



29 May 2023

Electricity Authority
Te Mana Hiko

Future Security and Resilience

Via email: fsr@ea.govt.nz

Submission on Part 8 of the Code's common quality requirements

Kia ora,

On behalf of Helios Energy I'm writing to submit our feedback to the consultation that was released by the Electricity Authority on Part 8 of the common quality requirements on the 4th April 2023.

Helios is a Kiwi company that was established in early 2020 when its founders recognised the potential for grid-scale solar to make a positive contribution to Aotearoa's economy, energy market and zero carbon targets.

Our portfolio spans across various stages of the grid connection application process with Transpower and our Edgecumbe project was the first grid-scale solar development in the country to receive contracted permission to connect to the national grid. We are first-hand experiencing some of the issues that have been identified with the common quality requirements in Part 8 of the Electricity Industry Participation Code 2010 and welcome the opportunity to provide our feedback on these.

Higher levels of inverter-based variable generation are key for Aotearoa to succeed in achieving a zero carbon electricity future. The majority of new connection requests to the system operator are inverter-based, and the paper also recognises this reality. The electricity system must be capable of supporting increased inverter-based variable generation, such as solar, and this support must be achieved in the most efficient way to ensure an equitable zero carbon future.

Ngā mihi,

/s/ Jeff Schlichting

Managing Director, Co-founder

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Helios Energy Response, in table Format for Submissions;

Question	Comment
<p>Q1. Do you agree with the description of the first common quality issue and that addressing it should be a high priority? If you disagree, please provide your reasons.</p>	<p>Inverter based resources are essential for Aotearoa to meet its climate goals. We agree that inverter based generation can cause frequency issues due to its inherent intermittency however, as we do not have any data on the scale of this issue it is hard to give it a priority.</p> <p>Further to this, technologies that support frequency deviations are advancing and becoming cheaper and we anticipate more will be added to the energy system. This may result in fewer net frequency issues caused by inverter based resources</p> <p>We see this issue as a higher priority to the voltage issues described as frequency issues are experienced system wide, whereas voltage issues tend to be more local.</p> <p>We also note that, observing what is happening in the Australian market, which has a much higher percentage of inverter based generation in its system, where it appears that this is a higher priority to resolve than the voltage issues.</p>
<p>Q2. Do you agree with the description of the second common quality issue (ie, first voltage-related issue) and that addressing it should be a high priority? If you disagree, please provide your reasons.</p>	<p>Yes. Lower priority than 1 and 5.</p>
<p>Q3. Do you agree with the description of the third common quality issue (ie, second voltage-related issue) and that addressing it should be a high priority? If you disagree, please provide your reasons.</p>	<p>Yes. Lower priority than 1 and 5.</p>
<p>Q4. Do you agree with the description of the fourth common quality issue (ie, third voltage-related issue) and that addressing it should be a high priority? If you disagree, please provide your reasons.</p>	<p>Yes. Lower priority than 1 and 5.</p>
<p>Q5. Do you agree with the description of the fifth common quality issue and</p>	<p>Yes, we believe this is the highest priority issue described in this paper. We are experiencing two key issues surrounding</p>

<p>that addressing it should be a high priority? If you disagree, please provide your reasons.</p>	<p>harmonics;</p> <ol style="list-style-type: none"> 1. The ambiguity with emissions flowing between transmission and distribution networks and the misalignment of power quality standards is delaying new generation projects and adding capital cost uncertainty. 2. Harmonics are treated as a connection issue to resolve, rather than an interconnection issue and therefore the potential investment in mitigation is sub-optimal and falls solely on new large scale generators. <p>The current uncertainty and lack of transparency around harmonics is leading developers to make estimates of harmonic allowances. These estimations may lead to millions of dollars of either over- or under-engineering, either of which has significant impact on development investment decisions.</p> <p>It is our view that harmonic emissions are system-wide and are therefore an interconnection issue, rather than solely a connection issue. As such, potential problems and solutions should be considered across the electricity system and not just at a project level.</p> <p>As referenced above, Australia is also experiencing issues with the way harmonics are being managed. ARENA have recently completed a project to investigate this and have identified that a number of the existing practices for the management of harmonic distortion within electricity supply networks are leading to inefficient harmonic emission limit allocation, and potentially increasing investment requirements from proponents and making the management of power system distortion more complex than is necessary.</p> <p>This issue is currently being observed and experienced by New Zealand market participants, so it is a high priority issue to resolve relative to other issues described in this paper.</p>
<p>Q6. If you are a distributor, what is your experience of asset owners sharing information with you for network operation purposes?</p>	<p>n/a.</p>
<p>Q7. Do you agree with the description of the sixth common quality issue and that addressing it should be a high</p>	<p>Yes, this is a lower priority compared to the other issues.</p>

priority? If you disagree, please provide your reasons.	
Q8. Do you agree with the description of the seventh common quality issue and that addressing it should be a high priority? If you disagree, please provide your reasons.	Somewhat agree. To add; the code should be technology agnostic or less specific given the accelerating rate of change in technology and contributions from a variety of supply and demand-side solutions as part of the energy transition.
<p>Q9. Do you consider there to be other high priority common quality issues not identified in this paper that are occurring or that you expect to occur because of:</p> <p>a. the uptake of inverter-based resources, and/or</p> <p>b. how the Code enables different technologies?</p>	As per our response in 8; the code should be technology agnostic or less specific given the accelerating rate of change in technology and contributions from a variety of supply and demand-side solutions as part of the energy transition.