

# Submission on Proposed National Policy Statement for Renewable Electricity Generation

Section 49 of the Resource Management Act 1991.

To: The Chairperson [renewable.electricity@mfe.govt.nz](mailto:renewable.electricity@mfe.govt.nz)  
Board of Inquiry

This is a submission on the following proposed national policy statement (the proposal):

**Proposed national policy statement for renewable electricity generation.**

From: Auckland Conservation Board - *Te Runanga Papa Atawhai o Tamaki Makaurau*

The Auckland Conservation Board is a statutory board appointed by the Minister of Conservation under the provisions of the Conservation Act 1987. Conservation boards provide community advice on conservation areas, policy and activities of the Department of Conservation, as well as having a role to advocate for conservation generally.

The interests of the Board are founded by the Conservation Act 1987. This is an Act to promote the conservation of New Zealand's natural and historic resources.

The Board is extremely pleased to see this proposed policy released for discussion and thanks the Board of Inquiry for the opportunity to comment on these issues.

The specific provisions of the proposal that our submission relates to are:

Policy 1 part ii

Policy 2 part i and ii

Policy 3

Policy 4 part i and ii

Policy 5

The Board's submission is that we support these provisions with amendments as follows:

1. **Policy 1 part ii “maintaining or increasing security of electricity supply at local, regional and national levels by diversifying the type and/or location of electricity generation.”**

We propose the following changes to the draft policy: the words “at an appropriate scale with due regard for the wider ecosystem, local community and iwi concerns” should be added. “Due regard” means that if there is any doubt, the wishes of the local community and hapu/iwi who have traditionally upheld ahikaa in the region WILL prevail.

1.1 The Board supports diversification to maintain security of supply, subject to careful consideration of appropriate scale and possible adverse effects. We draw attention to the Board's submission to the Electricity Commission on 28 March 2007 (attached in full as Appendix 1) concluding:

“Subject to local environmental factors it may be that a combination of solar, wind and hydro power generation could be feasible. There are ongoing developments such as small scale hydro technologies available now.

The Board wishes to emphasis it's view that new power generation schemes should as a rule be small and sustainable, tailored to meet the needs of the local community and under their control, with the long term benefits accruing to the quality of life in the community. If local power generation becomes widespread then expensive large scale, invasive upgrading of the national grid will not be necessary.”

1.2 To elaborate on this theme, if the majority of residential and commercial buildings in the greater Auckland area had efficient solar generation systems installed on north facing roof surfaces, all feeding into the local grid during the day while the occupants were away from home, at work or school then this would supplement the power requirements of commerce and industry and reduce the need for long distance transmission of electricity.

1.3 The Board stresses that caution and commonsense should always prevail in the development of new technology in relation to electricity generation e.g. it may not be wise to mount a large array of solar panels producing more than normal mains power on school rooms, child care centres, or residential rooms where young children spend much of the day, should higher capacity solar generating arrays be developed, they must be completely shielded, and mounted on higher roof surfaces away from daytime living spaces.

**2 Policy 2: “When considering measures to avoid, remedy or mitigate the adverse environmental effects of renewable electricity generation activities, consent authorities must have particular regard to the constraints imposed on achieving those measures by:**

**i. the nature and location of the renewable energy source”**

The Board supports these provisions and submits that these must be robust and specific.

2.1 The Board submits that this policy should clearly specify that any application for electricity generation (aside from micro scale units to support huts, visitor facilities or scientific installations) will NEVER be allowed in or near a Marine Mammal Sanctuary, Marine Protected Area, Marine Reserve, National Park, Conservation Stewardship Area or any intercoastal area where migratory birds feed, in the flight path of migratory or local birds or in the main entrance channel to harbours where marine mammals and elasmobranches (sharks and rays) may feed or breed.

2.1.1 Scientists now consider that migratory birds and marine species navigate using the earth’s magnetic field using tiny amounts of minerals in their bodies, and we know from simple school physics experiments demonstrating the fundamental laws of electricity, that electricity generation changes the local magnetic field, causing a compass needle to change direction. This is of lesser concern when considering conventional generators with a stator ring and rotors of small diameter, or even larger hydroelectric turbines such as the Manapouri Power station, the largest hydro electric power station in NZ, which has generator housings several metres in diameter, large enough for workers to climb inside them, however are usually surrounded by concrete, or in the case of Manapouri, are several hundred metres underground. One of the major concerns with the proposed Kaipara tide turbines was the change from a turbine driving a conventional generator housed in a sealed box, to a design where the full diameter of the turbine housing in which the rotor turns, forms the generator stator somewhere between 16 metres and 24 metres in diameter. Such large diameter, combined with the even larger steel base structure could be expected to considerably amplify the electromagnetic fields produced by each turbine generator unit, and when up to 200 units are installed in close proximity, could produce significant fluctuations to the local magnetic field during each tidal phase, constantly disrupting the navigation of all – small surface craft, marine life and migratory birds.

2.1.2 With further regard to Policy 2 (i) nature and location, the Board submits that this policy should clearly differentiate between projects using proven technology e.g. solar panels or wind turbines, on private land largely removed from public view, where the local community have few concerns and environmental values are not greatly compromised, compared to highly invasive proposals implying exclusive occupation of public domain such as the Mokihinui hydro dam proposal, or the proposed unproven Kaipara tide turbines with the loss of natural values and potential for irreversible environmental damage

**Policy 2 - ii. logistical or technical practicalities associated with developing, operating or maintaining the proposed renewable electricity generation activity.”**

2.2 The Board submits that it is inappropriate and technically unnecessary to test new and unproven technology in the New Zealand environment, or to contribute public funds towards such testing when there are well established and fully funded test facilities already established in the northern hemisphere, it is a completely unnecessary duplication and waste of scarce funding. We also submit that a single properly funded national agency rather than diverse regional authorities would be more appropriate to consider the implications and adverse effects of any large scale proposals, for example the proposed thermal power station at Kaukapakapa, or Kaipara tide turbines. The Board notes that where any adverse effects and discharges are likely to transcend notional boundaries, these dotted lines exist only on maps, the birds fly over the “line” and fish swim underneath without ever knowing it’s existence and the tide will flow in and out twice every day carrying whatever contaminants and discharges the installation may emit. It is not appropriate or effective for a sole local or regional authority which may have different interpretations or standards of environmental protection to its neighbours, to consider applications of major environmental significance.

2.2.1 The Board submits that in a small country such as NZ, it is unsustainable for multiple regional and local authorities to develop individual guidelines and processes to deal with applications for new and unproven technology, and clear direction must be provided at national level, to adopting international best practise as the Board submitted in it’s Kaipara tide turbine submissions (attached as Appendix 2), drawing attention to the establishment of the European Marine Energy Centre and urging the adoption of their standards of technical detail required before the installation of any test units, including a full decommissioning plan.

**3 Policy 3 - “When considering proposals to develop new renewable electricity generation activities, decision-makers must have particular regard to the relative degree of reversibility of the adverse environmental effects associated with proposed generation technologies.”**

The Board strongly supports this policy, and wishes to draw attention to the practicalities of small scale surface electricity generation using solar panels, wind turbines, and micro hydro generation schemes which can readily be removed leaving no trace at any time should they breakdown, prove harmful in any way, or are superseded by more efficient and safer technology. This last is one of the reasons that we consider large scale marine installations with high capital costs and a proposed life of 45 years, which cannot or will not be readily removed, are totally inappropriate in the New Zealand environment.

3.1 The Board submits that it is environmentally unsound to attempt to mitigate or monitor adverse environmental effects when the nett result could be disorientation, endangerment and failure to locate customary breeding and feeding areas, loss of these areas i.e the first we will know of adverse effects, may be when an entire species such as the Godwits fail to return to their customary habitats and disappear forever.

3.2 The Board supports a consistent national approach to such issues and recommends that a national authority or agency such as Maritime NZ (formerly the Maritime Safety Authority) would have naval architects, marine engineers and surveyors who could be better qualified to understand the wide ranging issues of electricity generation in sea water combined with steel structures and other dissimilar metals which could include aluminium, copper, lead and zinc, also the issues of anti corrosive marine paint systems, and of anti fouling paints which are likely to be applied on top of the anti corrosive coatings

3.3 It would also seem sensible for MfE to convene a national council of coastal, environmental & marine scientists and ecologists to advise on the wider range of adverse effects which may not be adequately addressed by the applicant's assessment.

4. **Policy 4** “By 13 March 2012, local authorities are to notify, in accordance with Schedule 1 of the Act, a plan change, proposed plan or variation to introduce objectives, policies and, where appropriate, methods, into policy statements and plans to enable activities associated with:

**i. the identification and assessment by generators of potential sites and energy sources for renewable electricity generation”**

4.1 The Board submits that high level national policy should be under pinned with a robust regulatory framework to clearly identify sites and potential energy sources of environmental significance that should NEVER be considered for electricity generation of any type.

**ii. research-scale investigation into emerging renewable electricity generation technologies and methods.**

4.2 The Board submits that public investment in research of renewable electricity technologies in the NZ context, should be encouraged to concentrate on development of affordable, more efficient, well proven methods such as small scale solar, water & wind power equipment, for example composite roofing materials encapsulating solar energy cells and water heating channels, so that large areas of residential and commercial roofing can economically be replaced to provide unintrusive solar power generation and water heating. In addition, the provision of low cost or free nett metering equipment to enable surplus power generated to be returned to the national grid and reduce the requirement for storage batteries, should be a priority. Storage battery technology is another major area for development, also lighter, more compact and efficient wind turbines which can more easily be erected with lower environmental impact.

4.2.1 The Board is totally opposed to the building of any more large scale dams due to their extreme adverse effects on ecological water flows, however it considers that micro hydro generation of the Pelton wheel type used at Whatipu Lodge on the West Coast of Waitakere City adjacent to the Whatipu Scientific Reserve, for example, could be widely employed without disrupting ecological flows.

4.2.2 The Board again emphasises that it is totally unnecessary and a waste of precious research funds, for developers to duplicate marine tide turbine testing in NZ when there is a fully developed test facility at Stromness, funded by a number of European governments. Any such local site testing, if appropriate sites are available, should only be done with a single fully developed and tested turbine unit to confirm how it will perform in the specific environment, and to establish that the developer can safely deploy and decommission the entire unit.

4.2.3 The Board considers it a matter of fundamental policy, that by definition any “renewable” energy device of any type, MUST be demonstrably able to be safely decommissioned and completely removed at any time leaving no trace. This should be the first test for any installation of any scale.

4.2.4 The Board further advocates as a matter of commonsense that any power generation device of any scale must undergo the same testing for compliance as the equivalent size of new appliances before they can be marketed, new vehicles before they are allowed on the road, new aircraft before they are allowed to fly, or new vessels before they can be launched.

5. **Policy 5**

**“By 13 March 2012, local authorities are to notify, in accordance with Schedule 1 of the Act, a plan change, proposed plan or variation to introduce objectives, policies and, where appropriate, methods, into policy statements and plans to enable activities associated with the development and operation of small and community-scale distributed renewable electricity generation.”**

5.1 The Board submits that individual or community small scale generation should be enabled without expensive compliance regimes, and integrated into the building code to allow it to be incorporated as standard best practise in any new building or renovation, to enable individuals and local communities to be self supporting for basic needs, to reduce their living costs and to protect the environment in a sustainable fashion.

The Board wishes to be heard in support of our submission.

\* If others make a similar submission, the Board will consider presenting a joint case with them at a hearing.

**Denise Yates**

Chairperson

Auckland Conservation Board

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Date 30 October 2008

# AUCKLAND CONSERVATION BOARD

28 March, 2007

Jenny Walton  
Electricity Commission  
Level 7, ASB Bank Tower  
2 Hunter Street  
PO Box 10041  
Wellington 6036

Dear Madam

Re: Submission on Transpower's North Island Grid Upgrade Proposal

## INTRODUCTION

1. The Auckland Conservation Board is a statutory board appointed by the Minister of Conservation under the provisions of the Conservation Act 1987. Conservation boards provide community advice on conservation areas, policy and activities of the Department of Conservation, as well as having a role to advocate for conservation generally.
2. The interests of the Board are founded by the Conservation Act 1987. This is an Act to promote the conservation of New Zealand's natural and historic resources.

## DISCUSSION

3. The Auckland Conservation Board considers that it is time for change in policy for national priorities around energy production. Ideally, any new policy must give priority for energy consumers to utilise the many and varied forms of locally available renewable and sustainable energy production. The Auckland Conservation Board advocates that a greater level of energy conservation at the consumer level can be achieved.
4. Large-scale energy production and reticulation is unacceptable now we have an obligation under The Kyoto Accord to reduce and minimise those factors which can contribute to global warming and climate change.
5. **Concept;**
  - 5.1 The Board submits that all new buildings erected in New Zealand should incorporate sustainable energy production with respect to efficiency, water conservation and carbon footprint. New subdivisions and high density housing developments could have the option of either individual or small group schemes.

- 5.2 Existing buildings and houses undergoing alterations and extensions requiring building permits should also be required to incorporate sustainable energy production with regard to efficiency, water conservation and carbon footprint.
- 5.3 The Board supports financial incentives for the creation of infrastructure at the level of the energy consumers, such as solar panels or similar passive, renewable /sustainable energy generation devices.
- 5.4 The Board supports incentives and education programs for greater consumer awareness.

## **6. Funding;**

- 6.1 The Board proposes that the additional cost of installing small scale renewable energy production systems could be covered by specific interest free loans.
- 6.2 In situations where buildings and dwellings are old, infrequently used or have a limited remaining life, investment in solar energy production could be concentrated on local community buildings including schools, fire and ambulance stations, churches, community halls, marae and sports club buildings. Any net gain from excess energy production returned to the national grid, would be to the benefit of these organisations and /or their members.
- 6.3 The Board contends that when a situation exists where most residential buildings in the Auckland region are returning surplus energy to the local grid during the off peak times then the additional energy requirements of commerce and industry may be met without a need for new large scale energy projects.

## **7. Environmental issues;**

- 7.1 New Zealand must protect its natural heritage and those landscape and community and cultural values that make us who we are.
- 7.2 It is no longer acceptable for large multinational companies to ignore the views and feelings, or social, cultural and health needs of individuals and communities in favour of of a perceived “national good”.
- 7.3 Wide and thorough consultation must be carried out with respect to proposals that have a range of effects.

## **8. Impacts;**

- 8.1 The impacts of energy production projects of any scale must always be mitigated under the RMA process, however small scale solar energy generation is passive and non intrusive if panels are mounted on existing roof surfaces.

8.2 The Auckland Conservation Board considers that the current proposals for new large-scale energy generation and reticulation have many potentially adverse environmental, cultural and social effects.

8.3 The displacement of communities or the creation of industry that jeopardises or compromises people's health, culture and environment must be given greater consideration to a perceived national benefit where alternatives exist and are economically feasible to implement.

## 9. Conclusions

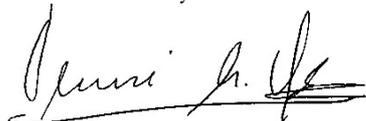
Subject to local environmental factors it may be that a combination of solar, wind and hydro power generation could be feasible. There are ongoing developments such as small scale hydro technologies available now.

The Board wishes to emphasise its view that new power generation schemes should as a rule be small and sustainable, tailored to meet the needs of the local community and under their control, with the long term benefits accruing to the quality of life in the community. If local power generation becomes widespread then expensive large scale, invasive upgrading of the national grid will not be necessary.

The Board wishes to be party to any future consultation and information.

The Board wishes to be heard in support of its submission at the public conference to be held on this proposal.

Yours sincerely



Denise Yates  
**Board Chairperson**

# AUCKLAND CONSERVATION BOARD

10 January, 2007

D L Roke  
Consents Manager  
Northland Regional Council  
Private Bag 9021  
WHANGAREI

Dear Sir/Madam

Re: Submission on Crest Energy Limited's resource consent application for a marine turbine generation project in the Kaipara Harbour.

## INTRODUCTION

3. The Auckland Conservation Board is a statutory board appointed by the Minister of Conservation under the provisions of the Conservation Act 1987. Conservation boards provide community advice on conservation areas, policy and activities of the Department of Conservation, as well as having a role to advocate for conservation generally.
4. The interests of the Board are founded by the Conservation Act 1987. This is an Act to promote the conservation of New Zealand's natural and historic resources.

## DISCUSSION

3. The Auckland Conservation Board wishes to submit the following comments with regard to the application by Crest Energy Limited to the Northland and Auckland Regional Councils and to Rodney District Council under Section 93(2) of the Resource Management Act 1991 to construct a marine turbine generation project in the Kaipara Harbour.
4. Very little time has been available to the Board, and other interested parties, to properly consider the Application. The Notice of Application is dated 23 November 2006, with a deadline for submissions of 12 January 2007, a period of time broken up by Christmas and New Year Statutory holidays.
5. Therefore, while clearly the Board supports in principle the concept of sustainable and renewable alternative energy generation, including tidal energy, we have wide ranging concerns about this particular application, not least the lack of device-specific information.

Serviced by:  
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6. The Board therefore submits that these wide ranging concerns include, but are not necessarily restricted to the following:

**6.1 Re the Transmission cable from the Kaipara Harbour mouth to the Hoteo River;**

- 6.1.1. The extent of the proposed cable.
- 6.1.2. The disturbance to the seabed during installation and maintenance.
- 6.1.3. The possible consequences that this cable will severely limit anchorages around the cable.
- 6.1.4. The almost inevitable damage to the seabed and habitat values.
- 6.1.5. The electromagnetic signature of the cable and the effect of this on sharks who use electromagnetic fields for navigation and orientation. As sharks use the harbour for breeding this is of concern to us.

**6.2 The currently unquantifiable potential for adverse effects including;**

- 6.2.1. Electrical discharges, noise and vibration generation, heated water, discharge of contaminants including anti corrosive paint, antifouling leachate, hydraulic fluid and lubricants, as well as suspended sediments, on fish and marine mammals entering and exiting the Kaipara Harbour for breeding purposes.
- 6.2.2 Disturbance to customary patterns and movement of marine life in general.
- 6.2.3 Consequent impacts on the food chain and the many thousands of sea birds feeding in the Kaipara Harbour.

**6.3 Other physical concerns;**

- 6.3.1 The potential for the turbine structures and rotating blades to damage any fish or marine mammals particularly endangered maui dolphin which may swim into them.
- 6.3.2 The enormous scale of this project occupying a significant area of the seabed in the entrance to the Kaipara Harbour.
- 6.3.3 The probability that turbine units could be moved around on the seabed by storm surge (as happened with the dive wreck of the sunken frigate Wellington) and smash into each other or be washed into shallower water where they will be difficult to salvage, discharging contaminants.
- 6.3.4 The risk of service and installation vessels carrying quantities of contaminants joining the numerous other shipwrecks in this dangerous area of water.

**7. Environmental Impact Assessment Guidelines**

- 7.1 In researching information on this method of power generation, the Board noted the establishment of the European Marine Energy Centre test site near Stromness in the Orkney Islands, and the comprehensive Environmental Impact Assessment guidelines published by the EMEC which must be complied with by developers before they can install one unit for testing. A copy of these guidelines is attached for your information.

7.2 The Board strongly urges that these be considered as international best practise for determining the environmental effects of underwater power generation devices, and that substantially more detailed device specific information including test results, with device specific installation and de-commissioning plans, be supplied to facilitate an informed consideration of this application.

The Board wishes to be party to any future consultation and information.

The Board wishes to be heard in support of our submission at future Hearings on this application.

Yours sincerely

**Denise Yates**  
**Chairperson**

The Board's second submission in September 2007 again included these guidelines "for guidance, further drawing attention to the information readily available on the EMEC website: [http://www.emec.org.uk/standards\\_environmental\\_impact.asp](http://www.emec.org.uk/standards_environmental_impact.asp)

**"Environmental Certification Scheme – The industry sees value in preparation of a certification system for wave and tidal stream devices that will allow technology developers to gain an accreditation for their device thereby ensuring that they will satisfy the reasonable requirements of conservation groups, other sea users and relevant stakeholders. This is planned over the next year or so.**

**Other Standards for the Industry: The industry has suggested that the following guides or draft standards are needed, these are still to be scoped in detail.**

**Tank Testing Performance Assessment    Standard Wave Scatter & Power Diagrams**

**Project Development Grid Interface**

**Inherent Safety in Design (in collaboration Carbon Trust)**

**Reliability, Availability & Maintainability    Health & Safety Practice**

**Resource Assessment RP                      Manufacture & Test Certification Scheme Outline"**

4.2.2 The Board urged that EMEC guidelines be recognised as current international best practise for assessing the environmental effects of marine power generation devices and structures, and that substantially more detailed device specific information including test results, with device specific installation and de-commissioning plans to the level of technical detail required by EMEC, should be supplied to facilitate an informed consideration of this application. The single turbine unit of this type being tested at EMEC has been installed on two mono piles driven into the seabed, not in the proposed freestanding venturi turbine housings.

4.2.3 The Board is extremely concerned that the detail required in the EMEC guidelines was not provided in the July 2007 Project Update and Further Information Pursuant to Section 92 RMA, and considers that information supplied about “bio fouling” is unacceptably generalised (specifically notes that it is yet to be finalised) and only refers to the interior surfaces of the turbine housing units.

4.2.4 Of greater concern is that no details whatsoever have been provided for the substantial quantities of anti corrosive coatings that will need to be applied to all surfaces of each steel turbine housing and the cable connection structure, or of the chemical and metallic composition of these coatings, commonly zinc based. It can be deduced that if the interior turbine surface area is in the region of 900 m<sup>2</sup> then the total exterior surface area of each housing, legs and base unit will be considerably greater, in the region of 1200m<sup>3</sup> – 1800m<sup>3</sup>. The interior turbine surface will also require a full anti corrosive protection system beneath any antifouling i.e total surface area coatings in excess of 2100 m<sup>3</sup> will be required for each unit.

4.2.5 No mention is made of the large quantities of zinc anodes normally fitted to any steel structures underwater, especially where electrical currents are present, or of the frequency that these will need to be replaced. In summary no further detailed information whatsoever has been provided about the quantities of protective coatings each unit will require, whether antifouling or anti corrosive, nor the rate at which it will be abraded / ablated in this sand laden environment, nor the frequency or procedures for reapplying coatings. The impression is given that these units will remain on the seabed for the project life of 45 years, then easily be uplifted leaving no trace.

4.2.6 This lack of specific information in the additional S92's appears to be either deliberately misleading, or an indication that the applicants are totally ignorant of the physical practicalities of the 200 turbine units which they propose to "install" on the seabed. Furthermore there is no information on the seabed cable junction box which has now been added into the installation, or on the need for a heavy mooring to take the tug and barge unit which it appears would need to remain permanently on site installing and lifting turbine units to reapply anti fouling and anti corrosive coatings.

4.2.7 The marine industry is generally aware that any steel structures will require regular re applications of antifouling and anti corrosion coatings, together with more frequent replacement of zinc anode protection, commonly within a period of 1 -5 years. Anti corrosive coatings may last for up to 15 years in sheltered water, however the rate at which they will be abraded in this situation with 3 knot currents carrying high levels of sand and other suspended sediments is unknown.

4.2.8 It appears that in practice, installation / service vessels would need to remain in the area at all times given the limited period available to work in, installing and lifting units to be taken ashore for refurbishing, with ongoing risk of shipwreck or stranding. The adverse effects of the antifouling and anti corrosion coating chemicals and metals leaking or leaching into the water and the physical activities associated with operation and maintenance are thus seen by the Board to have extreme impacts on the environment and ecology of the area that could not be mitigated by any methodology or management tool."