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Dr Graham Scott, Chair  
Members of the Transmission Pricing Advisory Group  
Electricity Authority  
PO Box 10041  
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Dear Graham and TPAG Members

## **ANALYSIS OF THE ALLEGED ASSYMETRIC IMPACT OF HVDC COSTS ON SOUTH ISLAND GENERATION INVESTMENT**

### **Introduction**

The former Electricity Commission's consultation paper titled 'Transmission Pricing Review: Stage 2 Options' of July 2010, on page 26, discusses, in relation to HVDC charges:

- (f) *The cost of reduced competition in generation development, because owners of existing South Island generation (notably Meridian) face a lower marginal signal on increased capacity than other generators.*

Footnote 27 on that page provides a numerical example that purports to illustrate how this comes about.

In our submission on this paper I pointed out that the analysis in the Commission's paper is flawed because it relies on an incorrectly specified counterfactual situation. If the analysis is repeated with the correct counterfactual, it can be clearly illustrated that the marginal signal provided by the incidence of HVDC charges is exactly the same for every investor in new generation in the SI, no matter how big their existing portfolio is.

It was therefore with considerable dismay at yesterday's first TPAG meeting that I discovered that staff of the new Electricity Authority also

held the view of the previous Electricity Commission that the incidence of HVDC charges conferred a competitive investment advantage to Meridian. Worse, this was also clearly distorting thinking around potential cost allocation options for HVAC assets.

### **Purpose of this Paper**

This thinking simply cannot remain uncontested and I attempt, again, to restate my case in the hope that it will convince the members of TPAG. I therefore request that this is discussed at our workshop next week.

I am looking for a clear direction from TPAG as to whether my economic arguments are completely wrong or completely right. There is no 'half-way house'.

### **The Arguments**

#### Meridian has a competitive investment advantage

Support for this argument is based on the counterfactual that if Meridian does not invest in a profitable SI generation opportunity, then no one else will make that investment or a similar one in the SI. The analysis then proceeds and derives the result that the marginal HVDC cost (in \$/kW) of generation investment by Meridian is lower than any other potential investor, by virtue of Meridian's greater initial size. This leads to a conclusion that Meridian has a competitive advantage in new investment in SI generation.

#### Correct Counterfactual and Discussion

The correct counterfactual is not that no one invests if Meridian does not, but that at least one other party makes that investment or an equivalent one. The incremental transmission costs attributable to South Island additional generation capacity is the same whether Meridian invests in it or some other party does. The fallacy arises by comparing the total amount of HVDC transmission charges Meridian would pay **if it invested in the new generator** with the total amount it pays **prior to the investment**. The correct comparison is between the total amount of HVDC transmission charges Meridian would pay **if it invested in the new generator** with the total amount it would pay **if it did not and some other party invested in the new generation**. This is because in economics this is the correct comparison for making decisions about whether to invest yourself, or let someone else invest. This is the correct counterfactual to assess the investment incentives on the parties.

If someone other than Meridian invested in the new generation. Meridian's transmission charges would actually fall as the total is the same and so all that changes is the allocation. It does not take much work to prove that Meridian's opportunity cost from investing in the additional generation, compared with letting another party do the investment, is exactly the same

as any other potential investors. I have done exactly that in my submission and repeat the analysis here using the Commission's data from footnote 27 of the consultation paper.

### Symmetric Opportunity Cost of Investing in SI Generation

Situation A – Status Quo	
4,000	Installed SIG (MW)
100	HVDC costs (\$m)
2000	Generator A SI HAMI (MW)
0	Generator B SI HAMI (MW)
2000	All other SI Generators HAMI (MW)
25.00	HVDC charge (\$/kW)
50,000,000	Generator A HVDC charges (\$)
0	Generator B HVDC charges (\$)
50,000,000	All other SI Generator HVDC Charges (\$)

Situation B – New Investment of 50MW by Generator A	
4,050	Installed SIG (MW)
100	HVDC costs (\$m)
2050	Generator A SI HAMI (MW)
0	Generator B SI HAMI (MW)
2000	All other SI Generator HAMI (MW)
24.69	HVDC charge (\$/kW)
50,617,284	Generator A HVDC charges (\$)
0	Generator B HVDC charges (\$)
49,382,716	All other SI Generator HVDC charges (\$)
617,284	Change in Generator A HVDC charges (\$)
0	Change in Generator B HVDC charges (\$)
-617,284	Change in all other SI Generator HVDC charges (\$)

<b>Situation C - New Investment of 50MW by Generator B</b>	
4,050	Installed SIG (MW)
100	HVDC costs (\$m)
2000	Generator A SI HAMI (MW)
50	Generator B SI HAMI (MW)
2000	All other SI Generator HAMI (MW)
24.69	HVDC charge (\$/kW)
49,382,716	Generator A HVDC charges (\$)
1,234,568	Generator B HVDC charges (\$)
49,382,716	All other SI Generator HVDC charges (\$)
-617,284	Change in Generator A HVDC charges (\$)
1,234,568	Change in Generator B HVDC charges (\$)
-617,284	Change in all other SI Generator HVDC charges (\$)

<b>Opportunity Cost Assessment</b>	
1,234,568	Opportunity cost of A investing ahead of anybody else
1,234,568	Opportunity cost of B investing ahead of anybody else

Using the correct counterfactual, the HVDC opportunity cost of anyone investing in SI generation is exactly the same. This is the only correct way to assess the investment incentives facing potential investors.

However, if Meridian chooses not to make a profitable investment in SI generation (and no one else takes up that opportunity or something similar) it cannot then be argued that the HVDC charging regime confers an investment advantage to Meridian. Rather, this indicates that there are other impediments to investment by others, such as Meridian's ability to exclude others through control of resource consents or other assets necessary for a particular investment.

The argument that the HVDC charging regime confers an investment advantage to Meridian, by way of Meridian's size, is not underpinned by any economic rationale. It is simply false and must be rejected.

Yours sincerely

Ray Deacon  
Director