

04th September 2019

Energy Division
Essential Services Commission
Level 37, 2 Lonsdale Street
Melbourne VIC 3000

Dear Sir/Madam,

RE: Electricity Distribution Code Review Issues Paper 20190813

In response to your letter to the industry dated 13 August 2019, I thank you for the opportunity to provide comment on the Issues Paper. As part of this paper, Middleton Group has commented on the technical standards and covered the factors that may create risks related to the technical standards of the code.

Table 1: Middleton Group comments on the issues paper and the electricity distribution code

Voltage Standard	
<p>Impulse Level Clause 4.2.2 & 4.2.2A</p>	<p>Currently, Table 1 from Clause 4.2.2 and Table 1A from Clause 4.2.2A have a requirement of 150 kV peak impulse level for 22 kV network; however, most 22 kV equipment including Ring Main Units which are widely used within our industry are made to IEC standards and have 125 kV peak impulse level.</p> <p>It is suggested to revise the code to accommodate for 125 kV peak impulse level as currently any upgraded 22 kV equipment is not specified according to the code. If the concern is risk to the equipment, surge arrestors can be installed to mitigate that risk which could be an addendum to this section.</p>
<p>Phase to Earth Voltage Variation Clause 4.2.2A</p>	<p>The code has been revised end of 2018 to accommodate for REFCL condition where the phase to earth overvoltage limitation was removed on the 22 kV network connected to REFCL as outlined in Table 1A.</p> <p>This creates ambiguity for customers when purchasing new equipment as this could be interpreted in a number of ways. One such interpretation is the customer shall install phase to earth overvoltages of 22 kV \pm 10 % rated</p>

	<p>for continuous operation. Equipment rated for phase to earth of 22 kV ± 10 % continuously is not readily available.</p> <p>As most equipment is manufactured to IEC standards, there is available equipment for a maximum of 8 hours to withstand overvoltage of 22 kV ± 10 %. We would suggest the code provides some direction on the phase to earth voltage and durations similar to Table 1 of clause 4.2.2.</p>
Specific requirements for synchronous generators	
Embedded Generation Requirements	<p>The power and energy sector are experiencing significant growth in the connection of renewable energy sources. As embedded generation brings the complexity of two-way flow of power, we believe it is very important to address and outline the standards to capture the embedded generation technology to minimise any safety and reliability impact of our network. Some key technical assessment criteria which could be considered are voltage, active and reactive loading, protection, power quality, frequency etc.</p>
Aggregation and other models	<p>As aggregation is an evolving model in the energy landscape, it is suggested that the code define the role of an aggregator and their responsibilities.</p>
Register of embedded generation	<p>It is suggested to have one set of rules, thus, a national register could be adopted.</p> <p>All existing data will need to be transferred to the national register, however, if this is done efficiently, it will have everything in one place making it simpler to track in the future.</p>
Other technical regulations	
Power factor Clause 4.3.5	<p>Currently, not all customers are fully aware of the requirements set by the code; thus, have no incentive to be within the limits set. Some customers also have a kW tariff instead of kVA, thus, are not concerned about losses that come with it as it does not impact their electricity bill. We suggest adding incentive for the customer to maintain their power factor to have better utilisation of their equipment.</p>
Harmonics Clause 4.4	<p>Harmonising with the National Electricity Rule and adapting the Australian Standard AS61000.3.6 for harmonics seems like a sensible approach. However, is there any current reporting method for the utilities and the HV customers to report on their existing harmonics and measures they have taken to mitigate any deviation from the standard? It is suggested that such measures be in place to ensure compliance with the code.</p>
Negative Sequence Clause 4.6	<p>Harmonising the negative sequence limits of the code with the national limits seems like a good idea as it looks at different duration ensuring better resolution of data monitoring.</p>

Other areas in the Code

Connection of Supply Clause 2	Here is no mention of supply upgrades (including cogeneration upgrades or changes) within this clause. It would be worth recognising this within this section and can be elaborated in clause 9.1.9.
Customer's electrical installation and equipment Clause 3.2.1	Is there a reporting method available to ensure the installation is compliant with the code and is maintained in a safe condition? Expanding the obligation in terms of reporting will be very helpful.

We would be pleased to discuss this submission with you in more detail. Please feel free to contact our Electrical Engineer, Mr. Abrar Aziz on [REDACTED] should you have any questions.

Sincerely,



Keith Middleton
Managing Director
Middleton Group Engineering Pty Ltd