

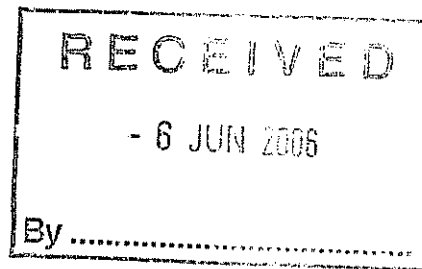
Submissions received

- Hancock M and N
- Hewitt J
- Hunua and Paparimu Valley Residents Association
- Ingle M
- Knight T
- Leyland B

Submission by

M and N Handcock

Electricity Commission,
P.O. Box 10041
Wellington
29th May 2006



Attention Mr Roy Hemmingway;-

Submission
Transpower proposed 400kv Line

We are opposed to the 400kv power lines with the 70 metre pylons. for the following reasons-

- 1;- The "visual environmental impact" would be disastrous for this scenic part of New Zealand.
- 2;- We are concerned about the unknown "health issues" that are being raised around the world concerning these huge lines and high voltage. If these go ahead and it is proved that the health issues *have* resulted from this decision, *then full compensation should be mandatory*. Asbestos being an example.
- 3;- "Neighbouring property values" being devalued especially those closely adjacent to the proposed line.
- 4;- "Oppose the one off payment for compensation". This should be based on a reviewable rent system, where future owners of affected properties will have security of an annual rent for inconveniences, restricted land use, reduction of farm value.
- 5;- "Houses a minimum of 400 meters" from the high voltage lines to help ease any danger of E.M.F.s . Decisions should be made with the possible future update of 400kv lines

However we would consider and support;-

- a;- Thermal upgrade and Duplexing of the A and B lines
- b;- The H.V.D.C. lines
- c;- Re examination of parts of the proposed route to go in a lesser affected area.

We hope you will consider this submission favourably on our behalf,
Thanking you,

Marion and Neville Handcock

Two handwritten signatures in cursive. The top one appears to be "M.J. Handcock" and the bottom one is "N. Handcock".

Submission by

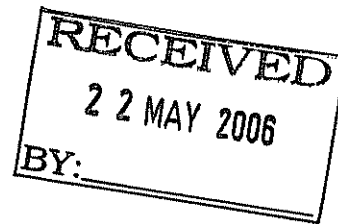
J Hewitt

Jenny.

CAMBRIDGE.

Ph. [REDACTED]

The Electricity Commission
P.O. Box 10041
Wellington.



Submission on Transpowers' 400 KV Grid Investment Proposal.

I would like to start by complimenting the Electricity Commission for the comprehensive way the Transpower proposal to build a 400kv.line to Auckland has been investigated and assessed.

There are a number of issues the report raises and my submission focuses on just 3 of these.

(1) It is alarming that there are no national standards to cover the health dangers of E.M.F.s. I can think of no other health risk in N.Z. that is not covered by a multitude of Acts of Parliament, codes of practice, and a small army of people monitoring that risk. The result of not having national standards, is that all parties involved in this issue regard each others arguments with cynicism and suspicion. This issue alone has greatly damaged the relationships between Transpower on one hand, and the affected parties on the other.

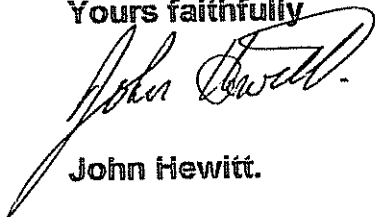
(2) It is also alarming that in assessing a proposal like this Transpower one, the Commission is unable in its commercial analysis, to consider and evaluate adverse health effects. Last week the results of the study commissioned by the University of Oxford on the effects of high tension power lines on human health were released. This is the most recent of numerous such studies worldwide, that highlight the health risks of E.M.F.s. In the case of the Oxford study in the U.K. 29000 cases of childhood cancer were analysed. Over 69% of the affected children had lived within 200mtrs. of high tension power lines. The ongoing human health costs are clearly horrendous. It is such a significant factor it should be included in any commercial assessment where electricity reticulation is involved.

(3) The third part of my submission deals with the question of corridor acquisition. I note the Commission has raised the question of whether corridor acquisition is desirable and practicable. My submission is it is both, and the acquisition of easements should be progressed. The meeting in Cambridge on 11/5/06 spent over an hour discussing this aspect. That simply emphasises how untidy and concerning the status quo is. Your report correctly points out how this problem grows with urbanisation and additional poorly sited building.

The only fair and practical way forward for all parties, is to negotiate easements based on their current use. That use would be reviewed annually . Compensation would be paid annually relative to what the corridor is being used for. Clearly if the use of the corridor alters the annual compensation would adjust. This avoids guessing what future affects may be, and insures protection for all parties if changes do occur. I submit it would be impossible for all parties to be fairly treated by any agreement, that would not reflect how the use of the easement might change in the future.

Wales has exactly this structure in place for both electricity and telecommunication services that cross private property. It is seen as simple, practical, and fair to all parties. It also encourages network providers to minimise the adverse affects of their structures, and mitigate environmental damage as much as possible. I am happy to speak to this proposal if required.

Yours faithfully

A handwritten signature in black ink, appearing to read "John Hewitt". The signature is written in a cursive style with a long, sweeping underline that extends to the left.

John Hewitt.

Submission by

Hunua and Paparimu Valley Residents
Association

HUNUA AND PAPARIMU VALLEY RESIDENTS ASSN

June 21st, 2006

**The Chair
Electricity Commission
Level 7 ASB Tower
2 Hunter Street
Wellington**

Attention Mr. R Hemmingway

Draft Decision – Transpower’s Auckland 400kV Grid Investment Proposal

Comments

Dear Roy

In response to your invitation The Hunua and Paparimu Valley Residents Association submits the following comments on the Draft Decision

The key comments we make are:

- The draft NO is the correct decision.
- Reliable supply into and north of Auckland can be achieved through upgrades to the existing grid.
- New Zealand needs a long-term strategic plan that encompasses generation and transmission.
- We need to make policy decisions on thermal or renewable generation (or some balance of both).
- We need to determine what HVAC voltage the community wants.
- There needs to be separation between system planning and system operation.
- Securing a corridor has major impact on affected communities, the route identified by Transpower should be discounted and a new independent consultation process initiated.
- A 400kV HVAC line run as 220kV is still a 400kV line. This community remains totally opposed to this technology, and believe the Electricity Commission’s data shows it to be unnecessary.
- The community has no confidence in Transpower, an organization that has spent considerable time creating unnecessary uncertainty within the government, industry, commerce and the community, can not complete basic criteria for a proposal, can not conduct open and balanced consultation, that did not complete the required economic analysis and did not consider the alternatives as required.

We would also reaffirm that Auckland will grow and accompanying this growth will be an increased requirement for energy. Integral to this could be new transmission lines at some time in the future. New transmission lines, as with many infrastructure projects must be the result of careful planning and full consultation.

The comments we made as our Alternatives Analysis Stage II submission still apply.

Yours sincerely

Steve Hunt

Steve Hunt-Chair

HUNUA AND PAPARIMU VALLEY RESIDENTS ASSOCIATION

COMMENTS

- 1) The Hunua and Paparimu Valley Residents Assoc supports the draft “NO” decision, believe this decision should be confirmed even for Transpower’s “staged implementation proposal”, and make the following comments:

2) A Strategic Long Term Plan

- i) It is clear that the so-called “New Zealand electricity market” does not work, electricity prices are increasing much faster than inflation, very significant profits are being made and the necessary planning has been neglected while the current asset base is raped. Many commentators have noted that in effect, the current market activity favours a shortage or threats of a shortage of supply, as this raises wholesale prices dramatically. These windfall profits have so far not shown any signs of translating into sensible investment in new generation. The sector should be reminded that the asset base was built by government organizations for the people of New Zealand and should continue to be managed as national utilities.
- ii) It would seem a good place to start is with a strategic electricity plan. This will assist in setting the direction and priorities. The fundamental decision that needs to be made as part of the planning process is should New Zealand continue down the path of fossil fuels or should we encompass renewables for it’s electricity supply. Given the status of global development of new generation technology, in the medium term, renewables is likely to be concentrated on hydro and wind (with the increasing likelihood of one or more forms of wave or tidal flow power).
- iii) Transpower is the grid planner. There is no organization with responsibility for planning generation development. Given the situation outlined above, and the importance of electricity to the New Zealand economy, there is a need for a national plan that will ensure coherent long term strategies are in place to ensure our nation is able to capitalize on opportunities as they develop. The responsibility for this planning is the domain of the Government. What action will the Government take to fulfill their obligations?
- iv) Therefore the H&PVRA urges the development of a National Energy Strategy to provide direction for new generation and transmission lines, which should not be considered in isolation.
- v) The development of a true Strategic Long Term Plan will require a fundamental change of mindset in the boardrooms of SOEs, and in particular, Transpower. Over many years, the monopoly position enjoyed by all transmission utilities deludes them into the belief that the rest of the electricity industry exists as a subordinate subset to transmission. The true

position of transmission as a long-haul service-carrier of other people's product, becomes obscured by the size of the investment, and by the arrogance of a monopoly so long enjoyed. This mindset change, to transmission as a service organisation dependent on a National Energy Strategy, will be the most difficult part of the National Energy Strategy to achieve and probably impossible with the present Executive structure.

3) Electricity generation policy

- i) The Grid Upgrade Plan includes future generation scenarios. Broadly speaking these scenarios are Gas, Coal, Renewables, Southern Hydro, and Reduced Demand. Currently the world is wrestling with issues of climate change much caused by the global consumption of fossil fuels¹ and potential restrictions from manipulated petroleum product supply. At some point in time supply of cheap petroleum products will be exhausted and there will need to be changes. New Zealand has for many years had cheap natural gas through the Maui field. There is considerable uncertainty on the future availability of our own natural gas. A weakness of the "mixed scenario" approach so far employed is that insufficient attention has been paid to the consequential effects of any major player making a pre-emptive commitment to dominant investment. Such investment would have a directing-influence on the strategies of other participants. The techniques of analysing situations where a key decision directly influences the probability of subsequent actions is well known (Bayesian Probability). For example, installation of a Large Power Plant on the Kaipara would drastically change the requirements for transmission in the North. Similarly, a pre-emptive installation of a large transmission line through the Waikato immediately predisposes Generators to southern generation, whether this is in the general interest or not. Until proper analysis of scenarios on a Bayesian basis is undertaken, it is most unwise to allow the biggest player (Transpower) to direct the Energy Strategy by a pre-emptive strike.
- ii) In 2001, the Government announced the Energy Efficiency and Conservation Strategy. This document indicates that Renewable Energy Systems will be the main source of energy for a sustainable economy,² however, this is a voluntary policy and the fickle nature of wind and the increasing occurrence of low lake storage levels confirm that in actual fact New Zealand needs a balance of thermal and renewable generation.
- iii) In October 2004, the Minister of Energy released the document [Sustainable Energy: Creating a Sustainable Energy System for New Zealand](#). This document is the first step towards an energy strategy. In the Speech from the Throne on 8 November 2005 it was announced that the government would explore various energy scenarios to develop a National Energy

¹ P14 Sustainable Energy, NZ Govt, Oct 04

² p5 section 1.2 MED, EECS

Strategy. At this time, therefore we have no energy strategy. In the meantime, the generators have developed plans and obtained Resource Consents for thermal power station in and north of Auckland. At the Independent Financial Review breakfast, 24th May, 2006, the Deputy Prime Minister, Michael Cullen, indicated, "The Government was not keen for an outcome that lead to more thermal power plants..." We are concerned that this statement is contrary to the recent statement by the Associate Energy Minister, Harry Duynhoven calling for more gas exploration³ and also, a strategy of not increasing thermal generation may continue to leave New Zealand vulnerable to energy crises.

- iv) In addition, at some point, the government should consider within their stance on thermal generation, should New Zealand sell coal to China and see it burnt with no regard to emissions or is it our moral responsibility to burn that same coal as cleanly as possible in New Zealand. There would seem to us to be some conflict on enjoying the revenue from the coal and indirectly contributing to pollution in Asia and global warming etc.
- v) Given that the studies by the Electricity Commission and peer reviewed by SSG, GE Energy, Allen Consulting and others indicated that there are easy upgrades that could be implemented to ensure reliable electricity transmission into Auckland until between 2017 and 2021 or beyond and given that the Transpower Project is a precedent setting change from historical electricity transmission, H&PVRA firmly believe there should be no advancement of 400kV transmission or for that matter the building of a new transmission line until the National Energy Strategy has been written and ratified.

4) Core Grid Transmission Policy

- i) New Zealand currently has a core voltage of 220kV HVAC supplemented by aged 110kV HVAC and reinforced by a HVDC link from Benmore to Haywards. The system has been shown to be extremely reliable and efficient but in recent years has been greatly neglected with little in the way of long term maintenance. Problems that are occurring as a direct result of poor maintenance should not be confused with the issues of transmission policy and strategy. (The catastrophe in Auckland 12th June 2006 was due to an earth wire snapping. Given that Auckland is a high wind area, frequently buffeted by high strength winds, a failure of this nature should have been planned for and designed out. This highlights the general incompetence of the management of this organization.)
- ii) **Voltage** - What should be the core grid voltage? Is there justification for the stepped change to 400kV HVAC? The key issues are health and environmental impact. The greatest environmental impact is clearly the visual impact. In the List of Route Maps published 6/01/05, Route Maps Series 3, Transpower has removed many sections "... because of high

³ National Gas Review, Autumn 2006

visibility...”. Are the benefits of 400kV sufficient to overcome the environmental impacts? The community at large has said “No”. Electricity Commission analysis has also shown that the financial benefits of 400kV is not sufficient to warrant the stepped change to 400kV. The H&PVRA submit that any stepped change of core voltage needs to be approved by general consensus of the wider New Zealand community. A change to 400kV needs to be ratified by the community through a consultation process by an independent transmission planner similar to that undertaken by the Electricity Commission on the 400kV Project

- iii) **HVDC / HVAC** An integral part of a generation strategy is how to deliver power to the demand centers. The first questions are what form of generation? And Where? The government has been working on the foundation of a National Energy Strategy since the efficiency consultations of 2001. It is reasonable to expect that some general outline has been established. This should enable considerable advancement of the NES in the near future. This process will also confirm optimal transmission methods. If generation is to be renewables from the South Island, and Auckland continues to be seen as the largest market, simple efficiency justifies the extension of the HVDC link from Haywards to Auckland. The benefits of this are: -
- (a) Low losses
 - (b) Small infrastructure
 - (c) Cost effective investment
 - (d) Flexibility – the poles can be run independently.
 - (e) Security for the same reason
 - (f) Reliability – the current HVDC link has proved to be extremely reliable
 - (g) Pole One needs to be upgraded anyway, so we avoid excess investment.

5) Electricity generation and transmission planning

- i) Transpower and Generators have ready access to the Government to present their case. The broad electorate struggles for access. Democracy is government for the people by the people. The Government needs to engage the broad community directly. This can be achieved through various community organizations or with public meetings. The totally different approaches shown by Transpower (who failed utterly to consult) and the Electricity Commission, demonstrate clearly why we need such input. Left to its own devices, uncontrolled, Transpower would have doubled its prices over the next 5 years **in advance** of requirements for such income, and gone ahead and built this 400 kV proposal without any reference to the now developing generation plans that will directly affect the value attributable to such a construction.

6) The Corridor

- i) The creating of a transmission corridor has some merits but also raises many questions. We believe that consideration of such should be an integral part of the NES as the growth requirements for New Zealand and the development of the National Grid clearly go hand in hand. A minimal requirement would be that the impact on communities should be exactly that, minimal, it should not run through communities or areas marked for development, can this be achieved? It may be that good risk management would see more than one corridor designated. The folly of putting up to 2000MW on one huge transmission line can be seen by the recent events at Otahuhu. We also note the comment by Brian Leyland “ New Zealand was out of step with an international standard requiring all loads of 350MW or more to be carried over separate lines.”⁴ The issue is potentially major and needs considerable consultation and very careful planning. Further, within affected communities lives will continue to be on hold, properties adjacent to the corridor will continue to be difficult to sell and there is always the possibility that infrastructure with a greater impact on the community will later be built within the corridor. Additional questions are: -
- (a) What would be the criteria for the corridor?
 - (b) Is it part of a National plan?
 - (c) What technology - e.g. lines or cables, pylons or monopoles etc?
 - (d) How will it interconnect with the balance of the grid?
 - (e) Who should select the corridor?
 - (f) Where?
 - (g) Is it multiple line?
 - (h) How many transmission lines?
 - (i) What is the effect on current lines?
 - (j) Does it include underground?
 - (k) What risks to security of supply does this create?
 - (l) How are these risks minimised?
 - (m) Who will manage, maintain and own the corridor?
 - (n) With the need for new lines in other parts of New Zealand, will New Zealand be covered in infrastructure corridors?
 - (o) What other infrastructure should use these corridors?
- ii) The situation still applies, that the SSG report indicates that 220kV solutions are the lowest cost options and indeed the WKM-ARI-HAM-WES-BOB-WIR-OTA route offers investment savings over WKM-OTA. Given this and the community’s interaction with them over the last 18 months, we struggle to accept that Transpower are capable of optimal route selection and submit that they should not be in charge of designating any such corridor.

7) Independent planner

- i) We have seen Transpower spend very large amounts of money on PR campaigns that are clearly biased in favour of the 400kV project. In

⁴ p A2 – NZ Herald 17.06.06

addition, Transpower have undertaken a program to create panic within Auckland. The community supports strongly the quiet but thorough consultation and investigations completed by the Electricity Commission.

- ii) The most recent action Transpower have undertaken is to propose an amendment to their GUP. They now suggest that the 400kV line with its massive towers be built as designed - but that the 220 / 400kV transformer substations be deferred to sometime in the future. This raises several issues.
 - (a) **Capacity** – it is estimated that in conjunction with grid augmentation plans, a 220kV transmission line would secure supply from the south through to at least 2030
 - (b) **Investment** – whether now or some years in the future, the substations are an integral part of the 400kV system and they should be considered in the GIT process.
 - (c) **Risk** – there is a very real and growing risk that running a line at 400 kV AC with a mere 65-metre easement may result with serious future problems with regard to electromagnetic emissions. This is borne out by recent information from the Bristol University study. We must remember that if such difficulties do eventuate, they represent a huge COST. Thus it is likely that such enormous towers would never be able to be used in this manner and the excessive materials of construction would be a costly waste in addition to being utterly unsightly.
 - (d) **Alternatives** – this compromise confirms that the 400kV system is not required, Transpower could easily ensure reliability by building a double circuit duplexed 220kV transmission line such as the type used in the Electricity Commission's alternatives costed in the Draft Decision at FAR LESS than Transpower's large scale construction.
- iii) The incident of 12th June 2006 also brings to light the folly of concentrating Auckland's power distribution through one substation. Our firm conclusion from our involvement in this project since October 2004 is that transmission planning is deficient and that the planning function needs to be separated from the system operator functions.

8) Consented and Planned Projects (in or north of AKL)

- i) While there are issues still to be resolved with regards fuel contracts, and there remain the CO₂ emission issues, generators Contact Energy and Mighty River Power have obtained Resource Consents for new generation in or north of Auckland. In addition, Genesis Energy has indicated they are serious in their aim to build a new power station close to the Kaipara Harbour. It is an indictment on the Government that they are signaling a requirement for new generation and have allowed many thousands of dollars, in the case of Genesis and Mighty River, to be spent on the planning process in their free market, yet these solutions may be contrary to the Government NES.

9) The GUP and short term supply into Auckland

- i) Transpower have indicated in the GUP their intentions out to 2040 under the various generation scenarios. As the plan stands at this point in time, there are differing numbers of 400kV lines.
 - (a) Gas has three, Whakamaru to Otahuhu; Bunnythorpe to Whakamaru; Stratford to Whakamaru.
Coal has two, Whakamaru to Otahuhu and Bunnythorpe to Whakamaru.
 - (b) Renewable has three, Whakamaru to Otahuhu; Bunnythorpe to Whakamaru and Whakamaru to Pakuranga.
 - (c) Southern Hydro and Reduced Demand each have just one, Whakamaru to Otahuhu.
- ii) In addition, the South Island has one, Waitaki Valley to Islington
- iii) Now which scenario is correct? Does New Zealand want 67metre pylons from the deep in the South Island to Auckland? Should New Zealand be saddled with this massive infrastructure when the future of generation is unknown? Clearly the people of New Zealand are saying “No”.
- iv) The Transpower 400kV proposal is of such a scale that it should be considered on a national basis, it is precedent setting and if one is built, there is a high probability that more will be. A 400kV transmission line will have a major environmental impact on some of the world’s best natural scenery, such that it should only be considered if it is the only possible option.
- v) The H&PVRA believe that studies completed by the Electricity Commission and peer reviewed by international experts shows clearly that it is possible to provide a reliable transmission grid into Auckland from the south without building any new transmission line. It has been shown that security of supply can be ensured for at least 15 years. We believe that there is considerable uncertainty on the generation front and the demand growth rates could be optimistically high. Therefore the starting point should be to develop a long-term coherent national electricity plan and leadership should be provided by the Government to undertake that planning.

10) Economic security for Auckland

- i) The Government has indicated it is extremely concerned for the ongoing economic security represented by electricity availability for Auckland and the nation – as indeed are we. It is of concern, however, that when we are 90% through a process, a process initiated by the Minister of Energy, in a letter to both Transpower and the Electricity Commission that the Government may now be looking to interfere. This is not necessary and should not happen. We believe that studies completed by the Electricity

Commission confirm there are short to medium term solutions that can be easily implemented and that these options adequately ensure the reliability of transmission into Auckland. There is even greater value in continuing with this approach, as it clearly allows for new information to influence the final design and build of any necessary transmission augmentation

11) Alternatives to the TP GUP (Whakamaru to Otahuhu)

- i) **Generation** - The H&PVRA understand that Auckland will grow and with that growth there will be demand for more electricity. We also believe that solutions can be found to cater for the electricity demand associated with that growth. The exact nature of those solutions, several of which are in the planning stages right now, will impact DIRECTLY on the value and suitability of the proposal put forward by Transpower. It makes no sense to us to build enormous, expensive infrastructure under such circumstances, especially as many of the generation proposals are far faster to consent and build than transmission lines.
- ii) There is a high probability that future generation will come from within the current New Zealand Generators. In September 2004, Transpower released an RFI seeking to establish what options were available to offer dynamic compensation for the transmission system into Auckland. Transpower indicated that no new generation was planned or likely to be investigated. This highlights Transpower's poor relationship with the sector. No sooner had Transpower indicated their result than Genesis announced plans for a CCGT station at Kaipara. Little has been said about the now consented plans for a 320 MW coal fired station at Marsden Point. It seems ludicrous to us that such plans sit on the table while Transpower claim urgency is required for THEIR plans to spend far greater sums than those required to build such assets (which would utilize an existing UNUSED transmission line). Somehow, someone needs to bring these proposals into the planning and either confirm or reject them. Allowing a "breathing space" of several years, as we would achieve with the Electricity Commission's enhancements suggested in the Draft Decision, is the only rational approach.
- iii) The generators have initiated a number of projects, some have progressed to Resource Consent stage but there is no construction on the scale needed to satisfy the probable growth in demand in and north of Auckland. Transpower and the generators have spent considerable time saying the issue is transmission into Auckland from the south. This clearly only applies if certain events unfold; further – if they do, the proposed 400 kV line is NOT the only reliable, practical and cost effective means of achieving increased transmission capacity into Auckland.
- iv) The Electricity Commission's draft decision outlines this with the economic information supporting the four alternative scenarios showing that at least two options which do not include a 400 kV AC line are viable (and more cost effective than a 2010 build of the TP proposal).

- v) **Thermal upgrades** - Within prudent operating limits, simple economics suggest that thermal upgrades should take place and H&PVRA endorse the approval to thermally upgrade the Whakamaru to Otahuhu A&B lines. In addition, where appropriate, thermal upgrades should be completed throughout the grid as a matter of course.

- vi) **Duplexing** - Normal business practice is to fully utilize assets before investing in new. During the consultation process, Transpower advised the community that existing transmission assets were at their limit and that the capacity into Auckland could not be increased by duplexing the Whakamaru to Otahuhu A & B lines. The H&PVRA believe it IS possible to duplex these lines and that this action would increase the reliability of the grid for many years at the forecast growth rates, without incurring any significant changes to communities living with these existing lines. Indication is clearly given in the GUP that duplexing is an integral part of the 400kV project with Stage One plans to duplex 200kV Tokaanu to Whakamaru A & B lines and Bunnythorpe to Haywards A & B lines. How do Transpower propose to duplex these lines? Will they secure property rights? We believe that there is no increase in injurious effect with the duplexing of lines. If required, the Electricity Act should be amended to allow full utilization of these assets and the work should be completed immediately. We request that the Electricity Commission demand an explanation from Transpower as to how they can propose to do some duplexing but not others? Our technical discussions with various sources indicate that use of a relocatable portion of temporary line would allow duplexing of the WHK – OTH A & B lines with minimal disruption of supply, and minimal effect on landowners.

- vii) **Energy Efficiency** - Transpower have published that the RFI identified 600MW of energy efficiency and peak demand initiatives that were available to reduce pressure on the system. Current peak demand into Auckland is just under 2000MW. The identified 600MW represents a major opportunity to mitigate pressure on the current system. Action needs to be taken immediately to achieve this net reduction in demand and the better management of the load.

12) General Comments

- i) What was the Transpower role during the development of the Electricity Governance Rules 2003? Was it involved in the consultation and review process? Did it have direct input into the drafting of the EGR?

- ii) Is the Grid Investment Test (GIT) established under the EGR? Did Transpower have input to the GIT? Did they make submission to the draft released September 2004? Before the Minister ratified the GIT in December 2004, did he consult with Transpower?

- iii) Transpower used costings that were 12 months old when they completed their GUP 30 September 2005. Why? Dr. R. Craven now claims that the 220/400 transformers have increased in price by 40%! Why then, did he criticise the Electricity Commission's more up to date costing models used in the Draft Decision?
- iv) Transpower have stated they did not know how the GIT would be applied. Transpower commenced discussions with the Electricity Commission mid 2004 – the GIT was being drafted at this point in time. It would seem appropriate that Transpower would seek input in this document before the draft was published in September. If not, why not?
- v) Under the GIT, Transpower are required to present a range of alternatives that show that appropriate consideration of alternative has been completed. Why was this not done?

Submission by

M Ingle

Mary Ingle

23 June 2006

Electricity Commission
P O Box 10041
Wellington 6038

Transpower's Auckland 400kV grid investment proposal: draft decision

I support the Electricity Commission draft "NO" decision and believe this should be confirmed. This no should also cover Transpower's staged proposal.

The draft decision includes analysis of transmission alternatives that should be undertaken before any new lines are built. These give time for the development of a national energy strategy which needs to include generation, transmission and energy efficiency.

Transmission corridor

The idea of transmission corridors needs further investigation. It needs to be considered as part of a National Energy Strategy

An investigation needs to include:

Will corridors be part of a national plan?

The effect on existing transmission lines

Do the corridors include the ability to underground?

What would be the criteria for a corridor?

Who will determine where the corridors should be?

Who manages, owns and maintains the corridors?

Should other infrastructure use the same corridors?

Should the corridors be easements or should Transpower have to purchase the corridors outright?

If the corridors are to be by way of easement new legislation is required. In addition to compensation for initial loss in value, landowners should also get paid an annual rental.

This is for the inconvenience of the corridors and because Transpower is likely to have access over other parts of their property not just the corridor.

Yours faithfully

Mary Ingle

Submission by

T Knight

Submission from Terry Knight.

1. It is not necessary to continue to obtain easements along the corridor and I strongly support this view. An alternative source of generation should be established in Auckland or Northland to maintain the security of supply.
2. New generation is required because the present generators are unable to cope with the winter demand.
3. To install new lines in close proximity to existing lines is leaving the whole system vulnerable to natural disasters therefore eliminating the security.

Submission by

B Leyland

Submission on Transmission Alternatives

Introduction

New Zealand must plan to provide for the transmission and generating capacity needed to meet the increasing demand from a growing economy, a growing population, electric cars, telecommuting and a drive for energy efficiency. (In the modern world, improvements in energy efficiency usually involve increased use of electricity. Heat pumps, electric cars and microwaves are obvious examples.) The alternative is more shortages, more transmission constraints, more blackouts and more expensive electricity.

In the last week or so we have had a power blackout in Auckland, load shedding in the Bay of Plenty and prolonged power failures in the South Island. On Monday night (19th June), the power system was struggling to meet a peak demand that, with emergency load shedding, was only 2% above the peak in 2004. A properly coordinated system would have had enough capacity to meet a peak 5% higher and with spare capacity available in case of a major breakdown.

Over the last few months, Transpower and the Electricity Commission have been debating the relative merits of 400 kV transmission against the Commission's alternative of upgrading the existing system and, possibly, adding a new direct current link. Personally, I favour the Commission's alternatives because they combined significantly lower cost with the flexibility to meet changing circumstances and a wide range of locations for possible new major power stations.

The biggest problem faced by Transpower is the fact that between the Resource Management Act and the Electricity Act it is as difficult to upgrade an existing line as it is to build a new one. Yet many of the people affected by the new 400 kV lines would support a proposal to upgrade existing lines. This should be a high priority for the government.

Transmission options

The Electricity Commission has investigated several options as an alternative to Transpower's proposed 400kV line from Whakamaru to Auckland.

I attended the commission's technical presentation and believe the EC's best options provide equal or better security and capacity at a significantly lower cost than Transpower's 400kV proposal. Transpower's proposal is probably influenced by the fact that it is just as difficult to do a major upgrade of an existing line as it is to build a new one - yet another perverse manifestation of the Resource Management Act that needs to be changed.

Unfortunately no one asked - or answered - the most important question: Based on reasonable assumptions about where our energy resources are, load growth and the need to provide an economic and reliable supply, what will the generation and transmission scene in New Zealand look like in 20, 30 or 40 years' time?

The question was asked 45 years ago and the result was a bold decision to build the direct current DC line from the Waitaki basin to Wellington to bring low-cost power from the 2000 MW Waitaki hydro development to the North Island.

We need an answer to the question before we commit maybe \$2.5 billion to a 400 kV system.

The grid investment test specifies how transmission scenarios are compared. In general, it is impossible to optimise a transmission system unless there is a firm indication of where the generation is going to be. What Transpower and the EC are trying to do is the same as trying to design a new motorway system without much idea of where the new population centres will be.

I believe the best long-term options for major power generation are nuclear power north of Auckland and/or hydro, coal or gas-fired stations in the lower South Island. There are stronger indications of large offshore gas fields around the lower half of the South Island. To get 2000MW or more from the South Island to Auckland would require a new DC link.

The EC's second best option includes a DC link from Whakamaru to Auckland. But why start at Whakamaru? If the DC link ran from Wellington (or even further south) to Auckland, it suddenly makes a lot of sense. Studies by Transpower have shown it is technically possible to convert the existing 200 MW AC single circuit 220kV lines to 330kV AC. Therefore it should be easy to convert one or two of the 220kV lines that run from Wellington to Auckland via Whakamaru, to carry 1400 MW at 350kV DC.

As a first stage, extending the existing DC link all the way to Auckland's North Shore would reinforce transmission into Auckland and also solve a long standing transmission problem across the isthmus at a much lower cost than the proposed \$300 million 220kV cables. (Roughly, two 350 kV DC cables can carry as much power as six 220 kV cables. I have established that a paper insulated 220 kV cable can carry 350 kV DC. It is not quite so certain that a polythene insulated cable can do so just yet.)

If new large power stations are built in the South Island, the new DC line can be connected to additional cables across Cook Strait and to a new overhead line to a terminal possibly in central Otago.

Converting two 200 MW 220 kV lines to provide 2400 MW of additional transmission capacity without the cost and problems of building a new 400 kV transmission line has obvious attractions in terms of time, cost and public acceptance.

To make all this happen three things need to be done:

- * the government must make it easier for Transpower to upgrade existing transmission lines;
- * Transpower must work with the EC to confirm whether the 200 MW 220kV lines can be converted to DC; and
- * the government should make long-term studies of the options before billions of dollars are committed to a 400kV system.

Generation options to support transmission

We need a short-term plan to give us breathing space to take a long term view on upgrading the transmission and building more power stations. There is a window of opportunity to do this right now. For the next six years or so sufficient gas for about 300 MW of generation will be available from new drilling at the Maui platforms. If no one does anything, this gas will finish up being burned at Huntly power station instead of coal or used to make methanol.

In my opinion, the best use for this gas is to drive six or eight open cycle gas turbines located north of the isthmus, at Otahuhu power station (where existing resource consents would allow them to be commissioned very rapidly) and also further down the system - wherever they would do most good in minimizing transmission constraints and improving security of supply. These gas turbines are available "off the shelf" and can be sold off when the gas runs out. As well as generating base load power, they could be contracted to Transpower to support transmission when it is reaching its limits, to Vector for load management and to the owners of windfarms to run when the wind isn't blowing. If the gas contract has a requirement to burn the gas at a steady rate Genesis Energy could be a partner in the gas contract because it is able to burn more gas and less coal at Huntly power station when the demand is low.

Summary

I believe that the first priority is to commission a review of future demand, generation and transmission. This will identify the most attractive options and so give us a rational basis for planning the transmission system.

Until this is done, the Electricity Commission's option for system development has clear advantages over Transpower's because it costs less, is more flexible and eliminates the stranding risk that would exist if a large scale power generation north of Auckland eventuated.

I am not impressed by the generator's arguments that we need a strong 400 kV grid to make the market work. The market was supposed to be more efficient and minimise costs: if it does need a stronger and more grid than would a coordinated system, we should first be questioning the market design.

Bryan Leyland
17 Bangor St,
Pt Chevalier,
Auckland, NZ

Thu, Jun 22, 2006