

Submissions received

- New Era Energy Inc Morrinsville
- New Era Energy Inc South Waikato
- New Era Energy Inc
- Northpower
- New Zealand Council for Infrastructure

Submission by

New Era Energy Inc Morrinsville

NEW ERA ENERGY INC MORRINSVILLE

Submission to Electricity Commission on Evaluation of Possibility of a
Corridor
22 June 2006

Prepared by Lorraine Bilby

In response to the request for information on a proposed corridor for future transmission, I have prepared the following comments.

While there are many logical reasons as to why a corridor easement would be desirable from the utility providers point of view and there would be minor benefits for the landowners concerned, the way in which present easements are negotiated is far from satisfactory from a landowner's perspective, therefore these minor benefits would be negated.

Where urban development is concerned, however, it would help town planners to have an easement in place so that the town can grow away from the transmission corridor. The easement needs to be a considerable distance from existing dwellings and places of work because of the mounting body of scientific evidence that there are health issues surrounding high voltage transmission lines.

In regard to obtaining an easement through rural land, the effect is likely to be gross devaluation of the value of that land and neighbouring properties.

It may not obtain RMA approval

It may never be required for transmission lines

There can be no accurate measurement of the injurious affection when the nature of the transmission line has not been decided upon

Injurious affection is ongoing and this should be recognized e.g., similar land increasing at 10% without transmission lines where land with transmission lines may be only 2%, upgrading or future development of the line would not be compensated for etc

Currently there is no review of further payment over an easement as future devaluation takes place of the adjoining properties to that easement

Reviewable lease agreements would be the only way forward in conjunction with a lump sum capital payment

As the use of the land changes over time how can this be reflected in compensation if a lump sum only is made?

As the arguments grow over the health issues, whether perceived or real, the impact on land values affected is likely to be considerable. No lump sum payment alone could evaluate these outcomes.

What guarantees do the landowners have that the easement will not be on sold for other utilities or indeed to outside interests?

If a transmission line were not built within a reasonable timeframe, then at what point in time would the ownership of the easement revert to the landowner?

Many landowners are unwilling to give up ownership of their property because of the uncertainty surrounding easements. They would be required to give up huge property rights in return for very little under the present regime.

Over the past 20 months Transpower has shown little respect for the landowners there by damaging relationships to the point of a high level of mistrust. This would make negotiations very difficult.

While it is well recognized that the way in which the current grid has evolved is far from satisfactory, it is, in my opinion, going to be very difficult to find a path forward unless landowners are considered as shareholders and compensated appropriately in what is a competitive commercial market.

Submission by
New Era Energy Inc

1st June 2006

Roy Hemmingway
The Electricity Commission
PO Box 10041
WELLINGTON

Dear Roy

Submission on the Electricity Commission's Draft Decision on Transpower's Auckland 400kV Grid Investment Proposal

The branches of New Era Energy are making individual submissions to the Electricity Commission on its draft decision, this ensures that the issues specific to each part of the proposed line route are discussed in appropriate detail.

There are, however, some aspects of the draft decision that apply to the overall grid investment proposal. All the branches of New Era Energy maintain the one view on these fundamental issues:

NEE supports the draft decision that "Transpower's proposal does not meet the Grid Investment Test and cannot be approved". While appreciating that the Commission reached this conclusion entirely on economic grounds, NEE goes further and contends that additional social and environmental costs arising from the scale of the 400kV proposal absolutely ensure that it is untenable. For all these reasons, NEE members are unanimously implacably opposed to **any** 400kV proposal supported by 70m pylons.

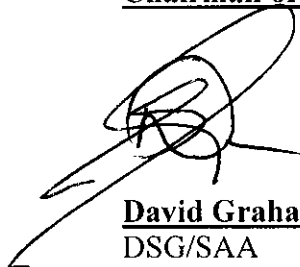
NEE supports the interim investments to up-rate the existing 220kV grid. The commercial common sense of getting the maximum utilization from the existing assets before investing in new assets is, however, only one reason for this support. More importantly, in the view of NEE members, is that this course "buys time", during which more careful and better-informed planning of the generation and distribution of electricity can be developed.

While understanding that the draft decision relates entirely to Transpower's proposal, NEE members remain extremely concerned that the Commission is able only to view the proposal in isolation, without taking into full account the generation side of the supply of electricity. NEE is hopeful that an important outcome if the draft decision is confirmed will be the encouragement of generation close to demand – that is, power stations in and north of Auckland. However this doesn't go far enough, in NEE's view. NEE believes that the Commission should make representations to the Government with a view to establishing mechanisms that see power stations being built close to demand, which will increase the security of supply and avoid the need for new transmission lines.

NEE supports the investigation of a dedicated transmission corridor within the context of an overall national electricity plan. While believing that this issue is worthy of proper investigation, NEE does not at this stage necessarily support the concept itself, foreseeing a number of practical, legislative and economic difficulties.

Should you require any further clarification please do not hesitate to contact the writer.

Yours faithfully
Chairman of New Era Energy

A handwritten signature in black ink, appearing to be 'David Graham', written over a horizontal line. The signature is stylized and somewhat cursive.

David Graham
DSG/SAA
Encl

**Submission to the Electricity Commission
on their
decision on Transpower's proposed
400kV Whakamaru-Otahuhu transmission proposal**

Prepared by
Robert J. McQueen
New Era Energy
June 22, 2006

1. General Comments

- 1.1 We **agree with the decision** of the Electricity Commission to turn down the Transpower Auckland 400kV proposal, and compliment the Electricity Commission for the thorough and fair economic analysis of the proposal and other transmission alternatives. We also commend the Electricity Commission on its transparent and honest consultation process..... quite a welcome contrast to the "consultation" process that Transpower claims to have been involved in since October 2004.
- 1.2 Our view is that the Transpower proposal was poorly constructed, missing significant amounts of required information, and is far from the best economic choice available. Transpower has undertaken no true consultation on the need for the line, no consultation or serious consideration of upgrade transmission alternatives for existing lines, and actively blocked, rather than facilitated the discussion of other transmission technology alternatives with the stakeholder group our organisation represents. Further, we believe Transpower has actively misled at least our stakeholder group, and possibly other stakeholders, with statements about the urgency of the 400kV line being required by 2010, the inability to do upgrade work on existing lines because they are running at full capacity 100% of the time, and the economic feasibility of other transmission technology alternatives. Transpower should be ashamed!

2. Easement Costs

- 2.1 There are some issues we would like to present on the costing of the easement corridor for the proposed 400kV line. The economic evaluation of the Transpower proposal under the grid investment test does not take into account any health or environmental issues - these will be dealt with, we hope, should this proposal or its variants ever make it as far as the RMA Notice of Requirement processes. However, the Electricity Commission should take note of the economic impact of some of these health and environmental issues, as we believe it is unlikely the RMA processes will ever grant approval for the Transpower 400kV proposal without significant mitigation of the effects likely to result from the construction of this line. The economic impacts that should be taken into account by any future Electricity Commission evaluations should incorporate probabilistic weighted estimates for the impact of these additional costs.

- 2.2 There are three components of easement costs which are likely to be many times greater than what has been estimated by Transpower, and which unfortunately were accepted as reasonable by the Electricity Commission assessment on this proposal.
- 2.2.1 **Easement Width.** Transpower have designed to a 65 metre wide easement width, while we feel that a 600 metre wide easement width is appropriate if this line is to be built. Appendix 1 of this submission contains the draft recommendation of a working group on easement widths of high voltage alternating current transmission lines which calls for an easement width of 600 metres for HVAC transmission lines as proposed by Transpower. At a minimum, the cost of acquiring this additional easement area will be about six times that estimated by Transpower, but in reality, it may well be more in the vicinity of 10-20 times those costs (up to \$2.8 billion) because that easement width cannot “pick its way” through settlements and dwellings, and therefore a much higher number of properties will require removal or replacement of dwellings and other buildings.
- 2.2.2 **Undergrounding.** Some areas of the selected route contain areas of special character, such as Lake Karapiro and the Maungatautari Ecological Island project, and where existing uses must not be affected, such as Ardmore Airport. The RMA processes may require as a condition of construction of this line that some additional sections of the 400kV line be undergrounded, at significant multiple of cost per kilometer of overhead pylons. Our estimate is that these additional underground sections could add as much as \$300 million for this additional undergrounding.
- 2.2.3 **Cost of easement.** Transpower is basing its costs of acquiring easements along the proposed route on a flimsy legal notion of injurious affection, which provides unrealistic targets for compensation of landowners. We believe the costs of settling with the vast majority of landowners along the proposed greenfields route, perhaps through compulsory arbitration under the operative sections of the Public Works legislation, even if a minimal 65 metre wide easement is all that is required by the RMA processes, will be at least five times (\$850 million) the amount being budgeted by Transpower. It should be noted that the cost of easement may differ quite significantly with the transmission technology chosen.....for example, because no health risks have been reported with HVDC overhead or underground lines, the easement width for transmission lines using this technology might be considerably less than the 600 metres which could be required for overhead 400kV HVAC lines.
- 2.2.4 **Overall,** we believe the potential for these significant additional easement costs needs to be incorporated in the costing model for any future new greenfields line, perhaps as a range of costs from the Transpower baseline estimates to the upper limits of possible costs as stated above. Picking a “most likely” cost for pylons, transformers and construction costs may be acceptable for the construction cost of the line; however, cost of acquiring the easements must be taken into account as a range of possible costs, not just by using the minimum likely easement acquisition cost as supplied by Transpower.

3. **Health Issues**

- 3.1 There are a range of health issues from overhead HVAC transmission lines which will be central to our opposition through the RMA processes. While it is not within the mandate of the Electricity Commission to consider the veracity of these health issues, it is within the EC's mandate to consider the economic effects of this issue.
- 3.2 The economic impacts of these health risks are likely to include initial additional costs for easement acquisition under the risk avoidance public policies now being developed elsewhere in the world, and also the potential for future penalty costs and death and injury compensation imposed by the courts in the future where individuals impacted by the lines seek financial redress for injuries suffered, and their cases are substantiated by the growing body of research that is showing that living close to HVAC transmission is injurious to human health. In effect, the EC costings for this line should include the equivalent of Transpower establishing contingency reserves, or purchasing public liability indemnity for any future claims brought against them after construction of this line. Even if financial cover is included in the costs, the social costs may not be politically acceptable.

4.0 **The revised 220kV/400kV proposal**

- 4.1 We believe the modified 220kV/400kV proposal, if submitted, needs a full investigation and economic test, and due process and timeframes for consultation and submission comment. We expect the Electricity Commission's investigation, analysis and public consultation processes on the revised proposal to be even more thorough than the process that resulted in the present "no" decision, and extend into consideration of generation and demand reduction alternatives. From our perspective, the revised Transpower proposal will still be as obtrusive as the original proposal, will likely be quickly upgraded to 400kV, and therefore will remain completely unacceptable to our organisation.

5.0 **Consideration of generation and demand reduction alternatives to transmission**

- 5.1 The Electricity Commission had said it would be investigating three areas of alternatives to the Transpower proposal, namely transmission alternatives, generation alternatives and peak and base load demand reduction alternatives when considering the original 400kV proposal, but in the end, it only looked at transmission alternatives and needed to go no further, because four lower cost transmission alternatives appeared as a result of consultation and analysis. We encourage the Electricity Commission to fully investigate generation and demand reduction alternatives if a revised Transpower proposal for 220kV/400kV is submitted. We believe a mix of strategic new generation north of Auckland, and strategic initiatives in demand reduction through pricing and demand reduction incentives (such as solar, insulation, gas domestic heating) may render additional new transmission capacity from the south to be unneeded for a very long time.

6.0 **Is there a need for a new, greenfields transmission line?**

6.1 Transpower has claimed in its media statements after the announcement of the Electricity Commission “no” decision that the Electricity Commission agreed that a new route was required. We understand that that conclusion, and media spin, was not what the Electricity Commission decision said. However, one can see how Transpower saw fit to use this misleading implication because all of the four transmission alternative scenarios assumed a new corridor carrying 400kV, 220kV or HVDC lines.

6.2 We believe that if future analysis of transmission alternatives is undertaken as a result of Transpower submitting a revised 220kV/400kV proposal, then at least one, and perhaps more of the long term scenarios should include transmission upgrades along the existing Whakamaru corridor. Whether an upgraded new line will ever be needed, in the unlikely situation that no new generation is built in or north of Auckland, is a subject for careful analysis. However, as the Electricity Commission considers future scenarios where increased transmission capacity from the south may be needed, we ask that the eventual replacement and upgrading of the three Whakamaru pylon lines beyond 2021 along this existing wide corridor be considered with equal weight as well as the consideration of a new greenfields line as a post-2021 alternative.

7.0 **Should there be consultation on corridors now or later?**

7.1 We support the idea that preliminary discussion and consultation on a corridor from Whakamaru to Auckland, and a corridor from Haywards or the South Island to north of Auckland, should be initiated sooner, rather than later by an independent, unbiased organisation such as the Electricity Commission. The scope of such an investigation should not be constrained to just the Otahuhu to Whakamaru requirement, but look at a range of options that might avoid the problems of the narrow Otahuhu isthmus as a corridor north to Auckland and Northland, and the avoidance of even more reliance on the highly vulnerable Otahuhu substation. Some “outside the square” options that might be considered could be an undersea HVDC cable from Fighting Bay to Kaipara Harbour, as well as the use of the existing corridor presently occupied by the three Whakamaru lines. We have absolutely no confidence that Transpower is capable of fairly conducting such an analysis or consultation, based on the debacle of their so-called “consultation” over the original 400kV route, so would hope that the Electricity Commission would take on this consultation role on a broad range of alternatives for a corridor.

8.0 **400kV HVAC Transmission technology**

8.1 Is the chosen 400kV technology the appropriate technology for NZ, now or in the future? We believe that the 400kV technology, with its highly intrusive pylons up to 70 metres high, should not be forced on New Zealand just because it is cheap technology. In 2006, we all have to balance the decisions made today on a lowest cost basis with the long term impact on our country. The health impacts and visual devastation of 70 metre high HVAC lines, installed in narrow 65 metre wide corridors are unacceptable, and will be even more so in the next 20 years. The opportunity exists, as we all work toward a

solution for a secure and economic electricity supply for all parts of New Zealand, including Auckland, to put in place the optimum mix and distribution of generation (renewable and thermal), transmission (using the least obtrusive technologies), and demand reduction (both legislative and economic carrot and stick incentives and constraints).

9.0 **Statement about New Era Energy**

9.1 New Era Energy is an organisation that initially came into being to represent the interests of landowners along the proposed 400kV route. However, we have broadened our mission from one of “not in my backyard” to “how can we contribute to finding the best solution to reliable and economic electricity generation, distribution and consumption in New Zealand?”

9.2 As the members of New Era Energy have traveled the road of experience since the the Transpower 400kV proposal was announced in 2004, we have learned much about transmission from the perspective of options available and strategic choices that can be taken. We remain adamantly opposed to the use of highly intrusive 400kV HVAC transmission technology anywhere in New Zealand, and will battle against the approval of the use of that technology through all the legal and political processes available to us with all the resources at our disposal, for as long as it takes.

9.3 New Era Energy has learned, in the last 20 months or so, that there are far better technical and less obtrusive technologies available for transmission other than 400kV, and that distributed generation in or north of Auckland will provide much better security of supply for that region in the long term. However, we also know that there are no easy solutions, and realise that we can have a role to contribute to the best solution for New Zealand through constructive dialogue with the generation, retail, distribution, regulation and transmission players in this industry.

9.4 New Era Energy has found it extremely difficult to have any kind of constructive dialogue with Transpower over this period, because of their corporate culture of confrontation and disinformation as this proposal has been progressed. This is highly frustrating for our organisation. Transpower is an important organisation that must have a significant role in the development of New Zealand’s future electricity infrastructure; sadly, we don’t believe it can fulfill this role with the present corporate culture embodied in its senior management. We hope the day will soon come when a reborn Transpower, with a mandate for both innovative and economic solutions, and a commitment to full and open consultation, will rise out of the chaos that characterises the Transpower of today. We look forward to constructively working with that new Transpower.

10. **Answers to requested questions**

10.1 The comments in italics following are in response to the questions asked in the Electricity Commission decision. In some cases, this submission has chosen to make a “no

comment” for a variety of reasons. A “no response” should not be considered to be either support for, or opposition to the question asked.

Q1 Do you consider there may be value in progressing at this stage a transmission corridor that would accommodate a range of overhead line technologies? Do you consider that such a corridor could be implemented under current legislation? If not, what changes do you consider would need to be made?

A1 We support the initiation of discussion and consultation on corridors, if conducted by the Electricity Commission. We have no confidence that Transpower is capable of conducting such a discussion and consultation. We believe that new legislation may be required to get the balance right between landowner rights and the need for public infrastructure. The existing legislation governing existing pylon assets, and the constraints on upgrades was constructed with the ownership of transmission assets held directly by the Government. This will surely be tested in the courts before long if new legislation is not introduced. Even the constraint of “no upgrade to transmission lines without easements and compensation” has been bypassed by Transpower as they undertake thermal upgrades around the country with no new easements or compensation. The environment on which the existing legislation was enacted has changed, as the ownership of these assets has vested with an SOE structure, who appear so independent of the original concept of public ownership that Transpower have sold the South Island transmission assets off to a Caymans Islands tax dodge organisation. New legislation, which recognises the economic cost to landowners of use constraint and capital value devaluation when “for profit” transmission infrastructure is built, can be drafted which provides fair and transparent arbitration processes when a willing buyer-seller relationship does not exist.

Q2 Do you agree that the Commission has adequately identified alternatives to Transpower’s Proposal?

A2 We would encourage consideration of transmission development alternatives along the existing Whakamaru corridor, in parallel with alternatives along the greenfields route. See above sections 2, 4, 5, 6 and 8 for further comment on this question.

Q3 Are you aware of any other information that the Commission should rely on to make its final decision?

A3 no comment

Q4 Do you agree with the Commission’s application of the GRS?

A4 no comment

Q5 Do you agree with the Commission's definition of GEIP? If not, what other definition should be used?

A5 no comment

Q6 Do you agree with the Commission's approach to consideration of costs to use in application of the GIT?

A6 no comment

Q7 Do you agree with the Commission's approach to consideration of benefits to use in application of the GIT?

A7 no comment

Q8 Do you agree with the Commission's treatment of forecast demand?

A8 We believe that the forecast demand of 2.8% per annum for Auckland is high by world standards, and high when recent demand trends are analysed. The forecast line seems to have been drawn from the slope of the two most recent data points, rather than measured forecast taking into account population and economic growth forecasts, and world trends. We believe the forecast demand growth of 2.8% that forms the basis of Transpower's panic prediction of a crises in 2010 is far too high under the present economic and legislative environment, and could be significantly reduced (perhaps to a more reasonable 1.5%, or even a nil growth scenario as suggested in the report by the Parliamentary Commissioner for the Environment) if appropriate legislation and incentive programmes (for both conservation and geographical location incentives for large energy users) were put in place. This "too high" demand forecast needs a lot more work.

Q9 Do you agree with the Commission's approach to modification of the scenarios from the Initial SOO?

A9 no comment

Q10 Do you agree with the Commission's addition of modelled projects to enable evaluation of Transpower's proposal under the Rules?

A10 no comment

Q11 Do you agree with the Commission's choice of a reference case for the purpose of application of the GIT?

A11 no comment

Q12 Do you agree with the Commission's identification of option values?

A12 no comment

Q13 Is the real option value of flexible investment timing justified? Should it be included in the reference case or as a sensitivity?

A13 We believe the issue of discounted cost of future investment is central to decisionmaking on transmission infrastructure proposals. Transpower would like us to believe that by spending huge amounts of our money now, they are somehow being prudent by putting in place high cost infrastructure that may never be needed. Analysis of investment timing clearly shows the fallacy of Transpower's unacceptable approach.

Q14 How should the benefits of potential surplus capacity be treated in the application of the GIT?

A14 The benefits of future surplus capacity should be heavily discounted. Build and invest for what we need now, and can predict with confidence in the future. Upgrade and make the best use of what we already have in place. Don't take billions of dollars out of the New Zealand economy today because of the very questionable potential of some future benefit some long way down the road.

Q15 Do you agree that the Proposal and the Alternative Projects effectively provide an equivalent level of transmission capacity into Auckland over the 20-year evaluation period? If not, why not?

A15 Yes. The planned economic upgrade of existing transmission assets in the next 15 years will provide a safety net of capacity equal to the Transpower proposal, and allow for the potential for new distributed generation in the Auckland region to become clearer over the next few years.

Q16 Do you agree with the Commission's decision not to further consider competition benefits? If not, why not?

A16 Yes. We believe the competition benefits are contrived, and are misleading in determining the economic value of the Transpower proposal.

Q17 Do you agree with the Commission's statements regarding Transpower's approach to consideration of alternatives?

A17 Yes

Q18 Has the Commission adequately considered alternatives to the proposal in the application of the GIT?

Q18 We believe that the full suite of alternatives to transmission, including generation and demand reduction, should be considered if a revised Transpower 220kV/400kV

proposal is submitted. See above sections 4, 5, and 8. We also believe there should be consideration and economic evaluation of less intrusive transmission alternatives, such as HVDC, and underground/underwater HVDC, which may allow much easier cooperation and support for additional transmission capacity to be approved by the affected landowners. This support (or absence of opposition) for less obtrusive technologies should have an economic cost that can be incorporated in the economic cost modelling.

Q19 Do you agree with the Commission's evaluation framework?

A19 no comment

Q20 Do you agree that if either the Proposal or one of the Alternative Projects were built, there would be a reliable supply of electricity to Auckland for the foreseeable future? If not, why not?

A20 We believe that some of the alternative projects evaluated (for example upgrade/duplexing + HVDC) would provide a reliable supply of electricity to Auckland for the foreseeable future, and support from landowners. Further, we believe that adopting an interim upgrade of existing lines will allow time for more generation in or north of Auckland to be proposed and implemented. The opportunity to buy time, with security of supply, while we see whether demand growth really develops at the rate predicted by Transpower, and to buy time while additional distributed generation projects are developed, is the greatest benefit of the alternative projects over the Transpower proposal.

Q21 Do you agree with the Commission's summary of the economic analysis provided by Transpower?

A21 Yes, we believe the Transpower 400kV proposal has been ineptly (and perhaps misleadingly) constructed by Transpower, and accurately evaluated from an economic perspective by the Electricity Commission.

Q22 Do you agree with the Commission's approach to the calculation of reliability benefits?

A22. We believe the reliability of Auckland's electricity supply will best be served in the long term by more distributed generation in of north of the Auckland region, not by a contrived evaluation of supposed increased reliability through highly vulnerable long distance transmission infrastructure from the south.

Q23 Do you agree with the Commission's calculation of costs to be included in the application of the GIT?

A23 no comment

Q24 Do you agree with the Commission's approach to the calculation of fuel cost benefits?

A24 no comment

Q25 Do you agree with the Commission's approach to the calculation of reliability benefits?

A25 see answer to A22.

Q26 Do you agree with the Commission's approach to the calculation of capital cost benefits?

A26 no comment

Q27 Is the incremental approach to transmission investment adopted by the Commission consistent with the GIT? If not, how should application of the GIT be modified?

A27 no comment

Q28 Do you agree with the Commission's approach to the calculation of loss benefits?

A28 no comment

Q29 Do you agree with the Commission's approach to the evaluation of terminal benefits at year 20 of the analysis timeframe? If not, how should the Commission approach this?

A29 no comment

Q30 Do you agree with the Commission's calculation of benefits to be included in the application of the GIT?

A30 no comment

Q31 Do you agree with the Commission's approach to sensitivity analysis?

A31 We believe the approach to sensitivity analysis is sound in conceptual design.

Q32 Should other sensitivities be considered? If so, which?

A32 We believe a sensitivity to delays in approval should be incorporated into the economic analysis. Opposition to construction through many channels of dissent may add years to commissioning dates, or even render commissioning impossible, even though planned capital expenditure has been made in construction. Such a sensitivity analysis would show a positive benefit when an acceptable, non-intrusive transmission technology is considered, and a large negative cost when intrusive and completely unacceptable

technologies, such as the 400kV proposal, meet determined and capable opposition from landowner, local body, health and environmental opponents. Hence, a 400kV size infrastructure would have a significant negative opposition component cost in the sensitivity analysis, while a non-intrusive technology, like underground HVDC, might have a positive support benefit.

Q33 Do you agree with the Commission's assessment of risk in relation to investment delay? If not, what parameters should be used?

A33 no comment

Q34 Is the Commission's interpretation of the GIT consistent with the purposes of the grid upgrade and grid investment rules listed in rule 2?

A34 no comment

Appendix 1

**Proposed New Zealand EMF Health Standard
for New Construction of Overhead High Voltage
AC Electricity Transmission Lines**

**Robert J. McQueen
Robin Smart
Laura Bennet**

July, 2005

Introduction

There has been much research undertaken and reported in the refereed scientific and medical literature on the linkages between the Electro Magnetic Force (EMF) fields surrounding high voltage alternating current (HVAC) electricity transmission lines, and health risks including childhood leukaemia, depression, miscarriage and other health problems.

There is also recent research which establishes the biomedical mechanisms through which these effects may result in some portion of populations exposed to these fields. It is no longer possible for apologists to say these effects are unproved, the results ambiguous, or the mechanisms unknown – the weight of evidence is already powerful, and grows more powerful each passing year.

Current health standards adopted by the World Health Organisation, and on which the standards for New Zealand have been derived, specify EMF levels based on simplistic mechanisms for tissue heating and burns, and do not encompass the latest research findings of the epidemiological EMF effects on leukaemia, miscarriages, depression, and other illnesses. These limited WHO standards are clearly out of step with current research findings, and if kept as the standard governing construction of new HVAC lines, will be putting the health of many New Zealanders at risk.

Many other countries, such as the US, Scandanavia, and Italy, have moved to adopt more prudent standards for acceptable levels of EMF fields caused by HVAC transmission lines.

With no leadership apparently forthcoming from the Ministry of Health, or the National Radiation Laboratory, to examine the literature and recommend revised standards in line with research findings and the standards set by other governments, it has been necessary for the authors of this proposed standard to undertake the investigation, and recommend the safe levels for EMF fields under HVAC transmission lines.

There has been little research done on health effects of EMF fields due to High Voltage Direct Current (HVDC) transmission lines. However, the mechanisms that may explain the reported links between HVAC EMF fields and health effects are seen to be due to the alternating or pulsile nature of HVAC fields. It is expected that the corresponding safe levels of EMF fields near to HVDC lines may well be set at much higher levels (and therefore narrower restricted use corridor widths) than those proposed here for HVAC lines.

The levels of EMF fields surrounding underground HVAC cables may vary due to the configuration of the cables in the trench or tunnel, and the depth, thickness of concrete, and shielding built into the walls of the concrete troughs. It may well be possible that minimum distances from underground HVAC cables may be reduced due to these effects. Certainly, underground HVAC cables are unlikely to have the windblown corona ion effect present with HVAC overhead lines.

It is expected that the EMF levels produced by underground HVDC cables may be significantly reduced due to the cancelling effect of the usual two pole underground cable configuration. In addition, the EMF fields from HVDC lines, whether underground or overhead, have not been linked to health risks because they are not of a pulsile, or alternating character.

It is possible that the recommended corridor widths of HVAC underground, and HVDC overhead and underground may be significantly less than those specified in this document for overhead HVAC lines.

The standard below is based on a survey of literature published in reputable, refereed scientific and medical journals (Smart, 2005).

The proposed standard for New Zealand:

The undesirable health effect risks due to the EMF field levels surrounding HVAC can be reduced if EMF field levels of buildings and outdoor areas used for human activities are limited to the following:

Table 1	
Type of use	maximum alternating current (AC) EMF levels permitted indoors or outdoors
Sensitive areas: a) workplace used by adult women, pregnant women, women of childbearing age, or which may be visited by children b) residence which may contain children c) school, childcare centre or health facility	0.1 microtesla*
Less sensitive areas: a) workplace used by male adults only	0.3 microtesla

* 1 microtesla is equivalent to 10 milligauss

Warning signs and barriers are to be erected around buildings and outdoor areas where these levels are exceeded. Cumulative exposure restrictions and guidelines for people regularly working in or visiting these areas are to be determined.

Translation to Clearance Distances

The EMF levels generated by HVAC electricity transmission lines can vary with the voltage and current carried by the lines, and their configuration. What follows are guidelines for human activities, based on the EMF levels given in Table 1, for residential and workplace use under or near new overhead electricity transmission lines.

No new HVAC transmission lines may be constructed over or nearer to a dwelling or workplace building according to the following schedule in Table 2:

Table 2	HVAC overhead lines
voltage of line	distance*
10kV-25kV	25metres
25kV-100kV	75metres
100kV-250kV	150metres
250kV-400kV	300metres

*distance refers to the horizontal distance from the perpendicular of the nearest set of conductors to the nearest edge of the building.

This would mean an approximate 600 metre wide building free corridor (300 metres either side) for any new proposed HVAC 400kV transmission line. If any existing residence or workplace buildings are within the minimum corridor proposed for a new transmission line, then those buildings should be moved or demolished and rebuilt at a safe distance. The cost of moving or replacing such buildings shall be borne by the authority constructing the transmission line.

Notes on the proposed standard

Sensitive Areas are defined as residences, schools, nurseries, hospitals, parks and playgrounds used by children, workplaces for pregnant women and women at risk of pregnancy.

The standards are based on a field strength measurement of background low frequency alternating current magnetic field strength of not more than 0.1 micro tesla for sensitive areas.

- “Background” means that due to large magnetic fields such as from high voltage overhead or underground power lines. It does not include small sometimes intense fields from domestic appliances such as microwaves, cellphones, electric blankets etc. These fields are typically present for short periods only and are small. There is personal choice as to exposure to these fields in contrast to the large permanent fields from power lines.
- “Low Frequency” means 0 to 300 Hz, usually 50 Hz in New Zealand.
- “Alternating Current” is specified because there is no evidence of health effects from Direct Current fields; this is consistent with these fields being similar to the Earth’s natural Geomagnetic field of 50 micro tesla which are natural to biological organisms.
- 0.1 micro tesla is achieved at varying distances from magnetic field sources depending on the current and voltage of the source. Homes, schools, etc away from high voltage power lines consistently have less than this level, usually 0.02 or 0.03 micro tesla. A 110 KV AC line would usually reach this level at 100 meters, a 400 KV line at 200 meters. But the distance could vary with current loadings. Many homes, schools etc in New Zealand are very close to 11000 volt overhead AC lines which may not reach this level until 15-20 meters. The standard specifies magnetic field strength as opposed to distance because that is the objective of the Standard: to limit exposure to AC magnetic fields.

Non Sensitive Areas are defined as workplaces for men, and women who are not at risk of pregnancy: Background Low Frequency Alternating Current Magnetic Field Strength not more than 0.3 micro tesla.

- The same comments as above apply to “Background”, “Alternating Current” and strength of Magnetic fields.

Special Areas are defined as workplaces with higher strength magnetic fields than those allowed in the above sections. These workplaces may have higher background low frequency alternating current magnetic fields than this providing:

- The workers exposed to the stronger fields are informed of their strength and location **and** the risks of health effects and Formally Consent to be there .
- There is no acceptable and practicable way of reducing the strength of the field for that workplace.
- Reasonable steps are taken to shorten the duration of exposure and strength of exposure to such fields to workers.
- Warnings are given effectively to children, their parents or guardians, and pregnant women who might visit the workplace and strategies they could use to minimise exposure.

References

Smart, Robin F. (2005) [Health Effects of High Voltage Transmission Lines: A Survey of the Medical Literature](http://www.notowers.co.nz/articles/information/medical/21_smart.htm). Retrieved June 22, 2005 from
http://www.notowers.co.nz/articles/information/medical/21_smart.htm

P. D. Allan B.A. LL.B.

Barrister

Thackeray Chambers

*26 Thackeray Street
Hamilton*

DX GP20025

Telephone: 07 839 1590

Facsimile: 07 839 0613

email thackeray@clear.net.nz

MEMORANDUM

DATE : **26 June 2006**

TO : **Electricity Commission**

FROM : **Peter Allan on behalf of South Waikato Group of New Era Energy**

MEMORANDUM TO ELECTRICITY COMMISSION

The South Waikato Group of New Era Energy had understood that Transpower had withdrawn its application for approval of the construction of a 400 kV transmission line between Whakamaru and Otahuhu. However, the South Waikato Group of New Era Energy has now ascertained that the Transpower application is merely “on hold” and has not been formally withdrawn.

In the circumstances, the South Waikato Group of New Era Energy would like to file a written submission in support of the Electricity Commission’s preliminary decision regarding Transpower’s application.

The South Waikato Group of New Era Energy supports the basis for and the reasoning behind the preliminary decision of the Electricity Commission.

In addition the South Waikato Group of New Era Energy also believes that the situation in the electricity industry is so fluid, both in regard to generation and transmission that any decision having the long term effects of Transpower’s proposal should be deferred for at least ten years so that alternatives in respect of both generation and transmission can be more fully investigated and studied. In particular, the South Waikato Group of New Era Energy believes that there will be significant generation of electricity in the area north of Auckland in the near future and that further transmission

capacity should be constructed in the area north of Auckland to a substation north of Auckland to provide for back up for the existing transmission capacity south of Auckland.

Furthermore, the South Waikato Group of New Era Energy believes that the upgrading of the current transmission lines from Whakamaru to Otahuhu will cover Auckland's needs for the foreseeable future. There is also insufficient financial justification by Transpower of the need for a further major construction such as the 400 kV transmission line from Whakamaru to Otahuhu.

The South Waikato Group of New Era Energy request that you take account of the above mentioned submissions in arriving at your final decision in regard to Transpower's application.

**FOR AND ON BEHALF OF SOUTH
WAIKATO GROUP OF NEW ERA
ENERGY**

DATE:

Mem2606

P. D. Allan B.A. LL.B.

Barrister

Thackeray Chambers

*26 Thackeray Street
Hamilton*

DX GP20025

Telephone: 07 839 1590

Facsimile: 07 839 0613

email thackeray@clear.net.nz

June 27, 2006

Jenny.Walton@electricitycommission.govt.nz

Dear Jenny

I was informed by Roy Hemmingway on Friday that Transpower has not actually withdrawn its original application for approval of the 400 kV line between Whakamaru and Otahuhu but that instead it has simply "on hold".

In the circumstances, the South Waikato Group of New Era Energy wishes, in addition to the submission it made last week regarding a transmission line corridor, to express its support for the preliminary decision of the Electricity Commission in regard to Transpower's application.

Please therefore find **enclosed** herewith short written submission in support of the Electricity Commission's preliminary decision.

Yours sincerely

PETER D ALLAN

New era12606

dc David Graham

Submission by

New Era Energy Inc South Waikato

P. D. Allan B.A. LL.B.

Barrister

Thackeray Chambers

*26 Thackeray Street
Hamilton*

DX GP20025

Telephone: 07 839 1590

Facsimile: 07 839 0613

email thackeray@clear.net.nz

June 23, 2006

Roy Hemmingway
Electricity Commissioner
P O Box 10041
WELLINGTON

Dear Roy

WRITTEN SUBMISSIONS ON BEHALF OF SOUTH WAIKATO GROUP OF NEW ERA ENERGY

Please find **enclosed** herewith memorandum on behalf of the South Waikato Group of New Era Energy, for whom I act, relating to the possible creation of an electricity transmission line corridor with specific reference to the South Waikato area.

Yours sincerely

PETER D ALLAN

Newera2306

P. D. Allan B.A. LL.B.

Barrister

Thackeray Chambers

*26 Thackeray Street
Hamilton*

DX GP20025

Telephone: 07 839 1590

Facsimile: 07 839 0613

email thackeray@clear.net.nz

MEMORANDUM

DATE : **22 June 2006**

TO : **Electricity Commission**

FROM : **Peter Allan on behalf of South Waikato Group of New Era Energy**

MEMORANDUM TO ELECTRICITY COMMISSION

Following the delivery of the Electricity Commission's preliminary decision regarding Transpower's application for approval of the construction of a 400 kV transmission line between Whakamaru and Otahuhu, the Electricity Commissioner, Roy Hemmingway invited interested parties to make submissions regarding, inter alia, the setting up of a corridor in which electricity transmission lines could be situated.

Although Transpower has now withdrawn its initial application for approval of the 400 kV transmission line between Whakamaru and Otahuhu the Electricity Commissioner has indicated that he would still be interested in receiving submissions regarding the setting up of a corridor for transmission lines.

Consequently, the South Waikato Group of New Era Energy wishes to make the following submission regarding the possible creation of a transmission line corridor given that it has a direct interest in such issue as Transpower has signalled that its preference for a line route through the South Waikato is across a green fields area owned by members of the South Waikato Group of New Era Energy.

While the South Waikato Group is not opposed per se to the creation of a transmission line corridor it is strongly of the view that where an existing corridor exists, then unless there are very sound reasons to the contrary, future transmission lines should be sited within such corridor.

In the South Waikato there is in fact an existing corridor across the Waikato river and to the west of the area owned by members of the South Waikato Group which could be used for the siting of any new 400 kV transmission line.

In other areas along the proposed line route to the north of the South Waikato Group's land Transpower has followed the existing transmission line corridor as far as possible and has used the existence of such corridor as a justification for the proposed siting of the 400 kV transmission line within such corridor.

The South Waikato Group of New Era Energy believes that similar logic should prevail and be applied in the South Waikato area rather than to create a further corridor across a green fields area.

There is no logic or sound reason for such proposal by Transpower.

The South Waikato Group has further cause for concern as the report commissioned by Transpower to study a comparison of the possible transmission line routes through the South Waikato is flawed and lacks any credibility as the rationale for the recommendation to follow a green fields approach through the South Waikato over land owned by members of the South Waikato Group does not stand up to proper analysis. Furthermore, the report is not genuinely independent as one of the key compilers of the report was a senior representative of Transpower.

If there is going to be any attempt by Transpower to transfer any proposed further transmission line through the South Waikato away from the existing corridor and into a green field situation, then it is submitted that a fully independent investigation should be carried out and an impartial and objective report prepared regarding a comparison of the pros and cons of all possible line routes through the South Waikato.

To summarise, therefore the South Waikato Group is totally opposed to the creation of a further transmission line corridor through the South Waikato when there is already an existing transmission line corridor through the area.

There is no logic or rationality in effectively despoiling a second area and creating a further transmission line corridor through a green fields area of the South Waikato.

We trust that the views of the South Waikato Group of New Era Energy expressed above will be taken into account in regard to the possible creation of a transmission line corridor through the South Waikato.

**FOR AND ON BEHALF OF SOUTH
WAIKATO GROUP OF NEW ERA
ENERGY**

DATE:

Submission by

Northpower

18 May 2006

Electricity Commission
Wellington

Submission on the Electricity Commission's draft decision re the proposed 400kV line

Northpower requests that the Commission includes the answers to two specific questions in the Commission's final decision regarding the proposed 400kV line into Auckland, namely:

1. Does the Commission's final decision guarantee beyond reasonable doubt that there will be no black-outs in Auckland and Northland in the period 2008 to 2018 arising from transmission constraints?
2. Which entity ultimately takes responsibility for the consequences of the Electricity Commission's final decision on the transmission options into Auckland? (Electricity Commission, Commerce Commission, Transpower, territorial authorities, or the Minister?)

Northpower is not in a position to comment on the relative merits of the various options presented by Transpower and by the Commission, and that is clearly not our role anyway.

Northpower's primary role is to deliver electricity to the end-use customers connected to our network. However, due to existing transmission constraints and the likelihood of even greater future constraints, we are unable to give assurances to the end-use customers regarding the security and continuity of the electricity supply to the GXP's that supply our network. In addition, we are unable to give such assurances to prospective customers or existing customers seeking to expand their operations. This in turn leads to uncertainty and concern in the region.

For several years, Transpower, Retailers and Upper North Island Distributors have committed significant resources to planning for summer and winter security. However, the likelihood of requiring blackouts under certain scenarios is expected to increase unless particular transmission constraints are removed. For instance, Northpower has had to agree to Transpower installing an automatic system to impose black-outs on large groups of end-use customers in certain circumstances this winter due to constraints north of Otahuhu.

Without significant step-changes in the capability of certain key elements of the transmission system in the Upper North Island, including the supply into Auckland from the south, we expect to witness a continuing deterioration in the security of supply. The situation is outside our direct control and we are uncertain as to whether the Electricity Commission, the Commerce Commission, Transpower, territorial authorities or the Minister is taking ultimate responsibility and accountability for the decision-making process. For this reason, we request that the Commission makes this clear in the context of the release of the final decision regarding the proposed 400kV line.

Regards

Mike Hayes
Network Commercial Manager

Submission by

NZ Council for Infrastructure

From: Stephen Selwood [stephen.selwood@nzcid.org.nz]
Sent: Saturday, 24 June 2006 2:03 p.m.
To: Info Electricity Commission
Cc: Jenny Walton
Subject: nzcid submission on Auckland 400kv proposal draft decision

Attachments: nzcid submission on Auckland 400kv proposal draft decision.pdf
Please find attached the NZ Council for Infrastructure submission on the 400kv draft decision.

Key messages include:

- the importance of long term security electricity supply to ensuring domestic and international investor confidence
- need for prompt determination of the upgrade path by means of a consultative approach between the Electricity Commission and Transpower (which is consistent with the consultative theme imbedded in the rules and regulations under which the EC operates)
- the need for early resolution of property rights for a transmission corridor to provide certainty for land owners, as well as for Auckland and the nation at large.
- the need for improved legislation to streamline approvals and consents for infrastructure of national significance, such as electricity transmission, without compromising on social and environmental outcomes
- recommendation of adoption of the New South Wales legislative approach where concept approval is obtained to establish the environmental performance requirements for the implementation of the subsequent stages of the project(s), and the relevant consultation requirements.

Kind Regards

Stephen Selwood | Chief Executive | NZ Council for Infrastructure Development | www.nzcid.org.nz | M: +64 21 791 209 | F: +64 358 7430 | E: stephen.selwood@nzcid.org.nz | Level 20, ASB Bank Centre, 135 Albert Street, Auckland, NZ

16 June, 2006

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

nzcid submission on Auckland 400kV proposal draft decision¹

need for confidence in long term security of supply

The New Zealand Council for Infrastructure Development (NZCID) is concerned at ongoing uncertainty about security of energy supply into Auckland and the consequential adverse impact that this is having on investor and business confidence both domestically and internationally.

Companies making investment decisions seek certainty. The bigger the investment the greater the need for confidence in energy supply in the medium to long term. In such circumstances, five, ten or even 20 year horizons may not be sufficient.

In the New Zealand context, concerns about inadequate infrastructure have been clearly demonstrated by business confidence surveys in recent times. The 2005 World Economic Forum global competitiveness executive opinion survey ranked inadequate supply of infrastructure as the most significant problematic factor for doing business in New Zealand. In the 2005 NZ Herald Mood of the Boardroom survey of 90 CEOs and directors of NZ's leading companies, 94% said they were concerned about the future of NZ's energy supply. Anecdotal feedback from NZ Trade and Industry staff note that the issue is a key concern often cited by potential investors.

We note that it is now some two years since the need for the upgrade path was first identified by Transpower. While understanding the complexity of the issues involved, NZCID seeks prompt resolution of the apparent impasse between Transpower and the Electricity Commission in respect of finding a suitable transmission upgrade path. This is essential to providing confidence in NZ as a place to invest.

¹ Note: This submission represents the views of NZCID as a collective whole, and may not necessarily represent the views of individual member organisations.

While incremental improvement of the electricity network might be economic from the viewpoint of the Grid Investment Test process, there is a risk that without confidence that the upgrades can be implemented in a timely and effective manner, business and investment confidence will be undermined. Uncertainty about decision making processes and the risks associated with gaining property rights and environmental consents have the effect of exacerbating this problem further.

need for prompt determination of the upgrade path

NZCID supports the position adopted by the Retail / Generator Line Company CEO Forum in their letter to the Commission dated 11 May 2006 which sought an outcome that will:

- Provide assured security of supply to greater Auckland
- Deal conclusively with any perceptions of a lack of security of supply
- Ensure the grid has sufficient flexibility to enable competition
- Achieve this sooner rather than later.

In its evaluation of alternatives, the Commission has considered broad categories of possible transmission options, generation and demand-side/energy efficiency options. The Commission has not proposed detailed investment projects, this being Transpower's responsibility. Rather, the alternatives the Commission has identified are indicative investment streams designed to see whether any investment strategies would be superior to Transpower's proposal. No attempt has been made to develop an optimal proposal for the purpose of finding the "best" alternative.

Transpower has invested a considerable amount of time, manpower and intellectual property into developing its grid upgrade proposal and has publicly stated its opposition to the alternatives proposed by the Commission.

On the other hand the Commission considers system security can be maintained without transmission upgrade until at least 2017 and that deferral of investment in increased capacity can have positive economic benefits as assessed by the Grid Investment Test.

Given the apparent intransigence of the respective positions, this begs the question as to what happens if the Commission rejects Transpower's revised proposal.

Presumably Transpower will develop and resubmit a further grid upgrade plan which will then have to be assessed under the rules. Given its declared reservations about the Commission's alternatives, and its fundamental belief that it has already recommended the optimal solution, reconciliation of these divergent views appears problematic. Development of a further proposal could be a time consuming process.

Should this occur, it will inevitably lead to further uncertainty about security of supply with consequential adverse impact on investor confidence.

While almost impossible to quantify, the opportunity cost of lost investor confidence is a significant factor that needs due consideration as part of the decision matrix.

We note that Transpower has stated that their revised proposal has an NPV which is much more aligned to the alternative proposals identified by the Commission. NZCID is not in a position to assess the

relative merits of Transpower's amended proposal versus the various alternative options that the Commission has identified and will leave others to comment on such issues.

However we do urge both the Commission and Transpower to work consultatively and with some urgency to resolve the current impasse. This is consistent with the approach generally required by the clause 13 Part F Section III of the Electricity Governance Rules. We also draw attention to clause 13.3.1.2 which requires the Board to have particular regard to the need to avoid unnecessary delays in approving reliability investments.

transmission corridor

NZCID endorses the concept of securing property rights for a transmission corridor that would accommodate a range of transmission technologies. Regardless of which upgrade option is determined, it is likely that an easement will be required. Early resolution of property rights would provide certainty for land owners, as well as for Auckland and the nation at large.

The process for determination of these issues could be facilitated by use of the "call in" process provided under the Resource Management Act, whereby a designated hearings panel can be established, or the matter referred directly to the Environment Court. However, it is not possible under the Resource Management Act or the Public Works Act to obtain property rights for a new transmission line, without knowing what is to be built, and when.

NZCID considers legislative change is required to enable such property rights to be secured for critical infrastructure projects of national importance, as is the case with the national transmission grid.

There are precedents of comparable legislation in Australia. In New South Wales a recent amendment to the Environmental Planning and Assessment Act passed in July 2005 provides a streamlined assessment and approvals process to ensure that critical infrastructure is delivered as quickly as possible without compromising on environmental outcomes². In most circumstances, a concept approval will be obtained to establish the environmental performance requirements for the implementation of the subsequent stages of the project(s), and consultation requirements. The project will be carried out in accordance with that approval. As with other approvals under Part 3A of the Act, the need for additional approvals under eight other Acts has been replaced by a single integrated assessment and approval process. The decision is not appealable except if the appeal is initiated or approved by the Minister. Both Victoria and Queensland have similar provisions to consolidate approval processes for projects of significance to their respective states.

NZCID considers there is merit in considering enactment of equivalent legislative powers in the NZ context and recommends this be an issue that the Commission should pursue with the Government.

Yours faithfully,



Stephen Selwood
Chief Executive

² See http://www.planning.nsw.gov.au/planning_reforms/index.asp