13 March 2008

Maree McGregor
Electricity Commission
PO Box 10041
WELLINGTON

Dear Maree

Grid Planning Assumptions

Meridian Energy ('Meridian') welcomes the opportunity to make submissions on the Electricity Commission's (Commission's) consultation on its Grid Planning Assumptions.

Meridian notes that there are multiple sets of planning assumptions all being worked on in parallel including:

1) HVDC input assumptions;

2) Transmission to enable renewables input assumptions;

3) The information being provided in the centralised data set for the 2008 SOO; and

4) Grid Planning Assumptions.

Meridian notes that, even as one of the larger market participants, we do not have the resources to effectively participate in each of these processes. Meridian is currently focused on the HVDC GUP and 'Transmission to enable renewables' processes. Because of the importance of the other work streams underway, relative to the Grid Planning Assumptions, Meridian will not be making substantive comments on this consultation.

Meridian is disappointed that the Commission is using different generation scenario's in the work streams discussed above. Meridian submits that the Commission should move to use a common set of Generation scenario's in all of its work. In particular, Meridian submits that the Commission should be using the scenario's developed by Transpower. This would promote more consistency in the Commission's analysis and avoid a duplication of effort.

Meridian is concerned that in each of the Commission's scenarios it assumes that the HVDC Grid Upgrade Proposal (GUP) has been approved and the new investment is operational in 2012. Meridian is concerned that this prejudges the outcome of the statutory process that requires Transpower to consult with parties that the Commission's Board thinks are representative of the interests of persons likely to be substantially affected by economic investments and the content of draft grid upgrade plans (Rule 14.2.3, Schedule 3, Part F). Meridian submits that the Commission should consider at least one scenario where the HVDC upgrade does not go ahead.

Meridian is also concerned that the Commission Board has had advice not to accept the information provided by generators without independent verification. Meridian notes that

information provided by generators is the most accurate and meaningful data available to the Commission. In fact, under rule 3.2, section 3, Part F, generators are required to provided accurate information to the Commission. Therefore, if the information provided by generators is not accurate, it would be in breach of the rules. Meridian does not consider that any value can be added to this information by third party verification.

Meridian submits that the Commission's forecasts for the percentage of demand growth in the South Island over the next 5-20 years are too low. Meridian notes that the South Island has experienced strong demand growth over the past five years, much of it driven by increased industrial activity rather than population growth. Meridian therefore queries whether or not the Commission has tested its assumptions around electricity growth being related to population growth?

In Meridian's view the Commission has relied too heavily on population growth in its analysis, resulting in an underestimate of South Island load. Meridian has attached a copy of a letter to Transpower, dated 22 February 2008, in which Meridian outlines this concern in detail to Transpower. Specifically, Meridian queries Transpower's assumptions on South Island load growth. Transpower has assumed that South Island demand growth will be a significant 100 – 120 GWH lower than recent history. On a percentage basis, over the last 10 years, South Island growth has contributed 42% of national demand and the North Island 58% of national demand. In clear contrast to history, Transpower are forecasting that in the medium demand scenario that the South Island will only contribute 19% of national demand growth and the North Island 81%.

At a cursory glance, it appears that demand growth in the GPA differs from Transpower's assumptions and are higher than the assumptions for the HVDC GUP. Our comments in the attached letter therefore remain relevant. Meridian queries whether or not the Commission has considered the impact of altering transmission pricing such that South Island generators do not carry the full burden of HVDC charges. Meridian considers that this will provide a strong incentive for additional renewable generation development in the South Island. This is particularly important if New Zealand is to have a 90% renewable generation mix. Meridian suggests that the Commission to consider this scenario in the event that HVDC pricing is changed in the future. Meridian will outline its views on the HVDC in more detail in its submission to Transpower's HVDC GUP proposal.

Meridian notes that in Table 5 in the Draft Generation Scenarios paper suggests the best North Island resource unit costs are LRMC of $80-85/MWh and South Island unit costs of LRMC of $85-90/MWh. Meridian's present commercial models for Mill Creek (North Island) and Hayes Stage 1 (South Island including the HVDC charge re-allocation) presently suggest unit costs under $80/MWh for both of these projects.

Meridian also notes, in relation to Appendix One, that:

- The Pukaki and Te Anau Control Gate Retrofits are modelled as occurring relatively soon. Neither of these projects is likely to proceed as the outage costs (spill) that would be incurred during these projects would exceed any benefits. We recommend that they be pushed out to 2020.
- Meridian is currently designing the Hayes wind farm. Depending on the outcome/progress of the Transmission to Enable Renewables project and the Hayes Environmental Court case, Meridian is aiming to commit to developing Hayes in late 2008. Depending on project economics, Meridian may commit to the development of

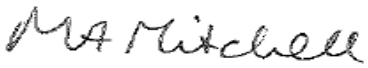
all turbine positions at this stage. Full power output, which might be up to 630 MW, may be available by 2013.

Finally, given the list of work that is currently underway relating to grid planning assumptions, Meridian reiterates its view that a more integrated approach should be undertaken to consulting on this work. It is disappointing, for instance, that the information provided in the Transmission to Enable Renewables process have not be incorporated into this work.

Meridian has also attached a copy of a letter sent to Transpower on 21 February 2008 outlining Meridian's concerns on HVDC pricing for your information.

Please call Andrew Pallesen on 3811 362 if you wish to discuss this submission further.

Yours sincerely



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Attachment: Meridian Energy Letter to Transpower. 21 February 2008.
Meridian Energy Letter to Transpower. 22 February 2008.

21 February 2008

Mr Peter Griffiths
Transpower New Zealand Limited
Level 7, Transpower House
96 The Terrace
PO Box 1021
Wellington
New Zealand

Dear Peter

HVDC Grid Investment Test Consultation

Meridian has begun reviewing the HVDC GIT consultation documentation. Given that under the transmission pricing methodology Meridian is required to pay for the majority of the upgrade, we have taken the approach of assessing the HVDC GIT as if it were any other merchant investment that we may consider.

We have identified a number of sensitivity studies that are missing from what we would expect to see in any investment analysis of our internal projects. Meridian is unable to replicate the Transpower GIT analysis to develop our views on the key areas that the results are sensitive to. We therefore request that Transpower provides the following sensitivity information to Meridian and all other market participants to assist with a robust consideration of the proposal.

In order to not slow the investment decision making process, we have decided to request these sensitivity studies early rather than waiting until the closing date for submissions. This should provide Transpower sufficient time to complete this work within the consultation timeframes. Ideally this information should be presented before the submission closing date so that it may be taken into consideration by all potential submitters.

The specific questions we have are as follows:

1. Understanding the impact of the "Peak Capacity Constraint"

Can Transpower please provide sufficient information for Meridian to understand the impact that the peak capacity constraint in GEM has on the overall HVDC GIT results?

We request that Transpower reruns one specific GEM scenario (preferably the "90% renewables" scenario given that this accounts for 50% of the GIT valuation) with the capacity constraint removed. In doing this Transpower should allow GEM to explicitly schedule generation at a reasonably priced value of lost load (VoLL) where required. We request that a VoLL number of $3,000/ MWh be used instead of a peak constraint as a reasonable proxy for the cost of non supply over an investment timeframe. This will clearly identify the difference in the HVDC valuation that is attributable to the GEM capacity constraint.

2. Comparing the projected HVDC transfers with historical transfers

Can Transpower please provide sufficient information to compare historical actual HVDC link flows with those assumed in the HVDC GIT?

We request that Transpower sets out the historical power flows (over say the last 15 years) across the HVDC link (in North flow and South flow directions and an aggregate net power flow position) and then adds to this data the projected HVDC link flows for the duration of the analysis. Again we suggest the 90% renewables scenario is used based on the previous rationale.

This information will enable us to compare the future assumptions to historical performance as a means to calibrate and test the robustness of the analysis.

3. Demand Forecasts

Can Transpower please provide sufficient information for Meridian to understand the sensitivity of the HVDC GIT to the relative South Island and North Island demand forecast assumptions?

We request that Transpower sets out historical demand growth in both peak demand and energy terms for both the North and South Islands (over say the last 15 years). The future demand growth assumptions in each Island for peak demand and energy growth should then be clearly set out so that we can compare and contrast historical demand growth with the future growth assumptions contained in the analysis.

We then request that Transpower runs a sensitivity scenario using demand assumptions (peak and energy) that are an extrapolation of historical demand growth. Again we suggest that the 90% renewables scenario is used.

This sensitivity study will identify how much the HVDC valuation is affected by differences in inter island demand growth assumptions.

4. Investment Timing

Can Transpower please provide sufficient information for Meridian to understand the sensitivity of the HVDC GIT to investment timing?

One key assumption that is held constant across the analysis is that the HVDC upgrade must occur in 2012 and no sensitivities have been completed to test the optimal timing for any upgrade.

We request that Transpower tests the sensitivity the HVDC GIT valuation to a delay in investment timing by running a scenario where the HVDC investment is delayed until 2014. Again we suggest that Transpower uses the 90% renewables scenario to test this sensitivity.

I am happy to discuss and clarify this request further if necessary and it is worth noting that we may request further points of clarification as our analysis progresses. Otherwise we look forward to your co-operation with these questions and the results of the sensitivity studies.

Yours faithfully

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Strategy Integration Manager

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cc: John Gleadow
Electricity Commission

22 February 2008

Mr Peter Griffiths
Transpower New Zealand Limited
Level 7, Transpower House
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PO Box 1021
Wellington
New Zealand

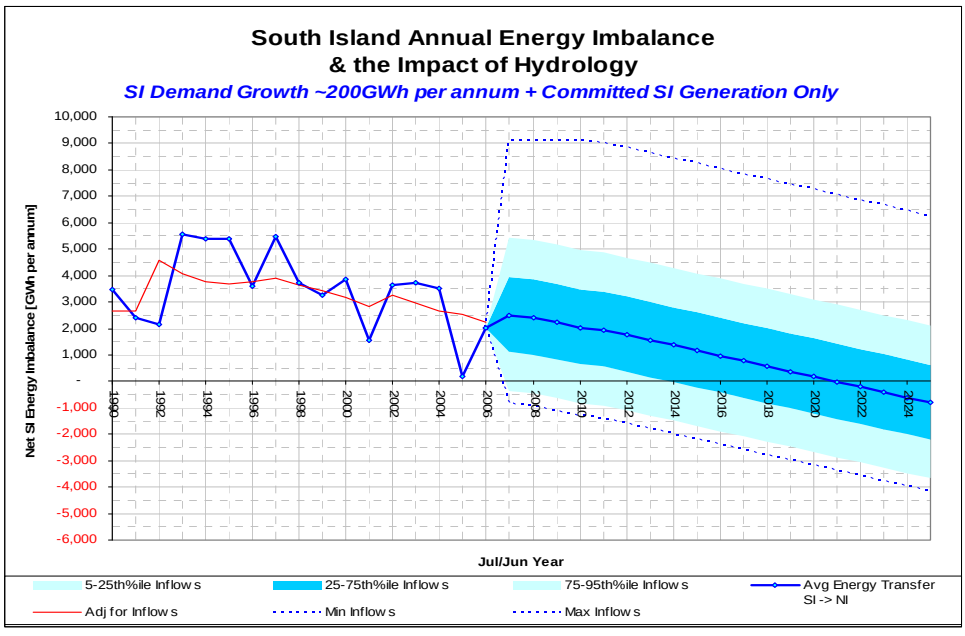
Dear Peter

HVDC Grid Investment Test Consultation

Further to our letter of 22 February and after attending the HVDC GIT consultation workshop, we are now acutely concerned that the HVDC GIT analysis contains a systematic bias across all generation scenarios. Furthermore the sensitivity analysis performed by Transpower (and highlighted in our previous letter) has not in our view uncovered the impact of this bias on the HVDC valuation.

Our concerns are chiefly around the extent to which all of Transpower's scenarios show a significant increase in HVDC energy transfers from the South Island to the North Island which is in stark contrast to what has occurred over the last 10 years. I raised this point at the workshop on Friday 22nd as a genuine question as to why all of Transpower's scenarios reflect a future set of market outcomes that are materially different from recent history.

By way of example, the graph below sets out the historical HVDC flows since 1990 (in aggregate) as well as a projection of future power flows across the HVDC link if only committed South Island generation is constructed. South Island demand growth is assumed to be a conservative 200 GWh per annum.



While the future assumptions are debatable, what is clear is that HVDC flows from the South to the North Island have continued to decline on average over the last 10-15 years. With no new South Island generation likely to be commissioned within the next three possibly four years due to consenting timeframes and transmission capacity issues, there is nothing committed in the market that will reverse this trend in the short term.

In contrast, all of Transpower's scenarios show significant and increasing energy transfers from the South Island to the North Island, opposite to what has been occurring in the market over the last 10-15 years.

We have since analysed Transpower's HVDC GIT and uncovered what we consider to be the primary source of this bias, which is in the demand forecasts.

Transpower's Demand Forecasts

The table below sets out historical demand across the North and South Islands[1]. The average energy growth in the South Island over the last 5 and 10 years has been 226 GWh and 245 GWh per annum respectively.

Year	NI Demand		Growth		SI Demand		Growth	
	Energy [GWh]	Peak [MW]	Energy [%]	Peak [%]	Energy [GWh]	Peak [MW]	Energy [%]	Peak [%]
1997	20,629	3,743	-0.7%		11,796	1,810	4.4%	
1998	20,357	3,558	-1.3%	-4.9%	12,039	1,825	2.1%	0.8%
1999	20,904	3,666	2.7%	3.0%	12,260	1,888	1.8%	3.5%
2000	21,758	3,724	4.1%	1.6%	12,518	1,902	2.1%	0.7%
2001	21,843	3,918	0.4%	5.2%	12,694	1,967	1.4%	3.4%
2002	22,101	3,853	1.2%	-1.7%	13,112	1,995	3.3%	1.4%
2003	22,557	3,867	2.1%	0.4%	13,309	1,941	1.5%	-2.7%
2004	23,658	4,124	4.9%	6.6%	13,768	2,026	3.4%	4.3%
2005	23,571	4,103	-0.4%	-0.5%	13,819	2,070	0.4%	2.2%
2006	23,913	4,322	1.4%	5.4%	13,958	2,119	1.0%	2.3%
2007	23,949	4,351	0.2%	0.7%	14,243	2,167	2.0%	2.3%
10 Yr Avg	**332**	**61**	**1.3%**	**1.6%**	**245**	**36**	**2.1%**	**1.8%**
5 Yr Avg	**370**	**100**	**1.6%**	**2.6%**	**226**	**34**	**1.8%**	**1.8%**

In contrast, Transpower's South Island demand forecasts contained in the HVDC GIT for the medium demand growth scenario equate to 124 GWh per annum. This assumes that South Island demand growth will be a significant 100-120 GWh per annum lower than recent history. Even Transpower's "high" demand growth scenario contains less South Island demand growth than historical rates, at 184 GWh per annum.

HVDC GUP - Annual Growth to 2040

	NI		SI	
	Energy GWh	Peak MW	Energy GWh	Peak MW
High	742	125	184	29
Medium	532	90	124	20
Low	332	56	67	12
History	**332**	**61**	**245**	**36**

[1] These historical North and South Island demand figures are based on reconciled GXP data.

On a percentage basis, over the last 10 years, South Island growth has contributed 42% of national demand and the North Island 58% of national demand. In clear contrast to history, Transpower are forecasting that in the medium demand scenario that the South Island will only contribute 19% of national demand growth and the North Island 81%.

We cannot find any rationale for incorporating demand forecasts that represent such a substantive change from historical demand growth in all scenarios, given a review of the key drivers of demand, namely population and economic growth. Furthermore, we have seen no evidence of hind-casting being used to calibrate historical growth drivers with those incorporated in your future growth assumptions.

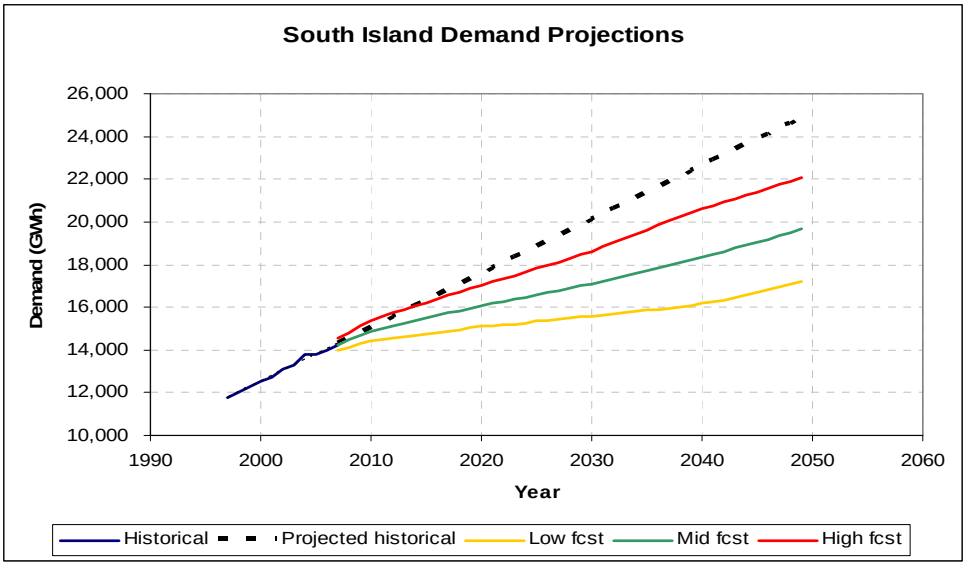
If the effect of this lower South Island demand growth is extrapolated across the period of the HVDC analysis then Transpower's results suggest that by 2040, a significant 4000 GWh of surplus South Island energy will be present compared to a counterfactual where demand growth continues at current rates.

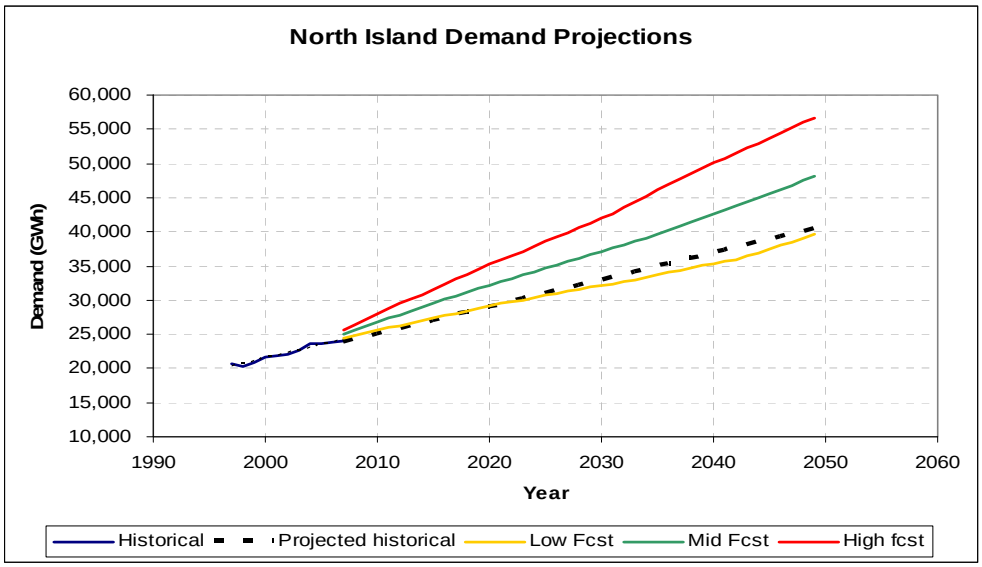
In a low growth scenario this South Island surplus could be as much as 6000 GWh. The consequences to the power system (in the medium and low demand scenarios) are equivalent to removing 80%-115% of the energy currently consumed by RTANZ at Tiwai point from the South Island and placing it in the North Island in every scenario. This will drive significant South to North energy transfers across the HVDC link as evidenced in your scenario analysis.

Demand Growth Difference by 2040 from Historical Growth

	NI		SI	
	Energy GWh	Peak MW	Energy GWh	Peak MW
High	13,515	2,110	**-1,996**	**-225**
Medium	6,599	948	**-3,978**	**-518**
Low	10	-160	**-5,860**	**-796**

Graphically the impact of the inter island demand growth assumptions are highlighted in the following two graphs, which show Transpower's low medium and high forecasts against a projection of historical (10 year average) demand growth.





Impact on HVDC Valuation

Meridian considers that it is likely that this systematic demand forecast bias across all generation scenarios will significantly affect the HVDC valuation. In our view, it is quite likely that Transpower's demand forecast assumptions will over inflate the HVDC GIT valuation.

In Transpower's own briefing you have stated that "The result (Grid Investment Test) must be robust with respect to sensitivity analysis".

We believe that Transpower has not met this test with respect to demand forecast sensitivity analysis.

Meridian therefore strongly recommends that Transpower performs a series of sensitivity studies to clearly identify the HVDC valuation impacts of the step change reduction in South Island demand forecasts contained within the HVDC GIT.

Specifically we recommend that Transpower conducts the following inter-island demand growth sensitivity analysis:

1. Use the 90% renewables and medium demand growth scenario as the basis for the inter-island sensitivity analysis. The rationale is that this scenario has the single highest weighting in the HVDC GIT analysis (at 50% for the generation scenario and 70% for the medium demand case) and is therefore responsible for the highest contribution to the HVDC valuation.

2. Change South Island demand growth to be consistent with historical demand growth rates (circa 220-240 GWh pa). North Island demand growth should be reduced accordingly to meet the overall national growth figures contained in the above scenario.

3. Run the mono pole base case and all pole 1 upgrade cases to assess the differential in HVDC upgrade valuations.

We have requested this sensitivity analysis early within the consultation period so that it can be completed with no impact to the overall timeframes of the HVDC GIT consultation.

We are happy to discuss any points of clarification if this request is unclear. Otherwise we look forward to your early response and expect that the results will be made public.

As with our previous information request, we may ask for further clarifications as our assessment of your proposal continues.

Yours faithfully

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