

31 October 2008

Electricity Commission
Level 7, ASB Bank Tower
2 Hunter Street
Wellington

by email: info@electricitycommission.govt.nz

SUBMISSION ON ISSUES PAPER – OPTIONS FOR ENSURING REACTIVE POWER INVESTMENT

- 1 Orion New Zealand Limited (**Orion**) welcomes the opportunity to comment on the issues paper – options for ensuring reactive power investment (the **paper**) released by the Electricity Commission (the **Commission**) in September 2008.
- 2 Our submission is in two parts:
 - 2.1 general comments; and
 - 2.2 our response to a number of the specific questions raised in the paper, which we set out in the schedule to this letter.
- 3 Orion would also like to endorse the more detailed submission on this issue prepared by Vector.

General comments

Need for general rule exemption due to time line of the Commissions process

- 4 We are concerned with the Commission's timetable in relation to future process. We consider that it will be necessary that some rule changes are made thus the timetable outlined in paragraph 5.1.3 will apply. This timetable indicates it may be September 2009 before rules are gazetted

that will remove the existing obligation on participants under the connection code.

- 5 Due to the uncertainty surrounding the process and its outcome, we support Vector's proposal that the Commission should:
 - 5.1 provide an exemption under Part 10 of the Electricity Governance Rules for all DTCs pending final decisions
 - 5.2 in the interests of providing regulatory certainty for all affected parties, the Commission immediately provide a public statement on whether it intends to issue such an exemption pending a final decision on the requirement.
 - 5.3 pending a final decision, it is appropriate for the requirement to revert to the pre-2008 obligation that DTCs maintain a power factor of not less than 0.95 lagging in system peak loading conditions.
- 6 If the Commission is not prepared to make the statement referred to in paragraph 5.2 above, then Orion requests that this submission be treated as an application for such an exemption.

Regulatory Co-ordination

- 7 Like Vector, Orion is extremely concerned by with the Commission's response to concerns raised in submissions that lines businesses would not be able to recover the costs they would face in meeting Clause 4.4 under the price control regime administered by the Commerce Commission.

- 8 The paper comments

"The Commission is not convinced that this is necessarily an issue, but noted that this issue is within the scope of the Commerce Commission's jurisdiction (rather than the Electricity Commission's) to resolve". It should not be a reason in itself to prevent the implementation of an obligation that will better reflect the cost of providing reactive support in these regions to the causers."

We do not consider that the Commission should adopt a hands-off approach in this manner. Rather we consider that the Commission should actively be working with the Commerce Commission to ensure that regulation under the Commerce Act does not produce any barriers to investment by line companies in this area.

Pricing mechanisms backed by minimum power factor standards

- 9 Orion supports Vector approach in relation to encouraging efficient investment in reactive compensation equipment via a pricing mechanism, supplemented by realistic minimum power factor requirements either on DTCs or retail customers.
- 10 Orion already has in place a power factor rebate scheme for our irrigation customers. We also have in place a pricing mechanism based on KVA demand for our major customers. For general customers we have recently decided to introduce a low power factor charge which will be applied where the measured power factor is less than 0.95 lagging between 0700 -2100 on weekdays.

Cost efficiency of power factor correction

- 11 In our submission of the 22 November 2007 we indicated that we did not consider that it would be cost effective to correct the power factor of the distributor's sub-transmission system to 0.99. We did consider that there may be a case for this in some instances but we did not consider that this approach could be applied universally to all Grid exit Points (GXPs)
- 12 To test the Commissions preliminary analysis we carried out power factor correction studies at an urban GXP Bromley 66kV (BRY0661) and a rural GXP Springston 66kV (SPN 0661).
- 13 The results indicated that:
 - 13.1 "Orion's urban low loss underground 66kV sub-transmission network from Bromley GXP to the local zone substations destroys the economic case of 11kV bus power factor correction beyond 0.95 power factor."
 - 13.2 The rural case compared 11kV zone substation power factor correction with SPN 66kV bus power factor correction. "The results indicate that correcting from 0.95 to 0.99 power factor is marginally economic".
- 14 We recommended in this earlier submission that:

"Given the significant variance in sub-transmission/distribution network characteristics we do not believe that it is appropriate to mandate power factor correction to a specific value. Transpower should consider the use of network connected capacitors as a transmission alternative."

We consider that this recommendation is still appropriate, and could be considered as complementary to a pricing mechanism.

Concluding remarks

- 15 Thank you for the opportunity to make this submission. Orion does not consider that any part of this submission is confidential. If you have any questions please contact Dennis Jones (Industry Developments Manager), DDI 03 363 9526, email dennis.jones@oriongroup.co.nz.

Yours sincerely

A handwritten signature in black ink that reads "D. L. Jones". The signature is written in a cursive, slightly slanted style.

Dennis Jones
Industry Developments Manager

Q	Question	Comment
1	Do you agree that it is reasonable to decide the purpose of an investment at the time the charges are fixed under the TPM ?	<p>We consider that before the Commission considers the question of whether <i>“it is reasonable to decide the purpose of an investment at the time the charges are fixed under the TPM”</i> it needs to consider if the proposed solution will lead to the appropriate economic outcome.</p> <p>As we indicated in our 22nd November submission <i>“The paper¹) suggests it would be economic to correct the power factor of the distributor’s sub transmission system to 0.99. While we consider that there may be a case for this in some instances we do not consider that it can be applied universally to all Grid exit Points (GXPs).”</i></p> <p>Clearly therefore if it is uneconomic to carry out the investment the question of whether <i>“it is reasonable to decide the purpose of an investment at the time the charges are fixed under the TPM”</i> is redundant.</p> <p>Putting aside the question of the economics of the investment the question appears to relate to trying to resolve who is responsible for the cost of an investment in the situation where:</p> <ol style="list-style-type: none"> 1. a DTC has not invested in equipment to meet the minimum PF requirements (a requirement that under the status quo we and many others consider is unreasonable) 2. Transpower does not enforce these obligations (the paper notes that only Transpower can enforce these obligations due to the bi-lateral nature of the transmission agreement. Yet the paper also notes that these obligations under this same bi-lateral contract cannot be varied by the parties bound by the agreement) 3. the result of the above being that the GRS is not met at a GXP 4. as a result of the GRS not being met Transpower applies to the Commission for

¹ The Original paper as the Commission is describing its earlier consultation

		<p>approval of an investment for voltage support</p> <p>5. in this event if the Commission approves the investment by Transpower there is the question of should the investment be an interconnection asset (with the costs spread across all DTCs) or a connection asset (with the costs assigned to a single DTC).</p> <p>The Commission suggest that (for USI and UNI) that if the above situation occurs then the matter of whether the investment is an interconnection asset of a connection asset can be determined by the net reactive flow during any of the 12 half hour periods that are chosen as the regional coincident peaks. If the net reactive flow is out of the grid then the investment would be considered to be reactive power supply and a connection asset. If the net reactive supply was into the grid then at investment would be considered to be grid support and a interconnection asset.</p> <p>This entire scenario appears to indicate a number of intrinsic flaws with the Transmission agreement (including the status quo for power factor requirements in the connection code) and the EGRs.</p> <ul style="list-style-type: none">• there is an asymmetric risk in relation to the investment between Transpower and DTCs• enforcement issues of the contract• lengthy process involving risks to GRS• relies on DTC refusing to invest to prevent possible inefficient investment <p>The paper notes that a proposal for investment by Transpower would have to be compared with a number of alternatives in order to pass the GIT and that one of these alternatives may be selected instead of the original proposal. In this case we assume that the original proposal would have been rejected on economic grounds in favour of the alternative. This suggests that if the Commission where to maintain the status quo then unless a DTC refuses to invest and forces a stand-off resulting in consideration of possible options under</p>
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		the GIT then a sub-optimal investment would be made.
2	Do you agree that the summary of the Commission's process is correct?	<p>No, as we stated in our submission of the 22 November 2007</p> <p><i>"We are concerned about the timing of the process for consultation in relation to the connection code. Orion is currently in the position of having to concurrently consider the draft default transmission agreement including a number of the other schedules while the Commission is still consulting on the code.</i></p> <p><i>We consider that the code will require considerable modification to be fit for purpose and that a second round of consultation on a modified code will be required.</i></p> <p><i>We understand the time constraints that the Commission is faced with and would recommend that to ensure that the overall process is not delayed and to ensure adequate consultation, the Commission should adopt a minimal code initially which can if necessary be added to later following further consultation.</i></p> <p><i>We consider that this is far more appropriate approach than to include the proposed code and then trying and fix it later. This will also reduce compliance costs that will result from breaches of the proposed code."</i></p> <p>We consider that the submissions received by the Commission that commented on the unity power factor proposal opposed it. We consider that these concerns were not properly taken into account by the Commission before it recommended the rule change to implement its proposal.</p> <p>The fact that the papers opening introduction states <i>"In response to a number of concerns electricity industry participants have expressed in relation to the power factor requirements in the Connection Code, the Commission is exploring what options are available to address these</i></p>

		<i>concerns</i> ". This opening statement in our opinion indicates a failure of the consultation process.
3	Do submitters consider that this a practicable and workable interpretation of the PF requirement? Do submitters consider that the Commission has to provide further guidance (see related question Q30)	No. We consider that the Commissions own paper highlights that the proposal is impractical and unworkable. The analysis carried out on behalf of the Commission demonstrates that for the meter alone a tolerance must be provided (albeit a small tolerance), it is not clear from the analysis whether this includes the errors in the measurement transformers that will be required at these voltages metering (CT's and VTs). We consider that the Commission is missing the point in stating that class 3 and by implication Class 2 var-hour meters are accurate enough to measure compliance with the connection code. The point is that whatever measurement device is used a tolerance around unity will be required, due to the physical load characteristics existing at GXP (a point of service) and the inability to control the reactive power flows to an absolute value.
4	Do you agree with Commission's view on the measurement issue?	No The Commission appears to be saying that a DTC must maintain a power factor of unity while at the same time acknowledging that this is not possible due to the fact that it is reasonable to expect and accept some minor deviations within a half hour period.
5	Do you consider that it is reasonable to expect and accept minor deviations within the half-hour measurement period or over a longer period?	We consider that it would be unreasonable and impractical not to expect and accept deviations (e.g. ± 0.05 (leading/lagging)) on the power factor within a half hour. We consider that within a half hour period there will always be a flow of reactive power both to and from the grid whether this averages out over a half hour period such that no reactive power is being drawn from the grid is improbable.
6	Do you have other concerns about the PF requirement?	We remain concerned that the Commission does not appear to have taken into account practical issues around matters such as the step size of capacitors that can be switched in and out.
7	Do you agree with assessment of Part C integration issues? Are there more?	No comment

8	Do you agree with assessment of system operation issues? Are there more?	We agree with the SO that there are issues with operation at light load that could create problems, including the need to have capacitors switching arrangements to remediate these effects in some cases. The connection code, must allow for flexibility of power factor control with the SO. If leading power factor is useful to the SO at peak loading, then the connection code should permit this.
9	Do you agree that the options should cover GXP demand for reactive power only?	No. The options should consider where is the most economic place to apply correction, correcting only to the most economically efficient level. The best place may not be at a GXP and also not necessarily all GXPs will be economic to correct to the suggested level of unity. We would also point out that the requirement to correct the power factor in the connection code is at the "point of service" and not by GXP (note these are not the same point on the grid).
10	Do you consider there are other reasonably practicable options [<i>to the four covered</i>]?	Orion does not consider that all of the four options covered are practicable. In particular we do not consider that the status quo is practical, however we accept that variations to the status quo by providing appropriate tolerances may be viable.
11	Are there other variations [<i>to the options set out</i>] that the Commission should consider in more detail?	Orion suggests that Vectors proposal of " <i>encouraging efficient investment in reactive compensation equipment is a pricing mechanism, supplemented by realistic minimum power factor requirements either on DTCs or retail customers</i> " should be considered in more detail. A further or complimentary option would be to ensure that future grid reactive support investment can be supplied as a Transmission alternative by a DTC.
12	Do you consider that a clarification of the TPM definition of connection assets is required?	Yes, clarification of how reactive support assets installed at GXPs are treated would be useful, the analysis should also consider whether assets installed by DTCs can be classed as transmission alternatives. We do not agree that the clarification should be limited to the two options suggested in the paper at paragraph 4.5.11.
13	Do you consider that any of the GRS, section III of Part F of the Rules, the	Yes. The paper has outlined a number of issues in respect of the benchmark agreement and the rules that need improving. Clearly enforcement of a bi-lateral agreement with a section of the

	Interconnection Rules or the BA would also need to be reviewed?	agreement that cannot be negotiated is a serious issue that needs resolving.
14	Do you consider that one of the above potential variations for the definition of the PF standard is superior? If so, why? Are there other options?	Yes. We consider that option (c) <i>"It could be held within a specific band, for example ± 0.005 (leading/lagging) of the standard. The upper limit of the standard would be a PF of 1.0"</i> is superior to options (a) and (b). However we do not consider that the tolerance of ± 0.005 shown in option (c) is appropriate, nor do we consider that it has to be symmetrical around unity PF.
15	Do you consider that a pragmatic approach to assessing contractual compliance is appropriate (see related questions Q3 and Q5)?	We consider that it is more important that a pragmatic approach be taken to the setting of the standard rather than in assessing contractual compliance. The Commission has noted (paragraph 4.5.14) that <i>"Seldom do measurements exist of any real world quality that establish with absolute certainty, absolute compliance."</i> For this reason and the other practical considerations with real time operation of the electricity network it is necessary to ensure that the standard is not an absolute value. To do otherwise will put an unreasonable onus on Transpower to make judgements on what it thinks is the Commission's intent.
16	Do you consider that Transpower and the Commission should develop a compliance policy?	We consider that the rules and consequently the Transmission agreement are appropriately set to a reasonable and practicable standard then it should not be necessary to develop a compliance policy. However if the status quo were to remain then it would be essential.
17	Do you consider that an appropriately worded compliance policy would help remove any doubt as to how the enforcement of unity PF obligation would impact on a GUP	See Q16
29	Do you agree with the proposed process? If not, do you have any	We consider that the proposed process will leave DTCs in an untenable situation, as the planning to meet the status quo will have to occur in a time frame that is inconsistent with the commission

	suggestions to improve the process?	process. We consider it is essential that the Commission first moves to remove clause 4.4 in the connection code or provides a blanket exemption from the requirements until this issue is resolved.
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