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RE: Response to Future Security and Resilience - Review of common quality requirements in Part 8 of the Code.

King Country Energy (KCE) is a distributed generator on the Electra and The Lines Company networks. All our generation is hydro and 93% of our generators are synchronous generators. This submission is primarily written from our perspective as an existing distribution connected hydro generator.

Question 1: Issue 1: Yes, we agree the description is adequate for the first issue. From our perspective this is a low priority. Our generation can run comfortably outside tolerances for short periods of time. The issue comes down to having sufficient data for analysis. It might be worthwhile for distributors to get details of inertia from current generators. It would help if a high level simplified formula could be used as a standard and generators just supply inputs. This is to avoid forcing small generators to engage expensive consultants to do analysis.

Question 2: voltage Issue 1: Yes, we agree the description is adequate. This is a high priority. We would suggest a national standard to specify minimum capability of inverters and have manufacturers publish relevant settings for their products to meet NZ standards.

Question 3: voltage issue 2: Yes, we agree the description is adequate. This is a low priority. Does not affect synchronous generators.

Question 4: voltage issue 3: Yes, we agree the description is adequate. This is a high priority. Fault ride through is a key concern. Generation dropping off is akin to load being added. So generation dropping off during a fault is increasing the probability of cascade failure. Europe has already identified this issue and many grid connected inverters have a ride through capability. However this requires technical setup and often installers don't understand what this is and network/grid operators have not provided guidance. We would suggest a national standard to specify minimum capability of inverters and have manufacturers publish relevant settings for their products to meet NZ standards.

Questions 5: Issue 5: Yes, we agree the description is adequate. This is a low priority. Distributors have means to address this issue. If generator is causing issues distributors under part 6 can charge for remediation is an incremental cost and can be passed through to generators.

Questions 6: we are not a distributor.

Questions 7: Issue 7: Yes, we agree the description is adequate. This is a medium priority. A simple solution is to have specific data saved on the registry for DG (as they all have an ICP number). A standard set of data requirements by generation type needs to be developed. It is recommended that a simplified model is used and the registry holds *inputs* to the model (not results). These inputs should be readily accessible information from normal nameplate data. DO NOT ask for analysed results as this will create a huge cost burden for a generator engaging consultants and will be unverifiable. Transpower will have the relevant information for large and/or grid connected generation.

Questions 8: Issue 8: Yes, we agree the description is adequate. This is a medium priority. Terminology is important. There are missing terms. When considering battery assisted solar systems at homes. These will be more likely as time goes on and they will be configured differently. For example one home system could be setup to optimise to tariff, another home system optimised to ensure back up ready for network failures.

Question 9: We do not believe there are any other issues that need to be raised. The two sub points raised are not relevant to this issue at this stage and best addressed through other consultation avenues. It is difficult to pick winners and technology development. We believe this paper as provided is the best way to respond to emerging issues.

Any changes to common quality requirements need to consider any installed systems. A dispensation process needs to be considered for any grandfathering of existing assets where compliance with changes cannot be practicably achieved.

We look forward to a constructive process to refresh the future networks.

Kind Regards



Chris Fincham
General Manager – King Country Energy