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Feedback on the Issues Paper for the Compliance Template Review 2026

SMA-Australia welcomes the opportunity to provide feedback to the Issues Paper for the review of the Compliance Template by the Reliability Panel of the Australian Energy Market Commission (AEMC).

SMA is a leading global specialist in photovoltaic (PV) system and battery energy storage system (BESS) power conversion and control technology. Our product range spans the home rooftop sector, commercial and industrial applications, and large grid-scale applications. Our inverter and battery storage products are complemented by components for energy management, system monitoring, and data analysis. SMA has a global inverter capacity of 144 GW in more than 190 countries and more than 10 GW inverter capacity in Australia. We are headquartered in Germany, with employees in 20 countries. We are one of the world's leading manufacturers of grid forming (GFM) inverters.

We strongly urge the Reliability Panel to consider including in the Compliance Template confirmation of crucial performance parameters using hardware-in-the-loop (HIL) testing platforms. Currently, HIL testing is an optional procedure that SMA Australia offers to our customers to test software on actual devices under simulated extreme system conditions and thereby provide confidence in system performance before commissioning. We anticipate that HIL testing will rapidly progress from a 'nice to have' to a 'must have' feature of commissioning in the National Electricity Market (NEM). HIL testing results could initially be included as an optional feature of the Compliance Template, potentially as a precursor to mandatory compliance in future. We have included further information about the benefits of SMA's HIL testing procedures in our submission and have also attached a flyer produced for our customers. We request that you refrain from publishing the flyer at this stage.

We understand that the scope of the review will not consider potential future changes to the National Electricity Rules (NER) and that the issues being considered through the 'Improving the NEM access standards – Package 2' rule change and distributed energy resources (DER) and consumer energy resources (CER) standards and compliance are out of scope. We urge the Reliability Panel to consider incorporating the technical requirements for high voltage connected generation and storage in the 200kW to 5MW

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range. Technical requirements for this size range were recently finalised by the Australian Energy Market Operator (AEMO). The 200kW to 5MW range is currently a 'grey zone' where few standards and requirements apply. The Compliance Template Review could be an opportunity to improve compliance in that size range.

It is unclear whether cyber security will be included as a component of the security criterion. SMA supports the inclusion of cyber security in the Compliance Template.

We look forward to discussing these important matters of energy policy as the Reliability Panel progresses its review.

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SMA responses to questions raised in the Issues Paper

Question 1: Effectiveness of the Template in providing guidance for compliance programs

What are stakeholders' experiences of using the Template?

Does the current Template provide useful guidance to help parties with their obligations under the NER?

What opportunities are there to improve the Template to provide better guidance in relation to compliance with NER technical performance standards?

SMA response

The Template provides useful guidance. We believe there is room for improvement. HIL testing is expected to become a more common feature of compliance and commissioning in future. It would be timely for the Reliability Panel to consider what role it could play in facilitating use of HIL testing.

Question 2: Proposed assessment principles and rationale

Do you agree with the proposed high level assessment criteria?

Are there additional criteria the Panel should consider, or criteria included here that are not relevant?

SMA response

SMA supports the high-level assessment criteria proposed for the review, namely:

- Safety, security and reliability
- Innovation and flexibility
- Principles of good regulatory practice

We seek clarification regarding whether cyber security will be included as a component of the security criteria. SMA supports the inclusion of cyber security compliance as a component of the security criteria.

Question 3: Proposed revised compliance principles

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Do you agree with the revised compliance principles? Are there any key concepts that are not currently outlined in the compliance principles that should be included?

SMA response

SMA supports the revised compliance principles.

We agree with the support for continuous plant monitoring and note that principles of cyber security will become more important as continuous monitoring becomes a standard feature of new plants.

Question 4: Structure and form of the Template

Do stakeholders support the Panel's proposed approach to revise the Template structure based on plant type to include schedule 5.2, schedule 5.3 and schedule 5.3a plant?

Do stakeholders have any suggestions for how the Template should provide guidance to different plant types?

Do stakeholders propose any alternative approaches to revising the Template structure to accommodate additional plant types and align with the revised NER?

SMA response

In future, it will likely be desirable to distinguish between compliance criteria for grid forming (GFM) and grid following (GFL) battery energy storage systems (BESS). However, as the performance of GFL BESS improves in future the capabilities of GFM and GFL BESS might not be as distinctly different as they are now. Structuring the template by access standards would allow for nuance that might not be so readily distinguishable if the template is structured by plant type. Structuring by access standard would be more consistent with the 'Innovation and flexibility' criteria which is intended to "account for technologies that are likely to become more prevalent in the future power system". We are confident that GFM BESS will be more prevalent in future.

Question 5: Testing and monitoring regimes for schedule 5.3 plant and schedule 5.3a plant

In general terms, what kinds of tests and monitoring regimes are included in existing compliance programs for schedule 5.3 plant (certain loads and distribution networks) and

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schedule 5.3a plant (HVDC links)? Is there a consistent structure for these programs that can be leveraged for the Template?

Are there any existing methodologies in the Template that would be appropriate to apply for new plant types?

Are there any specific testing or monitoring methodologies that are unique to a specific plant type that the Panel should consider including in the Template?

SMA response

SMA has not been involved in use of the Compliance Template for HVDC links and distribution networks.

Question 6: Appropriateness of existing testing and monitoring regimes

Despite the extensive changes to the technical requirements in Schedule 5.2, which existing testing and monitoring regimes in the Template are likely to remain suitable for new plant?

Are there any specific details about existing testing or monitoring regimes in the Template that should be amended to account for the rule changes listed above? For example, should the suggested frequency of testing of particular methodologies be amended for more effective compliance programs?

SMA response

The testing regimes should be reviewed to take advantage of HIL testing facilities. Refer to our response to Question 7 for more details.

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Question 7: Suggestions for new testing or monitoring regimes

Are stakeholders aware of any new testing or monitoring regimes that could contribute to making more effective compliance programs for performance standards made under the amended access standards?

Are there any commonly used regimes that are not currently listed in the Template?

SMA response

Yes. SMA has recently established two HIL testing facilities in Brisbane. One facility is managed by SMA to provide services for our customers, and the other has been established in partnership with the University of Queensland (UQ). We have attached a flyer produced to explain the benefits of our HIL testing services to customers. We are comfortable with the AEMC publishing this submission on its web site however we request that the AEMC refrain from publishing the flyer about our HIL testing facilities at this stage.

We understand that other inverter original equipment manufacturers (OEMs) and other universities are also in the process of establishing HIL testing facilities. HIL testing can be used to routinely confirm performance of fault ride through characteristics and other performance requirements for system stability. We expect HIL testing to rapidly move from being an 'optional extra' to a standard part of the pre-commissioning process. We urge the Reliability Panel to consider amending the Compliance Template to encourage and support the use of HIL testing procedures.

Renewable energy systems and BESS are moving rapidly to take the lead in maintaining grid stability, displacing legacy synchronous plant. Their performance is determined to a very high degree by the controllers and associated software and parameters. The availability of HIL facilities together with a limited number of inverter and controller variants per OEM now make it practical to test the software (together with its parameters) on the actual devices under simulated extreme system conditions. This gives a high degree of certainty that the software and parameters and hence the performance of the plant remains consistent with the register performance standards and power system models that AEMO and network service providers (NSPs) rely upon to maintain power system security.

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Question 8: Reflecting changes in technology and cost in the Template

Does the current Template appropriately consider all technology types? If not, how can the Template be amended to better reflect newer technologies?

Have the costs of the compliance methods listed in the Template changed significantly?

What changes, if any, could be made to the Template to reflect updated information on the costs of testing and compliance regimes?

SMA response

SMA supports the principle of removing technology specific language. We note that AEMO is currently considering access standards for GFM technology. If a future version of the template attempts to distinguish between GFM and GFL technologies, it will be challenging for the regulations to keep pace with technological developments. This affirms the argument for structuring the template by access standards rather than by plant type.