner.

56. Improving New Zealand's energy efficiency and energy conservation efforts will help to keep electricity demand in check. Modelling undertaken by EECA shows that if annual electricity demand can be reduced from 1.5% to 1% or lower, less new capacity is required to meet demand, and therefore there is less need for the more expensive renewables to be developed. Also, under this scenario, cumulative $CO_2$ emissions over 2007 to 2030 would be 6% lower.

57. Energy efficiency and conservation measures, along with technologies such as solar water heating, are vital and necessary parts of New Zealand's future energy mix. However, on their own these measures and technologies will not be enough to offset the need for new generation. New Zealand also needs new renewable energy developments.

[25] Concept Consulting, NZEECS Renewable Electricity Target; Modeling Results June 2007.

### *Proposed National Policy Statement on Renewable Electricity*

58. To further assist the achievement of the renewable electricity target a national policy statement on renewable electricity generation under the RMA has been developed. The proposed national policy statement was notified in September 2008.

59. Its proposed objective is, "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 percent of New Zealand's electricity will be generated from renewable sources by 2025 (based on delivered electricity in an average hydrological year)".

60. The proposal is consistent with this objective.

61. In summary, the proposal is consistent with the vision and objectives of the NZEECS, and will contribute towards the achievement of the 90% renewable electricity target and the overall objective of the proposed National Policy Statement on Renewable Electricity.

## PUBLIC SUPPORT FOR RENEWABLE ENERGY

62. A public opinion survey of attitudes towards energy issues undertaken for EECA by AC Nielsen in 2008 indicates that New Zealanders overwhelmingly supported renewable energy generation[26]. The survey examined support for renewable energy, and for different types of energy resources including support for wind energy in a variety of situations.

63. Although direct comparisons can not be drawn, the results of similar survey undertaken in 2004 indicate an increasingly positive view of renewable energy in general and in particular wind energy, between 2004 and 2008.

64. There is considerable support for renewable energy, as something New Zealand needs to focus on for the future. The 2008 surveys found that over 90% of respondents see renewable energy as something New Zealand needs to focus on for the future. 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).

[26] The survey was conducted between January and March 2008 and again between October to December 2008. It is conducted regularly to allow EECA to track and monitor consumer attitudes to renewable energy and energy efficiency. The research is part of EECA's ongoing research strategy.

65. Renewable energy sources are favoured highly over fossil fuel sources and wind energy is identified as the most supported type of electricity generation, with 86% support. Of respondents, 88% 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.

**CONCLUSION**

66. Creating an efficient, secure and affordable electricity system while upholding our environmental responsibilities is of paramount importance to the New Zealand economy. Electricity is a vital input for businesses and consumers and, therefore, the efficient and cost-effective provision of electricity services over the long-term is significant at a national level. To provide the electricity New Zealand needs to maintain society's current standard of living, the electricity system is required to meet both current demand (when, and at the levels, that it occurs), and to also meet growing future demand.

67. New Zealand still has substantial renewable energy resources that have not yet been developed. In line with growing public support for renewable energy it makes sense to cost-effectively utilise our untapped renewable energy resources to: diversify our generation portfolio, to improve security of supply; reverse our declining share of renewable generation; and reduce our greenhouse gas emissions.

68. To recap on why EECA supports this proposal:

- it is a renewable energy development, and such developments are vitally important for the production and delivery of electricity in an efficient, secure, affordable and environmentally sustainable manner.
- it will contribute to improving security of electricity supply; will meet current and future electricity demand, including winter and peak demand; will contribute to the geographic diversity of the electricity system as a whole, adding to its resilience; and will help to maintain a reliable, robust and sustainable electricity system; and

- it will increase the supply of renewable electricity thereby being well aligned with New Zealand's renewable electricity target and it's commitment to the Kyoto Protocol and its efforts to reduce electricity related $CO_2$ emissions.

69. For all of these reasons, the proposal is of national significance and value and will provide national benefits and positive effects. With specific regard to the Resource Management Act 1991, EECA submits that the proposal is consistent with sections 7 of the RMA and that all of the above reasons should be given weight in the consideration required to achieve the purpose of the Act.

**27 March 2009**