Electricity Networks Association

7th Floor, Wellington Chambers, 154 Featherston Street
PO Box 1017
Wellington, New Zealand 6140
Telephone: 64-4-471 1335 ***Fax:*** 64-4-496 5209
E-mail adj@electricity.org.nz

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Lisa DuFall
Submissions
Electricity Commission
PO Box 10041
Wellington 6143

via submissions@electricitycommission.govt.nz

Consultation Paper—Transmission Pricing Review: Stage 2 Options

Our submission focuses just on the questions from the discussion paper identified below.

Q1. What, if any, bearing do you consider the Authority's proposed objective has on the review's approach to analysis and evaluation to date?

We would expect that the proposed objective "to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers" would lead to a more rigorous examination of the options identified for controlling power factor, which our submission mainly focuses on. The Commission will be aware of the many objections from distributors that resulted from its decision to incorporate unity power factor requirements in the Connection Code, and we would expect the Authority to apply a level of economic analysis to requirements for new investments (in this case in the order of $75 million) comparable to the exacting processes that the Commission has applied in using the Grid Investment Test.

Q2. Do you agree that the Commission has identified the relevant factors in its assessment (paragraphs 3.2.6 to 3.2.13) of whether nodal pricing provides adequate signals for efficient generation and load investment? If not, please explain your reasons.

No. In our view the fundamental weakness of nodal pricing as a mechanism for signalling efficient generation or load investment is its fragility when loads change. A party investing in response to nodal pricing signals reflecting high transmission losses would see those losses drop exponentially as a result, and there is no obvious way of capturing the pre-investment pricing levels contractually, except where a contracting party is in a monopoly situation. Similarly, investments in

generation or load in response to a constraint signalled through nodal pricing would see the same effect, possibly heightened if out-of-merit-order generation was being displaced by the new investment.

Q17. The Commission has developed three options that it considers have potential to encourage efficient investment in static reactive power. Which of these options do you consider best encourages this objective? Please give reasons.

and

Q18. Are there other options for the allocation of static reactive power costs that the Commission should pursue?

ENA supports the more detailed analysis and submission that Vector is making on these issues.

To assist the review we attach a paper prepared by Sinclair Knight Merz entitled *Review of EGR Connection Code: UNI & USI Power Factor Requirements*. As a result of this review, SKM note, amongst other things, that:

- A key finding is that at system peak the average power factor of both the UNI and USI regions is approximately 0.98.
- The costs associated with meeting the unity power factor requirement in the UNI and USI regions are collectively estimated to be NZ$75M.

- The EC's economic evaluation of capacitor bank installations:
  - Overstated the extent of the distribution resistance and thus the possible loss reduction.
  - Under-estimated the costs associated with capacitor banks (due to switching costs).
- If one only considers the benefits associated with network loss reduction then a sensible target power factor for NZ EDBs would be about 0.95.

SKM also note that approaches to controlling power factor vary widely internationally, ranging from requirements to achieve levels approaching unity down to transmission authorities allowing power factors as low as 0.8. The Australian requirements range from around 0.95 to 0.98 above 400 kV.

In the light of this analysis it would seem that the established practices and pressures driving network development have delivered, and are continuing to deliver, very adequate power factor levels. An investment of the order of $75 million forced by a requirement to achieve power factors of 1 would be well out of proportion to the likely benefits, and would imply higher costs for delivered energy to all consumers. Accordingly we do not agree with option 1. Options 2 and 3 warrant more detailed study to determine whether real net benefits are likely to arise, but we recommend that the Commission reverts to requiring power factors at GXPs to be maintained at levels of 0.95 at times of peak demand, or perhaps 0.98 given that performance at that level has proven achievable without triggering the upward cascade of costs associated with pushing on to unity. Consideration should also be given to whether substantially the same outcome could be achieved at lower cost by mandating a

minimum power factor at regional level rather than at individual GXPs ie allowing aggregation across all the GXPs supplying a distribution company in the region.

Alan Jenkins
Chief Execuitve