
Reliability Panel AEMC

Draft report

Compliance Template Review 2026

2 April 2026

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About the Reliability Panel

The Panel forms part of the AEMC's institutional arrangements and is comprised of members who represent a range of participants in the National Electricity Market, including small and large consumers, generators, network businesses, retailers and AEMO. It is responsible for monitoring, reviewing and reporting on reliability, security and safety on the national electricity system, and advising the AEMC in respect of such matters. The Panel's key responsibilities are specified in section 38 of the National Electricity Law.

Acknowledgement of Country

The AEMC acknowledges and shows respect for the Traditional Custodians of the many different lands across Australia on which we live and work. The AEMC office is located on the land of the Gadigal people of the Eora nation. We pay respect to all Elders past and present, and to the enduring connection of Aboriginal and Torres Strait Islander peoples to Country.



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Summary

- 1 The Reliability Panel (Panel) is seeking stakeholder feedback on a revised draft Template for compliance programs (Template) that includes amendments to reflect recent changes to the National Electricity Rules (NER or Rules) and incorporate new technologies and processes related to compliance with plant performance standards.
- 2 The Panel has amended the draft Template to broaden its coverage. It now covers plant types other than generators, such as integrated resource systems (batteries), synchronous condenser systems, loads and HVDC links. It has also been updated to account for changes to the technical requirements in the NER since the Panel's last review in 2019, as well as changes in plant technology, compliance costs, and modern compliance practices.
- 3 The Template provides Registered Participants with guidance on instituting and maintaining effective compliance programs for their plant, consistent with good electricity industry practice. These compliance programs contribute to the safety, security and reliability of the power system by supporting plant compliance with technical performance standards.
- 4 This report describes the amendments included in the accompanying draft Template. We seek stakeholder feedback and suggestions on how to improve the Template's effectiveness, clarity and usefulness for existing and future Registered Participants when creating, maintaining or updating their compliance programs.

Changes in the draft Template to better guide the development of compliance programs

- 5 The changes and amendments in the draft Template include:
 - revised compliance principles to provide improved guidance to Registered Participants on the objectives and considerations for the development of compliance programs
 - new tables to provide guidance for the development of compliance frameworks for more plant types in addition to generating systems, such as integrated resource systems, synchronous condenser systems, loads, distribution networks and HVDC links
 - more detailed information and guidance on the broader compliance framework, where the existing Template is either silent or could benefit from additional clarification
 - more guidance on how to apply the compliance tables in the Template so that Registered Participants can better select appropriate compliance regimes to demonstrate ongoing compliance of their performance.
- 6 The draft Template also reflects changes in compliance costs and plant technologies since the Panel's last review of the Template in 2019, as well as reflecting modern practices, by providing:
 - more information about the use of continuous plant monitoring, while also introducing new suggested monitoring methods in the compliance tables
 - guidance on considering how plant changes (including firmware or software updates of inverter-based resources) may affect compliance with performance standards
 - more information around the use of plant models, as well as additional guidance in the compliance tables on using plant models for compliance purposes.
- 7 In addition, the draft Template also accounts for changes to several technical requirements in the NER made by several rule changes, since 2019, including the *Efficient management of system strength on the power system* Rule 2021, the *Integrated Energy storage systems into the NEM* Rule

2021, and the *Improving the NEM access standards - Package 1* Rule 2025.

8 See chapters 3 and 4 of the draft report and the draft Template for more information.

The draft Template includes a set of revised compliance principles

9 The Panel has strengthened the compliance principles in the draft Template to provide more effective high-level guidance to Registered Participants when instituting, maintaining and updating their compliance programs. These changes include the addition of two new principles that relate to how Participants should consider plant changes and deviations from the Template, to promote better compliance behaviours.

10 The compliance principles in the draft Template are summarised below:

- Principle 1: Compliance programs must balance costs against the risks to power system security
- Principle 2: Continuous plant monitoring is preferred, where practicable
- Principle 3: Testing frequency should be proportionate to the risk of non-compliance
- Principle 4: Compliance programs must provide reasonable assurance of ongoing compliance with plant performance standards
- Principle 5: The impact of plant changes on compliance must be assessed
- Principle 6: Compliance programs must align with good electricity industry practice
- Principle 7: Variations from the Template must be consistent with the compliance principles.

11 For more information on the revised compliance principles, see chapter 2.

The draft Template includes revised and new compliance tables to cover more plant types and account for changes to technical requirements

12 An important component of the Template is the suggested compliance methods (or regimes) for each technical requirement in the Rules - these methods are contained in 'compliance tables'. Registered Participants may apply these compliance tables and adapt them into their own compliance programs to demonstrate ongoing compliance with their performance standards.

13 Stakeholder submissions to the issues paper contained many suggestions for improvements to specific elements of the suggested compliance methods in the existing Template. The Panel has incorporated these stakeholder suggestions to revise the table in the existing Template and to develop new compliance tables for broader types of plant.

14 The draft Template amends the existing compliance table by:

- extending its application to integrated resource systems (generally battery energy storage systems) and synchronous condenser systems
- restructuring the table to remove redundant or repetitive information while highlighting more useful information
- incorporating new continuous plant monitoring methods and other supplementary methods
- consolidating methods in the existing Template to clarify the set of actions that a Registered Participant should take as a whole to demonstrate reasonable assurance of ongoing compliance
- accounting for specific changes to the NER due to the [Improving the NEM access standards - Package 1](#) Rule

- including suggested compliance methods for two new technical requirements that are not covered by the existing Template
 - referencing related AEMO documents for certain technical requirements that are important considerations for Registered Participants when instituting their own compliance programs.
- 15 The draft Template also creates new compliance tables for loads, distribution networks and HVDC links. When developing the new tables, the Panel decided to:
- mirror the compliance methods for similar technical requirements for generating systems, where applicable
 - provide technology-specific guidance for different HVDC technologies, where applicable.
- 16 For more information on the changes made to the compliance tables, see chapter 5 and appendix A.

The draft Template provides further guidance and information about the broader compliance framework

- 17 Stakeholder feedback to our issues paper noted that while the existing Template generally provides useful information that assists Registered Participants with their compliance programs, some guidance and information could be improved or clarified, or extended to cover other topics.
- 18 In the draft Template, the Panel has included more detailed information and guidance about the broader compliance framework, including:
- plant changes and associated NER processes
 - the use of plant models, model validation and model updates
 - the kinds of information that Registered Participants should maintain as part of their compliance programs
 - actions to take upon a suspected non-compliance with a performance standard
 - market-based obligations that may relate to Registered Participants' performance standards
 - interdependent or concurrent requirements from multiple performance standards
- 19 For more information on the Panel's additional guidance on these topics, see chapter 3.

The draft Template provides further guidance and information about how to interpret the compliance tables

- 20 To improve the effectiveness of the Template, the Panel has included more detail about how Registered Participants should interpret and apply the compliance tables when developing and amending their compliance programs. Notable additions include:
- guidance on the use of continuous plant monitoring in compliance programs
 - guidance on how to select an appropriate testing frequency for each regime
 - guidance on the use of hardware-in-the-loop testing for compliance purposes
 - providing examples for several defined terms that assist with event-based triggers for certain compliance actions.
- 21 For more information on the Panel's additional guidance and information on these topics, see chapter 4.

The Panel is recommending two potential rule change requests to improve the compliance framework

- 22 While developing the draft Template, the Panel has identified two potential rule change requests to the NER that would improve the effectiveness and efficiency of the compliance framework. These

potential rule change requests would seek to:

1. Allow greater flexibility for the timing of the Panel's review of the Template to be coordinated with AEMO's five-yearly review of the access standards, and any related changes to the NER
2. Expand the scope of the Template in the NER to cover all performance standards and any related NER or market-based obligations.

23 For more information on these two proposals, see chapter 6.

24 The Panel expects that these rule change requests would propose relatively discrete changes to the NER, and could potentially be progressed via the expedited or fast-tracked rule change process (provided they satisfy the relevant legal tests and the AEMC decides to progress under either of these processes). We seek stakeholder feedback on these two proposals, including which process may be appropriate for their consideration. We also seek views on any other suggestions for potential rule change requests that could improve future editions of the Template and the related compliance framework.

The Panel's review is guided by the NEO and informed by stakeholder input

25 This draft report follows on from an issues paper published by the Panel on 11 December 2025, which sought stakeholder feedback on key aspects of the existing Template and how it should be revised.

26 In response to the issues paper, the Panel received 15 stakeholder submissions that have helped guide its development of a revised Template. In addition, numerous interested stakeholders attended a technical workshop in early March 2026, which provided the Panel with useful suggestions and feedback on the compliance tables and on potential guidance for the draft Template.

27 In developing the draft Template, the Panel has considered numerous stakeholder suggestions to improve the compliance tables, the compliance principles and the Template's information on the broader compliance framework.

28 The draft Template also accounts for stakeholder concerns about the cost of implementing new compliance regimes, continuous monitoring and additional compliance obligations, while ensuring that it continues to encourage effective compliance programs for all existing and future new plant in the NEM.

29 The Panel's review of the Template has also been guided by the National Electricity Objective (NEO) and the Panel's assessment criteria:

- Safety, security and reliability - the Template should encourage effective and efficient compliance programs that contribute to system security
- Innovation and flexibility - the Template should accommodate all relevant plant types and compliance technologies, while not constraining future innovation and development
- Principles of good regulatory practice - the Template should appropriately balance prescription and flexibility to cater for a range of circumstances, while ensuring that the AER can perform its enforcement functions effectively.

30 We welcome stakeholder feedback on how the draft Template could be further improved to better meet the assessment criteria above.

We are seeking stakeholder views on the draft Template by 14 May 2026

- 31 Stakeholders can help shape the final Template by engaging with the Panel or lodging a submission to this draft report. We value stakeholder feedback, as it will assist the Panel in creating a well-considered, high-quality Template.
- 32 The Panel invites submissions from interested parties by the close of business on **Thursday, 14 May 2026**. See section 1.7 for further details.
- 33 Owing to greater-than-anticipated stakeholder interest in this review, and to allow time for consideration of stakeholder submissions to the draft Template, the Panel has requested an extension to the due date for publication of the final report and revised Template. The Commission has approved an extension to **27 August 2026**.

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1 Introduction

The Reliability Panel (Panel) invites stakeholder feedback on a revised draft Template for compliance programs (Template) as part of its review of the Template consistent with the terms of reference provided by the Australian Energy Market Commission (AEMC or Commission) on 11 December 2025.¹

After considering stakeholder feedback on the Panel's issues paper, as well as stakeholder engagement through bilateral meetings and a technical workshop, the Panel has prepared a draft Template that aims to improve its effectiveness, relevance and usefulness.

The Panel has made the following changes and amendments that improve upon the existing Template by:

- revising the compliance principles to improve their clarity, concision and guidance to Registered Participants
- providing more detailed information and guidance on the broader compliance framework, where the existing Template is either silent or could benefit from additional clarification
- providing more guidance on how to apply the compliance tables in the Template so that Registered Participants can better select appropriate compliance regimes to demonstrate ongoing compliance with their performance
- revising the compliance tables and adding new compliance methods in the Template to account for changes to the technical requirements in the NER, more modern compliance methods and changes in plant technologies and types.

In developing the draft Template, the Panel has considered numerous stakeholder suggestions to improve the compliance tables, the compliance principles and the Template's information about the broader compliance framework. The draft Template also accounts for stakeholder concerns about the cost of implementing new compliance regimes, continuous monitoring and additional compliance obligations, while ensuring that it continues to encourage effective compliance programs for all existing and new plant in the National Electricity Market (NEM).

The Panel welcomes stakeholder feedback on the draft Template on how it could be further improved to deliver greater compliance benefits, promote power system security, and reduce potential long-term impacts on consumers.

1.1 The Template is a key component of the broader compliance framework

Under the National Electricity Rules (NER or Rules), Registered Participants have obligations to ensure that their plant:²

- meets or exceeds the applicable performance standards
- is not likely to have a material adverse effect on power system security.

Effective compliance with performance standards by Registered Participants contributes to the delivery of reliable and secure electricity to customers in the NEM.

The Template is designed to assist Registered Participants with creating and maintaining compliance programs to provide reasonable assurance of ongoing compliance with their plant's

¹ The AEMC may give the Panel terms of reference in relation to specific Panel determinations and reviews under clause 8.8.3(c) of the NER.

² NER, rule 4.15(a).

technical performance standards. Furthermore, the Template is a key component of the Australian Energy Regulator's (AER) compliance framework, with a Tier 1 civil penalty attached to the failure of instituting and maintaining a compliance program consistent with the Template.³

The NER requires a Registered Participant's compliance program to:⁴

- be consistent with the Template for compliance programs;
- include procedures to monitor the performance of the plant in a manner that is consistent with good electricity industry practice;
- be modified to be consistent with any amendments made under the Reliability Panel's review of the Template by no later than 6 months after amendments are published or by a date determined by the Reliability; and
- provide reasonable assurance of ongoing compliance with each applicable performance standard.

Under the NER, the Template must:⁵

- cover all performance standards (in other words, all possible performance standards that could be established in accordance with Chapter 5 and Schedules 5.2, 5.3 and 5.3a of the NER)
- define suitable testing and monitoring regimes for each performance standard so that a Registered Participant can select a regime that complies with the obligations set out in rules 4.15(a), 4.15(b) and 4.15(c) of the NER for their particular plant.

1.1.1 The Template applies to all Registered Participants who have plant with performance standards determined under schedules 5.2, 5.3 and 5.3a of the NER

Under the current NER, there are many types of persons who must institute and maintain compliance programs for their plant under NER rule 4.15(b). For example, the relatively new category of Integrated Resource Provider (IRP) typically captures battery energy storage systems (BESS), and may also include scheduled loads alongside scheduled or semi-scheduled production units.⁶

In addition, network service providers (NSPs) must determine and document the performance standards of any plant for which access standards are specified in schedules 5.2 or 5.3a of the NER (for example, a network's synchronous condensers or HVDC links), and that are not subject to a connection agreement with another person.⁷ These performance standards must be provided to the Australian Energy Market Operator (AEMO). NER rule 4.15(b) applies to NSPs in respect of these plant, and so the Template must also cover these performance standards.

To reflect the broadening of the application of the Template, the [Improving the NEM access standards - Package 1](#) Rule 2025 (Access Standards Package 1) amended the name of the Template by removing the word 'generator' from the title.⁸

See Table 1.1 for a non-exhaustive list of types of Registered Participants who may have plant to which performance standards apply. In addition, see Table 3.1 of the Access Standards Package 1

3 NER, clauses 4.15(b) and (c).

4 NER, rule 4.15(c).

5 NER, rule 4.15(ca).

6 See AEMC, [Integrated Energy Storage Systems into the NEM](#) – final determination, figure 2.

7 NER, clause 5.2.3(c1).

8 The Template was formally titled the 'Template for generator compliance programs'.

[final determination](#) for a description of the terms *schedule 5.2 plant*, *schedule 5.3 plant* and *schedule 5.3a plant*.

Table 1.1: Registered Participants must have compliance programs for their registered plant

Type of Registered Participant	Relevant registered plant to which performance standards may apply	Applicable NER schedule
Generator	generating systems	Schedule 5.2
Integrated Resource Provider	integrated resource systems or synchronous condenser systems	Schedule 5.2
	loads	Schedule 5.3
Network Service Provider ¹	synchronous condenser systems	Schedule 5.2
	distribution networks	Schedule 5.3
	HVDC links (with a transfer capability greater than or equal to 5 MW)	Schedule 5.3a
Market Network Service Provider	HVDC links (with a transfer capability greater than or equal to 5 MW)	Schedule 5.3a
Customer	loads	Schedule 5.3

Source: AEMC

Note: ¹Network Service Providers must also institute and maintain compliance programs for their protection and control systems - see NER clause 5.7.4(a1). However, rule 4.15(b) only applies to network service providers in respect of their schedule 5.2 plant (synchronous condensers), schedule 5.3 plant (distribution networks) and schedule 5.3a plant (HVDC links), and does not apply to its facilities that would be covered by schedule 5.1. This is because the definition of *performance standard* does not include network performance requirements under schedule 5.1.

1.2 The Panel’s review has been guided by the National Electricity Objective

The Panel must apply the National Electricity Objective (NEO) in its work in accordance with the NER and as specified in the terms of reference issued by the AEMC.⁹

The Panel’s review of the Template must have regard to the NEO. The NEO is set out in section 7 of the National Electricity Law (NEL) as follows:

to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—

- (a) price, quality, safety, reliability and security of supply of electricity; and
- (b) the reliability, safety and security of the national electricity system; and
- (c) the achievement of targets set by a participating jurisdiction—
 - (i) for reducing Australia’s greenhouse gas emissions; or
 - (ii) that are likely to contribute to reducing Australia’s greenhouse gas

⁹ The AEMC must advise the Panel of the terms of reference in relation to specific Panel determinations and reviews under clause 8.8.3(c) of the NER.

emissions.

Throughout this review, the Panel must consider and balance the emissions reduction component¹⁰ alongside the other components of the NEO (price, quality, safety, reliability and security of supply), in a way that promotes the long-term interests of electricity consumers.¹¹

1.2.1 The Panel's assessment criteria have guided this review

To aid the Panel with its review of the Template and to ensure that it will contribute to the achievement of the NEO, the Panel proposed three assessment criteria in its issues paper. These were:¹²

- **Safety, security and reliability** – the Template should encourage effective compliance programs that contribute to the safety, security and reliability of the power system, while minimising the risk that consumers bear the cost of overly onerous compliance regimes.
- **Innovation and flexibility** – the Template should facilitate new technologies and a broad range of plant types, and not unnecessarily constrain innovation.
- **Principles of good regulatory practice** – the Template should be clear so that Registered Participants can apply its guidance to develop compliance programs that are consistent with 'good electricity industry practice'. It should also balance prescription and flexibility to account for a wide range of different circumstances and plant technologies while ensuring the AER can effectively carry out its compliance and enforcement functions.

Stakeholders generally supported the Panel's proposed assessment criteria, with some suggestions for specific considerations that would guide the Panel's review.¹³ For example, Akaysha suggested that cost should be included as part of the assessment criteria to guide this review, and that greater emphasis should be placed on aspects related to market revenue streams.¹⁴ SMA considered that cyber security should be included as a component of the 'safety, security and reliability' criterion, while VeriConneX recommended that implementation effectiveness should be an explicit focus of the assessment criteria.¹⁵

While the Panel agrees with Akaysha's sentiment that costs are an important consideration for Registered Participants when instituting their compliance program, it has not introduced a new, separate assessment criterion focused on costs. Rather, the Panel considers that costs are an important consideration when assessing the revised Template against all three criteria (and the NEO). As the primary aim of the Template is to encourage compliance programs that support power system safety, security, and reliability, we consider that cost considerations are best left to Registered Participants when instituting their compliance programs. This is reflected in the Panel's proposed compliance principles (see chapter 2 for more discussion on this point).

Following the Commission's [Cyber security roles and responsibilities](#) Rule 2024, AEMO's cyber security functions and responsibilities are explicitly detailed in the NER.¹⁶ Cyber security thus forms part of power system security, and the Panel will consider any cyber security-related

10 NEL section 7(c), as inserted by the Statutes Amendment (National Energy Laws) (Emissions Reduction Objectives) Act 2023 (SA). For the Panel, this change took effect in November 2023, under NEL Schedule 3 clause 39.

11 AEMC, [Reliability Panel guide to applying the emissions component of the National Electricity Objective](#), 4 April 2024, p 2.

12 Issues paper, pp 6-8.

13 Submissions to the issues paper: AEMO, p 3; Akaysha, p 3; Total Energies, p 2; Transgrid, p 2; VeriConneX, p 7.

14 Ibid.

15 Ibid.

16 NER, clauses 4.3.1(c1) and 4.3.2A.

matters in this review, to the extent that it relates to compliance programs and any performance standards.

On VeriConneX's suggestion of including implementation effectiveness into the 'principles of good regulatory practice' criterion, the Panel accepts that the Template should encourage best practice behaviours that can help improve and maintain power system security, rather than just satisfying minimum documentation requirements. The Panel has incorporated this suggestion as an explicit focus of the 'safety, security and reliability' criterion, and has taken this into account when developing the draft Template.

We seek stakeholder feedback on how the draft Template could be further improved to better meet the assessment criteria above.

1.3 The draft Template has addressed the issues raised in the Commission's terms of reference

This draft report is part of the Panel's Compliance Template Review, which is consistent with the terms of reference issued by the AEMC on 11 December 2025.¹⁷

The Commission requested that the Panel amend the Template to reflect changes to the NER following implementation of the Access Standards Package 1. This includes:¹⁸

- changes to the Template to account for changes to the technical requirements in schedules 5.2, 5.3 and 5.3a of the NER
- broadening the Template to apply to plant types other than generators, such as integrated resource systems, synchronous condenser systems, loads, distribution networks and HVDC links.

The Commission's terms of reference also suggested that the Panel consider whether:¹⁹

- there have been any changes to technology or cost that should be reflected in the Template
- the compliance principles set out in the Template remain fit for purpose
- there have been any other material changes to the NER that impact the Template
- there are opportunities for the Template to be amended or restructured to improve the application of the Template in guiding compliance programs.

The draft Template includes significant revisions that respond to the objectives set out in the terms of reference for the review and stakeholder submissions to the issues paper. The key changes in the draft Template include:

- **a new set of compliance principles** (see chapter 2 for more information), which:
 - strengthens the compliance principles so that they provide more effective high-level guidance to Registered Participants when instituting, maintaining and updating their compliance programs
 - adds two new principles relating to plant changes and deviations from the Template, to promote better compliance behaviours
 - makes editorial improvements to improve the clarity and concision of the compliance principles
- **more detailed information and guidance about the broader compliance framework**, including:

¹⁷ AEMC, [Terms of reference to the Reliability Panel](#), Template for compliance programs review 2026.

¹⁸ Ibid., p 2.

¹⁹ Ibid.

- plant changes and associated NER processes (see section 3.1)
- the use of plant models, model validation and model updates (see section 3.2)
- the kinds of information that Registered Participants should maintain as part of their compliance programs (see section 3.3)
- actions to take upon a suspected non-compliance against a performance standard (see section 3.4)
- market-based obligations that may relate to Registered Participants' performance standards (see section 3.5)
- interdependent or concurrent requirements from multiple performance standards (see section 3.6)
- **more detailed guidance about how to interpret and apply the compliance tables in the Template**, including:
 - the use of continuous plant monitoring in compliance programs (see section 4.1)
 - how to select an appropriate testing frequency for each regime (see section 4.2)
 - the use of hardware-in-the-loop testing (see section 4.3)
 - clarification on several defined terms that assist with event-based triggers for certain compliance actions (see section 4.4).
- **amended compliance program tables for generating systems, integrated resource systems and synchronous condenser systems**, by:
 - restructuring the table to remove redundant or repetitive information while highlighting more useful information (see section 5.1)
 - incorporating new continuous plant monitoring methods and other supplementary methods (see section 5.2)
 - consolidating methods in the existing Template to clarify the set of actions that a Registered Participant should take as a whole to demonstrate reasonable assurance of ongoing compliance (see appendix A)
 - accounting for changes made to the NER from the Access Standards Package 1 rule change (see section 5.3)
 - inclusion of two new technical requirements that are not covered by the existing Template (see appendix A)
 - referencing related AEMO documents for certain technical requirements that are important considerations for Registered Participants when instituting their own compliance programs (see appendix A).
- **new compliance program tables for loads, distribution networks and HVDC links** (see section 5.4), by:
 - mirroring the compliance methods for similar technical requirements for schedule 5.2 plant, where applicable
 - providing technology-specific guidance for different HVDC technologies, where applicable.

1.4 The draft Template has been informed by stakeholder input

This draft report follows on from an issues paper published by the Panel on 11 December 2025, which sought stakeholder feedback on key aspects of the Template review, including:

- how the Template should be updated to reflect a broader set of plant types – the updated Template must cover all Registered Participants' plant who have performance standards under schedules 5.2, 5.3 and 5.3a of the NER
- how the Template should be updated to reflect new and amended technical requirements – since the Panel's last review of the Template in 2019, there have been several rule changes that have amended the access standards in schedule 5 of the NER
- how the Template should be updated to reflect changes in technologies and costs – the technologies and costs of both compliance regimes and plant maintenance may have changed since the Panel's last review, and the Template should aim to provide up-to-date guidance on compliance methods for different kinds of plant.

In response to the issues paper, the Panel received 15 stakeholder submissions that have helped guide its development of a revised Template. In addition, numerous interested stakeholders attended a technical workshop in early March 2026, which provided the Panel with useful suggestions and feedback on the compliance tables and on potential guidance from a draft Template.

The Panel considers that, through the revision of the compliance tables, the draft Template better reflects a broader set of plant types, new and amended technical requirements and changes in costs and technologies. We are interested in stakeholder feedback on the draft Template as to how it can be further improved to provide clearer guidance and information for Participants to institute and maintain their compliance programs.

1.5 The Panel is recommending two potential rule changes that could improve the compliance framework

While preparing the draft Template, the Panel has identified two potential rule changes that could improve the way the Template operates within the broader compliance frameworks and better contribute to the NEO. The two potential rule change requests that the Panel may recommend would:

1. Allow greater flexibility for the Panel's review of the Template's to be coordinated with AEMO's five-yearly review of the technical requirements in schedules 5.2, 5.3 and 5.3a of the NER²⁰ (or, alternatively, with the completion of any subsequent AEMC rule change giving effect to the review's recommendations).²¹ The Panel considers this can be achieved by removing the five-yearly requirement of the review to be completed from the date the previous Template is determined. This would minimise the duration of time that the Template is out-of-date, while providing flexibility for the Panel to wait for the completion of an AEMO review or AEMC rule change.
2. Expand the scope of the Template so that it can provide guidance in relation to plant performance obligations or matters that are not directly covered by a plant's performance standards. This would ensure that future editions of the Template could provide useful guidance to Participants on complying with NER obligations that may be relevant to performance standards, but are not part of the performance standards themselves.

²⁰ NER, clause 5.2.6A.

²¹ NER, clause 5.2.6A(f).

See chapter 6 for more information on these potential rule change requests. We welcome stakeholder feedback on these two potential rule change requests, including on the potential process for how these can be progressed.

1.6 Implementation arrangements and consideration of impact on existing compliance programs

Under NER rule 4.15(c)(3), all compliance programs instituted and maintained under rule 4.15(b) must be modified to be consistent with any amendments to the Template by no later than six months after amendments are published, or by a date determined by the Panel. This six-month period also aligns with the timeframe for creating compliance programs for new plant, where Registered Participants have no more than six months to institute and maintain a compliance program after the day that AEMO gives notice that their plant is registered, or after the day on which the plant commences operation.²²

In submissions to the issues paper, two stakeholders requested that the Panel give a longer period than six months to update existing compliance programs to be consistent with the new Template.²³ Origin stated that a six-month transition period may not be reasonable, as budgets are set annually, while APA stated that developing three new compliance programs will be a significant undertaking for APA and will need more time.

While the Panel has considered these requests for a longer transition period, the Panel's draft proposal is to retain the usual six-month period after the publication of the new Template, as described by NER rule 4.15(c)(3). The Panel considers that although the draft Template has significantly revised the existing Template, a large proportion of existing compliance programs are likely to already be consistent with the updated Template. This is because:

- many compliance methods in the existing Template have been retained in the draft Template
- the draft Template would not necessarily require the retroactive amendment of existing compliance methods, so long as existing compliance methods provide a reasonable assurance of ongoing compliance with the plant's performance standards and reflect good electricity industry practice
- no new mandatory requirements for specific compliance methods have been added to the draft Template, as the compliance tables provide flexibility for Participants to deviate from specific details in the Template.

In some cases, amendments to existing compliance programs may only be limited to administrative changes. For example, a Registered Participant may only need to provide brief explanations of why any existing compliance methods may reasonably differ from the revised Template, pursuant to compliance principle 7 of the draft Template.

In addition, the Panel notes that the requirement to institute and maintain a compliance program under NER rule 4.15(b) applies to all existing Registered Participants' plant, irrespective of whether the Template is about to be updated. Where the existing Template does not provide explicit guidance for a specific type of plant (for example, HVDC links), a Registered Participant should use its best endeavours and good electricity industry practice to ensure that their compliance program(s) provide reasonable assurance of ongoing compliance with their performance standards.

²² NER, rule 4.15(b).

²³ Submissions to the issues paper: APA, p 5; Origin, p 1.

1.7 We are seeking submissions to the draft Template by 14 May 2026

The Panel is seeking stakeholder feedback on the revisions set out in the draft Template. We welcome stakeholder submissions to this draft report and Template to help shape and contribute to a high-quality final Template.

Due date: Written submissions responding to this draft report and draft Template must be lodged with the AEMC by **Thursday 14 May 2026**.

How to make a submission: From the AEMC's website, www.aemc.gov.au, find the 'lodge a submission' function under the 'Contact Us' tab, and select the project reference code **REL0095**. Tips for making submissions are available on the AEMC website.

Publication: The AEMC publishes submissions on its website. However, we will not publish parts of a submission that we agree are confidential, or that we consider inappropriate (for example, offensive or defamatory content, or content that is likely to infringe intellectual property rights).

1.8 The Panel intends to publish a final report and Template by no later than 27 August 2026

On 19 March 2026, the Panel requested an extension to the due date for the publication of the final report and revised Template. The Panel requested an extension of two months to the completion date of the review, to **27 August 2026**.²⁴ The extension allows for a six-week consultation period on this draft Template, and enables the Panel to better consider stakeholder feedback when developing the final revised Template.

The Panel's request for the extension was made in accordance with the Commission's terms of reference, allowing for the Panel to request an extension due to issues of sufficient complexity or difficulty raised in stakeholder submissions.²⁵

On 25 March 2026, the Commission approved the Panel's request for an extension to 27 August 2026.²⁶

1.9 Structure of this draft report

The remainder of this draft report is structured as follows:

- **Chapter 2** sets out the Panel's proposed compliance principles for the Template, which would provide high-level guidance to Registered Participants when instituting, maintaining or updating their compliance program(s)
- **Chapter 3** discusses the Panel's proposed amendments or additions to the Template's information and guidance about the broader compliance framework
- **Chapter 4** discusses the Panel's proposed guidance about how to apply and interpret the Template's compliance tables
- **Chapter 5** summarises the Panel's proposed amendments to the Template's compliance tables
- **Chapter 6** discusses two recommendations for potential rule changes that aim to improve the cadence and content of future Panel reviews of the Template.

²⁴ AEMC, Letter from Reliability Panel Chair to AEMC Chair, 19 March 2026.

²⁵ AEMC, Terms of reference to the Reliability Panel, Template for compliance programs review 2026, p 2.

²⁶ AEMC, Response to Reliability Panel request, 25 March 2026.

2 The Draft Template includes revised compliance principles

The draft Template includes revised compliance principles that build on the consolidated set of compliance principles set out in the issues paper and incorporate changes and inclusions in response to stakeholder submissions. These compliance principles reflect the Panel's approach to the development of the revised Template through this review and will support Registered Participants in the development of compliance programs consistent with the Template and good electricity industry practice, as required by NER rule 4.15(c).

This set of seven compliance principles reflect the five principles set out in the issues paper, along with two new compliance principles that provide additional guidance with respect to:

- The expectation for a Registered Participant to assess the impact of plant changes on compliance (principle 5)
- The expectation that variations from the Template must be consistent with the Compliance principles (principle 7).

Box 1 sets out the revised compliance principles and section 2.1 describes the Panel's reasoning with respect to each of the revised compliance principles, including how the Panel has incorporated and responded to stakeholder feedback.

Box 1: Draft revised compliance principles

Principle 1: Compliance programs must consider implementation costs and risks to power system security associated with potential non-compliance

When selecting, developing or amending a testing or monitoring regime for a performance standard, a *Registered Participant* must consider and balance the materiality related to the costs and benefits of implementing a compliance regime. This includes consideration for the costs and risks related to undertaking testing, against the risk of non-compliance with a *performance standard* and the associated risk of an adverse impact on power system security.

Principle 2: Continuous plant monitoring is preferred, where practicable

Subject to Principle 1, and where it is practicable to do so, a *Registered Participant* should institute continuous monitoring regimes to analyse *plant* performance during events, disturbances and normal operation to demonstrate ongoing compliance against its *performance standards*. Where continuous monitoring is not practicable, a *Registered Participant* must document its reasons and implement alternative monitoring and testing regimes that provide reasonable assurance of ongoing compliance.

Principle 3: Testing frequency should be proportionate to the risk of non-compliance

A *Registered Participant* is accountable for testing the functionality and integrity of relevant systems and settings to ensure compliance with the *plant's performance standards*, in accordance with the *plant's* compliance program. The frequency of such tests should take into account the expected variation of plant performance over time and the related risk of a potential non-compliance against the *plant's performance standards*.

Principle 4: Compliance programs must provide reasonable assurance of compliance with plant performance standards

A *Registered Participant's* active use and implementation of a compliance program must provide reasonable assurance of ongoing compliance with the *plant's performance standards*. As part of a *Registered Participant's* compliance management framework, a *Registered Participant* should

review and update its compliance program(s) periodically.

Principle 5: The impact of plant changes on compliance must be assessed (NEW)

Where *plant* performance may be affected by hardware modifications, equipment replacements, software updates, firmware changes, or any similar *plant* change, a *Registered Participant* must promptly assess whether such changes could have an impact on their compliance with their existing *performance standards* or require updates to any data and models previously provided to AEMO and the relevant *Network Service Provider*.

Principle 6: Compliance programs must align with good electricity industry practice

The Template supports the development of compliance programs which align with and represent *good electricity industry practice*. The Template specifies the objectives and outcomes to be achieved by each suggested testing or monitoring regime, and an appropriate test interval. Using the Template as a guide, a *Registered Participant* should exercise diligence and *good electricity industry practice* to determine the detailed methods and procedures to be employed as part of a compliance program for its *plant*.

Principle 7: Variations from the Template must be consistent with the Compliance principles (NEW)

Where a *Registered Participant's* compliance program deviates from the guidance or testing and monitoring regimes set out in this Template, a *Registered Participant* must ensure that the variation is consistent with these compliance principles. A *Registered Participant* must document the reasons for any variation, having regard to these compliance principles.

2.1 The Panel has developed the revised compliance principles with reference to stakeholder feedback

Stakeholders were generally supportive of the consolidated set of compliance principles outlined in the issues paper, while at the same time providing constructive feedback on further enhancements to support the development of pragmatic compliance programs. The following subsections describe the Panel's reasoning, including how stakeholder input has been accounted for in developing each of the revised compliance principles.

2.1.1 Principle 1 – Compliance programs must consider implementation costs and risks to power system security associated with potential non-compliance

The Panel prepared the drafting for Principle 1 as a consolidation of the existing Principles 3 and 6 relating to the role of materiality and efficiency in the development of compliance programs. The intention behind this revised principle is to provide guidance to Registered Participants on how to consider and balance the materiality of the costs and benefits of implementing a particular compliance regime, along with the benefits gained through increased assurance of ongoing compliance with a particular performance standard.

Submission to the issues paper from APA and VeriConneX noted that this principle could better describe how a registered participant should consider materiality in relation to the risk of non-compliance and the potential for adverse impacts on the NEM of other participants.²⁷ VeriConneX noted that Principle 1, 'could be enhanced to more clearly state that compliance programs should focus effort and resources where they matter most for system security.'²⁸

²⁷ Submissions to the issues paper: APA p 3; VeriConneX, p 9.

²⁸ VeriConneX, submission to the issues paper, p 9.

The revised drafting of this principle clarifies that, when selecting a compliance regime, the consideration of materiality relates to the materiality of potential non-compliance with respect to the associated risk of an adverse impact on power system security. This aligns with the obligations under NER rule 4.15(a)(2) for a Registered Participant to ensure that its plant is not likely to cause an adverse impact on power system security through failure to comply with a performance standard.

When considering these potential adverse impacts, the Panel considers that Registered Participants should be aware that their plant may contribute to an adverse impact through the collective non-compliance of multiple plant in the NEM. For example, a single plant's non-compliance may appear immaterial in nature when considered in isolation; but if multiple plant demonstrate similar non-compliances, then there may be a significant impact on power system security.

The drafting of this principle no longer refers to the NEO, as the Panel considered that this reference may be excessively onerous and complex for a registered participant to apply.

2.1.2 Principle 2 – Continuous plant monitoring is preferred, where practicable

Principle 2 consolidates and expands on the existing principles 7 and 8 that relate to disturbance or event-based monitoring regimes and other testing methods to provide assurance of compliance. This principle more clearly articulates an updated expectation that continuous plant monitoring (CPM) – which includes disturbance or event based monitoring - is preferred, where practicable. This reflects the increased prevalence and ease of implementing CPM regimes for modern connections, while allowing flexibility for alternative compliance regimes to be applied, where CPM is not practicable.

Stakeholder feedback on the Panel's proposal for CPM was generally supportive, with a number of stakeholders expressing explicit support for this proposal in their submissions to the issues paper.²⁹

Other stakeholders, including Energy Australia and APA, requested that the Template provide flexibility for alternatives to CPM, noting that the implementation of CPM for legacy plant may be onerous and unjustified.³⁰

The Panel considers that where it is practicable to do so, the benefits of continuous monitoring for system security reasons generally outweigh the potential costs to the Registered Participant who conducts the monitoring. The preference for continuous monitoring was not explicit in the original principles. However, it is consistent with section 1.4 of the current Template. The wording of this principle in the draft Template has been strengthened in response to stakeholder feedback. Section 4.6 of the draft Template provides examples of where continuous monitoring may not be practicable; for example, where it may be too costly to retrofit.

2.1.3 Principle 3 – Testing frequency should be proportionate to the risk of non-compliance

Principle 3 reflects the intention behind the existing principle 1 and 2 that describe how compliance programs should account the variation of plant performance over time. The drafting of this principle has been targeted towards the concept of the frequency of testing based on the expected variation of plant performance over time and the risk of potential non-compliance with a plant performance standard.

²⁹ Submissions to the issues paper: VeriConneX, p 6; Akaysha, p.3; Tesla, p.1.

³⁰ Submissions to the issues paper: APA, p 3; Energy Australia, p 3.

Submissions from AEMO and the APA noted that the reference in the previous reference to ‘plant parameters’ was somewhat vague and would benefit from clarification and/or simplification.³¹

In response to stakeholder feedback, the drafting of this principle has been simplified and revised to remove reference to ‘plant parameters’ and reflect the concept that an increased rate of testing is only necessary when there is a proportionate risk of non-compliance.

2.1.4 Principle 4 – Compliance programs must provide reasonable assurance of compliance with plant performance standards

Principle 4 reflects existing principles 4, 8 and 10, which all relate to the frequency of updating compliance programs along with the overarching goal of a compliance program - to provide assurance of compliance with performance standards.

Submissions from AEMO & Akaysha noted that the proposed drafting for this principle in the issues paper could be interpreted as encouraging compliance with a Registered Participant’s compliance management framework, rather than compliance with the registered performance standards.³²

The Panel acknowledges stakeholder feedback on the drafting set out in the issues paper. We have revised the wording for this principle to more closely reflect the intention for compliance programs to provide reasonable assurance of compliance with a Registered Participant’s plant’s performance standards.

2.1.5 Principle 5 – The impact of plant changes on compliance must be assessed

This is a new principle included in response to a suggestion from VeriConneX that the Panel include an additional compliance principle to provide guidance for Registered Participants to assess whether changes to their plant would be likely to affect compliance with performance standards.³³ The Panel has incorporated this additional principle in the draft Template and included drafting to reflect an expectation that a Registered Participant must promptly assess whether plant changes could have an impact on their compliance. This change clarifies the expectation that registered participants should identify the impact of plant changes on data and model validity in a timely manner (i.e. not to wait for months/years after plant change to assess it and notify AEMO of the change).

Section 3.1 of the draft Template provides additional guidance on the consideration of the potential impacts of plant changes on compliance programs, and the role of the change management process in the NER (such as clause 5.3.9).

2.1.6 Principle 6 – Compliance programs must align with good electricity industry practice

Principle 6 largely reflects the existing Principle 5 that relates to the concept of Compliance programs representing or aligning with ‘good electricity industry practice’.

While stakeholder feedback was generally supportive on the proposed revised compliance principles, Akaysha noted that this principle not particularly helpful for the development of compliance programs, noting their view that the term ‘good electricity industry practice’ was a vague concept.³⁴

31 Submissions to the issues paper: AEMO, p 4; APA, p 3.

32 Submissions to the issues paper: AEMO, p 4; Akaysha, p 3.

33 VeriConneX, submission to the issues paper, pp 3, 9.

34 Akaysha, submission to the issues paper, p 3.

The Panel notes the feedback from Akaysha in relation to the practical utility of the term ‘good electricity industry practice’. However, this term has been retained as a core part of this compliance principle, noting that under NER rule 4.15(c)(2), a compliance program must include procedures for monitoring plant performance that are consistent with good electricity industry practice. The Panel notes that the Template itself provides guidance to registered participants around what constitutes ‘good electricity industry practice’ and this is reflected in the drafting of this principle.

2.1.7 Principle 7 – Variations from the Template must be consistent with the Compliance principles

This is a new principle included in the draft Template to provide additional guidance to Registered Participants around the expectations for how elements of a Participant’s compliance program may vary from the approaches set out in the Template based on the expectation that any variation is consistent with these compliance principles.

Further commentary and guidance, including examples of reasons that may justify variations from the Template are set out in section 3.3.1 of the draft Template.

3 The draft Template includes more detailed information about the compliance framework

Stakeholder feedback to our issues paper noted that the existing Template generally provides useful information that assists Registered Participants in creating and instituting their own compliance programs.³⁵ However, a few stakeholders noted that the guidance and information that is included in the Template could be improved or clarified, or could be extended to cover other topics.³⁶

The Panel has reviewed the existing Template, taking into account all stakeholder feedback, and has developed a revised draft Template that provides further information and guidance on several aspects of the compliance framework.

Sections 3.1 to 3.6 in this chapter outline guidance that has been added to the draft Template. Section 3.7 outlines the Panel's consideration of stakeholder feedback that requested that the Template clarify the roles of intermediaries and third parties. The Panel notes that no additional guidance has been added to the draft Template on this matter.

3.1 Plant changes and impacts on compliance

To complement the proposed new compliance principle 5, the draft Template provides updated information and guidance to Registered Participants on their obligations for incorporating plant changes into their compliance program.³⁷ In addition, the draft Template's guidance encourages Participants to consult and collaborate with their NSP and AEMO when considering potential plant changes. Managing the potential impact on compliance from plant changes over the lifetime of all plant is important for power system security, especially through several software and firmware updates.³⁸

The updated information includes:

- references to NER clauses and obligations that Registered Participants should take into account, including NER clauses 5.3.9, 5.3.12, S5.2.2, S5.3.4 and S5.3a.2
- brief explanations of which clauses apply to which types of plant
- references to AEMO's recently released [NER 5.3.9 Process Guideline](#) and [5.3.9 webpage](#).

See section 3.1 of the draft Template for this updated information and guidance, including examples of relevant plant changes that could impact a plant's compliance with its performance standards. These include (but are not limited to):

- hardware modifications, such as the addition of new auxiliary equipment
- equipment replacements, such as the replacement of an ageing transformer
- software updates or firmware changes, such as an update for an inverter's control systems or settings.

The updated compliance method tables in the Appendices of the draft Template also provide more information on plant changes, including guidance on when it is appropriate to conduct additional performance testing or monitoring, following plant changes.

35 Submissions to the issues paper: APA, p 3; Akaysha, p 2; EnergyAustralia, p 2; SMA, p 3; Transgrid, p 2; VeriConneX, p 5.

36 Submissions to the issues paper: CleanCo, pp 1-2; SMA, p 3; VeriConneX, pp 5-6.

37 Compliance principle 5 requires Registered Participants to assess the impact of potential plant changes on compliance – see section 2.1.

38 For example, as discussed by VeriConneX, submission to the issues paper, p 18.

3.2 Model validation and updates

Since the Panel's last review in 2019, the use and importance of models have increased dramatically. In submissions to our issues paper, various stakeholders noted that the Template's guidance on the use of models, model overlays, model validation and updates could be improved.³⁹

As required by the NER, specific requirements for models are detailed in AEMO's [Power System Model Guidelines](#).⁴⁰ The draft Template does not seek to prescribe model requirements that would override or contradict AEMO's guidelines; instead, the Panel has provided only high-level and best-practice guidance on how Registered Participants should use and validate models in their compliance programs, in line with their NER obligations.

The draft Template retains existing guidance on the use of plant models in compliance programs, but has added information regarding:

- **Compliance programs can complement R2 model validation** - the draft Template provides examples of when R2 model validation may be incomplete, such as when a suitable power system event required to demonstrate compliance has not yet occurred.
- **Compliance programs should detect when models are out-of-date** - The Panel considers that, where models are readily available to the Registered Participant, compliance programs should be developed to detect when models are inaccurate or out-of-date, and where ongoing periodic model validation could be included as part of a compliance program. To supplement this, the Panel has also included supplementary methods in the draft Template's compliance tables for clauses S5.2.5.5, S5.2.5.13, S5.3a.13 and S5.3a.14 as a prompt to Registered Participants to ensure that their control system settings are consistent with the models provided to the NSP and AEMO.⁴¹
- **Model overlays can be an effective means of demonstrating compliance** - the draft Template notes that model overlays can be used to demonstrate compliance against certain performance standards, provided the model has been validated.⁴²
- **Registered Participants must provide updated and accurate models to AEMO and the relevant NSP** - the draft Template reminds Registered Participants that when they become aware that their previously supplied models, data or information is incomplete, inaccurate or out of date, they must promptly provide updated information to AEMO within 5 business days in accordance with NER clause 5.3.8(f). For completeness, the Panel considers that the Registered Participant should also promptly provide the updated information to the relevant NSP.

This information has been provided in section 3.2 of the draft Template.

In addition, the use of plant models to demonstrate compliance has been added throughout several compliance methods in Appendix A of the draft Template – see section 5.2 for more information on these new compliance methods.

39 Submissions to the issues paper: AEMO, pp 9-10; VeriConneX, p 15; Transgrid, p 6.

40 NER, clause S5.5.7(a)(3).

41 For example, see Table A.5, Table A.13, Table C.13 and Table C.14 of the draft Template.

42 A model overlay is typically a graph or figure that 'overlays' the actual response of the plant with the response of a computer model, against the same power system event.

3.3 Information provision and retention

The draft Template includes new guidance on the information that should be maintained by Registered Participants, as part of their compliance programs. This responds to stakeholder feedback on the need for improved guidance in this aspect so that parties can comply with their record-keeping obligations under the NER.

In its submission to our issues paper, VeriConneX noted that the Template's lack of guidance on the kinds of information that a compliance program should keep and proactively maintain may tacitly encourage some asset owners to be 'reactive' – that is, only recording and providing information to AEMO or the AER upon request.⁴³

Additionally, the existing Template is silent on the kinds of information that Registered Participants should maintain and provide, as part of their compliance program and broader compliance management framework. It only provides the following brief guidance to Registered Participants in relation to compliance information that must be retained:

A Generator is required to maintain compliance program records and other prescribed records for seven years, and if requested, deliver such records to the AER within five business days or other specified period.

To address this, in section 3.3 of the draft Template, the Panel has included additional information and guidance on the records that Registered Participants should maintain, in relation to compliance programs. The guidance in the draft Template includes encouraging Registered Participants to:

- promptly record and document the outcomes of any periodic monitoring or tests it conducts as part of its compliance program
- retain data and information from any plant monitoring equipment in relation to specific power system events
- document the reasons why any tests could not be performed according to schedule
- keep a detailed record of changes that are made to a plant's compliance program, including the reasons why such changes were considered necessary
- document the reasons why a compliance program may deviate from the Template, while having regard to the compliance principles. See section 2.1.7 for discussion on this new compliance principle.

The draft Template does not specify the exact format of these records. As each Registered Participant's compliance program and plant will be unique and will have different circumstances, the Panel considers that the exact format is best left to the judgement of each Registered Participant.

The Panel considers that this additional information would improve the Template's effectiveness by encouraging more prompt and detailed record-keeping behaviours, consistent with good electricity industry practice.

3.4 Guidance on non-compliances with performance standards

The current Template is brief in its information on the obligations of Registered Participants in instances where a plant is, or is likely to be, non-compliant with a performance standard. The Panel considers that it is critically important that all plant comply with their technical performance

⁴³ VeriConneX, submission to the issues paper, p 3.

standards to ensure the power system remains secure against disturbances. It is equally important that Registered Participants are aware of their obligations when they are aware that their plant is non-compliant.

The draft Template retains existing information on non-compliance that is outlined in section 1.3 of the current Template. However, this information has been moved to its own section in section 3.7 and enhanced with additional information on the obligations of Registered Participants when their plant is, or is likely to be, non-compliant. This section covers information relating to non-compliance, including:

- AEMO's [Notice of Non-compliance with Registered Performance Standards](#), which a Registered Participant should complete immediately when it is aware its plant is being non-compliant in accordance with rule 4.15(f) of the NER
- Rules 4.15(i) and (j), which provides AEMO the ability to determine a reasonable period for a Registered Participant to rectify a performance standards breach
- Rules 4.15(n)-(p), which provides a mechanism to involve the AER in the event a Registered Participant and AEMO cannot agree on a rectification period
- Clause 5.7.3 of the NER that outlines further obligations on Generators and Integrated Resource Providers in the instance that a generator or integrated resource system is not in compliance with one or more of the technical requirements in Schedule 5.2.5 or the relevant connection agreement.

Section 3.7 in the draft Template also provides information on the AER's ability to conduct technical compliance audits.

3.5 Market-based obligations in connection with performance standards

The Panel recognises that Registered Participants may have additional market-based or NER obligations beyond the performance standards outlined in Schedules 5.2, 5.3 and 5.3a. The current Template only provides guidance on performance standards, as per rule 4.15(ca) of the NER – it does not refer to other obligations a Registered Participant may have, despite these being equally critical to maintaining system security.

The Panel considers it prudent to recognise these additional market-based or NER obligations which relate to performance standards. However, given the requirements of the Template in rule 4.15(ca) of the NER, the Template cannot provide specific testing or monitoring methods for these obligations. As such, section 1.2 of the draft Template simply references what some of these obligations may be, which may be considered alongside the performance standards, including:

- requirements relating to the delivery of frequency control ancillary services
- operational requirements for primary frequency response
- requirements for active power dispatch tracking.

3.6 Interdependent and concurrent performance standards

The draft Template includes a new section that recognises the interdependency of performance standards and those that must be provided concurrently. Many performance standards are not provided in isolation, and in some cases, achieving one performance standard may rely on, influence or be affected by another performance standard. For example, plant may be required to meet multiple requirements in schedule 5.2 clauses concurrently.

The draft Template does not specify testing or monitoring regimes that explicitly provide for testing whether multiple performance standards can be met simultaneously. However, the draft

Template's guidance clarifies that Registered Participants should consider how their testing and monitoring regimes can ensure that the relevant performance standards are met concurrently and at all required times.

This information is found in section 3.7 of the draft Template.

3.7 The Panel considered outlining the obligations on intermediaries and third parties

The Panel understands that commercial agreements in which the Registered Participant is neither the owner nor the operator of the plant are increasingly common. The current Template does not specifically deal with the relationship between intermediaries and owner/operators in these circumstances.

In its submission to the issues paper, CleanCo requested guidance on this matter.⁴⁴ Specifically, CleanCo considers that the Template provides guidance on a model where the owner or operator would be responsible for undertaking testing and providing results to the Registered Participant appointed as the intermediary, and the Registered Participant would then remain accountable for auditing the outcomes and retaining records to provide to the AER in the event of an audit.⁴⁵

The Panel considers that it is not appropriate for the Template to provide guidance on how contractual arrangements between an applicant and an intermediary should work, given that these arrangements are negotiated between the two parties.⁴⁶ The Panel notes that clause 2.9.3(d)(5) of the NER provides that an intermediary and an applicant will be jointly and severally liable for the acts, omissions, statements, representations and notices of the intermediary in its capacity as a Registered Participant under the NER.

⁴⁴ CleanCo, submission to the issues paper, p 1.

⁴⁵ CleanCo, submission to the issues paper, p 2.

⁴⁶ The term 'applicant' is provided for under clause 2.9.3(a) of the NER, which provides that a person (the 'applicant') who is required to be registered under the NEL or under the Rules as a Generator, Integrated Resource Provider or a Network Service Provider may apply to AEMO or the AER, as applicable, for an exemption from that requirement to register.

4 The draft Template provides more guidance about how to interpret and apply the tables

The Panel has restructured the Template and moved sections that provide guidance on how Registered Participants should apply the compliance tables into Chapter 4 of the draft Template.

This chapter provides an overview of the additional guidance included in the draft Template and the amendments made to the guidance in the current Template. It does not cover guidance that remains unchanged between versions. This chapter outlines the draft Template's approach to:

- continuous plant monitoring
- testing frequency
- hardware-in-the-loop testing
- the definitions of 'significant disturbance', 'major disturbance' and 'major event'.

4.1 Continuous plant monitoring is generally preferable, but not mandatory

The draft Template set out the Panel's view that continuous plant monitoring is generally preferable, but not mandatory for all monitoring and compliance regimes. This is reflected in the proposed compliance principle 2 and the commentary set out in section 4.6 of the draft Template.

The guidance on continuous plant monitoring is written to:

- establish continuous plant monitoring as the preferred approach to demonstrating compliance
- provide flexibility for Registered Participants by recognising that continuous plant monitoring may not necessarily be practicable or proportionate in all circumstances.

This approach reflects stakeholder feedback received in response to the issues paper. While VeriConneX and SMA expressed support and proposed a strengthening of the requirement for continuous plant monitoring, APA and EnergyAustralia raised concerns about the practicality for existing plant.⁴⁷ The Panel has sought to balance these considerations.

In proposing that continuous plant monitoring be the norm, the Panel recognises that continuous plant monitoring:

- is becoming an increasingly common option for monitoring compliance, due to its increased affordability compared to the past, and it being a common outcome of the connection process for new plant
- provides several benefits over periodic testing alone, including:
 - providing Registered Participants with information about the ongoing performance of the plant, including automated alerts to any potential non-compliance
 - reducing the need for more frequent testing, as these tests can be focused on validating plant performance on edge cases or following plant changes only. The draft Template further recognises the interactions on the frequency of testing. See further explanation in section 4.2.

As per rule 4.15 of the NER, the Template is applicable for all Registered Participants and therefore, new and existing plant. However, as identified by stakeholders, continuous plant monitoring may not be practicable for all types of plant.⁴⁸ This may be due to cost, plant technology capability or purpose, or otherwise. For example, it was highlighted that retrofitting

47 Submissions to the issues paper: APA, p 4; EnergyAustralia, p 3; SMA, p 4; VeriConneX, p 2.

48 Submissions to the issues paper: APA, p 4; Energy Australia, p 3.

continuous plant monitoring on existing plant may result in high costs which would ultimately be passed through to consumers.⁴⁹

At the same time, the Panel recognises that instituting continuous plant monitoring may not be appropriate for every plant performance standard. In recognition of this, the draft Template provides flexibility for Registered Participants to assess the appropriateness of continuous plant monitoring, taking into account:

- the costs of instituting new continuous monitoring equipment
- the practicality of implementation
- the appropriateness of existing alternative monitoring and testing arrangements
- the power system security risk of a potential non-compliance against a specific performance standard.

As set out in revised compliance principle 2, where continuous plant monitoring is not instituted, Registered Participants should document their reasons in their compliance program(s).

4.2 The frequency of testing should be proportionate to the risk of non-compliance

The draft Template outlines the suggested testing frequency for each performance standard. This is supplemented by additional guidance in chapter 4.7 of the draft Template and proposed compliance principle 3. See section 2.1.3 for more details on this proposed principle.

Certain stakeholders in submissions to the issues paper outlined that testing frequency should be risk-based. Meaning, that the frequency of testing is guided by the level of risk associated with non-compliance of the relevant performance standard.⁵⁰ This risk-based approach has primarily driven the testing intervals detailed in the 'suggested testing frequency' column in Appendices A, B, and C of the draft Template.

At the same time, the Panel heard from stakeholders that other factors would also impact testing frequency. The existing Template recognises some of these factors:

- the Registered Participant's experience with the particular plant technology
- the manufacturer's advice with respect to a particular model
- an assessment of the frequency required to provide reasonable assurance of compliance.

The draft Template expands on this list and includes:

- the materiality of non-compliance with a performance standard, consistent with proposed compliance principle 3
- the potential for the plant's performance to drift over time
- the impact of any plant changes
- the cost of testing
- any risks associated with conducting a test.

Furthermore, the Panel heard from stakeholders that the revised Template should provide further guidance on the impact of continuous monitoring on testing frequency and the alignment of testing with operational factors, such as planned outages or scheduled maintenance.⁵¹ The draft

49 APA, submission to the issues paper, p 4.

50 Submissions to the issues paper: AEMO, p 4; VeriConneX, p 15.

51 Submissions to the issues paper: Alinta Energy, p 1; APA, p 5; ENGIE, p 1; Powerlink, p 2; VeriConneX, p 15.

Template provides additional guidance on these matters - see section 4.2.1 and section 4.2.2 below.

4.2.1 The draft Template considers the impact of continuous plant monitoring on testing frequency

The draft Template recognises that continuous plant monitoring can complement a Registered Participant's plant testing regime. Specifically, where continuous plant monitoring is in place, testing can focus on edge cases and plant performance during more severe power system conditions that may not occur under normal operation.

This reflects stakeholder feedback received in response to the issues paper. The Panel notes that in its submission, Alinta Energy stated, 'where feasible, enhanced monitoring and data visibility should be used in place of separate or more frequent testing, rather than addition to it.'⁵²

Furthermore, VeriConneX noted that the Template should 'provide more nuanced guidance on how testing frequency should be determined based on plant characteristics, technology type, and availability of continuous monitoring.'⁵³ This includes that for certain performance standards, such as frequency protection and frequency control (S5.2.5.3 and S5.2.5.11) and reactive power capability (S5.2.5.1), where continuous monitoring is in place, the Panel should consider extending the recommended length of time between tests.⁵⁴

Conversely, the Panel has provided guidance that where continuous monitoring is not in place, Registered Participants should exercise prudence and act in accordance with good electricity industry practice to demonstrate ongoing compliance. In these cases, more frequent testing may be required.

4.2.2 The draft Template considers aligning testing with plant maintenance and outages

In developing the draft Template, the Panel has sought to balance the need for Registered Participants to demonstrate ongoing compliance with the flexibility needed to reduce the administrative and operational burden of testing.

Several stakeholders considered that Registered Participants should be given increased flexibility to determine testing frequency, to allow for consideration of operational decisions.⁵⁵ This would include aligning testing with scheduled maintenance, planned outages, or original equipment manufacturer (OEM) availability.

The Panel has sought to accommodate for these considerations in the guidance set out in section 4.7 of the Template. At the same time, the Panel considers that a Registered Participant should not delay a test if the risk of non-compliance with a performance standard exceeds the foreseen benefits of delaying a test. Consistent with proposed compliance principle 1, the Registered Participant should exercise judgement in line with good electricity industry practice to determine whether it would be appropriate to deviate from the recommended testing frequency in the Template to better align with operational factors.

We note that several stakeholders considered that increased flexibility would still ensure Registered Participants provide ongoing assurance of compliance, while also reducing the costs associated with testing.⁵⁶

52 Alinta Energy, submission to the issues paper, p 1.

53 VeriConneX, submission to the issues paper, p 15.

54 VeriConneX, submission to the issues paper, p 16.

55 Submissions to the issues paper: APA, p 5; ENGIE, p 1; Powerlink, p 2.

56 Submissions to the issues paper: APA, p 5; ENGIE, p 1.

4.3 Hardware-in-the-loop testing can be used, but should not replace other more fulsome methods

The draft Template includes guidance in section 4.8 on the approach and considerations for hardware-in-the-loop (HIL) testing as part of a compliance program. This inclusion responds to stakeholder submissions to the issues paper, which requested that the Template provide guidance on the use of HIL testing.⁵⁷

HIL testing is a simulation technique that integrates physical hardware or equipment under test with a real-time simulated environment. In an HIL setup, components such as inverter control hardware may be connected to a virtual representation of the power system, enabling the exchange of control signals and the observation of the hardware's responses under a range of simulated operating conditions.

HIL testing can provide a higher level of fidelity than simulation using software models alone, as it captures the actual behaviour and dynamic response of physical control systems that may otherwise be approximated in purely model-based studies.

While HIL testing can significantly improve confidence in control system behaviour, the Panel considers that it does not replicate all aspects of full-scale plant operation and should be used to complement, rather than replace, end-to-end testing and monitoring of as-built plant. The Panel has included draft guidance to this effect in section 4.9 of the draft Template.

Where a Registered Participant chooses to use HIL testing as part of its compliance program to supplement other methods, the Panel considers that it should record the use and results of any HIL testing as part of its compliance management framework.

4.4 We have added examples to clarify 'significant disturbance', 'major disturbance' and 'major event'

In section 4.10 of the draft Template, the Panel has provided examples for three defined terms that are commonly used in the compliance tables as triggers for Participants to take certain compliance actions. Stakeholder feedback to our issues paper noted that the existing Template could be clearer on the types of event signals or triggers for plant monitoring regimes.⁵⁸

In the existing Template, three defined terms serve as triggers for specific actions in a Registered Participant's compliance program. These terms are 'significant disturbance', 'major disturbance' and 'major event', and are generally intended to test a specific aspect of a plant's performance standards. Table 4.1 summarises the existing definitions of the three terms.

⁵⁷ Submissions to the issues paper: SMA, p 3; Tesla, p 1.

⁵⁸ Submissions to the issues paper: Akaysha, p 2; VeriConneX, p 17.

Table 4.1: Summary of disturbance and event defined terms in the Template

Defined term	Summary of meaning
Significant disturbance	A disturbance where a plant trip is expected, to test whether a plant trip complied with its performance standards.
Major disturbance	A disturbance intended to test a plant's <i>continuous uninterrupted operation</i> , as required by its performance standards
Major event	A power system event intended to test a plant's response to faults or other disturbances , as required by its performance standards.

Source: AEMC

To provide Registered Participants with more clarity on how to select or differentiate between these events, the Panel has included examples in section 4.10 of the draft Template of what 'significant disturbances', 'major disturbances' and 'major events' could be. Clause-specific examples have also been provided to help explain differences between different kinds of disturbances or events.

For example, the draft Template provides separate examples for clause S5.2.5.3 (Response to frequency disturbances) and clause S5.2.5.4 (Response to voltage disturbances) for both 'significant disturbance' and 'major disturbance'. This helps Registered Participants differentiate between a 'significant voltage disturbance' and a 'significant frequency disturbance', which are terms commonly used in Appendix A.

The Appendix tables also include cross-references to the examples given in section 4.10 of the Template, which aim to clarify the types of events that should trigger investigations of plant trips or power system events.⁵⁹

The Panel considers that these examples should improve the application of the compliance methods listed in the Appendix tables, improving event-based investigations and the overall effectiveness of Registered Participants' compliance programs.

⁵⁹ For example, see Appendix A, 'Response to Frequency Disturbances', method 1; 'Response to Voltage Disturbances', method 1; and 'Response to Disturbances following Contingency Events/Disturbance ride-through Capability', method 1 and 2.

5 The draft Template includes new and updated compliance tables

Table 1 of the existing Template provides plant owners with useful information to design, institute and maintain their compliance program(s). However, as highlighted in the Panel's December 2025 issues paper, Table 1 needs to be expanded to cover integrated resource systems and synchronous condenser systems so that the Template complies with the requirements of rule 4.15(ca). It also needs to account for changes to the technical requirements made since the Panel's last review of the Template in 2019. Additionally, new compliance tables need to be created to cover the performance standards for schedule 5.3 plant and schedule 5.3a plant. See Chapters 3 and 4 of the Panel's issues paper for more information on these matters.

The Panel has taken the opportunity to improve the clarity, application and ease-of-use of the compliance tables in the Template wherever possible, recognising that stakeholders generally regard the tables as useful, but with opportunities for improvement.⁶⁰ We encourage all interested stakeholders to read the draft Template and provide feedback on any aspect of the tables, including specific wording, the proposed compliance methods, or the overall structure. For a list of the specific changes made to each section of existing Table 1, as well as the creation of new tables in Appendix B and C of the draft Template, refer to appendix A of this draft report.

5.1 The tables would be restructured to improve their clarity and effectiveness

The Panel has made three main structural changes when revising the compliance tables for the draft Template:

1. Creating a separate table for each technical requirement
2. Providing any contextual or additional information relating to each technical requirement as a preamble to each table
3. Clarifying the type of compliance method and its applicability to certain plant types

Creating separate tables for each technical requirement

To avoid an overly long table, the Panel's draft Template creates a new table for each technical requirement, which generally corresponds to a specific clause in schedule 5 of the NER. For example, in Appendix A in the draft Template for schedule 5.2 plant, a standalone table has been created for 'Reactive Power Capability', which refers to the technical requirements specified in clause S5.2.5.1 of the NER. This table lists four suggested compliance methods, along with three supplementary methods that may be used in conjunction with any of the three main compliance methods.⁶¹ This is followed by a separate table for 'Quality of Electricity Generated', which refers to the technical requirements of clause S5.2.5.2 of the NER, and contains two suggested compliance methods.⁶²

This approach continues for each technical requirement in S5.2.5, S5.2.6, S5.2.7 and S5.2.8 of the NER. The Panel has also adopted it for Appendix B and Appendix C, which list new tables for the technical requirements applicable to schedule 5.3 plant and schedule 5.3a plant, respectively.

60 Submissions to the issues paper: AEMO, p 10; Akaysha, p 2; EnergyAustralia, p 2; SMA, p 3; Transgrid, p 2; VeriConneX, pp 5-6.

61 See pages 19-20 of the draft Template.

62 See page 21 of the draft Template.

The Panel considers that separating tables by technical requirement should improve the Template's usefulness and ease of use when Registered Participants create their own compliance programs.

Providing contextual or additional information for each technical requirement

Instead of providing a separate 'Notes' column in the table, contextual information that relates to a specific technical requirement has been provided as a preamble to each table, underneath the heading of the name of each technical requirement. For example, under the section titled 'Voltage and Reactive Power Control / Excitation Control System' in Appendix A of the draft Template, the following text has been included:⁶³

Testing and monitoring regimes should consider control modes and conditions where voltage control may operate differently, including:

- Low and high solar irradiance conditions for solar farms
- Reactive power on demand mode for solar farms
- Low and high State of Charge (SoC) conditions for BESS

Where the Panel has considered that there is additional method-specific information that may be helpful to Registered Participants, this information has been provided in the Table itself. For example, in Method 1 of the 'Voltage and Reactive Power Control / Excitation Control System' section in Appendix A, additional information relating to the use of plant models has been provided in the 'Basis for compliance assessment'.

The Panel considers that the inclusion of additional information in the draft Template would greatly assist Registered Participants in developing their own compliance programs, prompting them to take into account any specific requirements under their performance standards, or consider related factors that may be applicable in their particular situation.

Clarifying the type of method and its applicability to certain plant types

Finally, each table in the draft Template has separate sections that correspond to different suggested compliance methods, with the type of method and applicability to specific plant types detailed in parentheses. For example, in the 'Response to Disturbances following Contingency Events/Disturbance ride-through capability' section in Appendix A:

- Method 1 is described as 'continuous high-speed monitoring for synchronous plant'
- Method 2 is described as 'continuous high-speed monitoring for asynchronous plant'
- Method 3 is described as 'investigation of events where continuous high-speed monitoring is not practical'

In other sections, 'supplementary methods' have also been provided where the Panel considers that certain compliance methods could be used in conjunction with other methods, where it may be applicable for specific plant.

The Panel considers that this approach would make it easier for Registered Participants to select appropriate compliance method (or regimes)⁶⁴ for their own plant, without having to navigate one single table and interpret whether a particular row may be applicable for their plant type.

63 See page 37 of the draft Template.

64 The terms 'compliance methods' and 'compliance regimes' are used interchangeably throughout this draft report and the draft Template.

5.1.1 The Panel may consider a spreadsheet format for compliance tables in the final Template

Recognising that Registered Participants may find it easier to navigate and use a Template in an editable format, the Panel is considering whether to have a version of Appendix A, B and C as an editable spreadsheet, for the final Template.

Other important NEM documents are already typically provided as an editable spreadsheet, for example:

- the Power System Design and Setting Data Sheets⁶⁵
- the NEM Registration and Exemption List⁶⁶
- AEMO directions reports.⁶⁷

The Panel understands that, when creating their own compliance programs, some parties typically copy the Template’s compliance table as a starting point, and then edit it to suit their plant and circumstances. An editable spreadsheet would facilitate this process and would make it easier for new Registered Participants to create their own compliance programs. This is supported by TotalEnergies’ experience, where they state ‘it would have been more efficient to have the Template in a readily editable format (e.g. Word or Excel) rather than pdf format.’⁶⁸

We welcome stakeholder suggestions on whether the Panel should consider any other alternate formats for the final Template.

5.2 The draft Template introduces new continuous plant monitoring regimes

To ensure that the Template appropriately reflects modern compliance practices and changes in costs since the Panel’s last review, the Panel has added several suggested compliance methods that leverage continuous plant monitoring technologies.

A list of the methods in the draft Template that utilise continuous plant monitoring is presented in Table 5.1.

Table 5.1: Suggested compliance methods which utilise continuous plant monitoring

Technical requirement	Method number	Notes
Reactive power capability (S5.2.5.1)	Method 1	Supplemented with active testing every 5 years to test the plant’s full range of reactive power capability
Quality of electricity generated (S5.2.5.2)	Method 1	Utilising alarm-based monitoring to flag power quality exceedances.
Response to frequency disturbances (S5.2.5.3)	Method 1 & Method 3	Method 3 is only applicable to small asynchronous units with distributed digital controls. Investigation of significant disturbances and major disturbances.
Response to voltage	Method 1	Investigation of significant

65 See [AEMO | Power System Model Guidelines \(PSMG\) and Data Sheets Consultation](#) for the latest version.

66 See [AEMO | Registration](#).

67 For example, see [AEMO | Directions to SA Generators - 4 June 2025 to 25 June 2025](#).

68 TotalEnergies, submission to the issues paper, p 1.

Technical requirement	Method number	Notes
disturbances (S5.2.5.4)		disturbances and major disturbances.
Response to disturbances following contingency events / Disturbance ride-through capability (S5.2.5.5/S5.2.5.5A)	Method 1 & Method 2	Method 1 is applicable to synchronous plant; method 2 is applicable to asynchronous plant. Investigation of significant disturbances and major events.
Quality of electricity generated and continuous uninterrupted operation / Response to abnormal voltage quality (S5.2.5.6)	Method 1	Investigation of major events.
Partial load rejection (S5.2.5.7)	Method 1	Investigation of major events.
Protection from power system disturbances (S5.2.5.8)	Method 1	Investigation of major events.
Frequency control / Frequency responsiveness and/or Governor stability and governor system (S5.2.5.11)	Method 1 & Method 3	Investigation of major disturbances and major events.
Voltage and reactive power control / excitation control system (S5.2.5.13)	Method 1 & Method 2	Method 1 is applicable to synchronous plant; method 2 is applicable to asynchronous plant. Supplemented with active testing every 5 years.
Active power control (S5.2.5.14)	Method 1	
Voltage fluctuations (S5.3.7)	Method 1	Continuous monitoring using power quality meters
Harmonic voltage distortion (S5.3.8)	Method 1	Continuous monitoring using power quality meters
Reactive power capability (S5.3a.8)	Method 1 & Method 2	
Balancing of load currents (S5.3a.9)	Method 1	
Voltage fluctuations (S5.3a.10)	Method 1	Continuous monitoring using power quality meters
Harmonic voltage distortion (S5.3a.11)	Method 1	Continuous monitoring using power quality meters
Response to disturbances in the power system (S5.3a.13)	Entire method	Investigation of significant disturbances and major disturbances using high-speed monitoring
Disturbance ride through	Entire method	Investigation of significant

Technical requirement	Method number	Notes
and response capability/Protection of market network services from power system disturbances (S5.3a.14)		disturbances and major events using high-speed monitoring
Voltage and reactive power control (S5.3a.15)	Method 1 & Method 2	Investigation of major events using high-speed monitoring
Active power control (S5.3a.16)	Method 1	

Note: Clause references above correspond to version 243 of the NER.

In submissions to the Panel’s issues paper, several stakeholders commented on how the revised Template should consider compliance methods that utilise continuous monitoring. VeriConneX noted that the existing Template is focused on periodic testing regimes, listing several examples where continuous plant monitoring methods could be included or clarified.⁶⁹ Akaysha considered that event signals and sampling rates that should be collected as part of a continuous monitoring method would assist greatly in establishing compliance programs.⁷⁰ EnergyAustralia noted that while continuous monitoring methods may be appropriate for new technologies, continuous monitoring should be considered high-cost and non-standard for existing synchronous generators.⁷¹

Although the Panel acknowledges Akaysha’s suggestion for specific requirements relating to sampling rates or event triggers, the draft Template has not included specific requirements for continuous monitoring technologies.⁷² Generally, the technical requirements as specified in each plant’s performance standard should help inform the required sampling rate or granularity for a continuous monitoring method. All continuous monitoring methods must be capable of reasonably demonstrating that the plant is achieving its performance standards, as is required by NER rule 4.15(c)(4). The Panel considers that any specific requirements for monitoring are best left to guidance from AEMO and/or NSPs, and encourages Registered Participants to engage and consult with these parties when determining the type of monitoring equipment to be utilised for their plant.

On the use of continuous plant monitoring methods, as explained in section 4.1, while the Panel considers that the use of continuous plant monitoring regimes is generally preferable, especially for new plant, it does not expect all incumbent Registered Participants to utilise continuous plant monitoring regimes. Compliance principles 1 and 2 and the associated guidance in sections 4.5 and 4.6 of the draft Template explain the factors that Registered Participants should consider when selecting an appropriate compliance method for their plant, and determining whether continuous plant monitoring methods are suitable.

The Panel considers that the inclusion of new continuous plant monitoring methods in the draft Template contributes to power system safety, security and reliability by encouraging Registered Participants to consider these methods for their compliance programs. It also supports innovation

69 VeriConneX, submission to the issues paper, pp 16-17. For more information on specific clause suggestions, see appendix A.

70 Akaysha, submission to the issues paper, p 2.

71 EnergyAustralia, submission to the issues paper, p 3.

72 However, the draft Template includes some high-level guidance on the kinds of event triggers that should be incorporated into a monitoring method, through the examples provided for the definitions of ‘significant disturbance’, ‘major disturbance’ and ‘major event’. See section 4.4 for more information.

and flexibility by recognising that continuous plant monitoring methods can provide superior compliance outcomes and can be very cost-effective for some plant, while also recognising that the cost of such methods may be unreasonably expensive for some existing plant. Having a Template which reflects modern compliance practices and monitoring methods is more likely to contribute to the NEO by encouraging more effective compliance programs for all relevant plant.

5.3 The draft Template accounts for changes made by the Access Standards Package 1 Rule

As highlighted by Table 4.1 of the Panel's issues paper, the *Improving the NEM access standards - Package 1* (Access Standards Package 1) rule change has amended several technical requirements in schedules 5.2 of the NER. As the Template must cover all performance standards, the draft Template has accounted for the changes made by the Access Standards Package 1 rule by:

- in the preamble to Reactive Power Capability in Appendix A (S5.2.5.1), explaining that 'testing should consider voltage range around the midpoint voltage and temperature derating, where relevant under the performance standard'.⁷³
- in the Response to Disturbances following Contingency Events / Disturbance ride-through capability section (S5.2.5.5/S5.2.5.5A), including a list of specific requirements that may be applicable to a Participant's performance standard in the 'basis for compliance assessment' column.⁷⁴
- in the Asynchronous Operation of Synchronous Generating Units / Protection to Trip Plant for Unstable Operation section in Appendix A (S5.2.5.10), including a method for plant with instability detection systems.⁷⁵
- in the Voltage and Reactive Power Control / Excitation Control System section in Appendix A (S5.2.5.13), including testing of secondary control modes to compliance methods 1 and 2.⁷⁶

Other minor changes were also made to accommodate technical requirements stemming from other rule changes since the Panel's last review in 2019. For more information on these changes, see appendix A.

5.4 The draft Template creates new tables for schedule 5.3 plant and schedule 5.3a plant

As discussed in section 1.1.1, the Template applies to all Registered Participants' plant that have performance standards determined in accordance with schedules 5.2, 5.3 and 5.3a of the NER. The Access Standards Package 1 rule change reflected this change by amending the formal name of the Template to exclude the word 'generator'.

The draft Template includes compliance tables for schedule 5.3 plant (registered loads and distribution networks) and schedule 5.3a plant (HVDC links) in Appendices B and C. The inclusion of these tables ensures that Registered Participants have sufficient guidance to institute and

73 The concept of a 'mid-point voltage' for reactive power capability was introduced by the Access Standards Package 1 rule - see section 4.1.1 of the [final determination](#) and clause S5.2.5.1(a0)(3).

74 The Access Standards Package 1 rule amended requirements for active power recovery after a fault, as well as rise time, settling time, commencement time for reactive current injection - see section 4.6 of the [final determination](#).

75 The Access Standards Package 1 rule change introduced new instability monitoring and detection requirements for new plant - see section 4.9 of the [final determination](#).

76 The Access Standards Package 1 rule introduced a requirement for both a primary and a secondary control mode for controlling voltage, reactive power or power factor - see section 4.10.4 of the [final determination](#) and clause S5.2.5.13(b)(2A).

maintain effective compliance programs for their schedule 5.3 plant and schedule 5.3a plant, which have not traditionally been a focus of the Template.

VeriConneX noted that several methodologies in the existing Template may be adaptable and can be mirrored for loads and HVDC links.⁷⁷ The Panel has largely adopted this approach when developing the draft Template, but has also incorporated technology-specific guidance for HVDC links, recognising that both voltage source converter-based HVDC links and line-commutated converter (LCC) HVDC links are present in the NEM.⁷⁸

The introduction of new compliance tables for schedule 5.3 plant and schedule 5.3a plant would promote power system security by facilitating the creation and maintenance of compliance programs for loads, distribution networks and HVDC links, all of which can have an adverse or material effect on security.

5.4.1 Application of the Template for non-registered persons who operate loads

AEMO considered that there will be very few schedule 5.3 plant connected to the power system that are (or will be) owned, operated or controlled by Registered Participants.⁷⁹ It encouraged the Panel to consider avenues to rectify a potential gap in the compliance framework where non-registered operators of schedule 5.3 plant may not be subject to the Panel's Template, and the associated requirements under rule 4.15 of the NER.⁸⁰

While the Panel notes AEMO's concerns, we consider that the application of rule 4.15 to non-registered Participants is beyond the scope of the Panel's review and remit. However, we note that the Commission has recently published a draft determination for the *Improving the NEM Access Standards - Package 2* rule change, which proposes that connection agreements with non-registered Schedule 5 Participants must provide reasonable assurance of ongoing compliance with their performance standards.⁸¹ This proposal would require the owners and operators of large loads (who may not be Registered Participants) to ensure ongoing compliance with their performance standards, without subjecting those parties to the requirements of rule 4.15 of the NER and the Template.

Despite the Template not formally applying to non-registered persons, the Panel considers that the revised Template could nonetheless provide useful guidance and information for these parties in developing any compliance programs for their large loads. We welcome stakeholder feedback on whether any aspects of the new load tables in Appendix B of the draft Template could be improved to provide more effective and useful guidance.

5.4.2 Application of the Template to existing HVDC links

In its submission, APA considered that the testing and monitoring regimes for HVDC links should reflect the grandfathering of existing performance standards under clause 11.186.6 of the NER, and should not impose additional obligations on existing plant.⁸²

The Panel notes that the Template must cover **all performance standards** and must reflect any newly added technical requirements that may not yet apply to any existing plant in the NEM.⁸³ The

77 VeriConneX, submission to the issues paper, p 13.

78 Older HVDC links, such as Basslink, use LCC technology, while newer HVDC links, such as Murraylink, use voltage source converter-based technologies.

79 AEMO, submission to the issues paper, p 5.

80 Ibid., pp 5-6.

81 AEMC, [Improving the NEM access standards – Package 2](#), draft determination, pp 44-45; draft rule, clause 5.3.7(b)(2).

82 APA, submission to the issues paper, p 4.

83 NER, rule 4.15(ca).

new tables in Appendix C of the draft Template cover all possible performance standards that may apply to HVDC links, ranging from version 1 to version 243 of the NER (including the newly added technical requirements from the Access Standards Package 1 rule, such as S5.3a.15 and S5.3a.16).

The inclusion of new tables for new technical requirements does not mean that new compliance requirements apply to existing plant. When determining which compliance methods are applicable and suitable for their plant, Registered Participants should refer to their existing performance standards, as provided to AEMO under clause 4.14(n) of the NER. For the avoidance of doubt, a revised Template would not seek, nor would it have the effect of, introducing new performance standard obligations on existing plant.

6 Draft recommendations for rule change requests to improve the compliance framework

As part of its review, the Panel has identified two potential changes to the NER that it considers would improve the effectiveness and efficiency of the compliance framework. The Panel is seeking stakeholders' views on the following potential rule change requests that are aimed at achieving this:

1. Allowing greater flexibility for the timing of the Panel's review of the Template to be coordinated with AEMO's review of the access standards and any related changes to the access standards rules
2. Expanding the scope of the Template in the NER to cover all performance standards and any related NER or market-based obligations.

The Panel expects that these proposals would result in relatively discrete changes to the NER, and could potentially be progressed via the expedited or fast-tracked rule change process (if they satisfy the relevant legal tests and the AEMC decides to progress under either of these processes). The Panel is also seeking views on any other suggestions for potential rule change requests that could improve future editions of the Template and the related compliance framework.

This chapter provides an overview and rationale for these potential rule change requests.

6.1 Aligning Template reviews with future changes to the NER technical standards

The Panel considers there would be benefits to aligning the timing of the Panel's review of the Template with AEMO's review of the access standards and any final rule made by the AEMC, where possible. The Panel considers that this can be achieved by removing the five-yearly requirement for the review to be completed from the date the previous Template is determined. This would give greater flexibility to the Panel to account for any changes to the technical standards in the NER following any final rule made by the AEMC.

The Panel considers that removing the timing requirements for the Template would provide the most flexibility and discretion for the Panel to commence a review of the Template. Under this proposal, triggers for a review could include new or revised technical standards in the NER, or the introduction of new technologies.

Removing the five-year timing requirement for the review would align it with other reviews under the Panel's remit that do not have a fixed review frequency. For example, neither the Reviewable Operating Incident Guidelines nor the Reliability and Emergency Reserve Trader Guidelines has a fixed review frequency under the NER. However, the Panel is seeking stakeholder feedback on whether a fixed review period should be maintained or removed. See further details and a list of consultation questions on this proposal in the sections below.

6.1.1 The current five-year frequency of the Panel's Template review is causing inefficiencies in the review process

As per clause 8.8.3(ba) of the NER, the Template must be reviewed at least every five years and at such other times as the AEMC may request. It is also a requirement under rule 4.15(c)(1) and (c)(4) for Registered Participants to institute and maintain a compliance program that:

- is consistent with the Template for compliance programs; and

- provides reasonable assurance of ongoing compliance with each applicable performance standard.

The Panel considers that the five-year review frequency can result in extended periods where the Template is not reflective of the access standards in the NER, thereby providing less effective guidance to Registered Participants. While the Panel can review the Template at any time within the five-year period or such other time as the AEMC requests, the current NER arrangements do not allow the Panel to delay a review to await the outcome of any rule change made by the AEMC in response to AEMO's review of the NER's technical requirements.

This is particularly of concern if the Panel is required to review the Template in line with the five-year cycle while the AEMC is progressing a rule change that may amend the access standards. As the Panel cannot amend the Template to reflect changes to the access standards that *may* occur, the Panel would conduct its review in line with the NER at the present time. If the AEMC subsequently amends the access standards through a rule change, the Template would not fully reflect the NER unless the AEMC requests that the Panel undertake another review of the Template.

Should the AEMC request another review, the Panel considers it would create additional operational and administrative burden for Registered Participants who, in accordance with rule 4.15(c)(3), must update their compliance programs to reflect any amendments to the Template made by the Panel within six months of publication.

6.1.2 **Enabling more flexible timing in the NER would streamline the review process and reduce potential operational and administrative burden on Registered Participants**

The Panel considers that this timing issue can be addressed if the rules provide flexibility that would allow it to defer its review until any potential rule changes on the access standards are complete. Allowing a more flexible arrangement would:

- streamline the review process and enable the Panel's review to be fully informed by any changes made to the NER access standards
- ensure the Template remains reflective of the access standards in the NER for longer, thereby providing more effective guidance
- avoid the need for Registered Participants to amend their compliance program within a short period of time if the AEMC requests that the Panel review the Template after any final rule is made to amend the access standards.

6.1.3 **The Panel has previously considered the cadence of Template reviews**

During the Template for Generator Compliance Programs Review 2015, the Panel sought stakeholder feedback on the frequency of reviews of the Template and whether the Template should continue to be reviewed at the scheduled frequency of at least every three years, on an alternative frequency, or after a specific trigger event.⁸⁴ At the time, the Panel was required under clause 8.8.3(ba) of the NER to review the Template at least every three years.

In the Panel's final report, it found that submitting stakeholders were of the view that the scheduled three-year frequency may not be required, and that the Panel should apply its judgement as to when a review is required.⁸⁵ The Panel further noted the AER's support for regular mandated reviews of the Template to ensure that it is both relevant and up to date. However, the

84 Reliability Panel, [Template for Generator Compliance Programs Review 2015](#), draft report, 26 March 2015, pp 26-27.

85 Reliability Panel, [Template for Generator Compliance Programs Review 2015](#), final report, 18 June 2015, p 32.

AER considered that the three-year timeframe could be extended, on the condition that the rules would allow a review to be undertaken on an 'as needs' basis.⁸⁶ On 3 December 2015, the AEMC made a final rule changing the frequency of the Template review from three to five years.⁸⁷

Question 1: Aligning Template reviews with future changes to the NER technical standards

- Do you support amending the NER to provide additional flexibility to align the Panel's review with AEMO's review of the access standards and any final rule made in response?
- Do you consider that this flexibility would improve the effectiveness of the Template and reduce administrative burden on Registered Participants?
- Do you consider there would be any issues with delaying a review of the Template to await the outcome of any rule change being progressed by the AEMC?
- Would removing the five-year time limit introduce an unsuitable level of certainty for when the Template may be updated?

6.2 The scope of the Template's guidance could be expanded in the NER

The Panel considers there is an opportunity to expand the Template's scope to align with the AER's expectations and NER requirements for a Registered Participant's compliance program in accordance with good electricity industry practice.⁸⁸ It proposes to achieve this by amending the NER to allow the Template to provide additional testing and monitoring methods on other NER or market-based obligations a Registered Participant may have, to the extent they relate to the performance standards.

6.2.1 The Panel considers that there is an opportunity for better alignment between the NER requirements and expectations on compliance programs

Under rule 4.15(ca) of the NER, the Template must cover all performance standards and define suitable testing and monitoring regimes for each one. At the same time, rule 4.15(c)(2) requires that a plant's compliance program include procedures to monitor the performance of the plant in a manner that is consistent with good electricity industry practice. The Panel also notes that a 2022 AER Compliance Bulletin on contingency FCAS states that a Registered Participant's compliance approach that solely focuses on its generator performance standard obligations would fall short of the AER's expectations in relation to compliance with the Market Ancillary Service Specification (MASS).⁸⁹

As such, there appears to be an opportunity for the Template to provide testing or monitoring regimes to assist Registered Participants in meeting these obligations. As such, this would better align the scope of the Template with the requirements for a Registered Participant's compliance program to be consistent with good electricity industry practice.

⁸⁶ Ibid.

⁸⁷ AEMC, [Review frequency for the Template for Generator Compliance Programs](#), final determination, 3 December 2015.

⁸⁸ NER, rule 4.15(c)(2).

⁸⁹ AER, [Contingency Frequency Control Ancillary Services \(FCAS\) Compliance Bulletin](#), 2022, p 10.

6.2.2 Expanding the scope of the Template would improve compliance outcomes

The Panel has also considered feedback provided in AEMO's submission to the issues paper, in which AEMO supported testing and monitoring methods that enable period validation that plant can meet performance standards or other market-based obligations concurrently or in the correct priority order.⁹⁰ For example, AEMO considers that primary frequency response should be maximised over satisfying a linear dispatch trajectory.⁹¹

Given the requirements of the Template in rule 4.15(ca) of the NER, the draft Template does not provide any specific testing or monitoring regimes for these other obligations. As outlined in section 3.5, the Panel has sought to address this feedback in the draft Template by acknowledging the additional market-based and NER obligations a Registered Participant may have, which relate to performance standards.

The Panel considers that amending the NER to expand the scope of the Template to allow it to provide specific testing and monitoring methods for performance standards and any other NER or market-based obligations, to the extent they relate to those performance standards, would better address this gap and lead to improved compliance outcomes. It would achieve this by providing Registered Participants with clearer guidance for their compliance program. It would also acknowledge the interdependence between (and the importance of) performance standards and other obligations in maintaining system security.

The Panel is seeking stakeholder feedback on this potential rule change request.

Question 2: Expanding the scope of the Template to cover performance standards and any related obligations

- Do you support amending the NER to clarify that the Template covers all performance standards as well as other obligations to the extent they relate to the performance standards?
- Would amending the scope of the Template improve its usefulness and guidance?
- Do you consider there would be any issues with expanding the scope of the Template?

90 AEMO, submission to the issues paper, p 11.

91 AEMO, submission to the issues paper, p 11.

Abbreviations

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AVR	Automatic voltage regulator
BESS	Battery energy storage systems
Commission	See AEMC
CPM	Continuous plant monitoring
FCAS	Frequency control ancillary service
FFR	Fast frequency response
HIL	Hardware-in-the-loop
HVDC	High voltage direct current
IBR	Inverter-based resource
IRP	Integrated Resource Provider
LCC	Line-commutated converter
MASS	Market ancillary service specification
MW	Megawatt
NEL	National Electricity Law
NEO	National electricity objective
NER	National Electricity Rules
NSP	Network service provider
OEM	Original equipment manufacturer
Panel	Reliability Panel
PFR	Primary frequency response
PFRR	Primary frequency response requirements
PSDCS	Power System Data Communication Standard
R2	A term that refers to plant data provided post-connection, but can also commonly refer to commissioning and post-commissioning processes.
SCR	Short circuit ratio
SoC	State of charge
VSC	Voltage source converter

A Summary list of changes made to the generator compliance tables

This Appendix provides a non-exhaustive list of changes made to ‘Table 1’ of the existing Template, to create Appendix A (compliance tables for schedule 5.2 plant). It also summarises stakeholder feedback in submissions on specific compliance methods and clauses, along with the Panel’s response to those suggestions.

Table A.1 only lists the changes made to Table 1 of the existing Template, and does not detail the specific testing methods for the new compliance tables for schedule 5.3 plant and schedule 5.3a plant. Refer to appendix B and C of the draft Template for the Panel’s proposed compliance tables for schedule 5.3 plant and schedule 5.3a plant.

Table A.1: Stakeholder feedback and summary list of changes made to ‘Table 1’ of the existing Template

Technical requirement and clause	Stakeholder comments in submissions	Changes made for draft Template
Reactive power capability (S5.2.5.1)	<ul style="list-style-type: none"> AEMO, p 9: Considered that the introduction of S5.2.5.1(a2) means that the Template should be updated to support operational verification that the plant does not alter connection point voltage when at zero active power. Engie, p 2: Considered it might be beneficial to have testing for S5.2.5.1 every 4 years, to be better aligned to other major compliance tests. Transgrid, p 5: Noted that some of the tests in the existing Template imply that they also apply to synchronous condensers, despite the tests referring to active power, such as testing reactive power capability at maximum active power. VeriConneX, p 16: Suggested clarifying that testing should address revised voltage range requirements (90% to 110% of nominal voltage); suggested addressing 	<p>The Panel has adopted the suggestions from AEMO, Transgrid and VeriConneX. While the Panel has not changed the suggested testing frequency to be 4 years as per Engie’s suggestion, we note that Participants are free to deviate from the Template’s suggestion, and that alignment with other testing periods may be good electricity industry practice (see section 4.7 of the draft Template).</p> <p>Summary of changes made:</p> <ul style="list-style-type: none"> Continuous monitoring method added, with supplementary testing every 5 years to cover any gaps. Existing methods 2 and 3 were combined. These were similar methods for synchronous machines. Existing method 5 changed to a supplementary method, to be used in support of other methods. Supplementary methods added for testing performance while not generating (at zero active power), and while generating units

Technical requirement and clause	Stakeholder comments in submissions	Changes made for draft Template
	<p>temperature derating requirements; and considered that the testing frequency could be extended to every 5 years for plant with robust monitoring, while maintaining 3 years for limited monitoring.</p>	<p>are disconnected.</p> <ul style="list-style-type: none"> Note added on compensating for reactive output during testing with other plant.
<p>Quality of electricity generated (S5.2.5.2)</p>	<ul style="list-style-type: none"> Transgrid, p 5: Queried the application of demonstrating compliance of power quality under S5.2.5.2 by measuring point-of-connection power quantities for synchronous condensers. 	<p>The Panel notes that the technical requirements of S5.2.5.2 apply to new synchronous condensers. For existing synchronous condensers, NSPs may be required to determine and document the performance standards for existing network synchronous condensers in respect of each technical requirement in schedule 5.2, to the extent that the requirement is relevant to that plant and is consistent with the actual capability of the plant (see clause 11.168.2 of the NER). A compliance program should ensure ongoing compliance with these documented performance standards.</p> <p>Summary of changes made:</p> <ul style="list-style-type: none"> Existing methods reordered to put continuous monitoring first.
<p>Response to frequency disturbances (S5.2.5.3)</p>	<ul style="list-style-type: none"> VeriConneX, p 16: Suggested clarifying that assessment should include fast frequency response (FFR) and primary frequency response (PFR) where plant provides these services. Also suggested reducing testing frequency to every 5 years, where comprehensive continuous monitoring is in place. 	<p>As explained in section 3.5, the Template cannot give guidance on matters that are not strictly part of a plant's performance standards. However, the draft Template includes references to the market ancillary service specification (MASS) and primary frequency response requirements (PFRR), noting that Participants should consider these requirements when developing and instituting their compliance programs.</p> <p>Summary of changes made:</p> <ul style="list-style-type: none"> Existing continuous monitoring method moved to be the first method.

Technical requirement and clause	Stakeholder comments in submissions	Changes made for draft Template
		<ul style="list-style-type: none"> Split the event analysis in the existing continuous monitoring method to cover different expected performance for trips and tests of <i>continuous uninterrupted operation</i>. Added references to ‘significant disturbance’ and ‘major disturbance’ examples in section 4.10 of the draft Template. Clarified guidance on model validation. Extended Method 3 (solar farms) to also cover BESS and wind farms.
<p>Response to voltage disturbances (S5.2.5.4)</p>	<ul style="list-style-type: none"> VeriConneX, p 16: Suggested clarifying the definition and measurement of <i>continuous uninterrupted operation</i>; suggested clarifying that assessment with high-speed monitoring should occur for all voltage disturbances, not just those causing trips; and that continuous monitoring should be the primary method, with periodic testing serving to validate edge conditions. 	<p>The Panel has not provided additional guidance on interpreting <i>continuous uninterrupted operation</i>, noting that the definition (and thus the performance standards) differ across versions of the NER and may include unique negotiated aspects due to a <i>negotiated access standard</i>. The Panel considers that Participants should refer to their existing performance standards and consult with their NSP and AEMO if there is confusion on what <i>continuous uninterrupted operation</i> means for their performance standard, in a real-world setting.</p> <p>The Panel agrees that where high-speed monitoring is in place, assessment should occur for all voltage disturbances (not just those that cause trips) - this has been reflected by referring to both ‘significant disturbances’ and ‘major disturbances’, which do not need to coincide with a plant trip.</p> <p>The Panel considers that the amended compliance principles and the proposed guidance on continuous monitoring have the effect that, where practical, Participants should consider instituting continuous monitoring regimes. See compliance principle 2 and section 4.6 of the draft Template for more information.</p>

Technical requirement and clause	Stakeholder comments in submissions	Changes made for draft Template
		<p>Summary of changes made:</p> <ul style="list-style-type: none"> Existing methods reordered to put continuous monitoring first. Continuous monitoring section updated to explicitly cover both plant trips and tests of <i>continuous uninterrupted operation</i>, with a reference to disturbance examples. Testing of 415 V drives has been changed to a supplementary method. Wording on model validation has been updated and clarified.
<p>Response to disturbances following contingency events (S5.2.5.5/S5.2.5.5A)</p>	<ul style="list-style-type: none"> AEMO, p 8: Notes that the existing Template does not currently contain a dedicated compliance method for S5.2.5.5A, and that changes may be necessary to ensure compliance against new time-based standards for post-fault recovery and reactive current response. VeriConneX, p 16: Suggested updating methodologies to reflect the new S5.2.5.5A requirements for reactive current injection (including rise time, settling time and commencement time requirements for reactive current); and suggested establishing that every fault event should be assessed, not just those causing trips. 	<p>The Panel has adopted AEMO and VeriConneX's suggestion to incorporate changes made to S5.2.5.5/S5.2.5.5A as a result of the Access Standards Package 1 rule.</p> <p>Summary of changes made:</p> <ul style="list-style-type: none"> Included criteria from recent rule changes, such as commencement time, rise time, settling time and active power recovery in the 'basis for compliance assessment' column Placed event monitoring as the primary method by reordering existing methods. Continuous monitoring method split between two new methods for synchronous and asynchronous plant. The new methods give more detail on what performance is expected to be verified through events. References added to examples of 'significant disturbance' and 'major event'. Added a supplementary method to periodically check control system settings against commissioned values and model

Technical requirement and clause	Stakeholder comments in submissions	Changes made for draft Template
		settings.
Quality of electricity generated and continuous uninterrupted operation (S5.2.5.6)	N/A	<p>Summary of changes made:</p> <ul style="list-style-type: none"> Existing methods reordered to put continuous monitoring first. Reference added to an example of 'major event'.
Partial load rejection (S5.2.5.7)	N/A	<p>Summary of changes made:</p> <p>Example event added to the event definitions, for completeness.</p>
Protection from power system disturbances (S5.2.5.8)	N/A	<p>Summary of changes made:</p> <ul style="list-style-type: none"> Explicit mention of over-frequency events added to the continuous monitoring section, linked to event examples. Reference to runback schemes, emergency frequency control schemes and trip schemes added. Old method 3 was difficult to interpret as it was an in-service monitoring method that referenced active testing. Much of the content was a duplicate of S5.2.5.9. As such, the method has been removed.
Protection systems that impact on power system security (S5.2.5.9)	N/A	<p>Summary of changes made:</p> <p>Three similar existing methods were consolidated to one method, with the verification of the protection settings database as a supplementary method.</p>
Asynchronous operation of synchronous generating units / Protection to trip	<ul style="list-style-type: none"> AEMO, p 12: In relation to runback schemes, SPS actions or other power system initiated control signals, the Template should include how a generator should be compliant with their negotiated performance standard. Noted that broader aspects of runback schemes (and 	<p>The Panel has not included specific guidance on runback schemes (or similar) in the draft Template for S5.2.5.10, noting that requirements for them are generally quite bespoke. Participants should consider their performance standard and any other requirements that may apply to them under other processes, such</p>

Technical requirement and clause	Stakeholder comments in submissions	Changes made for draft Template
plant for unstable operation (S5.2.5.10)	<p>similar) may be out of scope of the Template.</p> <ul style="list-style-type: none"> EnergyAustralia, p 3: Considered that the new Template should include additional methods for compliance under clause S5.2.5.10. Transgrid, p 5: Noted that there are tests to validate stability detection for S5.2.5.10 that are done during commissioning, and are not covered in the existing Template. Also noted that the existing Template does not cover validation tests of communication failure mechanisms. Transgrid, p 10: Suggested removing the requirement for relays to be checked for every event. VeriConneX, p 17: Suggested substantially revising to address new requirements for instability detection and response; suggested developing new methods for validating detection of oscillations or unstable operation, as well as contribution factors of the plant when instability is detected; and suggested distinguishing between approaches for synchronous plant versus inverter-based resources. 	<p>as emergency frequency control schemes, when developing their own compliance programs.</p> <p>The Panel has included a new method that suggests routine testing and/or calibration for instability detection systems, including confirming that the hierarchy of actions based on trigger conditions is working as intended. We welcome stakeholder feedback on whether this new method can be improved, noting that the Template cannot provide specific guidance for the full range of possible performance standards under the new technical requirements of S5.2.5.10, given that instability detection methods, equipment, and the agreed hierarchy of actions can vary greatly.</p> <p>In response to Transgrid’s comment about tests of communication failure mechanisms, the Panel has added a reference to the Communications Failure Guidelines at the end of Appendix A.</p> <p>Summary of changes made:</p> <ul style="list-style-type: none"> Added a new method for asynchronous plant with instability detection systems.
Frequency control / Frequency responsiveness and/or governor stability (S5.2.5.11)	N/A	<p>Summary of changes made:</p> <ul style="list-style-type: none"> Changed wording on model validation for the monitoring method. Added references to example events.
Stability / Impact on network capability	N/A	No changes other than structural and minor wording changes.

Technical requirement and clause	Stakeholder comments in submissions	Changes made for draft Template
(S5.2.5.12)		
Voltage and reactive power control / Excitation control system (S5.2.5.13)	<ul style="list-style-type: none"> • AEMO, p 9: Considered that the Template should support operational verification that the plant is able to control voltages at the highest system impedance identified under NER S5.2.5.13(m). • AEMO, p 11: Noted that extreme state of charge (SoC) conditions may affect BESS performance and voltage control. • AEMO, p 12: Control mode operation and switching between primary and secondary control modes should be included in the compliance table. • VeriConneX, p 16: Suggested updating methodologies to address multiple modes of operation and validate mode transitions. Considered that for continuous monitoring, testing frequency could be adjusted based on the frequency of suitable validation events. 	<p>The Panel has largely adopted AEMO’s and VeriConneX’s suggestions for S5.2.5.13.</p> <p>Summary of changes made:</p> <ul style="list-style-type: none"> • Added new methods (synchronous/asynchronous) for continuous monitoring, supplemented with active testing every 5 years or after plant change. • Added reference step tests in both primary and secondary control modes (where applicable), including steps into limiters • Added a note in the section preamble on low and high solar irradiance conditions, reactive power on demand modes and low and high State of Charge (SoC) conditions. • Provided better guidance for analogue and digital automatic voltage regulators (AVRs) • Added a reference to a ‘major event’ example • Changed old method 3 (checking performance of relevant sub-systems) to a supplementary method, to be used in support of other methods. • Added a supplementary method to periodically check control system settings against commissioned values and model settings.
Active power control (S5.2.5.14)	<ul style="list-style-type: none"> • AEMO, p 9: Notes that the current Template does not include an explicit method for testing ongoing compliance with dispatch following obligations. 	<p>As explained in section 3.5, the Template cannot give guidance on matters that are not strictly part of a plant’s performance standards. However, the draft Template includes references to AEMO’s dispatch procedure, noting that Participants should consider requirements under the procedure when developing and instituting</p>

Technical requirement and clause	Stakeholder comments in submissions	Changes made for draft Template
		<p>their compliance programs.</p> <p>Summary of changes made:</p> <ul style="list-style-type: none"> • The 'One-off installation' method was difficult to interpret and has been removed. • New continuous monitoring method added, with active testing on plant change. • Active testing on plant change added to the 'non-compliance with dispatch market systems' method.
Short circuit ratio (S5.2.5.15) (New)	<ul style="list-style-type: none"> • AEMO, p 8: Noted that explicit SCR compliance is a system security requirement for IBR, and that the Template could ensure compliance programs include model-supported evidence of stability at low SCR. 	<p>The Panel agrees that the Template should cover S5.2.5.15 of the NER, and has added a method to the draft Template accordingly.</p> <p>Summary of changes made:</p> <p>New method added prompting Participant to request AEMO's opinion on the potential impact of proposed alterations.</p>
Voltage phase angle shift (S5.2.5.16) (New)	N/A	<p>Summary of changes made:</p> <p>New method added. Protection testing (where appropriate). Model based methods following plant change.</p>
Remote monitoring (S5.2.6.1) Communications equipment (S5.2.6.2)	<ul style="list-style-type: none"> • AEMO, p 11: Noted that the existing Template does not include rows for either of S5.2.6.1 or S5.2.6.2. Also considered that the Template could add a note directing Registered Participants to requirements in the Power System Data Communications Standard (PSDCS) and NER 4.11. 	<p>The existing Template did include two rows relevant to S5.2.6.1 and S5.2.6.2 - these have been carried over to the draft Template. The Panel has adopted AEMO's suggestion to refer to NER 4.11 by including it in the preamble to both sections. The draft Template also adopts AEMO's suggestion to include a reference to the PSDCS by including a cross-reference at the end of Appendix A, together with a list of other documents that Registered Participants should consider when developing their compliance programs.</p> <p>Summary of changes made:</p>

Technical requirement and clause	Stakeholder comments in submissions	Changes made for draft Template
		<ul style="list-style-type: none"> • Reference to NER 4.11.1 added. • Reference to NER 4.11.3 added.
Power station / generation auxiliary supplies (S5.2.7)	N/A	No change other than structural and minor wording changes.
Fault level / current (S5.2.8)	N/A	No change other than structural and minor wording changes.

Note: This table is a non-exhaustive summary list of the changes made to the existing Template when developing the draft Template. Refer to the draft Template for more information on specific changes.