

16 December 2014

Reliability Panel
Australian Energy Market Commission
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Dear Reliability Panel

Template for Generator Compliance Programs Review 2015

AEMO is the independent market and power system operator in South Eastern Australia, with a range of operational and planning functions which are carried out in accordance with the National Electricity Rules and the National Electricity Objective. AEMO is also the transmission network service provider in the state of Victoria. Among AEMO's functions relevant to this review of the template for generator compliance programs (template) are negotiation of generator connections and registration of performance standards, negotiating with generators regarding remedial plans for any observed non-compliance with technical performance standards, and responsibility for power system security in the NEM.

Compliance with performance standards is fundamental for AEMO to maintain the reliability and security of the power system. In determining power system operating limits, the constraint equations used in generation dispatch, and associated procedures AEMO assumes that generating plant will perform in accordance with its registered performance standard, so any variation in performance can cause the power system to be operated insecurely. Depending on the operating state of the power system, non-compliance with some performance standards will also increase the impact of power system incidents. Performance standards also need to be clear and transparent so that NSPs, AEMO and generators can confidently act on a common understanding of power system operating limits.

AEMO welcomes the opportunity to provide input into this review of the template for generator compliance programs (template). The mix of generation technology has changed across the NEM since the previous review of the template in 2012, with approximately 12 renewable energy generators connecting to the NEM since this time. This has given AEMO the opportunity to engage increasingly with a range of operators of these generating technologies, including in relation to compliance with technical performance standards. Informed by these engagements, AEMO has observed areas where good electricity industry practice appears to be evolving.

The following information is therefore provided to assist the Reliability Panel in considering whether adjustments should be made to the template to reflect some of the observed changes in industry practice.

1. Plant Changes

Within the template a number of potential triggers are identified where it would be good practice to test plant to demonstrate that it complies with the associated technical

performance standard. For some performance standards, testing is triggered when there is “*plant change*”. The template offers a definition of *plant change*,

“when the replacement of components or equipment or the refurbishment or change of system takes place and that the relevant Generator considers that event may affect the plant’s capability to meet the particular performance standard. An appropriate process needs to be established under the Generator’s compliance management framework to ensure all changes to plant are noted and appropriately reviewed as to whether they constitute a plant change event in respect to each performance standard”¹

While *plant change* is identified as a trigger for testing of some performance standards, there are a number of performance standards where *plant change* is not identified as a trigger for testing – these are listed below:

- Response to Voltage Disturbances
- Partial Load Rejection
- Protection from Power System Disturbances
- Protection Systems that Impact on Power System Security
- Asynchronous Operation of Synchronous Generating Units/Protection to Trip Plant for Unstable Operation
- Frequency Control / Frequency Responsiveness and/or Governor Stability and Governor System
- Voltage and Reactive Power Control / Excitation Control System
- Communications Equipment
- Power Station Auxiliary Transformers /Supplies

Noting that the template is a guide to good practice in demonstrating compliance with technical performance standards, AEMO considers that the absence of *plant change* from some of the above standards warrants review. This is supported by our observation of current practice, where we see cases where testing is being carried out following *plant change* for some of the above standards, even though the template does not identify it as good practice. We therefore suggest the Panel consider whether *plant change* should be added to each of the above standards in the template.

2. Observation Regarding Continuous Monitoring Equipment

As the price and availability of generating plant monitoring equipment continues to make it more accessible, industry practice is moving toward continuous monitoring techniques in lieu of periodic testing, particularly for new generating plant. Where plant is normally running (i.e. not peaking plant that rarely operates), continuous plant monitoring could be seen to have a number of benefits over periodic testing, not only in relation to demonstrating compliance with technical standards, but also in providing information to plant owners. AEMO has observed that the adoption of continuous monitoring options is increasingly an outcome of the connection negotiation process for new plants. The Panel might therefore wish to consider identifying continuous monitoring as the preferred option in the “suitable testing and

¹ Reliability Panel AEMC, Template for Generator Compliance Programs, 27 June 2012, p.9

monitoring methodology column” of the template in some cases. A number of performance standards in the template already recognise continuous monitoring as an example of good practice, and strengthening these to be a preferred option could be a means of providing greater confidence of a plant’s resilience to system events and its ability to maintain continuous operation during events such as extraneous voltage and frequency.

3. Guidance for Dry Stored Generators

AEMO developed the Guidance for Dry-Storage Generators² in 2013. AEMO prepared and published the document to provide guidance on what AEMO considers to be good electricity industry practice in relation to meeting generator technical performance standard obligations during long-term storage of registered generating facilities in the NEM. In that context, the document adds to the guidance provided in the Reliability Panel’s template, which may have been prepared with generating plant that is routinely operating in mind.

In preparing the guidance for dry-stored generators, AEMO consulted with the AER and the Reliability Panel, both of which have endorsed the document:

- The Reliability Panel indicated to AEMO that it endorsed the following statement being included in the guide: “The Reliability Panel considers the requirements outlined in this document represent a reasonable guide to assist generators in completing the template for generator compliance programs, established by the Reliability Panel under the National Electricity Rules, where relevant”.
- The AER indicated that it the following statement could be included: “The AER has confirmed that the approach outlined in this guideline is consistent with its expectations with respect to compliance with the NEM, and the AER’s program for auditing generator compliance programs. Any questions related to compliance should be raised with the AER”.

AEMO notes that as at November 2014, 1164 MW of generation had been placed into dry-storage, with an additional 1313 MW permanently withdrawn for decommissioning across the NEM since 2012.

AEMO considers there would be value in reviewing the template, taking into account the different status of generator units connected to the NEM. Some of these plants are only generating in high demand scenarios, others are seasonal generators, while others can be idle for the majority of the year. In principle, a plant that has been offline for a significant period of time needs to undertake testing of some nature before it is placed back online. If plant spends significant times offline but may be required to commence operation with little notice, some form of ongoing testing may be appropriate to provide reasonable assurance that it will comply if started.

Appropriate testing and maintenance of the plant helps avoid unforeseen performance issues that may materially affect power system security if a generator is returned to service with uncertain performance following a long period of storage.

Now that the Reliability Panel is reviewing the template, and the trend towards storage of generating plant is continuing, AEMO suggests that it is timely for the Reliability Panel to consider adopting the guideline in some form within the template. This would continue to

² AEMO, 2013, Guidance for dry-storage generators (<http://www.aemo.com.au/Electricity/Market-Operations/Generator-Performance-Standards>)

facilitate the provision of good electricity industry practice in relation to generator compliance programs in a single place under the Panel.

4. Inclusion of solar farms

In the 2012 review the Reliability Panel decided that new technologies, such as large-scale solar, had not been established at the time and agreed that should such technologies eventuate, then new provisions in the template might be needed to articulate good practice for that technology.

Large scale solar is now entering the market including:

- The Royalla solar farm is a 20MW plant connected to the NEM in New South Wales.
- A 100MW solar generator is currently being commissioned at Nyngann in New South Wales: and
- A 20 MW plant at Capital East New South Wales is currently in the advanced planning phase.

AEMO recommends that in light of the current connections to the NEM, it is timely for the Reliability Panel to consider updating Method 1 and 4 of the Reactive Power Capability performance in the template under the column 'Notes' to include the words "and solar farms" in this review.

If you have further questions regarding this submission, please contact myself on (08) 8201 7371, or via email david.swift@aemo.com.au.

Yours sincerely

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Executive General Manager Corporate Development