

15 April 2013



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### **Loss factor methodologies**

1. Vector welcomes the opportunity to respond to the Electricity Authority's (Authority) consultation paper *Loss Factor Methodologies* dated 14 February 2013. No part of this submission is confidential and we are happy for it to be publicly released.
2. Vector's contact person for this submission is:  
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### **General comments**

3. The Authority is proposing to update its Guidelines on the calculation and use of loss factors (Guidelines). The Guidelines aim to provide the industry with a model that calculates loss factors to an appropriate level of accuracy and contains a set of assumptions and level of detail required for such modelling.
4. Vector supports the Authority's attempt to provide the industry with a recommended method for calculating loss factors. We agree that it is desirable for the industry to use *accurate* loss factors in its reconciliation. We also agree that distribution networks are best placed to determine technical loss factors and should provide such with an appropriate level of accuracy.
5. However, based on the Authority's current proposal we do not consider that there are strong incentives for Vector to calculate loss factors according to the approach under the Guidelines. Our reasons are as follows:
  - The Authority estimates that it will cost a total of \$2.7 million to calculate loss factors – a cost distributors will bear. However, the current proposal does not demonstrate that these costs will result in

any efficiency gains – i.e. \$2.7 million appears to be a cost merely associated with identifying loss factors under a particular approach.

- Further to the above, there is no discussion of how the Authority will go about addressing non-technical losses once they have been identified, let alone at all – i.e. there seems to be an assumption that the identification of technical losses will lead to the reduction/improvement of non-technical losses with no discussion of what the 'next steps' are (if any). It is not clear that the reduction of non-technical losses will in itself be feasible or have a positive cost-benefit. Therefore, the benefits of the Authority's proposal are dependent on uncertain future actions, while the costs are certain and up front.
  - It would appear that no analysis has been done to compare the accuracy of loss factors under the Authority's approach with the current approaches used by distributors – especially given that the Authority is happy with a variance of  $\pm 20\%$ . Has the Authority considered what the *current* variance is? Without demonstrating that current loss factors are in fact significantly less accurate than they would be under the proposed approach, it is hard to see what the benefits of the proposal are.
  - We agree that a nation-wide approach is not feasible. Each network has its own unique parameters and characteristics, depending on its size and geographic location. Most of the assumptions built into the Authority's model do not align with, or reflect, Vector's network (see examples in Question 2 below). This means that Vector would need to undertake a significant amount of work to tailor the model to its network before it can be of use.
  - The cost benefit analysis indicates that the Authority's approach requires 15 weeks of work by an engineer, for a balancing area. Vector has two balancing areas, which would require 30 weeks of an engineer - roughly equating to two-thirds of one full time employee. The Authority's approach also requires periodic on-going work and resources to enable the five year review.
6. For the reasons outlined above (and in our comments in the table below), Vector is unlikely to adopt the Authority's approach to calculating loss factors. We support the voluntary nature of the Guidelines, and until the Authority can demonstrate that strong incentives exist for distributors to embark on this onerous undertaking, we do not see any compelling reason to diverge from our current approach.

7. Vector **recommends** that the Authority note our comments above and reduce the costs and complexity of the methodology in the Guidelines. A simplified approach would be likely to deliver similar levels of accuracy for less cost.
8. Vector also **recommends** that before the Authority proceeds further it ought to consider whether the identification of losses will in fact translate into a reduction or improvement of non-technical losses, and how it will seek to achieve this. The Authority ought to also consider whether these proposals will actually effect or alter current incentives on parties to manage losses.
9. Most importantly, Vector **recommends** that the Guidelines remain voluntary and distributors retain the ability to vary their approach to meet the circumstances of their own networks and ensure the loss factors are calculated in a cost-effective manner.
10. Vector considers that implementation of the Guidelines would not be a sensible or feasible way forward without adequate consideration given to the above. The hurdle for change should be unambiguous consumer benefits, which, in our view, is not demonstrated in this proposal. Please see Appendix A below for Vector's responses to the Authority's questions.

Yours sincerely,



Bruce Girdwood  
**Manager Regulatory Affairs**

# Appendix A Vector's response to select questions

Question No.	Question	Response
Q1	Do you agree that publishing the updated Guidelines promotes the Authority's statutory objective? If not, why not?	See below, Q2.

<p>Q2</p>	<p>Do you agree that the benefits of publishing the updated Guidelines are likely to outweigh the costs? Please include comments on appropriateness of the assumptions.</p>	<p>Vector does not agree for the reasons outlined in our introduction (above) and our responses to the Authority's questions (below).</p> <p>Distribution practices vary across utilities. The Guidelines contain a number of assumptions that do not align with Vector's network, for example:</p> <ul style="list-style-type: none"> <li>• Vector has a 22kV sub-transmission network as well as a 22kV distribution network. It is noted that the EA only recognises sub-transmission equal-to or greater-than 33kV.</li> <li>• Vector has made extensive use of 150mm AL 4c PILC cables and 0.15mm Cu 4c PILC cables in the CBD and transformers supplying these circuits range from 200kVA to 1000kVA. The Hyland McQueen report has developed a table based on typical reticulation equipment, while the sample spreadsheet recommends to pro-rata the results to reflect actual distribution equipment as used on the network. Although the flexibility remains for distributors to develop a more accurate model of the network, this option clearly requires a considerable amount of work. However, it is unclear whether the EA is wanting a "consistency of approach" in which case the methodology outlined should be followed or are interested in achieving increased accuracy in calculating the loss factors in which case a network-specific bottom-up model is required.</li> </ul>
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<p>Q3</p>	<p>Do you agree that the proposed Code amendment would promote the Authority's statutory objective? If not, why not?</p>	<p>It is Vector's understanding that the consultation papers describe the difference between the energy coming into the network and the energy leaving the network - the difference being losses. Therefore, the EA is talking about the loss of <i>energy</i> (not electricity). Vector therefore, <b>recommends</b> the definitions replace reference to "losses of electricity" with "loss of energy", as follows:</p> <p><b>Line function services</b>  (b) ...assumption of responsibility for losses of <b>energy</b></p> <p><b>Loss compensation</b> ...for that known loss of <b>energy</b> in...</p> <p><b>Losses</b>  (a) (i) <b>the loss of energy associated with the injection of electricity into a network..</b>"  <b>L</b> is the loss of energy associated...  <b>A</b> is the <b>energy</b> conveyed...  <b>B</b> is the <b>energy</b> that would...  <b>C</b> is the <b>energy</b> injected....</p> <p>(ii) [Same as above]</p> <p>(b) " ...between the delivered <b>energy</b> at the point of connection and the <b>energy</b> required to be injected ...provide the delivered <b>energy</b>"</p> <p>Etc...</p> <p>In regards to the proposed definition of loss factor, it would be helpful to provide clarity around the two definitions that have been provided for "loss factor" (<math>L=A-B-C</math>; and <math>L=(A-B)+(A-C)</math>).</p> <p>The definitions of the terms used in these equations are unclear and ambiguous. Vector <b>recommends</b> the Authority revisit the definition and provide some clarity. The current lack of clarity makes it hard to understand what is contained in the underlying terms of these definitions.</p>
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<p>Q4</p>	<p>Do you agree that the proposed Guidelines strike the right balance between pragmatism and complexity?</p> <p>If not, please suggest improvements.</p>	<p>Vector recognises the difficulties that producing industry Guidelines would entail and appreciates the Authority’s attempt to do so. However, for the reasons we outline in this submission we are not of the view that the benefits of adhering to the Guidelines would outweigh the costs - mainly because we do not think that such “benefits” have yet been proven.</p> <p>For example, the Guidelines “simplify” the categorisation of load groups (e.g. CBD, high density, etc) for calculating the losses in the LV network. These losses are based on certain assumptions, such as cable size and kVA etc, that do not align with Vector’s network and practice.</p> <p>Despite the flexibility afforded to distributors in recalculating the generic loss components based on local network parameters, such a task would not be a sensible or feasible exercise for Vector. For example, Vector’s network has 20,800 transformers on its network (7,700 pole mounted and 13,100 ground mounted). Therefore, a significant sample size would be required for recalculating representative loss parameters – which would require a considerable amount of resources.</p> <p>Furthermore, within this group are a number of customers that need to be treated as part of the ICC process. The proposed process is labour intensive and Vector would welcome a more simplified process.</p> <p>As stated above, Vector considers that the Authority’s current proposal has not demonstrated that these costs will translate to efficiency gains. Vector <b>recommends</b> that the Authority note our comments above, and consider the current status of distributors’ existing loss factors, and compare it to those under its approach.</p>
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	Q4 contd...	In relation to embedded generation, Vector <b>recommends</b> that the threshold for considering embedded generators should be lifted to 100kW, rather than the current 10kW limit (see clauses 87 and 91). Within Vector's network the contribution of generation below 100kW to losses is expected to be small, given our connections, and well within the margin of the loss calculation error. For example, 20 kW PV results in a 0.03% of loss; and 80 kW PV results in a 0.2% of loss.
Q5	Do you agree that the proposed Guidelines, along with the example spreadsheet, provide a clear description of the methodology for calculation of loss factors on a distribution network? If not, what improvements do you consider should be made?	Vector considers that the inclusion of the sample spreadsheet is helpful.
Q6	Do you agree with the default allocation of non-technical losses to all classes of consumer? If not, why not?	Vector agrees with the proposed default approach unless there is further information available to suggest an alternative method of allocation.
Q7	Do you agree that the most recent 12 months of third revision (i.e. aged at least seven months) GR-260 data should be the data source for calculating reconciliation losses? If not, why not?	Vector agrees.

Q8	Do you agree that technical losses should be recalculated at least every five years? If not, why not?	<p>Vector agrees. The calculation of technical losses every five years is a good compromise between ensuring that the losses have not markedly changed in the intervening period, against the significant commitment and costs associated with carrying out the calculations.</p> <p>However, Vector does not support the proposal for an annual loss factor methodology report. We do not see any value in an annual review, which would require a certain degree of resources - especially given that the calculation is revisited on a five-yearly basis.</p>
Q9	Do you consider that the Authority should provide guidance on the format of loss category codes? If so, why?	Vector has no objection to the Authority providing guidance, as long as the guidance delivers net benefits to the industry and consumers.
Q10	Should that guidance (if any) include naming conventions to ensure national uniqueness?	Vector considers that guidance should only include naming conventions if the current ones are causing an issue. The cost to change nationwide systems for something cosmetic is not viable.
Q17	Do you agree that retailers have poor incentives to reduce existing non-technical losses? If not, why not?	<p>Vector agrees that retailers have poor incentives. However, retailers also have better incentives than any other party. To this end, Vector <b>recommends</b> the Authority consider:</p> <ul style="list-style-type: none"> <li>- Whether the identification of non-technical losses will in fact result or translate into a reduction / improvement in non-technical losses?</li> <li>- If so, what exactly are the 'next steps' for ensuring such a reduction / improvement?</li> <li>- Whether the Authority's proposal will affect current incentives on parties to manage losses?</li> </ul>