

Via Online Submission: ssiag@aemo.com.au

10 February 2023

CONSULTATION ON AMENDMENTS TO THE SYSTEM STRENGTH IMPACT ASSESSMENT GUIDELINES (SSIAG). – DRAFT GUIDELINES CONSULTATION RESPONSE

APD Engineering welcomes the opportunity to provide consultation feedback amendments to the System Strength Impact Assessment Guidelines (SSIAG). APD strongly supports this consultation on SSIAG amendments draft which will develop an 'Efficient Management of System Strength' Rule with the overarching objective of establishing a manageable framework for the supply of System Strength Services.

APD has included submission points for AEMO's consideration.

ABOUT APD

APD Engineering is an electrical engineering consultancy highly skilled and experienced in the delivery of power system studies, network modelling, engineering design services and project commissioning for a broad range of clients. APD hosts one of the largest Power Systems teams in the world and provides power system modelling and technical advisory services to clients across Australia and New Zealand.

Our engineers have detailed knowledge and understanding of different types of technologies in the market including photovoltaic inverters, wind turbine generators, storage technologies etc. APD is at the forefront of challenges, deriving strategic and pragmatic solutions for successful connection of complex renewable energy projects.

APD has a broad range of experience gained from working with AEMO and NSP's (NEM, NT, WA, New Zealand), renewable energy developers, EPCs, partnering consultancies and OEMs. Our detailed knowledge of Australia's and New Zealand's energy markets, Rules, regulatory requirements, and stakeholders provide immense value in delivering positive outcomes for renewable energy developments across Australia and New Zealand.

Please do not hesitate to contact Dr Germane Athanasius on germane.athanasius@apdeng.com.au if you would like to discuss this submission in further detail. APD looks forward to working with AEMO's System Strength team on the subject matter discussed in the draft document.

APD thanks AEMO for the opportunity provided to submit our feedbacks on SSIAG draft document.

Yours sincerely,

Rodney Reuben
Manager Power Systems – Oceania Region
M: +61 (0) 439 074 534
E: Rodney.Reuben@apdeng.com.au

SUBMISSION ITEM 1

Draft SSIAG introduces a new factor stability co-efficient (α) in the computation of available fault level (Δ AFL). The impact of the stability co-efficient (α) is found to reduce Δ AFL. For the purpose of assessment of system strength remediation from a new plant can this new Δ AFL computation methodology be used? Due to the introduction of the stability co-efficient (α) the size of the remediation measure will change significantly. Could AEMO provide more clarity on this?

SUBMISSION ITEM 2

Guidelines need to include the methodology to be applied in the calculation of Δ AFL using an PSSE OPDMS case. Specifically on the SCR withstand values to be applied for the IBR plants that are already included in the OPDMS case and for the committed plants in the calculation of proxy Thevenin's impedance (ie., the sub-transient reactance value of the plant in the fault level calculation).

SUBMISSION ITEM 3

The stability coefficient (α) is defined on page 15 as "Stability coefficient reflecting limitations in the network immediately beyond the 4.6.6 Connection, for which the lowest value must not be less than 1.2". Could AEMO please clarify under what conditions a value more than 1.2 can be assumed?

SUBMISSION ITEM 4

The system strength guidelines are silent on the approach to be adopted for the calculation of maximum fault level at a node. Specifically, on handling the IBRs in the OPDMS case with respect to:

- (a) The proxy Thevenin's impedance (or the sub-transient reactance value of the plant in the fault level calculation) to be used for IBR plants in the case.
- (b) The expected maximum fault current to be provided by IBR.

It is important to have a clear direction on the estimation of maximum fault current since it is important in the CB ratings and protection designs. If AEMO feels this should not be a part of system strength assessment, could AEMO propose any alternate stream that will address this issue.

SUBMISSION ITEM 5

More information is required on the treatment of plants employing grid forming technology (like BESS) in Δ AFL assessments. Specifically on the determination of withstand SCR. Even though the case study in the Appendix does consider a grid forming plant,

more clarification on the Δ AFL assessments is needed on these important technology-based plants.

SUBMISSION ITEM 6

The system strength related information is dispersed in three different documents:

- a) System Strength Impact Assessment Guidelines
- b) System Strength Requirements Methodology
- c) Power System Stability Guidelines

Most often these documents are revised or updated at different times. To make things easier for the participants for reference and application of these guidelines, it will be beneficial, if these documents are combined into a single document where all the related information are put together. AEMO is requested to consider this.