

## **CHAPTER 7**

## **7. Metering**

### **7.1 Introduction to the Metering Chapter**

#### **7.1.1 Purpose**

- (a) The purpose of this Chapter is to set out the rights and obligations of *Registered Participants* and the rights, obligations and qualifications of *Metering Providers* associated with the measurement of electrical *energy*, and the provision of *metering data* and *B2B Data* and the performance of *B2B Communications*.
- (b) This Chapter sets out provisions relating to:
  - (1) *revenue metering installations* and *check metering installations* used for the measurement of *active energy* and, where appropriate, *reactive energy*;
  - (2) collection and provision of *metering data* and *B2B Data*;
  - (3) provision, installation and maintenance of *metering installations* and the provision and servicing of *data collection systems*;
  - (4) accuracy of *metering installations*;
  - (5) inspection, testing and audit requirements;
  - (6) security of, and rights of access to, *metering data* and *B2B Data*;
  - (7) competencies and standards of performance; and
  - (8) the *metering database*, including *metering register* requirements.
- (c) Nothing in this Chapter precludes the application of evolving technologies and processes as they become available in accordance with the *Rules*.

#### **7.1.2 Obligations of Market Participants to establish metering installations**

- (a) Before participating in the *market* in respect of a *connection point*, a *Market Participant* must ensure that:
  - (1) the *connection point* has a *metering installation* and that the *metering installation* is registered with AEMO;
  - (2) either:

- (i) it has become the *responsible person* under clause 7.2.2 and has advised the *Local Network Service Provider*; or
  - (ii) it has sought an offer and, if accepted, entered into an agreement under clause 7.2.3; and
- (3) prior to registration, a *NMI* has been obtained by the *responsible person* for that *metering installation*.
- (b) *AEMO* may refuse to permit a *Market Participant* to participate in the *market* in respect of any *connection point* in relation to which that *Market Participant* is not in compliance with its obligations under paragraph (a).

## **7.2 Responsibility for Metering Installation**

### **7.2.1 Responsible person**

The *responsible person* is the person responsible for the provision, installation and maintenance of a *metering installation* in accordance with:

- (1) this Chapter 7; and
- (2) the *metrology procedure*.

### **7.2.2 Responsibility of the Market Participant**

- (a) A *Market Participant* may elect to be the *responsible person* for a *metering installation* that is a type 1, 2, 3 or 4 *metering installation*.
- (b) A *Market Participant* is the *responsible person* for a type 1, 2, 3 or 4 *metering installation* if:
  - (1) the *Market Participant* elects not to request an offer from, or does not accept the offer of, the *Local Network Service Provider* for the provision of a *metering installation* under clause 7.2.3; or
  - (2) an agreement under clause 7.2.3 is terminated due to a breach by the *Market Participant*.

### **7.2.3 Responsibility of the Local Network Service Provider**

- (a) The *Local Network Service Provider* is the *responsible person* for:
  - (1) a type 1, 2, 3 or 4 *metering installation* connected to, or proposed to be connected to, the *Local Network Service Provider's network* where the *Market Participant* has accepted the *Local Network Service Provider's* offer in accordance with paragraphs (b) and (c); and

- (2) a type 5, 6 or 7 *metering installation* connected to, or proposed to be connected to, the *Local Network Service Provider's network* in accordance with paragraphs (d) to (i).

#### **Types 1 - 4 metering installations**

- (b) A *Market Participant* may request in writing an offer from the *Local Network Service Provider* to act as the *responsible person* where a type 1, 2, 3 or 4 *metering installation* is, or is to be, installed.
- (c) If the *Local Network Service Provider* receives a request under paragraph (b), the *Local Network Service Provider* must:
  - (1) offer to act as the *responsible person* in respect of that *metering installation*; and
  - (2) provide the *Market Participant* with the terms and conditions on which the offer is made,

no later than 15 *business days* after the *Local Network Service Provider* receives the written request from the *Market Participant*.

#### **Types 5 -7 metering installations**

- (d) The *Local Network Service Provider* may provide a *Market Participant* with a standard set of terms and conditions on which it will agree to act as the *responsible person* for a type 5, 6 or 7 *metering installation*.
- (e) Where the *Local Network Service Provider* has not provided the *Market Participant* with the standard set of terms and conditions referred to in paragraph (d), the *Market Participant* must request an offer from the *Local Network Service Provider* to act as the *responsible person* where a type 5, 6 or 7 *metering installation* is, or is to be, installed.
- (f) The *Local Network Service Provider* must, within 15 *business days* of receipt of the request under paragraph (e), make an offer to a *Market Participant* setting out the terms and conditions on which it will agree to act as the *responsible person*.
- (g) The terms and conditions of an offer made under paragraphs (d) or (f) must:
  - (1) be fair and reasonable; and
  - (2) not have the effect of unreasonably discriminating between *Market Participants*, or between the customers of a *Market Participant*.
- (h) In relation to an offer made under paragraphs (d) or (f), a *Market Participant*:

- (1) must accept the offer; or
- (2) may dispute the offer in accordance with rule 8.2.
- (i) If a *Market Participant* accepts the offer in accordance with paragraph (h), the *Local Network Service Provider*:
  - (1) becomes the *responsible person*; and
  - (2) must provide *AEMO* with the *NMI* for the *metering installation* within 10 *business days* of entry into a *connection agreement* under clause 5.3.7 with that *Market Participant*.

#### **7.2.4 Joint metering installations**

- (a) Where more than one *Market Participant* wishes to use a *metering installation* at a particular *connection point* for the purpose of satisfying its obligations, then each of them may separately enter into the agreements referred to in clause 7.2.3 or some or all of them may jointly enter into those agreements for the use of a shared *metering installation*.
- (b) Where more than one *Market Participant* uses a *metering installation* which is provided, installed and maintained by a person other than the *Local Network Service Provider*, they must agree and notify *AEMO* as to which of them is the *responsible person* for that *metering installation*.
- (c) In the absence of such agreement, *AEMO* may nominate one of the *Market Participants* to be the *responsible person* for that *metering installation*.

#### **7.2.5 Role of the responsible person**

##### **Engagement of a Metering Provider**

- (a) A *responsible person* must for each *metering installation* for which it is responsible:
  - (1) engage a *Metering Provider* for the provision, installation and maintenance of that installation unless the *responsible person* is the *Metering Provider*; or
  - (2) subject to the *metrology procedure*, allow another person to engage a *Metering Provider* to install that installation.
- (b) The *responsible person* must:
  - (1) enter into an agreement with a *Metering Provider*:
    - (i) for the provision, installation and maintenance of the *metering installation* by the *Metering Provider*, where the *responsible*

- person* has engaged the *Metering Provider* under paragraph (a)(1); or
  - (ii) for the maintenance of the *metering installation*, where another person has engaged the *Metering Provider* under paragraph (a)(2); and
- (2) provide *AEMO* with the relevant details of the *metering installation* as specified in schedule 7.5 within 10 *business days* of obtaining a *NMI* in accordance with 7.3.1(e).
- (c) The *responsible person* may elect to terminate an agreement entered into under paragraph (b)(1)(i) after the *metering installation* is installed and if such an agreement is terminated, the *responsible person* must enter into a new agreement with another *Metering Provider* for the maintenance of the *metering installation*.

### **Metering installations**

- (d) The *responsible person* must, for each of its *metering installations*:
  - (1) ensure that the installation is provided, installed and maintained in accordance with the *metrology procedure*;
  - (2) ensure that the components, accuracy and testing of the installation complies with the requirements of the *Rules* and the *metrology procedure*;
  - (3) provide and maintain the security control of the installation in accordance with clause 7.8.2;
  - (4) ensure that a *communications link* is installed and maintained to the *telecommunications network* and includes, where required for the connection to that *telecommunications network*, a modem and isolation equipment approved under telecommunications regulations;
  - (5) provide access to a *telecommunications network* to facilitate the requirement of rules 7.7 and 7.12(aa);
  - (6) provide to *AEMO* (when requested), the information specified in schedule 7.5 for new or modified installations;
  - (7) not replace a device that is capable of producing *interval energy data* and is already installed in a *metering installation*, with a device that only produces *accumulated energy data* unless the *metrology procedure* permits the replacement to take place;
  - (8) ensure for any type 5 *metering installation* where the annual flow of electricity through the *connection point* is greater than the type 5

*accumulation boundary*, that the *metering data* is extracted or emanates from the *data logger* as *interval energy data*; and

- (9) allow the alteration of the installation for which that person is responsible with another installation in accordance with clause 7.3.4.
- (e) The *Market Settlements and Transfer Solution Procedures* may specify that an incoming *responsible person* is responsible for the *metering installation*:
  - (1) on the day that a *market load* transfers from one *financially responsible Market Participant* to another *financially responsible Market Participant* for the period within that day; or
  - (2) on any other day.
- (f) AEMO must establish guidelines, in accordance with the *Rules consultation procedures* in relation to the role of the *responsible person* consistent with this Chapter 7.

#### **7.2.6 [Deleted]**

#### **7.2.7 Registration of metering installations**

- (a) AEMO must establish and *publish* a registration process to facilitate the application of this Chapter 7 to *Market Participants* and *Network Service Providers* in respect of:
  - (1) new *metering installations*;
  - (2) modifications to existing *metering installations*; and
  - (3) decommissioning of *metering installations*,

including the provision of information on matters such as application process, timing, relevant parties, fees and *metering installation* details.

#### **7.2.8 Market Settlement and Transfer Solution Procedures**

- (a) AEMO, in consultation with *Registered Participants* in accordance with the *Rules consultation procedures*, must develop and *publish Market Settlement and Transfer Solution Procedures*.
- (b) AEMO may from time to time amend the *Market Settlement and Transfer Solution Procedures* in consultation with *Registered Participants* in accordance with the *Rules consultation procedures*. AEMO must *publish* any such amendment to the *Market Settlement and Transfer Solution Procedures*.

- (c) The *Market Settlement and Transfer Solution Procedures* may include roles and responsibilities for *Metering Providers*.
- (d) All *Registered Participants* and *Metering Providers* must comply with the *Market Settlement and Transfer Solution Procedures*.
- (e) If a *Registered Participant* or *Metering Provider* breaches the requirements of the *Market Settlement and Transfer Solution Procedures*, *AEMO* may send to that *Registered Participant* or *Metering Provider* a notice in writing setting out the nature of the breach.
- (f) If the *Registered Participant* or *Metering Provider* remains in breach for more than 5 *business days* after receipt of the notice from *AEMO*, *AEMO* must advise:
  - (1) the authority responsible for administering *jurisdictional electricity legislation* in the *participating jurisdiction* in which the *connection point* to which the breach relates is located; and
  - (2) the *AER*.

#### **7.2A.1 B2B e-Hub**

*AEMO* must provide and operate a *B2B e-Hub*. As required by *B2B Procedures* and subject to clause 7.2A.4(k), *Local Retailers*, *Market Customers* and *Distribution Network Service Providers* must use the *B2B e-Hub* for *B2B Communications*.

#### **7.2A.2 Information Exchange Committee**

- (a) *AEMO* must establish the *Information Exchange Committee* in accordance with the *Information Exchange Committee Election Procedures*.
- (b) The *Information Exchange Committee* must only be constituted by:
  - (1) three *Distribution Network Service Provider Members*;
  - (2) three *Local Retailer/Market Customer Members*; and
  - (3) two *Independent Members*.

*Local Retailers* and *Market Customers* together and *Distribution Network Service Providers* must, in relation to categories of *Members* in relation to which they are entitled to vote under the *Information Exchange Committee Election Procedures*, use their reasonable endeavours to ensure that the *Information Exchange Committee* is established in accordance with the *Information Exchange Committee Election Procedures*. Each *Member* must serve on the *Information Exchange Committee* for the term specified in the *Information Exchange Committee Election Procedures* and must only be removed or replaced in accordance with the *Information Exchange Committee Election Procedures*.



- (c) *Local Retailers, Market Customers and Distribution Network Service Providers* must ensure that the *Information Exchange Committee Election Procedures* include provisions in respect of *Member* qualifications, procedures for voting for *Members*, the term of a *Member*, determination and publication of results of elections and the removal and resignation of a *Member*.
- (d) The first *Information Exchange Committee Election Procedures* must be published by the time this clause 7.2A.2 comes into operation. The *Information Exchange Committee Election Procedures* may only be amended in accordance with the procedure set out in the *Information Exchange Committee Election Procedures* and with the support of:
  - (1) not less than 75% of all *Registered Participants* registered by AEMO as *Distribution Network Service Providers* under clause 2.5.1; and
  - (2) not less than 75% of that class of *Registered Participants* comprising:
    - (A) *Registered Participants* who are included on the list of *Local Retailers* published by AEMO; and
    - (B) *Market Customers* who are not included on the list of *Local Retailers* published by AEMO and who are not a *related body corporate* of a *Local Retailer*.

Neither a *Registered Participant* nor AEMO is obliged to comply with an amendment to the *Information Exchange Committee Election Procedures* unless that amendment is made in accordance with this clause. AEMO must publish the current version of the *Information Exchange Committee Election Procedures*.

- (e) A *Registered Participant* must ensure that a person it nominates as a *Member* for a category satisfies the requirements for that particular category of *Member* as set out in the *Information Exchange Committee Election Procedures*.
- (f) The first *Information Exchange Committee Operating Manual* must be published by the time this clause 7.2A.2 comes into operation. The *Information Exchange Committee Operating Manual* may only be amended in accordance with the procedure set out in the *Information Exchange Committee Election Procedures* and with the support of:
  - (1) not less than 75% of all *Registered Participants* registered by AEMO as *Distribution Network Service Providers* under clause 2.5.1; and
  - (2) not less than 75% of that class of *Registered Participants* comprising:
    - (A) *Registered Participants* who are included on the list of *Local Retailers* published by AEMO; and

- (B) *Market Customers* who are not included on the list of *Local Retailers* published by AEMO and who are not a *related body* corporate of a *Local Retailer*.

Neither a *Registered Participant* nor AEMO is obliged to comply with an amendment to the *Information Exchange Committee Operating Manual* unless that amendment is made in accordance with this clause. AEMO must *publish* the current version of the *Information Exchange Committee Operating Manual*.

- (g) The functions and powers of the *Information Exchange Committee* include:
- (1) developing, consulting on and making an *Information Exchange Committee Recommendation*;
  - (2) managing the ongoing development of the *B2B Procedures* and any changes to them;
  - (3) establishing the *Information Exchange Committee Working Groups*;
  - (4) developing, consulting on and approving the *Information Exchange Committee Works Programme*;
  - (5) reviewing and considering work completed by the *Information Exchange Committee Working Groups*;
  - (6) developing proposed amendments to the *Information Exchange Committee Election Procedures*; and
  - (7) developing proposed amendments to the *Information Exchange Committee Operating Manual*.
- (h) The *Information Exchange Committee* must provide to AEMO the current version of the *B2B Procedures* and the *Information Exchange Committee Works Programme*.
- (i) AEMO must *publish* the *B2B Procedures* and the *Information Exchange Committee Works Programme* provided to it by the *Information Exchange Committee*.
- (j) The *Information Exchange Committee*, AEMO, *Local Retailers*, *Market Customers* and *Distribution Network Service Providers* must comply with the *Information Exchange Committee Election Procedures* and the *Information Exchange Committee Operating Manual*.
- (k) The *Information Exchange Committee* must meet at least once every three months.

- (l) The quorum for a meeting of the *Information Exchange Committee* is five *Members* comprising two *Distribution Network Service Provider Members*, two *Local Retailer/Market Customer Members* and one *Independent Member*.
- (m) A decision of the *Information Exchange Committee* is not valid and enforceable unless it is made as follows:
  - (1) an *Information Exchange Committee Recommendation* requires the support of six or more *Members*;
  - (2) any decision that a proposal under clause 7.2A.3(a) should not be considered further after initial consideration under clause 7.2A.3(b), and any decision to not recommend *B2B Procedures* or a *change* to the *B2B Procedures* for approval by AEMO requires the support of six or more *Members*;
  - (3) any decision to approve the *Information Exchange Committee Works Programme* requires the support of six or more *Members*; and
  - (4) any other decision by the *Information Exchange Committee* requires the support of five or more *Members*.
- (n) Each *Member* in performing his or her duties or in exercising any right, power or discretion must have regard to the *B2B Objective* and the *B2B Principles* and must:
  - (1) at all times act honestly;
  - (2) exercise the degree of care and diligence that a reasonable person in a like position would exercise;
  - (3) not make improper use of information acquired by virtue of his or her position to gain, directly or indirectly, an advantage for himself or herself, or the *Registered Participants* by which he or she is employed and/or which nominated him or her to be a *Member*; and
  - (4) not make improper use of his or her position to gain, directly or indirectly, an advantage for himself or herself or the *Registered Participants* by which he or she is employed and/or which nominated him or her to be a *Member*.
- (o) Subject to clause 7.2A.2(n), a *Distribution Network Service Provider Member* may take into account the interests of *Distribution Network Service Providers* in performing his or her duties or in exercising any right, power or discretion.
- (p) Subject to clause 7.2A.2(n), a *Local Retailer/Market Customer Member* may take into account the interests of *Local Retailers* and *Market Customers*

in performing his or her duties or in exercising any right, power or discretion.

- (q) The *Information Exchange Committee* must prepare the *Information Exchange Committee Annual Report* for the period ended 31 December in the first calendar year following the establishment of the *Information Exchange Committee* and the year ended 31 December in each year thereafter. The *Information Exchange Committee* must provide the *Information Exchange Committee Annual Report* to AEMO by the following 31 March and AEMO must publish that *Information Exchange Committee Annual Report*.
- (r) The *Information Exchange Committee Annual Report* must contain the information required by the *Information Exchange Committee Operating Manual*.
- (s) By 28 February each year the *Information Exchange Committee* must prepare a draft budget for the following *financial year* in a form which is consistent with the budget procedures of AEMO. Following discussion with AEMO the *Information Exchange Committee* must prepare a budget by 31 March and provide that budget to AEMO. When AEMO publishes its budget pursuant to clause 2.11.3, AEMO must advise the *Information Exchange Committee* of the final budget for the *Information Exchange Committee* for that *financial year*.

### 7.2A.3 Method of making and changing B2B Procedures

- (a) AEMO, a *Local Retailer*, a *Market Customer* or a *Distribution Network Service Provider* may propose *B2B Procedures*, or a *change* to the *B2B Procedures*, to the *Information Exchange Committee*. The proposal must be submitted in writing to the *Information Exchange Committee* and must provide details of the proposal and supporting information, including reasons for any *change* or *B2B Procedure*.
- (b) Within 25 *business days* of receipt by the *Information Exchange Committee* of a proposal under clause 7.2A.3(a), the *Information Exchange Committee* must meet to determine whether on a *prima facie* basis making new *B2B Procedures* and/or *changing* the *B2B Procedures* is warranted having regard to the *B2B Objective* and the *B2B Principles*.
- (c) If, after its consideration under clause 7.2A.3(b), the *Information Exchange Committee* decides that the proposal made under clause 7.2A.3(a) should not be considered further, the *Information Exchange Committee* must within five *business days* provide written reasons for that decision to whichever of AEMO, the *Local Retailer*, *Market Customer* or *Distribution Network Service Provider* who made the proposal.

- (d) If, after its consideration under clause 7.2A.3(b), the *Information Exchange Committee* decides that the proposal made under clause 7.2A.3(a) should be considered further, the *Information Exchange Committee* must develop the proposal into a *B2B Proposal* (which may differ from the proposal originally made) and an accompanying *B2B Procedures Change Pack* for consultation. The *Information Exchange Committee* must seek AEMO's advice on whether a conflict with the *Market Settlement and Transfer Solution Procedures* arises from the *B2B Proposal* and include any such advice in the *B2B Procedures Change Pack*.
- (e) The *Information Exchange Committee* must comply with the *Rules consultation procedures* in relation to the *B2B Proposal*. For the purposes of rule 8.9(b), the nominated persons to whom notice must be given are *Local Retailers, Market Customers, Distribution Network Service Providers* and AEMO. For the purposes of the notice, the particulars of the matters under consultation must include a copy of the *B2B Procedures Change Pack*.
- (f) AEMO must *publish* the notice of consultation within 3 *business days* of its receipt and must notify all *Local Retailers, Market Customers* and *Distribution Network Service Providers* of the consultation.
- (g) In addition to the matters which rule 8.9(g) requires be included in the draft report, the draft report must contain details of the *Information Exchange Committee's* consideration of the *B2B Objective* and each of the *B2B Principles* and how the *Information Exchange Committee* has considered each submission made having regard to the *B2B Objective* and the *B2B Principles*.
- (h) In addition to the matters which rule 8.9(k) requires be included in the final report, the final report must contain details of the *Information Exchange Committee's* consideration of the *B2B Objective* and each of the *B2B Principles* and how the *Information Exchange Committee* has considered each submission having regard to the *B2B Objective* and the *B2B Principles*.
- (i) The *Information Exchange Committee* can conclude not to recommend the proposed *B2B Procedures* be made or not to recommend a *change* to the *B2B Procedures*. Alternatively, the *Information Exchange Committee* may make an *Information Exchange Committee Recommendation* and in doing so may recommend a different *B2B Procedure* or *change* to the *B2B Procedures* from that originally proposed under clause 7.2A.3(a). A conclusion not to recommend the proposed *B2B Procedures* be made or not to recommend a *change* to the *B2B Procedures*, or the making of an *Information Exchange Committee Recommendation*, must be included in the final report required under rule 8.9(k).
- (j) In coming to a conclusion not to recommend the proposed *B2B Procedures* or not to recommend a *change* to the *B2B Procedures*, or in making an

*Information Exchange Committee Recommendation*, the *Information Exchange Committee* must seek to achieve the *B2B Objective* and, in seeking to achieve the *B2B Objective*, must have regard to the *B2B Principles*. To the extent of any conflict between the *B2B Principles*, the *Information Exchange Committee* may determine the manner in which those principles can best be reconciled or which of them should prevail.

- (k) If the *Information Exchange Committee* recommends not to make the proposed *B2B Procedures* or not to *change* the *B2B Procedures*, AEMO must take no further action in respect of the proposal. If the *Information Exchange Committee* makes an *Information Exchange Committee Recommendation*, AEMO must consider the *Information Exchange Committee Recommendation* and must approve that *Information Exchange Committee Recommendation*, unless it concludes that:
  - (1) the *Information Exchange Committee* has failed to have regard to the *B2B Objective* and/or the *B2B Principles*;
  - (2) the *Information Exchange Committee Recommendation* would conflict with the *Market Settlement and Transfer Solution Procedures*; or
  - (3) the *Information Exchange Committee* has not followed the *Rules consultation procedures* (as supplemented by this clause 7.2A.3).
- (l) In considering an *Information Exchange Committee Recommendation*, AEMO must not consider:
  - (1) the manner in which the *Information Exchange Committee* considered the *B2B Objective* and the *B2B Principles* or the weight given by the *Information Exchange Committee* to the different *B2B Principles* or the balancing between them; or
  - (2) the merits of the *Information Exchange Committee Recommendation*.
- (m) AEMO must not amend the *Information Exchange Committee Recommendation* and must not conduct any further consultation on the *Information Exchange Committee Recommendation* prior to making its *B2B Decision*.
- (n) AEMO must *publish* and make available on its website its *B2B Decision*, with reasons, within 10 *business days* of receiving an *Information Exchange Committee Recommendation* from the *Information Exchange Committee*.
- (o) If AEMO decides not to approve an *Information Exchange Committee Recommendation*, the reasons for the *B2B Decision* which are to be *published* and made available in accordance with clause 7.2A.3(n) must include an explanation of the following, where applicable:

- (1) to which of the *B2B Objective* and/or the *B2B Principles AEMO* considers the *Information Exchange Committee* failed to have regard;
- (2) how the *Information Exchange Committee Recommendation* would give rise to a conflict with the *Market Settlement and Transfer Solution Procedures*; or
- (3) how the *Information Exchange Committee* did not follow the *Rules consultation procedures* (as supplemented by this clause 7.2A.3).

#### **7.2A.4 Content of the B2B Procedures**

- (a) The *B2B Procedures* may provide for *B2B Communications*.
- (b) For each *B2B Communication*, the *B2B Procedures* must contain:
  - (1) the required *B2B Data* inputs and *B2B Data* outputs;
  - (2) the required business process flows and related timing requirements;
  - (3) the required content and format;
  - (4) the required delivery method; and
  - (5) the back-up delivery method to be used where the required delivery method cannot be used.
- (c) The *B2B Procedures* may include obligations in relation to the information to be maintained and provided to support *B2B Communications*.
- (d) For each *B2B Communication* the *B2B Procedures* may also include:
  - (1) details for testing and certification;
  - (2) provisions relating to contingency arrangements;
  - (3) examples of how a *B2B Communication* may operate in practice; and
  - (4) the method for dealing with a dispute (which may include provisions deferring the use of the dispute resolution procedures in the *Rules* and access to the courts).
- (e) The *B2B Procedures* or a *change* to the *B2B Procedures* must also include a date for the commencement of the *B2B Procedures* or the *change*. That date must be not less than 10 *business days* after the related *B2B Decision* is *published*. The *Information Exchange Committee* may extend that date following consultation with *AEMO* and affected *Registered Participants*. If the date is extended by the *Information Exchange Committee*, the

*Information Exchange Committee* must provide *AEMO* with that date and *AEMO* must *publish* that date.

- (f) A *change* to the *B2B Procedures* may also include provisions relating to a date for the end of a process related to a *B2B Communication*. That date may be after the date of commencement of the *change* and may be left to the discretion of the *Information Exchange Committee*. If the date is set by the *Information Exchange Committee*, the *Information Exchange Committee* must provide *AEMO* with that date and *AEMO* must *publish* that date.
- (g) The *B2B Procedures* may be constituted by one or more separate documents.
- (h) The *B2B Procedures* may include roles and responsibilities for *Metering Providers*.
- (i) Subject to the *Information Exchange Committee* following the requirements placed upon it in the *Rules* in relation to the *B2B Procedures*, *Local Retailers*, *Market Customers*, *Distribution Network Service Providers*, *AEMO* and *Metering Providers* must comply with the *B2B Procedures*.
- (k) *Local Retailers*, *Market Customers* and *Distribution Network Service Providers* may, on such terms and conditions as agreed between them, communicate a *B2B Communication* on a basis other than as set out in the *B2B Procedures*, in which case the parties to the agreement need not comply with the *B2B Procedures* to the extent that the terms and conditions agreed between them are inconsistent with the *B2B Procedures*.
- (l) *B2B Data* is *confidential information* and may only be disclosed as permitted by the *Rules*.
- (m) If a *change* to the *B2B Procedures* is of a minor or procedural nature or is necessary to correct a manifest error in the *B2B Procedures*, the *Information Exchange Committee* may recommend the *change* to *AEMO* and need not consult on the *change* in accordance with the *Rules consultation procedures*. Clauses 7.2A.3(i) to (o) (inclusive) and clauses 7.2A.4(e) and (f) apply to such a *change* (with any necessary modifications). In addition to *publishing* its *B2B Decision* in relation to such a *change*, *AEMO* must notify all *Local Retailers*, *Market Customers* and *Distribution Network Service Providers* of the *change*.

#### **7.2A.5 Transition of B2B Communications from the Market Settlement and Transfer Solution Procedures**

- (a) At 9.00am (EST), on the day immediately following the day on which the *Information Exchange Committee* is established pursuant to clause 7.2A.2(a) ("**transition day**");



- (1) those *Market Settlement and Transfer Solution Procedures* entitled “MSATS Procedures: B2B Procedures” are deemed to have been the subject of an *Information Exchange Committee Recommendation* under clause 7.2A.3(i) and to have been approved by NEMMCO in accordance with clause 7.2A.3(k), and are deemed to be *B2B Procedures*. Such a deemed *Information Exchange Committee Recommendation* and deemed *B2B Decision* are not within the scope of clauses 8.2.5(d1) to (d4) (see clause 8.2A.2(i)); and
  - (2) any proposed new *Market Settlement and Transfer Solution Procedures* entitled “MSATS Procedures: B2B Procedures”, or a change to any *Market Settlement and Transfer Solution Procedures* entitled “MSATS Procedures: B2B Procedures”, which is the subject of consultation by NEMMCO in accordance with the *Rules consultation procedures* on the transition day is deemed to be a valid *B2B Proposal* and, to the extent the *Rules consultation procedures* have been complied with by NEMMCO, is deemed to comply with the consultation requirements detailed in clause 7.2A.3(e).
- (b) All things done in relation to a *B2B Communication* the subject of those *Market Settlement and Transfer Solution Procedures* entitled “MSATS Procedures: B2B Procedures” immediately before the transition day must under the *B2B Procedures* continue to have the same status, operation and effect as they would have under the *Market Settlement and Transfer Solution Procedures* entitled “MSATS Procedures: B2B Procedures”. In particular, this clause 7.2A.5 does not disturb the status, operation or effect of any *B2B Communication* or any proceeding, liability, rights or other matter or thing made, done, effected, obtained, given, accrued, incurred, acquired, existing or continuing before the transition day.

#### **7.2A.6 Cost Recovery**

- (a) The costs of the development of the *B2B Procedures*, the costs of the establishment and operation of the *Information Exchange Committee* (including the engagement costs of specialist advisers, and the remuneration and payment of the reasonable expenses of the *Independent Members*), all of which must be set out in the budget prepared by the *Information Exchange Committee* pursuant to clause 7.2A.2(s) and the *Information Exchange Committee Annual Report*, and the operational costs associated with any service provided by AEMO to facilitate *B2B Communications* (including providing and operating a *B2B e-Hub*) must be paid by AEMO in the first instance and recouped by AEMO as *Participant fees*.
- (b) Subject to clause 7.2A.6(a), the cost of any *Member* (other than an *Independent Member*) and involvement of individuals in the *Information Exchange Committee Working Groups* is not to be borne by AEMO.

- (c) The cost to a *Local Retailer*, *Market Customer* and *Distribution Network Service Provider* of implementing and maintaining the necessary systems and processes to ensure compliance with *B2B Procedures* must be met by that *Local Retailer*, *Market Customer* or *Distribution Network Service Provider*.

## 7.3 Metering Installation Arrangements

### 7.3.1A Metering Installation Requirements

- (a) Each *connection point* must have a *metering installation*.
- (b) *Energy data* is to be based on units of watthour (*active energy*) and where required varhour (*reactive energy*).

### 7.3.1 Metering installation components

- (a) A *metering installation* must:
  - (1) either contain a device that has a visible or an equivalently accessible display of the cumulative total *energy* measured by that *metering installation* (at a minimum) or, be classified as an *unmetered connection point* in accordance with schedule 7.2 and in which case such a device is not required;
  - (2) be accurate in accordance with clause 7.3.4;
  - (3) have *electronic data transfer* facilities from the *metering installation* to the *metering database* in accordance with clause 7.3.5;
  - (4) contain a *communications link* in accordance with clause 7.2.5(d)(4);
  - (5) be secure in accordance with rule 7.8;
  - (6) have electronic data recording facilities such that *active energy* can be collated in accordance with clause 7.9.3;

[**Note:** For the avoidance of doubt, clause 7.3.1(a)(6) relates to a metering installation and not a meter.]

- (7) be capable of separately registering and recording flows in each direction where bi-directional *active energy* flows occur;
- (8) if a device is used in accordance with subparagraph (1), have a *measurement element* for *active energy* and if required in accordance with schedule 7.2 a *measurement element* for *reactive energy*, both of which have an internal or external *data logger*;

- (9) be capable of delivering data from the site of the *metering installation* to the *metering database*;
  - (10) include facilities on site for storing the *interval energy data* for a period of at least 35 days if the *communications link* has a capability for actual *metering data* as required by clause 7.11.1(b) from the site of the *metering point* and the *metering installation* includes the *measurement element(s)* and the *data logger* at the same site;
  - (11) include facilities on site for storing the *interval energy data* for a period of at least 200 days or such other period as specified in the *metrology procedure* if the *communications link* does not have a capability for actual *metering data* as required by clauses 7.11.1(c) or (d) and the *metering installation* includes the *measurement element(s)* and the *data logger* at the same site;
  - (12) include *metering installation* database facilities for storing *energy data* for a period of at least 35 days where the *metering installation* provides for a remote *data logger*;
  - (13) include *metering installation* database facilities for storing *energy data* for a period of at least 35 days where *metering data* is determined for an *unmetered connection point*; and
  - (14) if a type 6 *metering installation*, include facilities capable of continuously recording by a visible display, the total accumulated *energy* supplied through it over a period of at least 12 months, in accordance with subparagraph (1).
- (b) A *metering installation* may consist of combinations of:
- (1) a *current transformer*;
  - (2) a *voltage transformer*;
  - (3) secure and protected wiring from the *current transformer* and the *voltage transformer* to the *meter*;
  - (4) an appropriately constructed panel on which the *meter* and the *data logger* are mounted;
  - (5) a *meter* and a *data logger* which may be either internal or external to the *meter* where a *data logger* may be located at a site remote from the site of a *meter* and a *data logger* may consist of a *metering installation* database that is under the control of the *Metering Provider*;

- (6) communication interface equipment such as a modem, isolation requirements, telephone service, radio transmitter and data link equipment;
  - (7) one or more *communications links* which facilitate the collection of *energy data* from a *data logger* or a *measurement element* so as to enable a remote interface to the *telecommunications network* to be established;
  - (8) data processing facilities, including algorithms for the preparation of a load pattern(s), for the conversion of *accumulated energy data* or *estimated energy data* into *metering data*;
  - (9) techniques for the estimation of *market loads* in accordance with schedule 7.2;
  - (10) auxiliary electricity supply to the *meter*;
  - (11) an alarm circuit and monitoring facility;
  - (12) a facility to keep the *metering installation* secure from interference;
  - (13) test links and fusing;
  - (14) summation equipment; or
  - (15) several *metering points* to derive the *metering data* for a *connection point*.
- (c) Either a *Local Network Service Provider* or a *Market Participant* may, with the agreement of the *responsible person* (which cannot be unreasonably withheld), arrange for a *metering installation* to contain features in addition to, or which enhance, the features specified in paragraph (b).
- (d) The *responsible person* for a *metering installation* must apply to the *Local Network Service Provider* for a National Metering Identifier ('*NMI*').
- (e) The *Local Network Service Provider* must issue for each *metering installation* a unique *NMI*.
- (f) The *responsible person* must register the *NMI* with *AEMO* in accordance with procedures from time to time specified by *AEMO*.
- (g) Where a *metering installation* is used for purposes in addition to the provision of *metering data* to *AEMO* then:
- (1) that use must not cause an infringement of the requirements of the *Rules*;

- (2) the *responsible person* must co-ordinate with the persons who use the *metering installation* for such other purposes; and
  - (3) the *metering installation* must comply with the requirements for operational *metering* as detailed in Chapter 4 of the *Rules*.
- (h) A *Metering Provider* is entitled to physical access to the site of a *metering installation* in accordance with clause 5.3.7(g) and schedule 5.6.

**Requirements for metering installations for non-market generating units**

- (i) In addition to the requirements in paragraphs (a) to (g), a *metering installation* for a *non-market generating unit* must:
- (1) be capable of separately registering and recording flows in each direction where bi-directional *active energy* flows occur;
  - (2) where payments for the purchase of electricity *generated* by that unit are based on different rates according to the time of the *day*, be capable of recording *interval energy data*;
  - (3) where a *current transformer*, a *voltage transformer* or a *measurement element* for *reactive energy*, is installed, meet the requirements in schedule 7.2 for the type of *metering installation* appropriate to that *connection point*;
  - (4) for units with a *nameplate rating* greater than 1 MW, meet:
    - (i) the accuracy requirements specified in schedule 7.2; and
    - (ii) the measurement requirements in paragraph (a)(8);
  - (5) in relation to new accumulation *metering equipment* for units with a *nameplate rating* equal to or less than 1 MW, meet the minimum standards for *active energy* class 1.0 watt-hour or 2.0 watt-hour *meters* in accordance with clause S7.2.6.1(f);
  - (6) for units with a *nameplate rating* of equal to or less than 1 MW that are capable of recording *interval energy*, meet the minimum standards of accuracy for the *active energy meter* in accordance with schedule 7.2 for a type 3 or 4 *metering installation* which is based on projected sent out annual *energy volumes*; and
  - (7) if reasonably required by the *Distribution Network Service Provider* (where such a request must be in writing and with reasons), after taking into account the size of the *generating unit*, its proposed role and its location in the *network*, have the *active energy* and *reactive energy* measured where the unit has a *nameplate rating* of less than 1 MW.

### 7.3.2 Connection and metering point

- (a) The *responsible person* must ensure that:
  - (1) the *revenue metering point* is located as close as practicable to the *connection point*; and
  - (2) any *instrument transformers* required for a *check metering installation* are located in a position which achieves a mathematical correlation with the *revenue metering data*.
- (b) The *Market Participant*, the *Local Network Service Provider* and *AEMO* must use their best endeavours to agree to adjust the *metering data* which is recorded in the *metering database* to allow for physical losses between the *metering point* and the relevant *connection point* where a *meter* is used to measure the flow of electricity in a power conductor.
- (c) Where a *Market Network Service Provider* installs a *two-terminal link* between two *connection points*, *AEMO* in its absolute discretion may require a *metering installation* to be installed in the facility at each end of the *two-terminal link*. Each of these *metering installations* must be separately assessed to determine the requirement for *check metering* in accordance with schedule 7.2.

### 7.3.3 Use of metering data

- (a) *Revenue metering data* must be used by *AEMO* as the primary source of *metering data* for billing purposes.
- (b) *Check metering data*, where available, must be used by *AEMO* for:
  - (1) validation;
  - (2) substitution; and
  - (3) account estimation,of *revenue metering data* as required by clause 7.9.4.

### 7.3.4 Metering installation types and accuracy

- (a) The type of *metering installation* and the accuracy requirements for a *metering installation* which must be installed in respect of each *connection point* are to be determined in accordance with schedule 7.2.
- (b) A *check metering installation* is not required to have the degree of accuracy required of a *revenue metering installation* but must have a mathematical correlation with the *revenue metering installation*, and be consistent with the requirements of schedule 7.2.

- (c) *Metering installations* in use at *market commencement* must conform with the provisions of Chapter 9.
- (d) The accuracy of a type 6 *metering installation* must be in accordance with regulations issued under the *National Measurement Act* or, in the absence of any such regulations, with the *metrology procedure*.
- (e) Subject to the *metrology procedure* and this clause 7.3.4, a *financially responsible Market Participant* or a *Local Network Service Provider* may make arrangements with the *responsible person* to alter any type 5, 6 or 7 *metering installation*.
- (f) A *Local Network Service Provider* may alter a *metering installation* in accordance with paragraph (e) to make it capable of *remote acquisition* where the *Local Network Service Provider* decides that operational difficulties reasonably require the *metering installation* to be capable of *remote acquisition*.
- (g) An alteration of a *metering installation* by a *Local Network Service Provider* in accordance with paragraph (f), does not alter the classification of that installation to a type 4 *metering installation*.
- (h) For the purposes of paragraph (f), operational difficulties may include locational difficulties where the *metering installation* is:
  - (1) at a site where access is difficult; or
  - (2) on a remote rural property.
- (i) A type 5, 6 or 7 *metering installation* must not be altered by the *financially responsible Market Participant* under paragraph (e) until the transfer of the relevant *market load* has been effected by AEMO in accordance with the *Market Settlement and Transfer Solution Procedures*.
- (j) AEMO must develop and *publish* in accordance with the *Rules consultation procedures*, guidelines for the *financially responsible Market Participant* to consider in managing the alteration of a metering installation where one or more devices are to be replaced (**'meter churn guidelines'**).
- (k) AEMO may from time to time and in accordance with the *Rules consultation procedures*, amend or replace the meter churn guidelines referred to in paragraph (j).
- (l) AEMO must develop and *publish* the first meter churn guidelines under paragraph (j) by 1 January 2008 and there must be such guidelines available at all times after that date.
- (m) A *financially responsible Market Participant* who is not the *responsible person* for a *metering installation* that is altered under paragraph (e), must:

- (1) consider and manage meter churn consistently with the meter churn guidelines developed by *AEMO* under paragraph (j); and
- (2) advise the *responsible person* of the proposed date of alteration:
  - (i) prior to that alteration being made; and
  - (ii) in accordance with any time specified in the *Market Settlement and Transfer Solution Procedures*.

### 7.3.5 Data collection system

- (a) **[Deleted]**
- (b) *AEMO* must establish processes for the collection of *metering data* for the *metering database* from each *metering installation* in accordance with the requirements of rule 7.9.
- (c) *AEMO* may use *agency data collection systems* to collect *metering data*, process *metering data* into *settlements ready data* and to transfer *metering data* to the *metering database*.
- (d) *AEMO* may obtain *metering data* directly from a *metering installation* for the *settlements* process.
- (e) Rules and protocols in respect of use of a *data collection system* and its connection to a *metering system* must be approved by *AEMO* and *AEMO* must not unreasonably withhold such approval.
- (f) Data formats used in respect of a *data collection system* must allow access to *metering data* at a *metering installation* and from the *metering database*.

### 7.3.6 Payment for metering

- (a) Subject to paragraph (b), the financially responsible Market Participant is responsible for payment of all costs associated with the provision, installation, maintenance, routine testing and inspection of the metering installation and includes:
  - (1) the cost of providing *metering data* and *settlements ready data* to the *Local Network Service Provider* and to the *Local Retailer* to enable these parties to fulfill their obligations under the *Rules*;
  - (2) the cost of providing *metering data* to *AEMO*;
  - (3) the cost of preparing *settlements ready data* where such costs will not be recovered by *AEMO* in accordance with paragraph (c); and



- (4) the cost of additions and enhancements to *metering installations* undertaken in accordance with clause 7.3.1(c).
- (b) If a *responsible person* allows another person to engage a *Metering Provider* to install a *metering installation* in accordance with clause 7.2.5(a)(2), the *financially responsible Market Participant* is not responsible for the payment of the costs of installation of the relevant *metering installation* under paragraph (a).
- (c) When *AEMO* is required to undertake functions associated with a *metering installation* in accordance with the requirements of the *metrology procedure* (which could include the preparation and application of a profile), *AEMO*'s cost is to be recovered through *Participant fees* in accordance with a budget prepared under clause 2.11.3(b)(3) unless the *metrology procedure* specifies an alternative method of cost recovery, in which case *AEMO* must not recover the costs through *Participant fees*.
- (d) Subject to paragraph (a), any costs incurred in gaining access to *metering data* must be paid by the party who obtained the *metering data*.
- (e) The cost of requisition testing and audits must be paid by the party requesting the test or audit, except where the *metering installation* is shown not to comply with this Chapter 7, in which case the *responsible person* in relation to that *metering installation* must bear the cost.
- (f) Paragraph (a) does not apply to the recovery of costs by a *Local Network Service Provider* that are associated with the provision, installation, maintenance, routine testing and inspection of type 5, 6 or 7 *metering installations*, to the extent that these costs can be recovered by the *Local Network Service Provider* in accordance with a determination made by the *AER*.
- (g) Where:
  - (1) a *financially responsible Market Participant* alters a type 5, 6 or 7 *metering installation* under clause 7.3.4 that leads to a change in the classification of that *metering installation*; and
  - (2) the *Local Network Service Provider* is no longer the *responsible person* for that *metering installation*,

the parties must negotiate in good faith to ensure the *Local Network Service Provider* is reasonably compensated for the alteration to the *metering installation*.

## **7.4 Metering Providers**

### **7.4.1 Responsibility**

- (a) Installation and maintenance of *metering installations* must be carried out only by a *Metering Provider*.
- (b) A *Metering Provider* is responsible for providing and maintaining the security controls of a *metering installation* in accordance with clause 7.8.2.

### **7.4.2 Qualifications and registration of Metering Providers**

- (a) A *Metering Provider* is a person who:
  - (1) meets the requirements set out in schedule 7.4; and
  - (2) is accredited by and registered by *AEMO* in that capacity in accordance with the qualification process established under clause S7.4.1(b).
- (b) Any person may apply to *AEMO* for accreditation and registration as a *Metering Provider*.
- (ba) *AEMO* must, in accordance with *Rules consultation procedures*, prepare and publish guidelines in respect of the accreditation of *Metering Providers*. The adoption of the guidelines by *Metering Providers* is to be included in the qualification process in accordance with clause S7.4.1(b). The guidelines must include a dispute resolution process.
- (bb) A *Metering Provider* must comply with the provisions of the *Rules* and of procedures authorised under the *Rules*, and with any requirements established by *AEMO* under clause 7.4.2(bc), that are expressed to apply to *Metering Providers*.
- (bc) The requirements referred to in clause 7.4.2(bb):
  - (1) must include the service level requirements with which the different categories of *Metering Providers* referred to in schedule 7.4 must comply; and
  - (2) may include, among other things, requirements relating to cooperation with *AEMO* and any person engaged by *AEMO* to operate any relevant *agency metering database*, the confidentiality of information collected by *Metering Providers*, the resolution of disputes between *AEMO* and *Metering Providers*, the access of *AEMO* to and inspection by *AEMO* of any equipment or database maintained by *Metering Providers*, the insurance which must be taken out by or on behalf of *Metering Providers*, subcontracting by *Metering Providers*, the software and systems that are used by *Metering Providers*, the

ownership of intellectual property that is developed or used by *Metering Providers*, and the delivery up to AEMO of data, works, material and other property in the event of the deregistration of a *Metering Provider*.

As at the date the *Rules* commence operation, the requirements referred to in clause 7.4.2(bb) that apply in respect of a category of *Metering Providers* referred to in schedule 7.4 must be the same as those that applied in respect of that category of *Metering Providers* immediately prior to that date, but AEMO may from time to time amend such requirements in accordance with the *Rules consultation procedures*.

- (c) *Network Service Providers* must either register as a *Metering Provider* or enter into agreements with *Metering Providers* for the provision of *metering services*.
- (ca) A *Network Service Provider* must allow a person other than a *Market Participant* to engage a *Metering Provider* to install a *metering installation* where the person does so in accordance with the *metrology procedure*.
- (d) Subject to clause 7.4.2(e), a *Market Generator* or *Market Customer* which is involved in the trading of *energy* must not be registered as a *Metering Provider* for *connection points* in respect of which the *metering data* relates to its own use of *energy*.
- (e) If a *Market Participant* is a *Market Customer* and also a *Network Service Provider* then the *Market Participant* may be registered as a *Metering Provider* for that *connection point* as specified in clause 7.4.2(d), providing that at the *connection points* on the *transmission network*, the *Market Participant* must regard the *Transmission Network Service Provider* with which it has entered into a *connection agreement* as the *Local Network Service Provider*.

### 7.4.3 Deregistration of Metering Providers

- (a) If a *Metering Provider* materially breaches the requirements of clause 7.4.2(bb), AEMO must send to that *Metering Provider* notice in writing setting out the nature of the breach and, if the *Metering Provider* remains in breach for a period of more than 7 days after notice from AEMO, AEMO may deregister the *Metering Provider*.
- (aa) If AEMO reasonably determines that a *Metering Provider* may have breached the requirements of clause 7.4.2(bb), it must conduct a review of the *Metering Provider's* capability to install and maintain a *metering installation*. The outcome of the review may be deregistration, suspension of some categories of registration or continued operation under constraints agreed with AEMO.

- (b) If, in the reasonable opinion of *AEMO*, a *Metering Provider* has acted in any way which is unethical, *AEMO* may deregister that *Metering Provider*.
- (c) This clause 7.4.3 sets out the only action that can be taken against a *Metering Provider*:
  - (1) for a breach by that *Metering Provider* of provisions of the *Rules* or of procedures authorised under the *Rules*, or of any requirements established by *AEMO* under clause 7.4.2(bc), that are expressed to apply to *Metering Providers*; or
  - (2) by *AEMO* as a result of that *Metering Provider* acting in a way which is unethical.

## **7.5 Register of Metering Information**

### **7.5.1 Metering register**

- (a) As part of the *metering database*, *AEMO* must maintain a *metering register* of all *revenue metering installations* and *check metering installations* which provide *metering data* used for *AEMO* account statements.
- (b) The *metering register* referred to in clause 7.5.1(a) must contain the information specified in schedule 7.5.

### **7.5.2 Metering register discrepancy**

- (a) If the information in the *metering register* indicates that the *revenue metering installation* or the *check metering installation* does not comply with the requirements of the *Rules*, *AEMO* must advise affected *Registered Participants* of the discrepancy.
- (b) If a discrepancy under clause 7.5.2(a) occurs, then the *responsible person* must arrange for the discrepancy to be corrected within 2 *business days* unless exempted by *AEMO*.

## **7.6 Inspection, Testing and Audit of Metering Installations**

### **7.6.1 Responsibility for testing**

- (a) Testing of a *metering installation* carried out under this clause 7.6.1 must be carried out in accordance with:
  - (1) this clause 7.6.1; and
  - (2) the relevant inspection and testing requirements set out in schedule 7.3.

- (b) A *Registered Participant* may request that the *responsible person* make arrangements for the testing of a *metering installation* and if the request is reasonable, the *responsible person* must:
  - (1) not refuse the request; and
  - (2) make arrangements for the testing.
- (c) Where the *responsible person* does not undertake the testing requested under paragraph (b), the *responsible person* must advise *AEMO* that the requested testing has not been undertaken and *AEMO* must make the arrangements for the testing where, in *AEMO's* reasonable opinion, it is practicable for *AEMO* to do so.
- (d) The *Registered Participant* who requested the tests under paragraph (b) may make a request to the *responsible person* to witness the tests.
- (e) The *responsible person* must not refuse a request received under paragraph (d) and must no later than 5 *business days* prior to the testing, advise:
  - (1) the party making the request; and
  - (2) where the *Local Network Service Provider* is the *responsible person*, the *financially responsible Market Participant*,of:
  - (3) the location and time of the tests; and
  - (4) the method of testing to be undertaken.
- (f) The *responsible person* and *AEMO* must co-operate for the purpose of making arrangements for *AEMO* to inspect or test the *metering installation* where:
  - (1) the *responsible person* must give *AEMO* access to the *metering installation*; and
  - (2) *AEMO* must:
    - (i) no later than seven *business days* prior to the testing or inspection, give the *responsible person* notice of:
      - (A) its intention to access the *metering installation* for the purpose of inspection or testing;
      - (B) the name of the *representative* who will be conducting the test or inspection on behalf of *AEMO*; and

- (C) the *time* when the test or inspection will commence and the expected *time* when the test or inspection will conclude; and
  - (ii) where reasonable, comply with the security and safety requirements of the *responsible person*.
- (g) Where *AEMO* or the *responsible person* has undertaken testing of a *metering installation* under this clause 7.6.1, *AEMO* or the *responsible person* (as the case may be) must make the test results available in accordance with paragraphs (h) and (i).
- (h) If the test results referred to in paragraph (g) indicate deviation from the technical requirements for that *metering installation*, the results must be made available as soon as practicable to the persons who are entitled to that *metering data* under rules 7.7(a)(1) to (7).
- (i) If the test results referred to in paragraph (g) indicate compliance with the technical requirements for that *metering installation*, the test results must be made available as soon as practicable:
  - (1) in circumstances where the tests were requested by a *Registered Participant*, to the *Registered Participant* and persons who are entitled to that *metering data* under rules 7.7(a)(1) to (7); or
  - (2) to a *Registered Participant* if requested by that *Registered Participant*, where the tests are not the result of a request for testing.
- (j) *AEMO* must check test results recorded in the *metering register* by arranging for sufficient audits annually of *metering installations* and to satisfy itself that the accuracy of each *metering installation* complies with the requirements of this Chapter 7.
- (k) The *responsible person* must store the test results in accordance with clause 7.6.4 and provide a copy to *AEMO* upon request or as part of an audit.

## **7.6.2 Actions in event of non-compliance**

- (a) If the accuracy of the *metering installation* does not comply with the requirements of the *Rules*, the *responsible person* must:
  - (1) advise *AEMO* as soon as practicable of the errors detected and the possible duration of the existence of the errors; and
  - (2) arrange for the accuracy of the *metering installation* to be restored in a time frame agreed with *AEMO*.

- (b) *AEMO* may make appropriate corrections to the *metering data* to take account of errors referred to in clause 7.6.2(a) and to minimise adjustments to the final *settlements* account.

### 7.6.3 Audits of metering data

- (aa) *AEMO* is responsible for auditing *metering installations*.
- (a) A *Registered Participant* may request *AEMO* to conduct an audit to determine the consistency between the data held in the *metering database* and the data held in the *Registered Participant's metering installation*.
- (b) If there are inconsistencies between data held in a *metering installation* and data held in the *metering database* the affected *Registered Participants* must liaise together to determine the most appropriate way to resolve the discrepancy.
- (c) If there is an inconsistency between the data held in a *metering installation* and the data held in the *metering database*, the data in the *metering installation* is to be taken as *prima facie* evidence of the *connection point's energy data*.
- (d) *AEMO* must carry out periodic random audits of *metering installations* to confirm compliance with the *Rules* and must be given unrestrained access by *Registered Participants* to *metering installations* for the purpose of carrying out such random audits where *AEMO* agrees to comply with the *Registered Participant's* reasonable security and safety requirements and has first given the *Registered Participant* at least two *business days'* notice of its intention to carry out an audit, which notice must include:
  - (1) the name of the *representative* who will be conducting the audit on behalf of *AEMO*; and
  - (2) the *time* when the audit will commence and the expected *time* when the audit will conclude.

### 7.6.4 Retention of test records and documents

- (a) All records and documentation of tests prepared under this Chapter 7 or for the purposes of this Chapter 7 must be retained in accordance with this clause 7.6.4.
- (b) The *responsible person* must ensure records and documentation are retained as follows:
  - (1) for a period of at least 7 years:

- (i) sample testing of *meters* while the *meters* of the relevant style remain in service;
  - (ii) the most recent sample test results of the *meters* referred to in subparagraph (i) after the *meters* are no longer in service;
  - (iii) non-sample testing of *meters* while the *meters* remain in service;
  - (iv) the most recent non-sample test results after the *meters* are no longer in service;
  - (v) the most recent sample test results of *instrument transformers* after *instrument transformers* of the relevant type are no longer in service;
  - (vi) the most recent non-sample test results of *instrument transformers* after they are no longer in service;
  - (vii) tests of new *metering* equipment of the relevant style while the equipment remains in service; and
  - (viii) tests of new *metering* equipment of the relevant style after the equipment is no longer in service; and
- (2) for a period of at least 10 years:
  - (i) sample testing of *instrument transformers* while *instrument transformers* of the relevant type remain in service; and
  - (ii) non-sample testing of *instrument transformers* while they remain in service.
- (c) The *responsible person* must ensure records of type tests and pattern approvals carried out or obtained in accordance with clause S7.2.6.1(f) are retained while *metering* equipment of the relevant type remains in service and for at least 7 years after it is no longer in service.

## 7.7 Entitlement to metering data

- (a) The only persons entitled to receive *metering data*, *NMI Standing Data* or data from the *metering register* for a *metering installation* are:
  - (1) *Registered Participants* with a financial interest in the *metering installation* or the *energy* measured by that *metering installation*;
  - (2) *Metering Providers* who have an agreement to service the *metering installation*, in which case the entitlement to access is restricted to allow authorised work only;



- (3) *financially responsible Market Participants* in accordance with the *meter churn guidelines* developed under clause 7.3.4(j);
  - (4) the *Network Service Provider* or providers associated with the *connection point*;
  - (5) *AEMO* and its authorised agents;
  - (6) an Ombudsman in accordance with paragraphs (d), (e) and (f);
  - (7) a *financially responsible Market Participant's* customer upon request by that customer to the *financially responsible Market Participant* for information relating to that customer's *metering installation*; and
  - (8) the *AER* or *Jurisdictional Regulators* upon request to *AEMO*.
- (b) Electronic access to *metering data* from a *metering installation* must only be provided where passwords in accordance with clause 7.8.2 are allocated, otherwise access to *metering data* shall be from the *metering database*.
- (c) The *responsible person* must ensure that access to *metering data* from the *metering installation* by persons referred to in rule 7.7(a) is scheduled appropriately to ensure that congestion does not occur.
- (d) Despite anything to the contrary in this rule 7.7, *AEMO* may provide *metering data* relating to a *Registered Participant* from a *metering installation*, the *metering database* or the *metering register* to an Ombudsman acting under a duly constituted industry dispute resolution ombudsman scheme of which the *Registered Participant* is a participant, if the Ombudsman has requested the data for the purpose of carrying out a function of that scheme in respect of a complaint made by a customer of the *Registered Participant* against that *Registered Participant* under that scheme.
- (e) *AEMO* must notify the relevant *Registered Participant* of any information requested by an Ombudsman under rule 7.7(d) and, if it is requested by that *Registered Participant*, supply the *Registered Participant* with a copy of any information provided to the Ombudsman.
- (f) *AEMO* must, acting jointly with industry Ombudsmen, develop procedures for the efficient management of timely access to data by Ombudsmen in consultation with *Registered Participants* in accordance with the *Rules consultation procedures*.

## 7.8 Security of Metering Installations and Data

### 7.8.1 Security of metering installations

- (a) The *responsible person* must ensure that a *metering installation* is secure and that associated links, circuits and information storage and processing systems are protected by security mechanisms acceptable to *AEMO*.
- (b) *AEMO* may override any of the security mechanisms fitted to a *metering installation* with prior notice to the *responsible person*.
- (c) If a *Local Network Service Provider*, *financially responsible Market Participant*, or *Metering Provider* becomes aware that a seal protecting *metering* equipment has been broken, it must notify the *responsible person* within 5 business days.
- (d) If a broken seal has not been replaced by the person who notified the *responsible person* under paragraph (c), the *responsible person* must replace the broken seal no later than:
  - (1) the first occasion on which the *metering* equipment is visited to take a reading; or
  - (2) 100 days,after receipt of notification that the seal has been broken.
- (e) The costs of replacing broken seals as required by paragraph (d) are to be borne by:
  - (1) the *financially responsible Market Participant* if the seal was broken by its customer;
  - (2) a *Registered Participant* if the seal was broken by the *Registered Participant*; or
  - (3) by the *Metering Provider* if the seal was broken by the *Metering Provider*,and otherwise by the *responsible person*.
- (f) If it appears that as a result of, or in connection with, the breaking of a seal referred to in paragraph (c) that the relevant *metering* equipment may no longer meet the relevant minimum standard, the *responsible person* must ensure that the *metering* equipment is tested.

### 7.8.2 Security controls

- (a) The *responsible person* must ensure that *metering data* held in the *metering installation* is protected from direct local or remote electronic access by suitable password and security controls in accordance with clause 7.8.2(c).
- (b) The *Metering Provider* must keep records of electronic access passwords secure.
- (c) The *Metering Provider* must allocate 'read-only' passwords to *Market Participants*, *Local Network Service Providers* and *AEMO*, except where separate 'read-only' and 'write' passwords are not available, in which case the *Metering Provider* must allocate a password to *AEMO* only.
- (d) The *Metering Provider* must hold 'read-only' and 'write' passwords.
- (e) The *Metering Provider* must forward a copy of the passwords held under clause 7.8.2(d) to *AEMO*.
- (f) Subject to rule 7.12(aa), *AEMO* must hold a copy of the passwords referred to in clause 7.8.2(e) for the sole purpose of revealing them to a *Metering Provider* in the event that the passwords cannot be obtained by the *Metering Provider* by any other means.
- (g) Subject to the authorisation of the *responsible person*, if a customer of a *financially responsible Market Participant* requests a 'read-only' password, the *financially responsible Market Participant* must:
  - (1) obtain a 'read-only' password from the *Metering Provider*; and
  - (2) provide a 'read-only' password to the customer within 10 *business days*,in accordance with paragraph (c).
- (h) The *responsible person* referred to in paragraph (g) must not unreasonably withhold the authorisation required by the *financially responsible Market Participant*.

### 7.8.3 Changes to metering equipment, parameters and settings

Changes to parameters or settings within a *metering installation* must be:

- (a) authorised by *AEMO* prior to the alteration being made;
- (b) implemented by a *Metering Provider*;
- (c) confirmed by the *responsible person* within 2 *business days* after the alteration has been made; and

- (d) recorded by *AEMO* in the *metering register*.

#### **7.8.4 Changes to metering data**

- (a) The original stored *energy data* in a *meter* must not be altered except when the *meter* is reset to zero as part of a repair or reprogramming.
- (b) If an on-site test of a *metering installation* requires the injection of current, the *responsible person* must ensure that:
  - (1) the *energy data* stored in the *metering installation* is inspected; and
  - (2) if necessary following the inspection under subparagraph (1), alterations are made to the *metering data* in accordance with paragraph (c),

to ensure that the *metering data* in the *metering database* is not materially different from the energy volumes flowing through the *connection point* during the period of the test.

- (c) If a *responsible person* considers alterations are necessary under paragraph (b)(2), the *responsible person* must:
  - (1) for a type 1, 2, 3 or 4 *metering installation*, advise *AEMO* of the variation and *AEMO* must arrange for the *metering database* to be altered in accordance with the validation, substitution and estimation procedures in the *metrology procedure*; or
  - (2) for a type 5, 6 or 7 *metering installation*, alter the *energy data* in accordance with the validation, substitution and estimation procedures in the *metrology procedure* and submit the altered data to *AEMO*.
- (d) If a test referred to in paragraph (b) is based on actual *connection point* loads, no adjustment is required.

### **7.9 Processing of Metering Data for Settlements Purposes**

#### **7.9.1 Metering databases**

- (a) *AEMO* must create, maintain and administer a *metering database* (either directly or under a contract for provision of the database) containing information for each *metering installation* registered with *AEMO*.
- (b) *AEMO* may use *agency metering databases* to form part of the *metering database*.
- (b1) A person engaged by *AEMO* to provide *agency data collection systems* and *agency metering databases* must meet and comply with the service level

requirements and any other criteria that *AEMO* establishes from time to time in relation to those functions, including accreditation requirements.

- (c) The *metering database* must have the capacity for electronic access by relevant *Market Participants* and *Network Service Providers*.
- (d) The *metering database* must include original *energy* readings and, where relevant, *metering data* and *settlements ready data*.
- (e) Rights of access to data held within the *metering database* are set out in rule 7.7.
- (f) The person who is required under this Chapter 7 to collect the *metering data* from the *metering installation* for the purpose of *settlements* must ensure that:
  - (1) the data is stored separately from the *metering database* and retained for a period of 7 years in the form in which it was collected; and
  - (2) a record of each adjustment or substitution to the *metering data* in respect of a *metering installation* is stored separately from the *metering database* and retained for a period of 7 years.
- (g) For all types of *metering installations*, the *metering database* must contain *metering data* that is retained:
  - (1) online for 13 months in an accessible format; and
  - (2) following the retention under subparagraph (1), in archive in a form that is accessible independently of the format in which the data is stored for a period of 5 years and 11 months.

### 7.9.2 Remote acquisition of data

- (a) *AEMO* is responsible for the *remote acquisition* of the *metering data* and for storing this data as *settlements ready data* in the *metering database*. Such data may be used:
  - (1) by *AEMO* for *settlements* purposes in accordance with clause 7.9.1; or
  - (2) by *Distribution Network Service Providers* for the purpose of determining *distribution service charges* in accordance with clause 6.20.1.
- (b) If *remote acquisition* becomes unavailable, *AEMO* must arrange with the *responsible person* to obtain the relevant *metering data*.

### 7.9.3 Periodic energy metering

- (a) Where a device is used as a *data logger* (for types 1 to 5 *metering installations*), *metering data* relating to:
  - (1) the amount of *active energy*; and
  - (2) *reactive energy* (where relevant) passing through a *connection point*,  
  
must be collated in *trading intervals* within a *metering installation* unless it has been agreed between AEMO, the *Local Network Service Provider* and the *Market Participant* that *metering data* may be recorded in sub-multiples of a *trading interval*.
- (b) Where a *metering installation* database is used as a *data logger* (*metering installation* types 6 and 7), the *metering data* relating to the amount of *active energy* passing through a *connection point* must be collated or determined in *trading intervals* within a *metering installation* unless it is specified in the *metrology procedure* that the data may be converted into *trading interval* data in the AEMO substitution process referred to in clause 7.9.4(a), in which case the *metrology procedure* must specify:
  - (1) the parameters to be used in preparing the *trading interval* data for each *market load*, including the algorithms;
  - (2) the first-tier *energy data* that is to be used in the conversion process;
  - (3) the quality and timeliness of the first-tier *metering data*;
  - (4) the party responsible for providing the first-tier *metering data*; and
  - (5) if required, the method of cost recovery in accordance with clause 7.3.6(c).

### 7.9.4 Data validation, substitution and estimation

- (a) AEMO is responsible for the validation and substitution of *metering data* for a type 1, 2, 3 and 4 *metering installation* in accordance with the *metrology procedure*.
- (b) The *responsible person* is responsible for the validation, substitution and estimation of *metering data* for a type 5, 6 and 7 *metering installation* in accordance with the *metrology procedure*.
- (c) *Check metering data*, where available, must be used by AEMO to validate *metering data* provided that the *check metering data* has been appropriately adjusted for differences in *metering installation* accuracy.

- (d) If *check metering data* is not available or *metering data* cannot be recovered from the *check metering installation* within the time required for *settlements*, then a substitute value is to be prepared by *AEMO* using a method agreed with the *Market Participant* and the *Local Network Service Provider*.
- (e) If *AEMO* detects a loss of *metering data* or incorrect *metering data* from a *metering installation*, it must notify the *Market Participant* and *Local Network Service Provider* within 24 hours of detection.

### 7.9.5 Errors found in metering tests, inspections or audits

- (a) If a *metering installation* test, inspection or audit, carried out in accordance with rule 7.6, demonstrates errors in excess of those prescribed in schedule 7.2 and *AEMO* is not aware of the time at which that error arose, the error is to be deemed to have occurred at a time half way between the time of the most recent test or inspection which demonstrated that the *metering installation* complied with the relevant accuracy requirement and the time when the error was detected.
- (b) If a test or audit of a *metering installation* demonstrates an error of measurement of less than 1.5 times the error permitted by schedule 7.2, no substitution of readings is required unless in *AEMO's* reasonable opinion a particular party would be significantly affected if no substitution were made.
- (c) If any substitution is required under clause 7.9.5(b), then *AEMO* must provide substitute readings to effect a correction for that error in respect of the period since the error was deemed to have occurred.

### 7.10 Confidentiality

*Metering data* and passwords are confidential data and are to be treated as *confidential information* in accordance with the *Rules*.

### 7.11 Performance of Metering Installation

#### 7.11.1 Metering data

- (a) Subject to paragraphs (b) and (c), *metering data* is required for all *trading intervals* where the *metering installation* has the capability for *remote acquisition* of actual *metering data*.
- (b) Where *AEMO* requires actual *metering data* to ensure compliance with Chapter 3, the *metering data* required under paragraph (a) must be:
  - (1) at the level of accuracy prescribed in schedule 7.2;

- (2) within the timeframe required for *settlements* and *prudential requirements* specified in the *metrology procedure*, and at a level of availability of at least 99% per annum for *instrument transformers* and other components of the *metering installations*, not including the *communication link*;
- (3) within the timeframe required for *settlements* and *prudential requirements* specified in the procedures established in the *metrology procedure*, and at a level of availability of at least 95% per annum for the *communication link*, and
- (4) actual or substituted in accordance with the procedures established by *AEMO* under clause 7.14.1(c)(6);

or as otherwise agreed between *AEMO* and the *responsible person*.

- (c) Where *AEMO* does not require actual *metering data* to ensure compliance with Chapter 3, the *metering data* required under paragraph (a) must be:
  - (1) at the level of accuracy prescribed in schedule 7.2;
  - (2) within the timeframe required for *settlements* specified in the *metrology procedure*;
  - (3) actual, substituted or estimated in accordance with the procedures established by *AEMO* under clause 7.14.1(c)(6); and
  - (4) in accordance with the performance standards specified in the *metrology procedure*.
- (d) Where the *metering installation* does not have the capability for *remote acquisition* of actual *metering data*, *metering data* is required:
  - (1) at the level of accuracy prescribed in schedule 7.2;
  - (2) within the timeframe required for *settlements* specified in the *metrology procedure*;
  - (3) as actual, substituted or estimated in accordance with the procedures established by *AEMO* under clause 7.14.1(c)(6); and
  - (4) in accordance with the performance standards specified in the *metrology procedure*.

### 7.11.2 Metering installation malfunctions

- (a) Unless an exemption is obtained from *AEMO* under this clause 7.11.2, in respect of a *connection point* with:



- (1) a type 1, 2 and 3 *metering installation*, if a malfunction occurs to the installation, repairs must be made to it as soon as practicable but no later than 2 *business days* after the malfunction was detected or should reasonably have been detected; or
  - (2) a *metering installation* other than the installations referred to subparagraph (1), if a malfunction occurs to the installation, repairs must be made to it as soon as practicable but no later than 10 *business days* after the malfunction was detected or ought reasonably to have been detected.
- (b) *AEMO* must establish and *publish* a procedure applicable to the provision of exemptions for the purpose of paragraph (a) and *AEMO* may revise the procedure from time to time.
  - (c) If an exemption is provided by *AEMO* under this clause 7.11.2 then the *Metering Provider* must provide *AEMO* with a plan for the rectification of the *metering installation*.
  - (d) A *Registered Participant* who becomes aware of an *outage* or malfunction of a *metering installation* must advise *AEMO* as soon as practicable.

## 7.12 Time settings

- (a) The *responsible person* must ensure that all *metering installations* and *data logger* clocks are referenced to *Eastern Standard Time* and maintained to a standard of accuracy in accordance with schedule 7.2 relevant to the *load* through the *metering point*.
- (b) In relation to a type 1, 2, 3 and 4 *metering installation*, the *responsible person* must provide to *AEMO* suitable remote data access to set the time function of the installation.
- (c) In relation to a type 5, 6 and 7 *metering installation*, the *responsible person* must set the time function of the *metering installation*.
- (d) *AEMO* must ensure that the *metering database* clock is maintained within -1 second and +1 second of *Eastern Standard Time* for a type 1, 2, 3 and 4 *metering installation*.
- (e) The *responsible person* must ensure that the *metering installation* database clock is maintained within - 1 second and + 1 second of *Eastern Standard Time* for types 5, 6 and 7 *metering installations*.

## 7.13 Evolving Technologies and Processes and Development of the Market

- (a) Evolving technologies or processes that:

(1) meet or improve the performance and functional requirements of this Chapter; or

(2) facilitate the development of the *market*,

may be used if agreed between the relevant *Market Participant(s)*, the *Local Network Service Provider* and *AEMO*, and the agreement of the *Local Network Service Provider* and *AEMO* must not be unreasonably withheld.

(b) No agreement contemplated by rule 7.13(a) can be entered into if it materially and adversely affects the interests of persons other than the *Market Participant(s)* and the *Local Network Service Provider* who are parties to the agreement.

(c) *AEMO* must, at least annually, *publish* a report on the application of evolving technologies and processes.

(d) *AEMO* must, at least annually, submit a written report to the *AEMC* on the extent to which this Chapter 7 may need to be amended in order to accommodate the evolving technologies and processes or the development of the *market*.

(e) *AEMO* must, at least annually, prepare and *publish* a report on the impact of the introduction of retail competition on the wholesale market, including:

(1) the scope for improvement in the operation of wholesale *market settlements*;

(2) developments in metering technology suited to more timely operation of the *market*; and

(3) the effectiveness of the provisions of this Chapter 7.

(f) Having regard to the need to remove barriers to the adoption of economically efficient metering solutions and other economically efficient technology ('**efficient solutions**'), *AEMO* must:

(1) monitor developments in the Australian metering standards; and

(2) consult with the *participating jurisdictions* and other interested parties on any changes proposed to be made to the Australian metering standards that may have the potential to create such barriers,

and include any relevant findings in its report under paragraph (c).

(g) The *Ministers of participating jurisdictions* must, by 30 June 2009, conduct and complete a review of type 5 and 6 *metering installations* and the *metrology procedure*.

- (h) In undertaking the review referred to in paragraph (g), the *Ministers of the participating jurisdictions* may:
  - (1) review the outcomes from the Joint Jurisdictional Review of Metrology Procedures: Final Report of October 2004 ('the **JJR report**') and identify any outstanding issues from the JJR report;
  - (2) make recommendations to resolve any outstanding issues from the JJR report;
  - (3) identify any additional barriers to the adoption of efficient solutions and make recommendations to reduce those barriers; and
  - (4) have regard to the need to maintain the regulatory certainty, in recognition that regulatory uncertainty is itself a major barrier to the adoption of efficient solutions.

## 7.14 Metrology procedure

### 7.14.1 Requirements of the metrology procedure

- (a) *AEMO* must develop and *publish* the *metrology procedure* that will apply to *metering installations* in accordance with this rule 7.14 and this Chapter 7.
- (b) The *metrology procedure* must be prepared, revised and *published* by *AEMO* in accordance with the *Rules consultation procedures* and must include a minimum period of 3 months between the date when the *metrology procedure* is *published* and the date the *metrology procedure* commences unless the change is made under clause 7.14.4(e) in which case the effective date may be the same date as the date of publication.
- (c) The *metrology procedure* must include:
  - (1) information on the devices and processes that are to be used to:
    - (i) measure, or determine by means other than a device, the flow of electricity in a power conductor;
    - (ii) convey the measured or determined data under subparagraph (i) to other devices using *communication link(s)*;
    - (iii) prepare the data using devices or algorithms to form *metering data*; and
    - (iv) provide access to the *metering data* from a *telecommunications network*;
  - (2) the requirements for the provision, installation and maintenance of *metering installations*;

- (3) the obligations of *responsible persons* and *Metering Providers*;
- (4) details on:
  - (i) the parameters that determine the circumstances when *metering data* must be delivered to *AEMO* for the purposes of Chapter 3 and such parameters must include, but are not limited to, the volume limit per annum below which *AEMO* will not require *metering data* for those purposes;
  - (ii) the timeframe obligations for the extraction or delivery of *metering data* from a *metering installation* for the purpose of *settlements*; and
  - (iii) the performance standards for *metering data* required for the purpose of *settlements*;
- (5) subject to clause 7.14.2(d)(2), zero MWh as the specification for the *type 5 accumulation boundary*;
- (6) procedures for the preparation of *settlements ready data* on the following matters:
  - (i) data validation and substitution in accordance with clause 7.9.4;
  - (ii) data estimation for the purposes of clause 7.11.1; and
  - (iii) in relation to the matters specified in clause 7.9.3, the method:
    - (A) by which accumulated *metering data* is to be converted into *trading interval data*; and
    - (B) of managing the *first-tier load energy data* that is necessary to enable the conversion referred to in subparagraph (1) to take place; and
- (7) other matters in the *Rules* required to be included in the *metrology procedure*.

#### **7.14.2 Jurisdictional metrology material in metrology procedure**

- (a) Subject to this clause 7.14.2, *AEMO* may include in the *metrology procedure* other metrology material that is in the nature of a guideline, specification or other standard for a *participating jurisdiction* in relation to *type 5, 6 and 7 metering installations* which alters the application of the *metrology procedure* for that jurisdiction (*'jurisdictional metrology material'*).

- (b) *Jurisdictional metrology material* may only be submitted to *AEMO* for inclusion in the *metrology procedure* by the *Ministers of the MCE*.

[**Note:** For the period until 1 January 2009, a *Minister of a participating jurisdiction*, on behalf of a particular participating jurisdiction, may provide to NEMMCO jurisdictional metrology material in accordance with clause 11.5.5]

- (c) *Jurisdictional metrology material* submitted to *AEMO* under paragraph (b) must:
  - (1) be in writing;
  - (2) be provided to *AEMO* within sufficient time for *AEMO* to meet its obligations under this clause 7.14.2;
  - (3) be consistent with the matters contained in clauses 7.14.1 and 7.14.3;
  - (4) contain a date by which the *Ministers of the MCE* will undertake a review in relation to harmonising the *jurisdictional metrology material* with the *metrology procedure* (the ‘**review date**’); and
  - (5) be accompanied by written reasons as to why the *jurisdictional metrology material* is required instead of the *metrology procedure*.
- (d) *Jurisdictional metrology material* may address the following matters:
  - (1) guidelines for the replacement of a device capable of producing *interval energy data* with a device that only produces *accumulated energy data*; and
  - (2) the specification of the *type 5 accumulation boundary*.
- (e) On receiving *jurisdictional metrology material* from the *Ministers of the MCE*, *AEMO* must undertake the *Rules consultation procedures* in relation to that material, including in that consultation the reasons referred to paragraph (c)(5).
- (f) At the conclusion of the *Rules consultation procedures* under paragraph (e), *AEMO* must provide a final report to the *Ministers of the MCE* in accordance with rule 8.9(k) of the outcome of that procedure and:
  - (1) in the case where the *Ministers of the MCE* do not advise *AEMO* of any amendments to the *jurisdictional metrology material*, *AEMO* must incorporate that material into a separate part of the *metrology procedure*; or
  - (2) in the case where the *Ministers of the MCE* advise *AEMO* of amendments to the *jurisdictional metrology material*, *AEMO* must

incorporate the amended material into a separate part of the *metrology procedure*.

- (g) The *jurisdictional metrology material*, as included in the *metrology procedure* by AEMO, expires on the review date unless the *Ministers of the MCE* submit to AEMO new *jurisdictional metrology material* in accordance with this clause 7.14.2.
- (h) The *jurisdictional metrology material* must not prevent the *metering data* from being extracted or emanating from a *data logger* as *interval energy data* if required by the *financially responsible Market Participant* or a *Local Network Service Provider* for any purpose other than for *settlements*.

### 7.14.3 Additional matters

- (a) The *metrology procedure* may:
  - (1) clarify the operation of the *Rules* in relation to:
    - (i) *load* profiling;
    - (ii) the provision and maintenance of *meters*;
    - (iii) the provision of *energy data services*;
    - (iv) metrology for a *market load* connected to a *network* where the owner or operator of that *network* is not a *Registered Participant*;
    - (v) the accreditation of *Metering Providers*; and
    - (vi) the obligations of *responsible persons*, AEMO, and *Metering Providers*;
  - (2) specify in greater detail:
    - (i) the accuracy of *metering installations*;
    - (ii) *data logger* standards;
    - (iii) inspection and testing standards;
    - (iv) *Metering Provider* accreditation standards;
    - (v) the technical requirements for the database of the *metering installation*; and

- (vi) the technical standards for *metering* of a *market load* that is connected to a *network* where the operator or owner of that *network* is not a *Registered Participant*;
  - (3) provide information on the application of the *Rules*, subject to a statement in the procedure that where any inconsistency arises between the *Rules* and the *metrology procedure*, the *Rules* prevail to the extent of that inconsistency;
  - (4) in relation to type 5 and 6 *metering installations*, contain requirements:
    - (i) for the engagement and payment of *Metering Providers*; and
    - (ii) for the provision of relevant details of the *metering installation* to the *responsible person*, where applicable;
  - (5) in relation to type 5, 6 and 7 *metering installations* specify in what circumstances *energy data* held in *metering installations* within the relevant *participating jurisdiction*, can be used by *Distribution Network Service Providers* to calculate charges for *distribution services* for the purposes of clause 6.20.1(e); and
  - (6) contain information to ensure consistency in practice between the *metrology procedure* and other instruments developed and published by *AEMO*, including the practices adopted in the *Market Settlement and Transfer Solution Procedures*.
- (b) The *metrology procedure* may not include information relating to consumer protection.

#### 7.14.4 Amendment of the metrology procedure

- (a) Any person ('the **proponent**') may submit to *AEMO* a proposal to amend the *metrology procedure* except in relation to the *jurisdictional metrology material* ('the **proposal**'), and must include reasons for the proposed change.
- (b) For proposals submitted under paragraph (a), *AEMO* must:
  - (1) give notice of receipt of the proposal to the proponent; and
  - (2) advise the proponent of the action that *AEMO* proposes to undertake under paragraphs (c) or (e).
- (c) Where *AEMO*:
  - (1) accepts the proposal, *AEMO* must conduct the *Rules consultation procedures* in relation to that proposal;

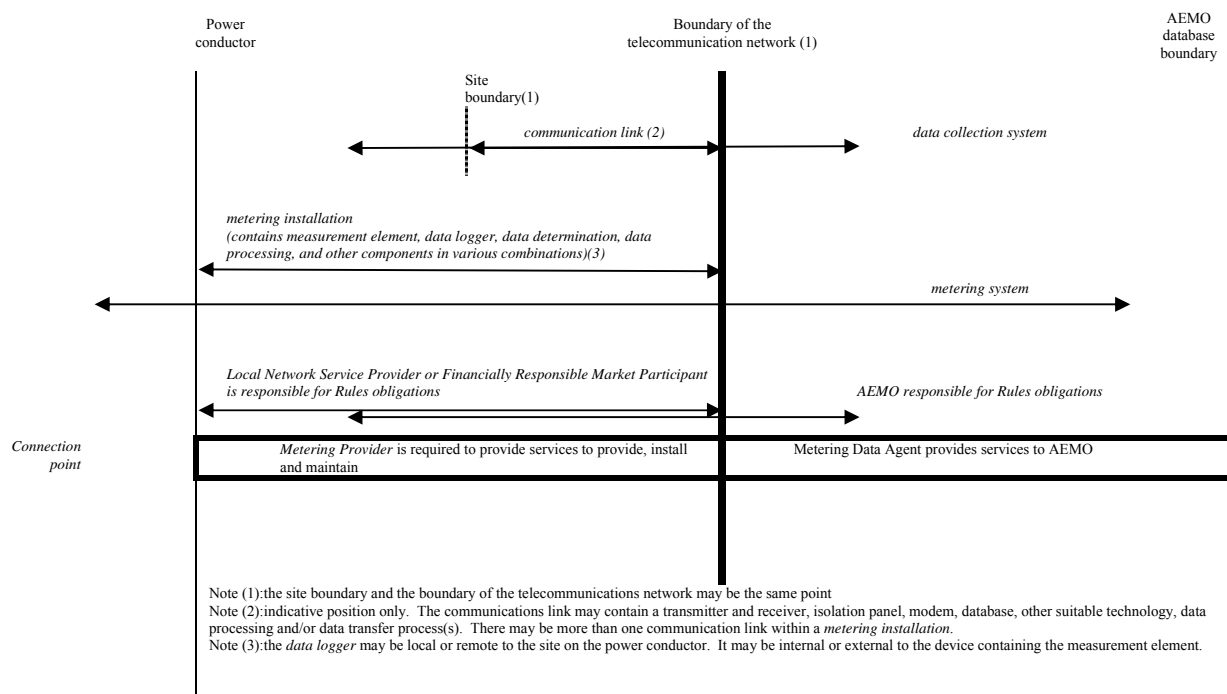
- (2) requests further information from the proponent in relation to a proposal, on receiving that information *AEMO* must either accept, or reject the proposal; or
  - (3) rejects a proposal, *AEMO* must advise the proponent of its decision and reasons for the decision in writing.
- (d) *AEMO* may at the conclusion of the *Rules consultation procedures* amend the *metrology procedure* (if necessary).
- (e) Where in *AEMO*'s reasonable opinion, a proposal referred to in paragraph (a) relates to amendments that are of a minor or administrative nature, *AEMO* is not required to undertake the *Rules consultation procedures* but must:
  - (1) *publish* the proposal including the accompanying reasons;
  - (2) issue a notice to *Registered Participants*, *Metering Providers*, *Ministers* and the *AER* advising that the amendment to the *metrology procedure* has been *published*;
  - (3) invite submissions on the proposal;
  - (4) allow 10 *business days* for the receipt of submissions;
  - (5) allow a reasonable extension of time for submissions if requested in writing by a *Registered Participant* or *Metering Provider*;
  - (6) *publish* submissions as soon as practicable after submissions have been received;
  - (7) consider the submissions; and
  - (8) *publish*, on or before the day of *publication* of the *metrology procedure*, reasons for the amendments to the *metrology procedure*.

## 7.15 Miscellaneous

- (a) *AEMO* in consultation with the *National Measurement Institute* must establish guidelines that clarify the application of the requirements of the *National Measurement Act* to *metering installations*.
- (b) For the avoidance of doubt, to the extent that there is an inconsistency between the *Rules* and the *National Measurement Act*, the Act prevails to the extent of that inconsistency.



## Schedule 7.1 - Responsibility for Metering



## Schedule 7.2 - Types and Accuracy of Metering Installations

### S7.2.1 General requirements

- (a) The following are the minimum requirements for *metering installations*.
- (b) A *Registered Participant* may install a *metering installation* with a higher level of accuracy, with the full costs of this work being met by that *Registered Participant*.

### S7.2.2 Metering installations commissioned prior to 13 December 1998

- (aa) This clause provides conditions that are to apply to *metering installations* that were commissioned prior to 13 December 1998.
- (a) The use of *metering class current transformers* and *voltage transformers* that are not in accordance with Table S7.2.3.1 are permitted provided that where necessary to achieve the overall accuracy requirements:
  - (1) *meters* of a higher class accuracy are installed; and/or
  - (2) calibration factors are applied within the *meter* to compensate for *current transformer* and *voltage transformer* errors.
- (b) Protection *current transformers* are acceptable where there are no suitable *metering class current transformers* available and the overall accuracy and performance levels can be met.
- (c) Where the requirements of clauses S7.2.2(a) and S7.2.2(b) cannot be achieved then the *responsible person* is required to comply with transitional arrangements or obtain an exemption from *NEMMCO* or upgrade the *metering installation* to comply with this schedule 7.2.
- (d) The arrangements referred to in clause S7.2.2(c) may remain in force while the required accuracy and performance can be maintained within the requirements of the *Rules*.
- (e) The purchase of new *current transformers* and *voltage transformers* must comply with the *Rules*.

### S7.2.3 Accuracy requirements for metering installations

Table S7.2.3.1 Overall Accuracy Requirements of Metering Installation Components (Item 1)

Type	Volume limit per annum per connection point	Maximum allowable overall error (±%) (refer Tables 2 - 6) at full load		Minimum acceptable class or standard of components	Metering installation or data logger Clock Error (Seconds) in reference to EST
		active	reactive		
1	greater than 1000 GWh	0.5	1.0	0.2 CT/VT/Meter Wh 0.5 Meter varh	±5
2	100 to – 1000 GWh	1.0	2.0	0.5 CT/VT/ Meter Wh 1.0 Meter varh	±7
3	0.75 to less than 100 GWh	1.5	3.0	0.5 CT/VT 1.0 Meter Wh 2.0 Meter varh	±10
4	less than 750 MWh (Item 2)	1.5	n/a	Either 0.5 CT and 1.0 Meter Wh; or whole current connected <i>General Purpose meter MWh</i> : <ul style="list-style-type: none"> <li>with a <i>data logger</i>; and</li> <li>meets the requirements of clauses 7.11.1(a) and (b) or 7.11.1(a) or (c).</li> </ul>	±20 (Item 2a)
5	Less than x MWh (Item 3)	1.5 (Item 3b)	n/a	Either 0.5CT and 1.0 <i>meter Wh</i> ; or whole current connected <i>General Purpose meter Wh</i> ; <ul style="list-style-type: none"> <li>with a <i>data logger</i>; and</li> <li>meets the requirements of clause 7.11.1(d)</li> </ul>	±20 (Item 3a)

Type	Volume limit per annum per connection point	Maximum allowable overall error ( $\pm\%$ ) (refer Tables 2 - 6) at full load		Minimum acceptable class or standard of components	Metering installation or data logger Clock Error (Seconds) in reference to EST
		active	reactive		
6	Less than y MWh (Item 4)	2.0 (Item 4b)	n/a	CT or whole-current connected <i>General Purpose meter</i> Wh with data processing used to convert <i>accumulated energy data</i> into <i>metering data</i> and to provide <i>estimated energy data</i> where necessary.	(Item 4a)
7	Volume limit not specified (Item 5)	(Item 6)	n/a	No <i>meter</i> Techniques for determination of <i>estimated energy data</i> to be included in the <i>metrology procedure</i> .	n/a

- Item 1: (a) For a type 3, 4, 5 and 6 *metering installation*, direct connected *meters* may be used if the *meters* meet the requirements of the relevant *Australian Standards* and International Standards which must be identified in the *metrology procedure*.
- (b) The *metering installation* types referred to in paragraph (a) must comply with any applicable specifications or guidelines (including any transitional arrangements) specified by the National Measurement Institute under the *National Measurement Act*.
- Item 2: *High Voltage* customers that require a *VT* and whose annual consumption is below 750MWh, must meet the relevant accuracy requirements of Type 3 *metering* for *active energy* only.
- Item 2a: For the purpose of clarification, the clock for a type 4 *metering installation* may be relaxed in the *metrology procedure* to accommodate evolving whole-current technologies that are acceptable in accordance with rule 7.13(a).
- Item 3: The following requirements apply in relation to a type 5 *metering installation*:

- (1) the installation must comply with the *metrology procedure* when converting *active energy* into *metering data*;
- (2) the value of “x” must be determined by each *Minister of a participating jurisdiction* and must be provided to AEMO for inclusion in the *metrology procedure*;
- (3) the maximum acceptable value of “x” determined under subparagraph (2) must be 750 MWh per annum;
- (4) the installation may provide delays in transferring the *interval energy data* to a remote location where access to a *telecommunications network* has been established;
- (5) delays under subparagraph (4) must be approved by the relevant *Minister of the participating jurisdiction* and the approval provided to AEMO for inclusion in the *metrology procedure*; and
- (6) the *metrology procedure* must record the value of “x” for each *participating jurisdiction*, and indicate how *interval energy data* will be established for a type 5 *metering installation* in that *participating jurisdiction* during the period of delay.

Item 3a: For the purpose of clarification, the clock error for a type 5 *metering installation* may be relaxed in the *metrology procedure* to accommodate evolving whole-current technologies that are acceptable in accordance with rule 7.13(a).

Item 3b: The maximum allowable error of a type 5 *metering installation* may be relaxed in the *metrology procedure* to accommodate evolving technologies providing that such relaxation is consistent with any regulations published under the *National Measurement Act*.

Item 4: The following requirements apply in relation to a type 6 *metering installation*:

- (1) a *metrology procedure* must include a procedure relating to converting *active energy* into *metering data*;
- (2) the value of “y” must be determined by each *Minister of a participating jurisdiction* and be provided to AEMO for inclusion in the *metrology procedure*;
- (3) the maximum acceptable value of “y” determined under subparagraph (2) must be 750 MWh per annum;
- (4) *accumulated energy data* can be transferred to a remote location where access to a *telecommunication network* has been established;
- (5) the *metrology procedure* must:

- (i) record the value of “y” for each *participating jurisdiction*;
  - (ii) identify the method by which *accumulated energy data* is to be converted into *trading interval* data in accordance with clause 7.9.3(b), and
  - (iii) the method by which *estimated energy data* is to be prepared during the period when the *accumulated energy data* is not available; and
- (6) devices within the installation may provide *accumulated energy data* in pre-determined daily time periods where such time periods are contained in the *metrology procedure*.

Item 4a: Any relevant clock errors for a type 6 *metering installation* are to be established in the *metrology procedure*.

Item 4b: The maximum allowable error of a type 6 *metering installation* may be relaxed in the *metrology procedure* providing that such relaxation is consistent with any regulations published under the *National Measurement Act*.

- Item 5:
- (a) A type 7 *metering installation* classification applies where a *metering installation* does not require a *meter* to measure the flow of electricity in a power conductor and accordingly there is a requirement to determine by other means the *energy data* that is deemed to flow in the power conductor.
  - (b) The condition referred to in paragraph (a) will only be allowed for *connection points* where AEMO in consultation with the *Local Network Service Provider* determines:
    - (1) the load pattern is predictable;
    - (2) for the purposes of *settlements*, the load pattern can be reasonably calculated by a relevant method set out in the *metrology procedure*; and
    - (3) it would not be cost effective to meter the *connection point* taking into account:
      - (i) the small magnitude of the *load*;
      - (ii) the *connection* arrangements; and
      - (iii) the geographical and physical location.
  - (c) The *metrology procedure* must include arrangements for type 7 *metering installations* that have been classified as *market loads*.

- (d) A *connection point* that meets the condition for classification as a type 7 *metering installation* does not limit that *connection point* from being metered in the future.

Item 6: The accuracy of the calculated *energy data* is to be in accordance with approved techniques for determining the flow of electricity in power conductors. The techniques, including algorithms, are to be included in the *metrology procedure*.

Table S7.2.3.2 Type 1 Installation – Annual Energy Throughput greater than 1,000 GWh

% Rated Load	Power Factor					
	Unity	0.866 lagging		0.5 lagging		Zero
	active	active	reactive	active	reactive	reactive
10	1.0%	1.0%	2.0%	n/a	n/a	1.4%
50	0.5%	0.5%	1.0%	0.7%	1.4%	1.0%
100	0.5%	0.5%	1.0%	n/a	n/a	1.0%

Table S7.2.3.3 Type 2 Installation – Annual Energy Throughput between 100 and 1,000 GWh

% Rated Load	Power Factor					
	Unity	0.866 lagging		0.5 lagging		Zero
	active	active	reactive	active	reactive	reactive
10	2.0%	2.0%	4.0%	n/a	n/a	2.8%
50	1.0%	1.0%	2.0%	1.5%	3.0%	2.0%
100	1.0%	1.0%	2.0%	n/a	n/a	2.0%

Table S7.2.3.4 Type 3 Installation – Annual Energy Throughput from 0.75 GWh to less than 100 GWh

% Rated Load	Power Factor					
	Unity	0.866 lagging		0.5 lagging		Zero
	active	active	reactive	active	reactive	reactive
10	2.5%	2.5%	5.0%	n/a	n/a	4.0%

50	1.5%	1.5%	3.0%	2.5%	5.0%	3.0%
100	1.5%	1.5%	3.0%	n/a	n/a	3.0%

Table S7.2.3.5 Type 4 or 5 Installation – Annual Energy Throughput less than 0.75 GWh

% Rated Load	Power Factor		
	Unity	0.866 lagging	0.5 lagging
	active	active	active
10	2.5%	2.5%	n/a
50	1.5%	1.5%	2.5%
100	1.5%	1.5%	n/a

Table S7.2.3.6 Type 6 Installation – Annual Energy Throughput less than 0.75 GWh

% Rated Load	Power Factor		
	Unity	0.866 lagging	0.5 lagging
	active	active	active
10	3.0%	n/a	n/a
50	2.0%	n/a	3.0%
100	2.0%	n/a	n/a

(NOTE: All measurements in Tables S7.2.3.2 – S7.2.3.6 are to be referred to 25 degrees Celsius).

- (a) The method for calculating the overall error is the vector sum of the errors of each component part (that is,  $a + b + c$ ) where:

$a$  = the error of the *voltage transformer* and wiring;

$b$  = the error of the *current transformer* and wiring; and

$c$  = the error of the *meter*.

- (b) If compensation is carried out then the resultant *metering system* error shall be as close as practicable to zero.



### S7.2.4. Check metering

(a) *Check metering* is to be applied in accordance with the following Table:

Type	Energy (GWh pa) per metering point	Check Metering Requirements
1	greater than 1000	<i>Check metering installation</i>
2	100 to 1000	Partial <i>check metering</i>
3	0.75 to less than 100	No requirement
4, 5 and 6	Less than 0.75	No requirement

(b) A *check metering installation* involves either:

- (1) the provision of a separate *metering installation* using separate *current transformer* cores and separately fused *voltage transformer* secondary circuits, preferably from separate secondary windings: or
- (2) if in *AEMO's* absolute discretion it is considered appropriate, in the case of a *metering installation* located at the facility at one end of the *two-terminal link*, a *metering installation* located at the facility at the other end of a *two-terminal link*.

- (c) Where the *check metering installation* duplicates the *revenue metering installation* and accuracy level, the average of the two validated data sets will be used to determine the *energy* measurement.
- (d) Partial *check metering* involves the use of other *metering data* or operational data available to *AEMO* in 30 min electronic format as part of a validation process in accordance with clause 7.9.4.
- (e) The physical arrangement of partial *check metering* shall be agreed between the *responsible person* and *AEMO*.
- (f) *Check metering installations* may be supplied from secondary circuits used for other purposes and may have a lower level of accuracy than the *revenue metering installation*, but must not exceed twice the level prescribed for the *revenue metering installation*.

### S7.2.5. Resolution and accuracy of displayed or captured data

Programmable settings available within a *metering installation*, *data logger* or any peripheral device, which may affect the resolution of displayed or stored data, must:

- (a) meet the requirements of the relevant *Australian Standards* and *International Standards* which must be identified in the *metrology procedure*; and
- (b) comply with any applicable specifications or guidelines (including any transitional arrangements) specified by the National Measurement Institute under the *National Measurement Act*.

## **S7.2.6. General design standards**

### **S7.2.6.1 Design requirements**

Without limiting the scope of detailed design, the following requirements must be incorporated in the design of each *metering installation*:

- (a) For *metering installations* greater than 1000 GWh pa per *metering point*, the *current transformer* core and secondary wiring associated with the *revenue meter* shall not be used for any other purpose unless otherwise agreed by AEMO.
- (b) For *metering installations* less than 1000 GWh pa per *metering point* the *current transformer* core and secondary wiring associated with the *revenue meter* may be used for other purposes (e.g. local *metering* or protection) provided the *responsible person* demonstrates to the satisfaction of AEMO that the accuracy of the *metering installation* is not compromised and suitable procedures/measures are in place to protect the security of the *metering installation*.
- (c) Where a *voltage transformer* is required, if separate secondary windings are not provided, then the *voltage* supply to each *metering installation* must be separately fused and located in an accessible position as near as practical to the *voltage transformer* secondary winding.
- (d) Secondary wiring must be by the most direct route and the number of terminations and links must be kept to a minimum.
- (e) The incidence and magnitude of burden changes on any secondary winding supplying the *metering installation* must be kept to a minimum.
- (f) *Meters* must:
  - (1) meet the requirements of relevant *Australian Standards* and *International Standards* which must be identified in the *metrology procedure*; and
  - (2) have a valid pattern approval issued under the authority of the National Measurement Institute or, until relevant pattern approvals exist, a valid type test certificate.

- (g) New *instrument transformers* must:
  - (1) meet the requirements of relevant *Australian Standards* and *International Standards* which must be identified in the *metrology procedure*; and
  - (2) have a valid pattern approval issued under the authority of the National Measurement Institute or, until relevant pattern approvals exist, a valid type test certificate.
- (h) Suitable *isolation* facilities are to be provided to facilitate testing and calibration of the *metering installation*.
- (i) Suitable drawings and supporting information, detailing the *metering installation*, must be available for maintenance and auditing purposes.

#### **S7.2.6.2 Design guidelines**

In addition to the above Design Requirements, the following guidelines should be considered for each *metering installation*:

- (a) The provision of separate secondary windings for each *metering installation* where a *voltage transformer* is required.
- (b) A *voltage* changeover scheme where more than one *voltage transformer* is available.

## Schedule 7.3 - Inspection and Testing Requirements

### S7.3.1. General

- (a) The *responsible person* 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.
- (b) The *responsible person* must ensure appropriate test certificates of the tests referred to in paragraph (a) are retained.
- (c) The *responsible person* (or any other person arranging for testing) must ensure that testing of the *metering installation* is carried out:
  - (1) in accordance with clause 7.6.1 and this schedule 7.3; or
  - (2) in accordance with an asset management strategy that defines an alternative testing practice (other than time-based) determined by the *responsible person* and approved by *AEMO*,
 and:
  - (3) in accordance with a test plan which has been registered with *AEMO*;
  - (4) to the same requirements as for new equipment where equipment is to be recycled for use in another site; and
  - (5) so as to include all data storage and processing components included in the *metrology procedure*, including algorithms used to prepare agreed load patterns.
- (d) *AEMO* must review the prescribed testing requirements in this schedule 7.3 every 5 years in accordance with equipment performance and industry standards.
- (e) The testing intervals may be increased if the equipment type/experience proves favourable.
- (f) The maximum allowable level of testing uncertainty ( $\pm$ ) for all *metering* equipment must be in accordance with Table S7.3.1.

Table S7.3.1 Maximum Allowable Level of Testing Uncertainty ( $\pm$ )

Description	Metering Equipment Class				
	Class 0.2	Class 0.5	Class 1.0	General Purpose	Class 2.0

		Metering Equipment Class				
In Laboratory	CTs ratio phase	0.05% 0.07 crad	0.1% 0.15 crad	n/a	n/a	n/a
	VTs ratio Phase	0.05% 0.05 crad	0.1% 0.1 crad	n/a	n/a	n/a
	Meters Wh	0.05/cos $\phi$ %	0.1/cos $\phi$ %	0.2/cos $\phi$ %	0.2/cos $\phi$ %	n/a
	Meters varh	n/a	0.2/sin $\phi$ %	0.3/sin $\phi$ %	n/a	0.4/sin $\phi$ %
In Field	CTs ratio Phase	0.1% 0.15 crad	0.2% 0.3 crad	n/a	n/a	n/a
	VTs ratio Phase	0.1% 0.1 crad	0.2% 0.2 crad	n/a	n/a	n/a
	Meters Wh	0.1/cos $\phi$ %	0.2/cos $\phi$ %	0.3/cos $\phi$ %	0.3/cos $\phi$ %	n/a
	Meters varh	n/a	0.3/sin $\phi$ %	0.4/sin $\phi$ %	n/a	0.5/sin $\phi$ %

Where cos $\phi$  is the power factor at the test point under evaluation.

Table S7.3.2 Maximum Period Between Tests

Unless the *responsible person* has developed an asset management strategy that defines practices that meet the intent of this schedule 7.3 and is approved by AEMO, the maximum period between tests must be in accordance with this Table S7.3.2.

Description	Metering Installation Type				
	Type 1	Type 2	Type 3	Type 4	Types 5 & 6
CT	10 years	10 years	10 years	10 years	10 years
VT	10 years	10 years	10 years		n/a
Burden tests	When <i>meters</i> are tested or when changes are made				
CT connected Meter (electronic)	5 years	5 years	5 years	5 years	5 years
CT connected Meter (induction)	2.5 years	2.5 years	5 years	5 years	5 years

Whole-current (Direct Connected Meter)	The testing and inspection requirements must be in accordance with an asset management strategy. Guidelines for the development of the asset management strategy must be recorded in the <i>metrology procedure</i> .
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Table S7.3.3 Period Between Inspections

Unless the *responsible person* has developed an asset management strategy that meets the intent of this schedule 7.3 and is approved by *AEMO*, the period between inspections must be in accordance with this Table S7.3.3.

Description	Metering Installation Type			
	Type 1	Type 2	Type 3	Type 4, 5 & 6
<i>Metering installation equipment inspection</i>	2.5 years Note: increased inspection period allowed because of <i>check metering installation</i> requirements.	12 months (2.5 years if <i>check metering</i> installed)	> 10 GWh: 2 years 2 ≤ ≤10 GWh: 3 years <2 GWh: when meter is tested.	When meter is tested.

### S7.3.2. Technical Guidelines

- (a) *Current transformer* and *voltage transformer* tests are primary injection tests or other testing procedures as approved by *AEMO*.
- (b) The calculations of accuracy based on test results are to include all reference standard errors.
- (c) An "estimate of testing uncertainties" must be calculated in accordance with the ISO "Guide to the Expression of Uncertainty for Measurement".
- (d) Where operational *metering* is associated with *settlements metering* then a shorter period between inspections is recommended.
- (e) For  $\sin\phi$  and  $\cos\phi$  refer to the ISO "Guide to the Expression of Uncertainty in Measurement", where  $\cos\phi$  is the *power factor*.
- (f) A typical inspection may include:
  - (1) check the seals;
  - (2) compare the pulse counts;
  - (3) compare the direct readings of *meters*;

- (4) verify *meter* parameters and physical connections; and
- (5) *current transformer* ratios by comparison.

## Schedule 7.4 - Metering Provider

### S7.4.1 General

- (a) A *Metering Provider* must be accredited by and registered by *AEMO*. *AEMO* must accredit and register a *Metering Provider* only for the type of work the *Metering Provider* is qualified to provide.
- (b) *AEMO* must establish a qualification process for *Metering Providers* that enables registration to be achieved in accordance with the requirements of this schedule 7.4.
- (c) **[Deleted]**
- (d) A *Metering Provider* must have the necessary licenses in accordance with appropriate State and Territory requirements.
- (e) A *Metering Provider* must ensure that any *metering* equipment it installs is suitable for the range of operating conditions to which it will be exposed (e.g. temperature; impulse levels), and operates within the defined limits for that equipment.
- (f) A *Metering Provider* must ensure that the *metering installation* is installed and maintained in accordance with the *metrology procedure*.

### S7.4.2 Categories of registration

- (a) Registrations, in relation to *metering installation* types 1, 2, 3 and 4, must be categorised in accordance with Tables S7.4.1, S7.4.2 and S7.4.3 or other procedures approved by *AEMO*.
- (b) In relation to *metering installation* types 5, 6 and 7, *AEMO* must establish categories of registration which are consistent with the service requirements established in the *metrology procedure*.
- (c) *AEMO* may establish *Accredited Service Provider categories* of registration for a *Metering Provider* in accordance with clause S7.4.5.

Table S7.4.1 Categories of registration for accreditation

Category	Competency
1C	Class 0.2 CTs with < 0.1% uncertainty.
1V	Class 0.2 VTs with < 0.1% uncertainty.
1M	Class 0.2 Wh meters with < 0.1/cos $\phi$ % uncertainty and class 0.5 varh meters with < 0.3/sin $\phi$ % uncertainty.
1A	Class 0.2 CTs, VTs, Wh meters; class 0.5 varh meters; the total installation to 0.5%.



Category	Competency
	Wh with < 0.2% uncertainty at unity <i>power factor</i> ; 1.0% for varh with <0.4% uncertainty at zero <i>power factor</i> .
2C	Class 0.5 CTs with < 0.2% uncertainty.
2V	Class 0.5 VTs with < 0.2% uncertainty.
2M	Class 0.5 Wh meters with < 0.2/cos $\phi$ % uncertainty and class 1.0 varh meters with <0.4/sin $\phi$ % uncertainty.
2A	Class 0.5 CTs, VTs, Wh meters; class 1.0 varh meters; the total installation to 1.0%. Wh with < 0.4% uncertainty at unity <i>power factor</i> ; 2.0% for varh with <0.5% uncertainty at zero <i>power factor</i> .

Table S7.4.2 Categories of registration for accreditation

Category	Competency
3M	Class 1.0 Wh meters with < 0.3/cos $\phi$ % uncertainty and class 2.0 varh meters with <0.5/sin $\phi$ % uncertainty.
3A	Class 0.5 CTs, VTs; class 1.0 Wh meters; class 2.0% varh meters; the total installation to 1.5%. Wh with < 0.5% uncertainty at unity <i>power factor</i> ; 3.0% for varh with <0.6% uncertainty at zero <i>power factor</i> .
4M	Class 1.0 Wh meters and class 1.5 Wh meters with <0.3/cos $\phi$ % uncertainty

Table S7.4.3 Categories of registration for accreditation

Category	Competency
L	Approved Communication Link Installer

### S7.4.3 Capabilities of Metering Providers for metering installations types 1, 2, 3 and 4

Category 1A, 2A, 3A and 4M *Metering Providers* must be able to exhibit the following capabilities to the reasonable satisfaction of AEMO:

- (a) Detailed design and specification of *metering* schemes, including:
  - (1) knowledge and understanding of this Chapter 7;
  - (2) knowledge of equipment (*meters, current transformers* and where applicable *voltage transformers*);
  - (3) design experience including knowledge of *current transformers* and where applicable *voltage transformers* and the effect of burdens on performance;

- (4) ability to calculate summation scheme values, multipliers, etc; and
  - (5) ability to produce documentation, such as single line diagrams, panel layouts and wiring diagrams.
- (b) Programming and certification requirements for *metering installations* to the required accuracy, including:
  - (1) licensed access to *metering* software applicable to all equipment being installed by the *Metering Provider*;
  - (2) ability to program requirements by setting variables in *meters*, summators, modems, etc;
  - (3) management of the testing of all equipment to the accuracy requirements specified in this Chapter 7;
  - (4) certifications that all calibration and other *meter* parameters have been set, verified and recorded prior to *meters*, *data loggers*, etc., being released for installation;
  - (5) all reference/calibration equipment for the purpose of meeting test or inspection obligations must be tested to ensure full traceability to test certificates issued by a *NATA* accredited body or a body recognised by *NATA* under the International Laboratory Accreditation Corporation ('*ILAC*') mutual recognition scheme and documentation of the traceability must be provided to *AEMO* on request; and
  - (6) compliance with ISO/IEC Guide 25 "General Requirements for the Competence of Calibration and Testing Laboratories" with regard to the calculation of uncertainties and accuracy.
- (c) Installation and commissioning of *metering installations* including the remote accessing of data, including:
  - (1) the use of calibrated test equipment to perform primary injection tests and field accuracy tests;
  - (2) the availability of trained and competent staff to install and test *metering installations* to determine that installation is correct; and
  - (3) the use of test procedures to confirm that the *metering installation* is correct and that *metering* constants are recorded and/or programmed correctly.
- (d) Inspection and maintenance of *metering installations* and equipment, including:

- (1) regular readings of the measurement device where external *data loggers* or recorders to be used (6 monthly) and verification with *AEMO* records;
  - (2) approved test and inspection procedures to perform appropriate tests as detailed in this Chapter 7;
  - (3) calibrated field test equipment for primary injection and *meter* testing to the required levels of uncertainty; and
  - (4) secure documentation system to maintain *metering* records for all work performed on a *metering installation*, including details of the security method used.
- (e) Verification of *revenue metering data* and *check metering data*, as follows:
- (1) on commissioning *metering data*, verification of all readings, constraints (adjustments) and multipliers to be used for converting raw data to consumption data; and
  - (2) on inspection, testing and/or maintenance, verification that readings, constants and multipliers are correct by direct conversion of *meter readings* and check against the *metering database*.
- (f) Quality System as AS 9000 series standards, including:
- (1) a quality system to AS/NZ ISO 9000 series applicable to the work to be performed:
    - Type 1 - full implementation of AS/NZ ISO 9002;
    - Type 2 - full implementation of AS/NZ ISO 9002;
    - Type 3 - implementation of AS/NZ ISO 9002 to a level agreed with *AEMO*;
    - Type 4 - implementation of AS/NZ ISO 9002 to a level agreed with *AEMO*;
  - (2) the calculations of accuracy based on test results are to include all reference standard errors;
  - (3) an estimate of Testing Uncertainties which must be calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement"; and
  - (4) a knowledge and understanding of the appropriate standards and guides, including those in the *Rules*.

#### **S7.4.4 Capabilities of Metering Providers for metering installations types 5, 6 and 7**

*Metering Providers*, who apply for categories of *Metering Provider* accreditation of *metering installations* types 5, 6 and / or 7, must be able to exhibit, to the reasonable satisfaction of *AEMO*:

- (a) all of the capabilities relevant to that type of *metering installation* which are included in clause S7.4.3;
- (b) any relevant capabilities required for data processing specified in the *metrology procedure*; and
- (a) an acceptable standard of performance, determined by reference to the *metrology procedure*, for each of the processes and devices identified in the *metrology procedure*.

#### **S7.4.5 Capabilities of the Accredited Service Provider category**

- (a) The *Accredited Service Providers categories* established by *AEMO* under clause S7.4.2(c) may perform work relating to the installation of any types 1, 2, 3, 4, 5 or 6 *metering installations*.
- (b) *AEMO* must include *Accredited Service Provider categories* in the accreditation guidelines prepared and *published* under clause 7.4.2(ba).
- (c) *AEMO* may determine:
  - (1) the competencies of a *Metering Provider* registered in each *Accredited Service Provider category* provided that those competencies are consistent with any service requirements established in the *metrology procedure* in respect of the work performed under paragraph (a); and
  - (2) different competencies for each *Accredited Service Provider category* for each *participating jurisdiction*.

## Schedule 7.5 - Metering Register

### S7.5.1. General

- (a) The *metering register* forms part of the *metering database* and holds static *metering* information associated with *metering installations* defined by the *Rules* that determines the validity and accuracy of *metering data*.
- (b) The purpose of the *metering register* is to facilitate:
  - (1) the registration of *connection points*, *metering points* and affected *Registered Participants*;
  - (2) the verification of compliance with the *Rules*; and
  - (3) the auditable control of changes to the registered information.
- (c) The data in the *metering register* is to be regarded as confidential and would only be released to the appropriate party in accordance with rule 7.7.

### S7.5.2. Metering register information

*Metering* information to be contained in the *metering register* should include, but is not limited to the following:

- (a) *Connection* and *metering point* reference details, including:
  - (1) agreed locations and reference details (eg drawing numbers);
  - (2) loss compensation calculation details;
  - (3) site identification names;
  - (4) details of *Market Participants* and *Local Network Service Providers* associated with the *connection point*;
  - (5) nomination of the *responsible person*; and
  - (6) transfer date for *Second-Tier Customer* and *Non-Registered Second-Tier Customer metering data* (i.e. to another *Market Customer*).
- (b) The identity and characteristics of *metering* equipment (ie *instrument transformers*, *revenue metering installation* and *check metering installation*), including:
  - (1) serial numbers;
  - (2) *metering installation* identification name;

- (3) *metering installation* types and models;
  - (4) *instrument transformer* ratios (available and connected);
  - (5) current test and calibration programme details, test results and references to test certificates;
  - (6) asset management plan and testing schedule;
  - (7) calibration tables, where applied to achieve *metering installation* accuracy;
  - (8) *Metering Provider(s)* details;
  - (9) summation scheme values and multipliers; and
  - (10) data register coding details.
- (c) Data communication details, including:
- (1) telephone number(s) for access to data;
  - (2) communication equipment type and serial numbers;
  - (3) communication protocol details or references;
  - (4) data conversion details;
  - (5) user identifications and access rights; and
  - (6) 'write' password (to be contained in a hidden or protected field).
- (d) Data validation, substitution and estimation processes agreed between affected parties, including:
- (1) algorithms;
  - (2) data comparison techniques;
  - (3) processing and alarms (eg *voltage* source limits; phase-angle limits);
  - (4) *check metering* compensation details; and
  - (5) alternate data sources.
- (e) Data processing prior to the *settlement* process, including algorithms for:
- (1) *generation* half-hourly 'sent-out' calculation;
  - (2) customer half-hourly *load* calculation; and

(3) *Local Retailer net load* calculation.