

CANADIAN SOLAR SUBMISSION TO AEMC – ERC0222

NATIONAL ELECTRICITY AMENDMENT (GENERATOR TECHNICAL PERFORMANCE STANDARDS) RULE 2018

COMPANY PRESENTATION AND REASON FOR SUBMISSION

Founded in 2001 in Canada, Canadian Solar is one of the world's largest and foremost solar power companies. As a leading manufacturer of solar photovoltaic modules and a provider of solar energy solutions, Canadian Solar has a geographically diversified pipeline of utility-scale power projects in various stages of development. Canadian Solar – Energy Group is the second biggest global Solar PV developers in 2017 (GTM research) utility size Solar project Development.

With an increasing presence in Australia, Canadian Solar has over 1 GWp of projects in development that might get affected by the rules change proposed by AEMO and in evaluation by the AEMC. Canadian Solar it is an experienced player in the Market with a track record of more than 117 MWp solar farm in construction or finalising commissioning. Projects in construction or finalising commissioning includes Longreach Solar Farm and Oakey Solar Farm stages 1 and 2.

The draft determination as it is, poses a **significant risk of delay** to the late stage projects in developments from Canadian Solar. While we see benefits on the modernization of the rules, the Regulator as a **neutral figure** should promote fair and reasonable use of resources by the industry and the Market Operator on solving the real issue which is promoting a cost-effective, reliable and stable grid for Australians.

We believe the transitioning for a renewable energy “grid” is a target for the Australian Government and therefore as the maturity of the industry reaches a certain point, the Regulator and Market Operator will increase its level of comfort for particular technologies that make this transitioning possible. The Generator Performance Standards should be **prescriptive** of a certain technology capability based on its limitations and **tailored to a certain specific location**. The Rules are now suggesting that generator systems are to be scrutinized in terms of its **maximum available level of performance** instead of its real needs for a specific point of connection. In order to have a fair and shallow connecting process, the Generator should do what it is in its reasonable control to do no harm to the Grid. NSPs and AEMO Planning System Engineers should be using their time to identify solutions to increase grid reliability.

Although we know that intermittent sources of energy pose a technical challenge to the Market Operator, the idea of increasing the minimum level of performance for all generators will potentially mislead the market to believe that having generators “**capable**” of certain behaviour (proven by mathematical models known to have flaws) are the solution to the grid operation. What is even more concerning is the fact that the Energy Industry in any country is known for having an considerable inertia to make changes and to react to actual challenges, putting the onus of this necessary augmentation through several generators across the grid doesn't indicate to be the most effective way of planning expansion.

We believe that the rule changes, which seeks to broaden the negotiation capabilities, will provoke an opposite effect, as AEMO/NSPs will push the proponents to meet AAS increasing the burden on the generator to procure expensive equipment in order to have access to the grid.

Should you have any further questions on any of the propositions below, please do not hesitate in contacting us.

Thiago Costa – Engineering Manager – Energy Group
thiago.costa@canadiansolar.com – 0436 027 042



STRUCTURE OF THIS SUBMISSION

Canadian Solar will focus the discussions on this submission on where our feedback can be most valuable, therefore Canadian Solar will not provide full comments on all the proposed rules change.

TRANSITIONAL ARRANGEMENTS

Resourcing Issues

The race for Connection Agreements is leading to a detrimental situation in the market where lead times for GPS studies are becoming unrealistic to any Project Developer. A GPS study (given only the actual requirements) usually takes 6 months to complete in the best case scenario. Cases of 12+ months are also not unheard of. In addition, NSPs and AEMO, known for being a bottleneck in the process, are also heavily resourced constrained. Simple tasks such as providing Planning Data and performing pre-studies (once a connection investigation process is contracted) can take up to 2 to 3 months.

The proposition while defines new technical requirements, hardly prescribe any useful guidance to proponents on how the new requirements will be assessed. Therefore, it is expected that during the transitional period, several more iterations on the process will be necessary before consensus on certain performance standards will be agreed. *It is worth mentioning that even today there is discussions on how the CUO interpretations have changed from "staying connected" to "stay connected and provide ancillary services".*

Suggestion: In order for the industry to adapt, a transition period of **6 months after the Final Determination** is proposed. During this period, AEMO and AEMC should promote workshops and educational meetings in order to discuss with the industry the best practice for assessing the new rules, providing practical examples of what will be deemed acceptable.

Modelling Issues

For an applicant to perform its studies, it needs to rely on the information provided by AEMO and NSP. Often due to the extended timelines of the connection application process and the dynamic expansion of the system, the modelling information will get "outdated" before the generator can reach the committed status.

For the solar Industry, another factor has been adding a significant complication to the overall situation. Inverter manufacturers are constantly updating their models to suite new requirements requested by AEMO. It is obvious that while the updates are happening, the applicant is performing a study with the latest available model.

Due to changes on the system configuration (high penetration of asynchronous generators) and reduced levels of inertia, NSPs and AEMO are pushing towards a more reliable representation of the grid and the actual performance of the generators using EMT models, specifically PSCAD. System specific modelling with PSCAD is known to be even slower than the original PSS/e studies with the increased complexity of the PSCAD models.

Suggestion: The rules should include a provision to obligate the NSP and AEMO to agree to a certain Modelling Information once it is distributed to the Applicant, the information should be valid for a reasonable period for the Applicant to perform the required studies. The GPS assessment by AEMO and the NSP needs to be analysed on the same Modelling Information. The OEM model utilised should also be valid for the same period established. The OEM model should be complete and accurate enough to meet the Modelling Requirements;

NEGOTIATING FRAMEWORK

In the actual scenario, the proponent often relies on its consultant to provide a reasonable set of Performance Standards in an application, on the other hand, NSPs and AEMO confirms if the application is acceptable or not. The main issue with this process is that AEMO and NSPs usually do not work with the same assumptions as the consultants.

Given the reason above, most of the application process have several iterations due to the lack of consistency between what is reasonable expected from the applicants and AEMO/NSP requirements. Often when AEMO is brought to the process, which is after the modelling exercise is fairly advanced, there are change requests that results on re-work for all parties (the applicant, NSP and AEMO).

The proposition of including the wording to clearly define why a certain performance standard is rejected should improve this situation, but also AEMO should consider what is the less onerous to the system as whole and not what is the maximum contribution of a single generator in the certain areas of the NEM. If the requirements are too onerous on the generators, there will be a disincentive for generators to meet the Automatic Standard and all applicants will start targeting the minimum.

Suggestion: While rejecting a certain proposed negotiated standard, AEMO/NSP should demonstrate clearly why the generator is causing a Power System Security issue. Demonstrating which chapter of the rules the Generator is not capable of meeting and why. If the generator is "capable" of meeting a higher standard as proposed by AEMO, this should not be at the cost of additional equipment that are not reasonably part of the generating system such as STATCOMs or SVCs.

CONCLUSION

Canadian Solar believes that there is benefit in reviewing the current process and adding clarity to the specific requirements from AEMO and NSPs. While we hope the maturity of the industry develops, there should be a compromise of what is reasonable to implement on the short and long term. Some of the proposed changes are not mature enough to be implemented, such as Multiple Fault Ride Through. Others are just not practical such as *Load Rejection* and new Voltage/Reactive Power Control requirements.

AEMC should also consider that there is an increasing concern on the relaxation of the system normal operation parameters. Pushing the generators far from the system normal operation (ride through ranges) to limits that are not in line with power system security standards shouldn't be encouraged.