

# SUBMISSION TO THE AUSTRALIAN ENERGY MARKET COMMISSION – COMPLIANCE TEMPLATE REVIEW 2026 – DRAFT REPORT (REL0095)

Submitted by:  
Marissa McCauley  
Submission made in a personal capacity

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## Professional Disclaimer

This submission is provided in my personal capacity. The views expressed are my own and do not represent the views of my employer, past employers, or any affiliated organisation.

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## 1. Introduction and Strategic Context

This submission is provided in response to the Reliability Panel's Draft Report on the **Template for Compliance Programs**. As the National Electricity Market (NEM) undergoes an unprecedented shift toward Inverter-Based Resources (IBR), the mechanisms for ensuring technical compliance must evolve from static, "snapshot" testing to dynamic, data-driven assurance.

I support the Panel's objective to streamline compliance whilst maintaining the integrity of the power system, specifically through the integration of **Schedule 5.3 and 5.3a plant**. However, to be truly robust, the Template must address the "blind spots" created by rapid firmware iterations and the administrative overhead of multi-asset portfolio management.

## 2. Analysis of the Proposed Assessment Principles

### 2.1 Principle 2: Preference for Continuous Plant Monitoring (CPM)

The preference for CPM over periodic testing is a critical advancement.

- **The "Evidence Gap" Challenge:** Whilst CPM is superior, the Template must define the "minimum viable data set" required to prove compliance during periods of inactivity (e.g., when a plant is not dispatched or is in "hibernation").

- **Recommendation:** The Panel should include a provision for "Synthetic Performance Validation" where CPM data is unavailable, allowing participants to use high-fidelity model simulations to bridge data gaps between major system events.

## 2.2 Principle 5: Management of Plant Changes and Firmware

Modern GRC design requires a risk-based approach to software changes.

- **Firmware Risk Categorisation:** The current Draft Report treats "firmware and software updates" as a broad category. This creates a risk where minor security patches trigger the same compliance assessment as a fundamental change to the inverter control logic.
- **Recommendation:** I propose a "Tiered Change Framework" within the Template:
  - **Tier 1 (Administrative/Security):** Simple notification to AEMO with no mandatory re-testing.
  - **Tier 2 (Minor Tuning):** Assessment via simulation/model-in-the-loop.
  - **Tier 3 (Material Change):** Full physical testing or high-fidelity Hardware-in-the-Loop (HIL) validation.

## 3. Expansion of Technical Tables (S5.3 & S5.3a)

The inclusion of Battery Energy Storage System (BESS) and High Voltage Direct Current (HVDC) links is vital, but the following technical nuances must be captured in the final Template:

- **Addressing Model Drift:** Beyond specific asset types, the Template must account for the "silent killer" of technical integrity—**Model Drift**. As noted in my recent analysis, unvalidated firmware updates and aging components can cause a physical asset's performance to deviate from its registered R2 digital twin.
- **Merchant Collision Risk:** This is not merely a technical issue; it represents a significant merchant risk. A single technical non-conformance during a price spike can lead to immediate regulatory intervention and substantial revenue loss.
- **State of Charge (SoC) Impacts:** For BESS, the Template should explicitly state that compliance with active power frequency response (S5.2.5.11) is subject to energy availability. Compliance programs should define how "energy-limited" status is communicated to the market to avoid false-positive compliance breaches.
- **HVDC Interactions:** For HVDC links, the Template needs to address the interaction between the link and the AC networks at both ends. Compliance should be assessed on a "system-impact" basis rather than just terminal performance.

## 4. Regulatory Harmonisation and Efficiency

### 4.1 Decoupling Review Cycles

- **Support for the 5-Year Alignment:** I strongly endorse the proposal to decouple the Template review from the fixed 5-year NER cycle, instead aligning it with AEMO's review of access standards. This prevents "regulatory drag" where the Template lags behind the technical standards it is meant to monitor.

### 4.2 The "Single Source of Truth" Model

- **Overlapping Obligations:** Participants currently manage compliance across the NER, the Market Ancillary Service Specification (MASS), and Primary Frequency Response (PFR).
- **Recommendation:** The Panel should utilise this review to create a "Universal Compliance Mapping." If a participant demonstrates compliance with an access standard through a MASS-compliant data recorder, that evidence should automatically satisfy the corresponding Template requirement without additional reporting.

## 5. Transition and Implementation Logistics

The proposed six-month transition period is technically optimistic for large-scale generators.

- **Feedback on the Proposed Six-Month Window:** The Draft Report proposes a mandatory six-month period for participants to align their programs with the new Template. Whilst I support the urgency of the transition, this timeframe is technically optimistic for participants managing complex portfolios.
- **Implementation Constraints:** Meaningful updates often require third-party OEM involvement for firmware audits and the extraction of high-speed data.
- **Proposed Solution:** In response to the Panel's request for feedback on this duration, I recommend a **tiered transition**:
  - **6 Months:** For purely administrative updates to existing programs.
  - **12 Months:** For complex programs requiring new physical monitoring hardware or extensive updates to Inverter-Based Resource (IBR) models.

## 6. Summary of Recommendations

| Topic             | Proposed Action  | Benefit  |
|-------------------|--|--|
| <b>Firmware</b>   | Introduce a 3-Tier Risk Framework for software changes.            | Reduces administrative burden for minor patches.   |
| <b>Data Gaps</b>  | Allow "Synthetic Validation" (simulations) to supplement CPM.      | Ensures continuity of compliance during low-dispatch periods.  |
| <b>Format</b>     | Release the Template as an editable, machine-readable spreadsheet. | Directly supports the AER's data-driven surveillance goals and enables automation in Enterprise GRC systems. |
| <b>Transition</b> | Adopt a tiered 6-to-12 month transition window.                    | Ensures high-quality, technically sound compliance programs.   |

## 7. Conclusion

A robust compliance framework is the bedrock of a secure power system. By adopting a more granular approach to firmware management and providing a longer, more realistic transition runway, the Reliability Panel will ensure that the 2026 Template is not just a regulatory hurdle, but a tool for genuine risk mitigation.

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