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## NZCID Submission on the Notice of Intention to Decline the NAaN Proposal

The New Zealand Council for Infrastructure Development<sup>1</sup> appreciates the opportunity to submit on the Electricity Commission's interim decision to decline Transpower's North Auckland and Northland (NAaN) investment Proposal One.

This matter was considered by the NZCID Board in February. NZCID does not support the Commission's interim decision to decline the proposal. We concur with Transpower's analysis that the project needs to be commissioned by 2013, subject to their commitment to defer investment should the Rodney Generation project proceed in the interim. NZCID considers this electricity transmission upgrade is needed to provide for growing demand for electricity across the NAaN region, providing for diversity of supply to this area, and to restoring confidence in a transmission grid that is increasingly being perceived as inadequate to meet the needs of an efficient economy. We consider the Grid Investment Test (GIT), as applied by the Commission, as being too narrow in its approach; places insufficient value on unserved energy; undervalues low probability high impact events; and consequently undervalues diversity of supply across the NAaN region.

Accordingly, NZCID requests the Commission to review its interim decision and approve Transpower's proposal.

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<sup>1</sup> NZCID is a non profit organisation. Members comprise a diverse range of leading private and public organisations including infrastructure equity owners, financiers, constructors, service providers, public sector agencies, and major infrastructure users. Information on the Council, its members, policy and work can be found at [www.nzcid.org.nz](http://www.nzcid.org.nz). In developing its policy position on infrastructure issues, NZCID consults extensively with its member organisations, undertakes workshops and seminars on policy and undertakes independent research. This submission represents the views of NZCID as a collective whole, and may not necessarily represent the views of individual member organisations, some of whom will be making their own individual submissions.

## Need for certainty in electricity transmission capacity

NZCID is seriously concerned at ongoing uncertainty about security of electricity supply across the Auckland region and the consequential adverse impact that this is having on investor and business confidence both domestically and internationally. NZCID supports the position adopted by the Retail / Generator Line Company CEO Forum in their letter to the Electricity Commission dated 11 May 2006 in respect of the NIGUP which sought an outcome that will:

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

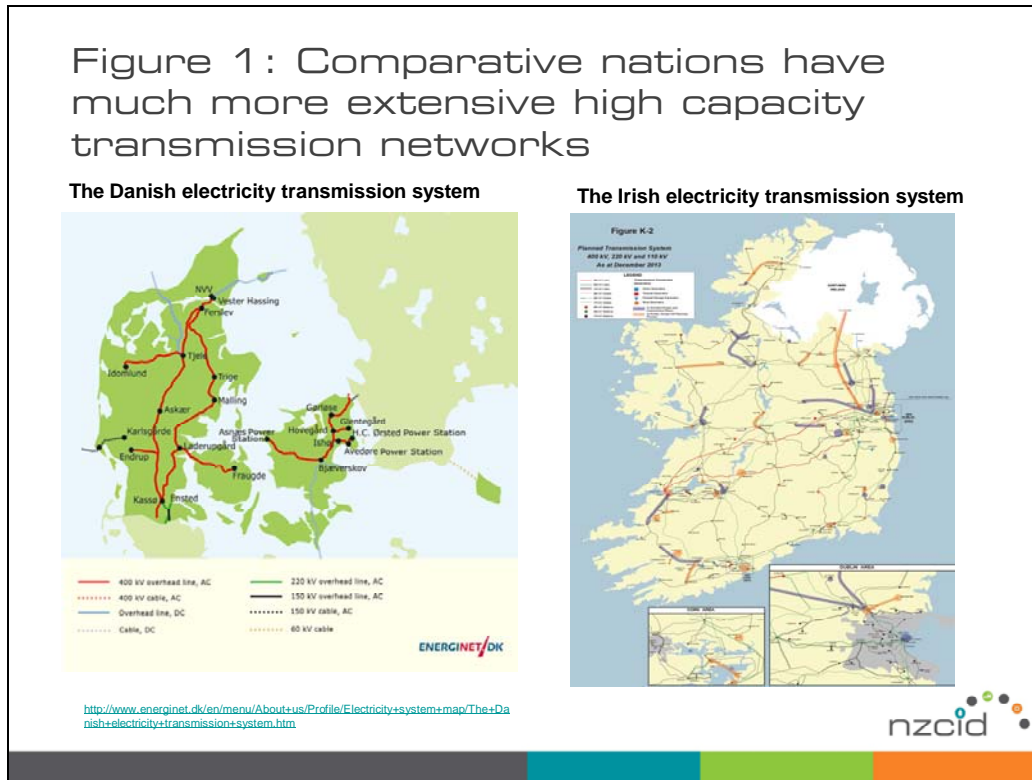
We believe equivalent issues apply in respect of the NAaN region.

Companies making investment decisions seek certainty. The more significant 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.

For this reason NZCID considers Transpower, the Electricity Commission and the Commerce Commission need to move away from the current piecemeal approach to regulatory approvals for upgrade of the national transmission grid. Rather, New Zealand should adopt a planning regime which clearly sets out a long term grid upgrade path supported by a committed investment programme within an agreed long term price path approved by the Commerce Commission.

We note that countries of similar population size to New Zealand, such as Denmark and Ireland (depicted in Figure 1) below have far more extensive high capacity transmission networks than New Zealand. Denmark, which has an extensive 400Kv network, is rated very highly on international standards for the quality of its power supply system. The Irish capital, Dublin, is supplied by two physically separated 400Kv circuits extending from a major power supply on the west coast of the republic to the capital city. Such nations adopt a strategic approach to transmission capacity. We consider a similar strategic approach needs to be adopted in New Zealand.

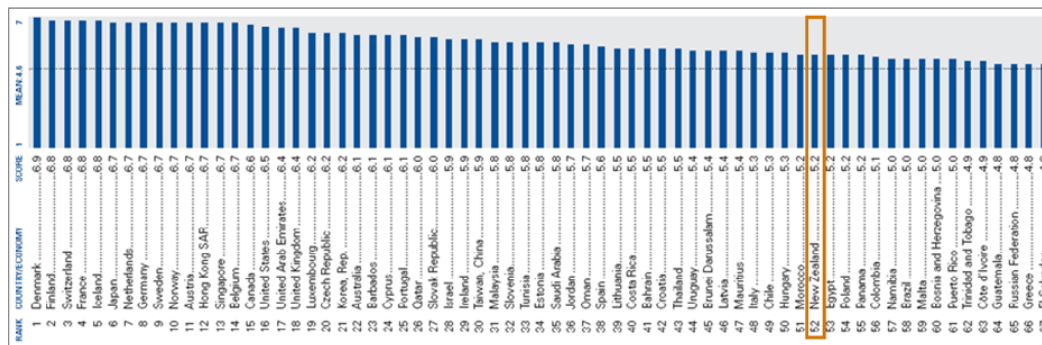
Figure 1



By contrast, in the New Zealand context, concerns about inadequate infrastructure have been consistently demonstrated by business confidence surveys in recent years. The latest 2008 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. The ranking for quality of electricity supply was of particular concern as depicted below:

Figure 2: World Economic Forum Executive Opinion Survey of the Quality of Electricity Supply

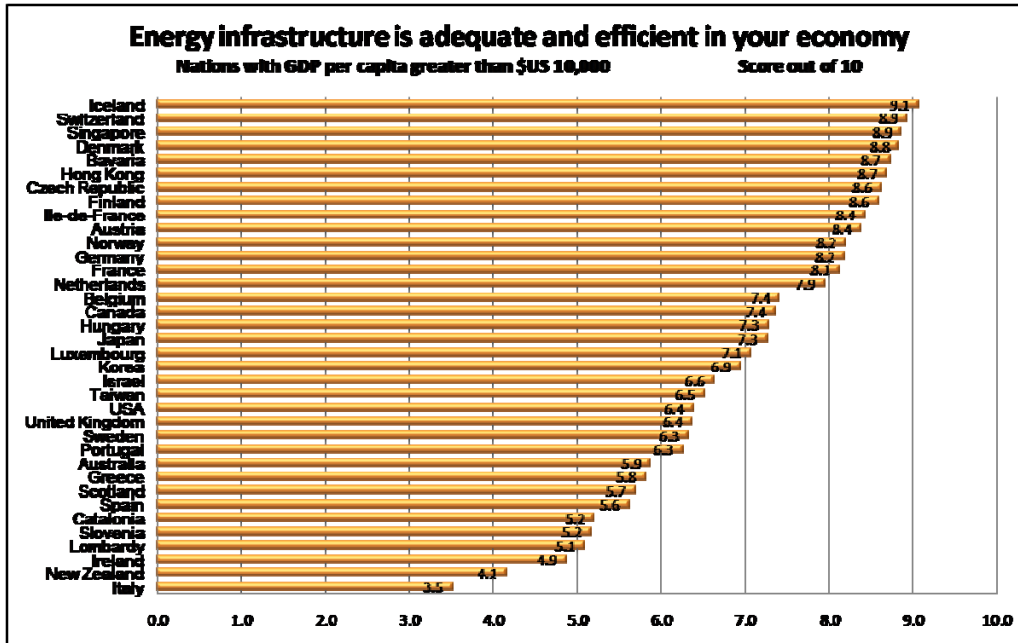
The quality of the electricity supply (lack of interruptions & lack of voltage fluctuations)  
 1= worse than other countries, 7 = meets the highest standards in the world



Source: World Economic Forum Executive Opinion Survey (2008)

These results were replicated in the latest IMD Executive Opinion Survey which rated New Zealand 4 out of 10 in terms of the adequacy of its energy infrastructure for an efficient economy and ranked the country 35th out of 36 nations with a GDP per capita greater than \$US10,000.<sup>2</sup>

**Figure 3: IMD Executive Opinion Survey of the Adequacy of Energy Infrastructure**



Undoubtedly these relative low ratings stem from past failures of the electricity supply network including: persistent failures of the transmission network, most notably in 1998 and 2006; insufficient dry year security margin (evidenced by risks to secure supply in four of the last five years, 2001, 2003, 2006, 2008); and ongoing regulatory uncertainties, including climate change policy, security of water rights; and uncertainty about the national transmission investment programme.

The Commission's, "just in time" approach to core grid transmission upgrades and the notice of intention to decline the NAaN proposal will be seen by investors as engendering further uncertainty about the capacity of New Zealand's transmission grid relative to demand.

## Persistent Failure of the Transmission system underlines the need for diversity of supply

Failure at Transpower's Otahuhu substation on June 12, 2006 highlighted the importance of connections at the substation and the need for diversity of supply into Auckland. This was underlined in a Government

<sup>2</sup> IMD WCY Executive Opinion Survey based on an index from 0 to 10 © IMD WORLD COMPETITIVENESS ONLINE

Policy Statement on Electricity Governance and the need identified by the then Minister for Energy for *“improved diversity of supply routes to major cities where practical”*.<sup>3</sup>

We note that risks associated with lack of diversity of supply across the national grid have not been uncommon events in recent times. They were highlighted again recently in August 2008 when one of the Marlborough Sounds pylons carrying the high-voltage, direct-current (HVDC) inter-island cables from the North Island was buckling because wet ground beneath it had slipped.



This was not the first time pylons supporting the HVDC cables have collapsed breaking the link between north and south. In January 2004, storm-force north-westerly winds gusting to 160km/h blew down three 40m-tall pylons on Molesworth Station, cutting power supply to the North Island.

Figure 4 HOLDING ON: Red clamps halfway up the power pylon, with four steel guy-ropes that are embedded in concrete in the ground, help maintain the South Island's electricity flow. NZ Herald graphic 30 August 2008

Equivalent risks apply to the NAaN line crossing the Auckland isthmus but the problems are arguably more significant in a city environment where access to both pylons and lines is more difficult than for other parts of the transmission grid and where significant population densities are affected.

Most recently a substantial part of Auckland's power supply was interrupted again on 3 February 2009 resulting from transformer failure. While such events have low probability, they have extremely high impact, both in terms of the direct disruption they cause, but also in terms of the damage that they inflict on New Zealand's international standing as a place to live and invest. NZCID considers the Commission needs to give more weight to the value of diversity of supply in its analysis of options.

## Inappropriate value of unserved energy

We note that the value attributed to unserved energy is \$20,000/MWh in the GIT analysis. While this is the default value defined in Clauses 8 and 17 in Schedule F, the legislation clearly anticipates that the Commission will update this value from time to time. Indeed the Commission has recently commissioned

<sup>3</sup> Hon David Parker, Minister of Energy, (7 August 2006), August 2006, Government Policy Statement on Electricity Governance, 36pp.

Minister of Energy Letter to the Chair of Transpower, 8 August 2006, Letter from the Minister of Energy to the Chair of Transpower regarding proposed amendments to Government Policy Statement on Electricity and Expectations Concerning Transpower's role, 1pp.

the Centre for Advanced Engineering to undertake such an assessment. We assume this has ensued from comment by ourselves and others that the value of unserved energy used by the Commission is too low.

In any case, \$20,000/MWh seems to vary substantially from the value that Auckland consumers, including business consumers, place on the costs of supply interruption. The recent power outage on 3 February illustrates this point. Commenting on the costs of the outage Newmarket Business Association head Cameron Brewer said

"When you consider everything from wasted restaurant meals, employees unable to work, wiped computer documents, and missed electronic sales, the cost would have to be several million"

We also note a recent report by Castalia (see extract in Figure 5 below) which reviewed national and international research and concluded that the \$20,000/MWh value for unserved energy used by the Commission as being too low. Castalia valued costs of unserved energy for the NAaN region as being \$41,000/MWh, over twice the level that used in the GIT analysis.<sup>4</sup>

The importance of continuous supply to the NAaN should not be underrated, particularly noting the heavy weighting of commercial and industrial demand served within the area including the NZ Oil Refinery at Marsden Point.

It seems obvious that the differences in the value of unserved energy between that used by the Commission and the value used by the business community and others contribute substantially to perceived inadequacies of the electricity network indicated by the World Economic Forum and IMD business surveys, among others.

### Figure 5: Castalia assessment of the value of unserved energy for the NAaN area

**2.4 An Auckland and North of Auckland Value of Unserved Energy of \$41,000 per MWh**

The pattern of energy consumption in the Auckland and North of Auckland areas is different from New Zealand as a whole. Using census data from Statistics New Zealand, we were able to estimate the proportion of load within each sector.<sup>4</sup> Table 6 sets out a summary of this analysis and shows that value of unserved energy for Auckland and North of Auckland should be \$41,000 per MWh (rounded to the nearest thousand dollars).

**Table 6: Value of Unserved Energy for Load in Auckland plus North of Auckland (NZ\$ 2004)**

Sector	Sector VoLL	% of MWh	Weighted VoLL
Residential	\$ 4,582	29%	\$ 1,346
Commercial	\$ 75,134	41%	\$ 31,164
Agriculture	\$ 89,213	2%	\$ 1,535
Industrial	\$ 26,574	27%	\$ 7,288
<b>Composite VoLL</b>		<b>100%</b>	<b>\$ 41,333</b>

Source: Castalia, Energy Data File, Statistics NZ

<sup>4</sup> The Value of Unserved Energy, Castalia report to Transpower August 2006 sourced at [http://www.gridnewzealand.co.nz/f326,9427/9427\\_ip-attach-m-assess-value-unserved-energy-aug-2006.pdf](http://www.gridnewzealand.co.nz/f326,9427/9427_ip-attach-m-assess-value-unserved-energy-aug-2006.pdf)

Accordingly NZCID considers that the value of unserved energy used by the Commission in its analysis is significantly below that which should be applied. We consider the Commission fails to adequately recognize the risks surrounding significant power failures on New Zealand's international standing. Already New Zealand's electricity supply is seen to be below the standard required for an efficient economy. A decision to defer the transmission upgrade and the associated opportunity to provide diversity of supply for the growing area covered by the NAaN proposal can be expected to be seen once again in an adverse light by those looking to invest in New Zealand.

## **Generation alternatives do not replace the need for the transmission capacity**

NZCID does not consider regional generation capacity, such as the 33% possibility of additional generation capacity at Rodney, is a replacement for the transmission upgrade proposal.

One of the most significant advantages of additional transmission capacity is stability of supply. It also enables competitive generation supply to and from regions. Reliance on distributed generation runs the risk of creating market dominant suppliers within the NAaN region and risks reducing national market competitiveness. On the other hand, future additional generation capacity in Auckland linked to the national grid adds to national capacity thereby increasing the potential for competition.

Providing certainty on the grid upgrade path is critical to delivering the Energy Strategy which is reliant on getting distributed renewable hydro and wind generation capacity to market via a robust transmission grid, backed by base load capacity of thermal and geothermal generation.

## **Modelled savings are marginal in comparison to the additional benefits of Proposal One**

The commission has indicated that the mean NPV cost for Proposal One would be funded by consumers and the total impact on their electricity bills would be less than 5%. Assuming the commission is correct and their preferred options provide a saving of between \$20m and \$30m respectively<sup>5</sup>, this equates to a saving in the range of 0.4% and 0.6% for consumers. An average monthly electricity account for a family of four is around \$250 per month meaning that the potential saving identified by the Commission might be between \$1.00 and 1.50 per month in this example. On the other hand, Proposal One offers consumers across north Auckland and Northland diversity of supply and avoids the potential need for Vector to augment its network at an indicative cost somewhere between \$12m and \$70m, (or an additional cost to consumers of between 30cents and \$1.75 per month). In NZCID's view, the benefits of diversity of supply outweigh the potential marginal savings for consumers which are probabilistic, at best.

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<sup>5</sup> As indicated in Table 6, p63 of the interim decision report

## Conclusion

Taking each of these factors into account, NZCID considers that the notional savings of the two alternatives posited by the Commission do not outweigh the benefits of diversity of supply and the potential for reduced costs in Vectors distribution network that Proposal One provides.

On balance, Transpower's Proposal One provides for improved confidence in security of supply at reasonable cost. The Roskill option is not an acceptable alternative in the long term interests for electricity supply for the NAaN area as it fails to provide for an adequate level of diversity of supply. On the other hand the Staged Alternative model fails to satisfy the need to rebuild confidence in the grid by means of timely investment in the national transmission network and undermines the value of transmission capacity to provide competition and diversity of electricity supply across the NAaN area.

We urge the Commission to take a more holistic long term view to the development of the transmission grid, rather than relying on a narrow interpretation of results derived from the Grid Investment Test. Accordingly NZCID recommends the Commission reverse its interim decision in the light of submissions received and approve Proposal One as submitted by Transpower.

Yours faithfully,



Stephen Selwood  
Chief Executive