



Compliance Bulletin No.6

## **Instrument Transformer Testing**

December 2011

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## Shortened forms

AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
CTTWG	Current Transformer Testing Working Group
CTs	Current Transformers
Electricity Law	National Electricity Law
Electricity Rules	National Electricity Rules
IEC	Information Exchange Committee
LNSP	Local Network Service Provider
NEM	National Electricity Market
RMEC	Retail Market Executive Committee
Statement of Approach	AER Enforcement and compliance – Statement of Approach
VTs	Voltage Transformers

## **Executive summary**

The National Electricity Rules (Electricity Rules) require instrument transformers to be tested every 10 years for accuracy, unless an alternate test plan has been approved by the Australian Energy Market Operator (AEMO). Instrument transformers are designed to transform the voltages or currents present in the high voltage transmission and distribution systems to lower values that can be utilised by metering devices. If an instrument transformer is inaccurate, this can affect the overall accuracy of the metering installation.

In 2011, the Australian Energy Regulator (AER) was made aware of a failure by industry to test instrument transformers in accordance with the Electricity Rules. The AER was also notified by AEMO that industry had formed a Current Transformer Testing working group (CTTWG) to identify an acceptable sample testing approach.

The AER is concerned by the potential harm untested instruments transformers may have on the National Electricity Market (NEM). However, given the work of the CTTWG and the current lack of industry guidance on testing methodologies, the AER has chosen to issue a compliance bulletin. The AER is seeking that industry demonstrate a willingness to comply by testing a sample of their instrument transformers over 12 months.

# 1 Introduction

The AER is responsible for compliance and enforcement with respect to the National Electricity Law (Electricity Law), the Electricity Rules and associated Regulations. The AER has detailed its methods for compliance and enforcement in the *AER Enforcement and Compliance – Statement of Approach* (Statement of Approach), available on the AER’s website. The Statement of Approach explains our approach to monitoring compliance, how we respond to potential breaches and how we decide whether to take enforcement action.

Chapter 7 of the Electricity Rules governs the operation of metering arrangements in the NEM. It contains obligations relating to metering installations used for the measurement of energy, the collection and provision of metering data and the accuracy of metering installations. It also establishes the role of the responsible person (RP), which is the registered participant responsible for the provision, installation and maintenance of a metering installation, including the testing of the metering installation.<sup>1</sup>

The RP, which is a financially responsible market participant (eg. Market Generator or Retailer) or a local network service provider (LNSP), must ensure that the testing of the metering installation complies with the requirements of the Electricity Rules, the metrology procedure and procedures authorised under the Electricity Rules. This encompasses all components of a metering installation, including instrument transformers.<sup>2</sup>

Instrument transformer is the collective name given to current transformers (CTs) and voltage transformers (VTs). The Electricity Rules require CTs and VTs to be tested every 10 years unless an asset management strategy has been developed and approved by the AEMO.

The AER has identified a systemic compliance issue related to testing of low voltage CTs in accordance with the 10 year timing requirement. Therefore, this compliance bulletin is focused on the testing requirements of low voltage CTs. In future, the AER may broaden its approach to include other types of instrument transformers if it is considered necessary to ensure industry compliance.

## 2 Purpose

The purpose of this compliance bulletin is to educate registered participants about their obligations and set out the AER’s expectations in relation to further testing. The

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<sup>1</sup> The RP is also responsible for the validation, substitution and estimation of metering data for type 5 to 7 metering installations in accordance with the metrology procedure.

<sup>2</sup> Under the Electricity Rules a ‘metering installation’ is defined as *the assembly of components including the instrument transformer, if any, measurement element(s) and processes, if any, recording and display equipment, communications interface, if any, that are controlled for the purpose of metrology and which lie between the metering point(s) and the point at or near the metering point(s) where the energy data is made available for collection.*

AER is not providing immunity or otherwise permitting any breach of the Electricity Rules. The AER may choose to take enforcement action in relation to any breach at any time.

### **3 Current levels of compliance**

The AER monitors the conduct of relevant participants in the NEM to screen for non-compliance. Monitoring relies on public data and information provided by the AEMO and other entities. The AER uses this information to assess participants' compliance with the Electricity Rules. Among other things, the AER is responsible to monitor and enforce compliance with the requirement to test metering installations.

In March 2011, AEMO advised the AER that a number of RPs had failed to test instrument transformers in accordance with the 10 year timing requirement set out in Table S7.3.2 of chapter 7 of the Electricity Rules.

In July 2011, the AER sent a letter to all the relevant RPs to ascertain how many instrument transformers were overdue for testing. Further, it inquired into the approach RPs were taking to ensure compliance with the 10 year timing requirement under the Electricity Rules.

The responses received indicate that while some respondents had demonstrated a strong commitment to ensure compliance with this obligation, others have made limited attempts to comply. In particular, many RPs had failed to test their low voltage CTs. For example, one RP had not tested any of its 15,000 low voltage CTs in the last ten years. Further, many RPs who were retailers did not accurately know how many instrument transformers they were responsible for or how many were due for testing. The non-compliance appeared to relate primarily to those that were retailers and rely on others to fulfil the obligation on their behalf.

### **4 CT Testing Working Group**

As a result of the AER's concerns and the extent of non-compliance, AEMO's Information Exchange Committee (IEC) and Retail Market Executive Committee (RMEC) formed a CTTWG. The group comprises 12 members representing LNSPs, retailers and metering providers.

The purpose of the CTTWG was to investigate matters relevant to the testing of low voltage CTs and to develop an industry-wide approach to the testing of low voltage CTs. This included the development of an appropriate sampling testing methodology.

### **5 Relevant Rules**

This section summarises the provisions of the Electricity Rules that are relevant to this compliance bulletin.

Chapter 7 of the Electricity Rules governs the operation of metering arrangements in the NEM, including the relevant rules related to the testing of instrument transformers.

#### *Rule 7.2.5(d)(2)*

Rule 7.2.5(d)(2) of the Electricity Rules requires RPs to ensure the components<sup>3</sup>, accuracy and testing of each of its metering installation complies with the requirements of the Electricity Rules, the metrology procedure and procedures authorised under the Electricity Rules. Rule 7.2.5 (d) is also a civil penalty provision.

#### *Schedule 7.3.1(a)*

Schedule 7.3.1(a) provides that the RP must ensure that equipment comprised in a purchased metering installation has been tested to the required class accuracy with less than the uncertainties set out in Table S7.3.1 of chapter 7 of the Electricity Rules. Table S7.3.2 requires RPs to test instruments transformers at least every 10 years.

#### *Schedule 7.3.1 (c)*

Schedule 7.3.1(c) provides that the RP (or any other person arranging for testing) must ensure that testing of the metering installation is carried out in accordance with the testing requirements under the Electricity Rules<sup>4</sup> or in accordance with an asset management strategy that defines an alternative testing practice (other than time-based) determined by the RP and approved by AEMO.

## **5.1 Rule enforcement**

The AER may issue infringement notices or institute proceedings in a Court in relation to a breach of the Electricity Rules.

The relevant rule in relation to meter testing identified above is a civil penalty provision, so the AER may issue an infringement notice of \$20,000. The AER may alternatively initiate proceedings in a Court. The Courts can make a range of orders or require a civil penalty to be paid. For a body corporate, the civil penalty can be:

- (A) an amount not exceeding \$100 000; and
- (B) an amount not exceeding \$10 000 for every day during which the breach continues.<sup>5</sup>

## **6 Approach to compliance**

Based on the information provided by AEMO and the registered participants responsible for metering installation testing, the AER believes that the failure to comply with the low voltage CT testing requirements of the Electricity Rules is widespread.

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<sup>3</sup> Metering installation components are defined by Rule 7.3.1 of the Electricity Rules. It includes CTs and VTs.

<sup>4</sup> Rule 7.6.1(a) of the Electricity Rules

<sup>5</sup> S.58 of the Electricity Law



While in many cases metering providers, who are not directly captured by the Rules, undertake the actual testing of metering installations, the obligation to ensure that testing occurs ultimately lies with the RP defined under the Electricity Rules.

As noted above, the AER could instigate enforcement action, including seeking civil penalties. However, given the apparent lack of clear industry guidance on an acceptable approach to sample testing, and testing methodologies, and the work of the CTTWG, the AER has decided, at this stage, on the following approach.

In the AER's view, there are two options available to RPs to demonstrate a willingness to comply. These include:

1. Undertaking an alternative testing practice approved by AEMO
2. Testing a representative 10% sample of low voltage CTs from all family types over the coming 12 months.

These two approaches are explained further below.

## **6.1 Alternative testing practice approved by AEMO**

As set out above, S7.3.1(c) of the Electricity Rules provides that the RP may test metering installations in accordance with an asset management strategy that defines an alternative testing practice (other than time-based) determined by the RP and approved by AEMO.

To date, AEMO has rejected alternative (sample) testing practices for low voltage CTs proposed by participants, based on the lack of empirical evidence supporting sample testing as a way of validating the accuracy of all instrument transformers. Coming out of the CTTWG process, AEMO has agreed to publish a guideline regarding alternative testing practices for instrument transformers (the guideline).

The guideline will set out what AEMO deems to be an acceptable alternative testing practice. For RPs to satisfy the requirements of the guideline, their asset management plan will need to include a low voltage CT testing plan which is consistent with the guideline.

Under the guideline, RPs who seek to undertake an alternative testing practice will be required to submit their test plans to AEMO by April 2012, with the test program commencing from July 2012.

It should be noted that if a RP adopts this approach it does *not* affect the AER's discretion to take any enforcement action it considers appropriate at any time prior to July 2012. Furthermore, the AER may take enforcement action after July 2012 if there is ongoing non-compliance (for example, the RP fails to fulfil the testing practice approved by AEMO).

## **6.2 12 month instrument transformer testing**

If the RP fails to have an alternative testing practice approved by AEMO, the RP should test at least a representative 10 per cent sample of its low voltage CTs from all family types which are due for testing between 1 July 2012 and 30 June 2013. Where records of historical test results are not available, RPs should assume that the instrument transformer in question has not been tested in accordance with the timing requirement in the Electricity Rules.

Before the commencement of tests, the RP should provide a copy of their test plan to AEMO. The plan should list those low voltage CTs that the RP proposes to test within the next 12 months and the proposed dates for the tests. Plans should be provided to AEMO by April 2012.

Test results should be provided to AEMO within the 12 month period or upon a request from AEMO. AEMO will record this information in a central depository and will report the results back to the AER.

It should be noted that if a RP satisfies the 10 per cent threshold as set out above, this does *not* affect the AER's discretion to take any enforcement action it considers appropriate at any time in relation to any RPs, even if there is a single instance of non-compliance. However, the AER will have regard to the fact that a RP has satisfied or proposes to satisfy the 10 per cent threshold when deciding whether to take enforcement action.

This 12 month instrument transformer testing option is an interim solution. At the end of the 12 month period, the AER will assess whether a further 10%, or another sample size of low voltage CTs, should be tested by RPs who have adopted this approach.

### **6.3 Next steps**

In July 2012, the AER will seek advice from AEMO on the number of RPs which have not provided AEMO with a low voltage CT test plan. Through 2012-13, the AER will monitor closely the extent of test results submitted to AEMO.

In July 2013, the AER will seek advice from AEMO on whether any RPs have not met the 10 per cent threshold or complied with their alternative testing regime agreed with AEMO.