

CHAPTER 7

7. Metering

7.1 Introduction to the Metering Chapter

7.1.1 Contents

(a) ~~[Deleted]~~

(a) This Chapter sets out provisions relating to:

- (1) *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 of *metering data services*;
- (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;
- (8) *metering data services database* and the *metering database*; and
- (9) *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).

7.1.3 Obligation to establish, maintain and publish procedures

- (a) *AEMO* is responsible for the establishment and maintenance of procedures specified in this Chapter 7 except for the *B2B Procedures*.
- (b) The procedures authorised by *AEMO* must be established and maintained by *AEMO* in accordance with the *Rules consultation procedures*.
- (c) The procedures established or maintained by *AEMO* under this clause must be *published* by *AEMO*.
- (d) *AEMO* must establish, maintain and *publish* a list of procedures authorised under the *Rules* relevant to this Chapter 7, irrespective of who authorised those procedures.

7.1.4 Amendment of procedures in the Metering Chapter

- (a) Any person (the '**proponent**') may submit to *AEMO* a proposal (the '**proposal**') to amend any procedure in Chapter 7 including the *metrology procedure* except:
 - (1) in relation to the *jurisdictional metrology material* which is contained within the *metrology procedure*; and
 - (2) procedures specified in Rule 7.2A,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* proposals 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 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*, *Metering Data Providers*, *Ministers* and the *AER* advising that the amendment to the 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*, *Metering Provider* or *Metering Data 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 procedure identified in paragraph (a), reasons for the amendments to the procedure.

7.2 Responsibility for Metering Installation, Metering Data and Market Settlement and Transfer Solution Procedures

7.2.1 Responsibility of the responsible person

- (a) The *responsible person* is the person responsible for in accordance with this Chapter 7, the *metrology procedure* and procedures authorised under the *Rules*, the:
 - (1) provision, installation and maintenance of a *metering installation*; and
 - (2) collection of *metering data* from each *metering installation* for which it is responsible, the processing of that data and the delivery of the processed data to the *metering database* and to parties entitled to that data under rule 7.7(a), except as otherwise specified in clause 7.2.1A(a).
- (b) The *responsible person* must perform its role in accordance with:

- (1) this Chapter 7; and
 - (2) procedures authorised under the *Rules*.
- (c) *AEMO* must establish, maintain and *publish* relevant explanatory material that sets out the role of the *responsible person* consistent with this Chapter 7.

7.2.1A Responsibility of AEMO for the collection, processing and delivery of metering data

- (a) Where the *Market Participant* has selected a *responsible person* for a *metering installation* in accordance with clause 7.1.2(a)(2) and that *responsible person* is a *Transmission Network Service Provider*:
- (1) the *Transmission Network Service Provider* is responsible for the provision, installation and maintenance of the *metering installation*; and
 - (2) *AEMO* is responsible for the collection of *metering data* from that *metering installation*, the processing of that data and the delivery of the processed data to the *metering database* and to parties entitled to that data under rule 7.7(a).
- (b) In performing its role under subparagraph (a)(2), *AEMO* must:
- (1) permit the *financially responsible Market Participant* to engage a *Metering Data Provider* of its choice to perform the *metering data services* between the *metering installation* and the *metering database* and to parties entitled to that data under rule 7.7(a), subject to the limitations on that choice imposed by clauses 7.2.4(d) and 7.2.4A(e);
 - (2) where a *financially responsible Market Participant* has not chosen a *Metering Data Provider* in accordance with subparagraph (1), engage a *Metering Data Provider* to provide *metering data services* between the *metering installation* and the *metering database* and to parties entitled to that data under rule 7.7(a);
 - (3) comply with the processes for the collection, processing and delivery of *metering data* from the *metering installation* to the *metering database* and to parties entitled to that data under rule 7.7(a) in accordance with the requirements of the procedures authorised under the *Rules*, and may establish additional processes if necessary in order to fulfil that role;
 - (4) if any additional processes established by *AEMO* for the purpose of fulfilling its obligations under subparagraph (3), and those processes impact on other persons, the relevant parts of those processes that impact on those persons must be incorporated in the *service level procedures*.

7.2.1B Responsibility for interconnectors

- (a) For an *interconnector*, the relevant *Transmission Network Service Provider* is responsible for the provision, installation and maintenance of a *metering installation*.
- (b) For an *interconnector*, AEMO is responsible for the collection of *metering data* from that *metering installation*, the processing of that data and the delivery of the processed data to the *metering database*.

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*;
 - (2) provide the *Market Participant* with the name of the *Metering Provider* and the name of the *Metering Data Provider* that would be

engaged under clauses 7.2.5(a) and 7.2.5(c1), if requested by the *Market Participant*; and

- (3) provide the *Market Participant* with the terms and conditions relating to the offer,

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

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

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.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (c) In the absence of such agreement, *AEMO* may nominate one of the *Market Participants* to be the *responsible person* for that *metering installation*.
- (d) Where more than one *Market Participant* or *responsible person*, as the case may be, are subject to the same special site or technology related conditions as specified in clause 7.2.4A(c), either the affected *Market Participant* or the affected *responsible person* must notify *AEMO* of the *Metering Data Provider* that will provide the *metering data services* for the relevant *metering installation(s)*.
- (e) In the absence of such an agreement specified in paragraph(d), *AEMO* may nominate a *Metering Data Provider* to provide the *metering data services* for those *metering installations*.

7.2.4A Special site or technology related conditions

- (a) Special site or technology related conditions are situations where *AEMO* determines that special arrangements are required to support the integrity of the collection and processing of *metering data* from nominated *metering*

installations. These conditions include, but are not limited to, the following situations:

- (1) a *transmission network connection point* where the *metering data* collection and/or processing arrangements from *metering installations* nominated in the document *published* in subparagraph (c)(1) require a single *Metering Data Provider*;
 - (2) a situation where two or more *metering points* are required to form a *metering installation* and the *metering data* determined from that *metering installation* is required to be identified as a virtual *NMI* in the *settlements* process;
 - (3) a *metering installation* on an *interconnector*;
 - (4) a *metering installation* on the interconnection between adjacent *distribution networks*.
- (b) Special site or technology related conditions do not exist until they are described and *published* in the document specified in subparagraph (c)(1).
- (c) Where *AEMO* determines that special site or technology related conditions exist under paragraph (a), it must:
- (1) describe and *publish* those special site or technology related conditions including the nomination of *metering installations* affected by those conditions in a document;
 - (2) notify *responsible persons* and *financially responsible Market Participants* of the availability of the document specified in subparagraph (1) at the time of its *publication* and each time that document is revised; and
 - (3) clarify any matters with the *responsible person* or the *financially responsible Market Participant* in order to choose a *Metering Data Provider* for that *metering installation* that is mutually suitable to all parties.
- (d) A *responsible person* or *financially responsible Market Participant* may make alterations to a *metering installation* and its *metering data* collection arrangements in order to remove its classification as a special site or technology related condition, in which case *AEMO* must remove that *metering installation* from the document specified in clause 7.2.4A(c)(1).
- (e) Where a *financially responsible Market Participant* chooses to engage a *Metering Data Provider* under clause 7.2.1A(b)(1), it must:
- (1) only engage a *Metering Data Provider* who can fully accommodate any special site or technology related conditions described in the document *published* under subparagraph (c)(1);

- (2) clarify any matters with *AEMO* in order to choose a *Metering Data Provider* for that *metering installation* that is mutually suitable to all parties.

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* or *Metering Providers* for the provision, installation and maintenance of that installation unless the *responsible person* is the *Metering Provider* or *Metering Providers*; or
 - (2) subject to the *metrology procedure*, allow another person to engage a *Metering Provider* to install that installation.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (b) The *responsible person* must:
 - (1) enter into an agreement with a *Metering Provider* or *Metering Providers*:
 - (i) for the provision, installation and maintenance of the *metering installation* by the *Metering Provider* or *Metering Providers*, where the *responsible person* has engaged the *Metering Provider* or *Metering Providers* under paragraph (a)(1); or
 - (ii) for the maintenance of the *metering installation*, where another person has engaged the *Metering Provider* or *Metering Providers* 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).

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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* or *Metering Providers* for the maintenance of the *metering installation*.

Engagement of a Metering Data Provider

- (c1) The *responsible person* (other than when the *Transmission Network Service Provider* is the *responsible person* for a *metering installation*) must, for each *metering installation* for which it is responsible:
- (1) engage a *Metering Data Provider* (unless that person is a *Metering Data Provider*) to provide *metering data services* between the *metering installation* and the *metering database* and to parties entitled to that data under rule 7.7(a); and
 - (2) if the *responsible person* is a *Local Network Service Provider*, provide the *financially responsible Market Participant* with the name of the *Metering Data Provider* that would be engaged under subparagraph (1).

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 *Rules*, the *metrology procedure* and procedures authorised under the *Rules*;
 - (2) ensure that the components, accuracy and testing of the installation complies with the requirements of the *Rules*, the *metrology procedure* and procedures authorised under the *Rules*;
 - (3) ensure that the security control of the installation is provided in accordance with clause 7.8.2;
 - (4) where *remote acquisition* is used or is to be used for the collection of *metering data* ensure that a *communications interface* is installed and maintained to facilitate connection to the *telecommunications network*;
 - (5) **[Deleted]**
 - (6) ensure that *AEMO* is provided (when requested) with 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; and
 - (8) **[Deleted]**
 - (9) allow the alteration of the installation for which that person is responsible with another installation in accordance with clause 7.3.4.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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) **[Deleted]**

Metering data services

- (g) The *responsible person* (other than when the *Transmission Network Service Provider* is the *responsible person* for a *metering installation*) must, for each *metering installation* for which it is responsible:
 - (1) ensure that the *Metering Data Provider* chosen in paragraph (c1) accommodates any special site or technology related conditions determined by *AEMO* in accordance with clause 7.2.4A(c), and where necessary clarify any matters with *AEMO* in order to choose a *Metering Data Provider* for that *metering installation* that is mutually suitable to all parties;
 - (2) ensure that *metering data services* are provided in accordance with the *Rules* and procedures authorised under the *Rules*;
 - (3) 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 *interval energy data* is collected; and
 - (4) arrange for the provision of relevant *metering data* to the *Metering Data Provider* if *remote acquisition*, if any, becomes unavailable.

7.2.6 [Deleted]

7.2.7 Registration of metering installations

- (a) *AEMO* must establish, maintain 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 establish, maintain 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* and *Metering Data Providers*.
- (d) All *Registered Participants*, *Metering Providers* and *Metering Data Providers* must comply with the *Market Settlement and Transfer Solution Procedures*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (e) If a *Registered Participant* breaches the requirements of the *Market Settlement and Transfer Solution Procedures*, *AEMO* may send to that *Registered Participant* a notice in writing setting out the nature of the breach.
- (f) If the *Registered Participant* 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 B2B Arrangements

7.2A.1 B2B e-Hub

AEMO must provide and operate a *B2B e-Hub*. As required by the *B2B Procedures* and, subject to clause 7.2A.2(b), *Local Retailers*, *Market Customers* and *Distribution Network Service Providers* must use the *B2B e-Hub* for *B2B Communications*.

7.2A.2 B2B Procedures

- (a) *Local Retailers, Market Customers, Distribution Network Service Providers, AEMO, Metering Providers and Metering Data Providers* must comply with the *B2B Procedures*.
- (b) *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*.
- (c) *B2B Data* is *confidential information* and may only be disclosed as permitted by the *Rules*.

7.2A.3 Cost Recovery

- (a) 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) 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*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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*, unless it is classified as an *unmetered connection point* in accordance with schedule 7.2, 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);

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (2) be accurate in accordance with clause 7.3.4;

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (3) *metering installations* types 1, 2, 3, or 4, have *electronic data transfer* facilities from the *metering installation* to the *metering data services database*;

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (4) include a *communications interface* to meet the requirements of clause 7.2.5(d)(4);

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (5) be secure in accordance with rule 7.8;

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (6) record *energy data* in a manner that enables *metering data* to be collated in accordance with clause 7.11.5;

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (7) be capable of separately recording *energy data* for energy flows in each direction where bi-directional *active energy* flows occur or could occur;

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (8) 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 are recorded;

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (9) **[Deleted]**

- (10) include facilities for storing *interval energy data* for a period of at least 35 *days* if the *metering installation* is registered as a type 1, 2, 3 or 4 *metering installation*;

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (11) include facilities for storing *interval energy data* for a period of at least 200 *days* or such other period as specified in the *metrology procedure* if the *metering installation* is registered as a type 5 *metering installation*; and

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (12) **[Deleted]**

- (13) **[Deleted]**

- (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) **[Deleted]**
- (5) **[Deleted]**

- (6) communication interface equipment such as a modem, isolation requirements, telephone service, radio transmitter and data link equipment;
 - (7) **[Deleted]**
 - (8) **[Deleted]**
 - (9) **[Deleted]**
 - (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*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (f) The *responsible person* must register the *NMI* with *AEMO* in accordance with procedures from time to time specified by *AEMO*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (g) Where a *metering installation* is used for operational purposes in addition to metrology purposes, the *responsible person* must:
- (1) use reasonable endeavours to ensure that there will be no infringement of the requirements of the *Rules*;

- (2) co-ordinate with the persons who use the *metering installation* for such other purposes; and
 - (3) ensure that 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) **[Deleted]**
 - (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.

Requirements for metering installations for a small generating unit classified as a market generating unit

- (j) In addition to the requirements for *metering installations* for *non-market generating units* in paragraph (i), a *metering installation* for a *small generating unit* classified as a *market generating unit* must:
 - (1) be a *metering installation* that is classified as a type 1, 2, 3 or 4 *metering installation*; and
 - (2) be capable of recording *interval energy data* relevant to *settlements*.

7.3.2 Connection and metering point

- (a) The *responsible person* must ensure that:
 - (1) the *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 *metering data*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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 [Deleted]

7.3.4 Metering installation types, accuracy and meter churn

- (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 *metering installation* but must have a mathematical correlation

with the *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*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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 establish, maintain and *publish* procedures 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 (the '**meter churn procedures**');
- (k) AEMO may from time to time and in accordance with the *Rules consultation procedures*, amend or replace the meter churn procedures referred to in paragraph (j).

- (l) *AEMO* must develop and *publish* the first meter churn procedures under paragraph (j) by 1 January 2008, and there must be such procedures 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 procedures 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 [Deleted]

7.3.6 [Deleted]

7.3.7 Meter installation malfunctions

- (a) Unless an exemption is obtained by the *responsible person* from *AEMO* under this clause 7.3.7, the *responsible person* must in respect of a *connection point* with:
 - (1) a type 1, 2 and 3 *metering installation*, if a *metering installation malfunction* occurs to the *metering installation*, cause repairs to be made to it as soon as practicable but no later than 2 *business days* after the *responsible person* has been notified of the *metering installation malfunction*; or
 - (2) a *metering installation* other than the installations referred to in subparagraph (1), if a *metering installation malfunction* occurs to the *metering installation*, cause repairs to be made to it as soon as practicable but no later than 10 *business days* after the *responsible person* has been notified of the *metering installation malfunction*.
- (b) *AEMO* must establish, maintain and *publish* a procedure applicable to the provision of exemptions for the purpose of paragraph (a).
- (c) If an exemption is provided by *AEMO* under this clause 7.3.7 then the *Metering Provider* must provide *AEMO* with a plan for the rectification of the *metering installation*.
- (d) A *Registered Participant*, *Metering Provider* or *Metering Data Provider* who becomes aware of a *metering installation malfunction* of a *metering installation* that cannot be rectified within the applicable timeframes as specified in paragraph (a) must notify the *responsible person* of the *metering installation malfunction* within 1 *business day*.

7.3A Payment for Metering Provision and Metering Data Services

- (a) Subject to paragraph (b), the *financially responsible Market Participant* is responsible for payment of all costs associated with:
 - (1) the provision, installation, maintenance, routine testing and inspection of the *metering installation*;
 - (2) the provision of *metering data services*;
 - (3) the cost of preparing *settlements ready data* where such costs will not be recovered by *AEMO* in accordance with paragraph (c);
 - (4) the cost of additions and enhancements to *metering installations* undertaken in accordance with clause 7.3.1(c); and
 - (5) the cost of additional data services that exceed the minimum requirements in accordance with clause 7.11.2(b).
- (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 accessed 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 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 and Metering Data Providers

7.4.1 Role of Metering Providers

- (a) Installation and maintenance of *metering installations* must be carried out only by a *Metering Provider*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (b) A *Metering Provider* must provide and maintain the security controls of a *metering installation* in accordance with clause 7.8.2.

7.4.1A Role of Metering Data Providers

- (a) The provision of *metering data services* must be carried out only by a *Metering Data Provider*.
- (b) A *Metering Data Provider* must provide and maintain the security controls associated with *metering data services* 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 include requirements for accreditation of *Metering Providers* in the *service level procedures*. The adoption of the requirements by *Metering Providers* is to be included in the qualification process in accordance with clause S7.4.1(b). The requirements must include a dispute resolution process.

- (bb) A *Metering Provider* must comply with the provisions of the *Rules* and procedures authorised under the *Rules* that are expressed to apply to *Metering Providers* relevant to their category of registration.

- (bc) **[Deleted]**

- (c) *Network Service Providers*, who are *responsible persons* for *metering installations*, must either register as a *Metering Provider* or enter into agreements with *Metering Providers* for the provision, installation and maintenance services relating to the *metering installations* for which they are responsible.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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*.

7.4.2A Qualifications and registration of Metering Data Providers

- (a) A *Metering Data Provider* is a person who:
 - (1) meets the requirements set out in schedule 7.6; and
 - (2) is accredited by and registered by *AEMO* in that capacity in accordance with the qualification process established under clause S7.6.1(b).
- (b) Any person may apply to *AEMO* for accreditation and registration as a *Metering Data Provider*.

- (c) *Network Service Providers*, who are responsible for *metering data services*, must either register as a *Metering Data Provider* or enter into agreements with *Metering Data Providers* for the provision of *metering data services* for those *metering installations*.
- (d) *AEMO* must include requirements for accreditation of *Metering Data Providers* in the *service level procedures*. The adoption of the requirements by *Metering Data Providers* is to be included in the qualification process in accordance with clause S7.6.1(b). The requirements must include a dispute resolution process.
- (e) A *Metering Data Provider* must comply with the provisions of the *Rules* and procedures authorised under the *Rules* that are expressed to apply to *Metering Data Providers* relevant to their category of registration.
- (f) A *Market Generator* or *Market Customer* which is involved in the trading of *energy* must not be registered as a *Metering Data Provider* for *connection points* in respect of which the *metering data* relates to its own use of *energy*.
- (g) If a *Market Participant* is a *Market Customer* and also a *Network Service Provider* then the *Market Participant* may be registered as a *Metering Data Provider* for that *connection point* as specified in paragraph (f).

7.4.3 Deregistration of Metering Providers and Metering Data Providers

- (a) *AEMO* must establish, maintain and *publish* a procedure for deregistration of *Metering Providers* and *Metering Data Providers* which incorporates the principles specified in paragraph (aa).
- (aa) A breach of the provisions of the *Rules* or of the procedures under the *Rules* must be determined against the following principles:
 - (1) the definition of breach must contain three or more levels of severity, the highest level of severity being a ‘material breach’;
 - (2) the de-registration of a *Metering Provider* or a *Metering Data Provider* can only occur if it can be demonstrated that the provider has performed a material breach; and
 - (3) the levels of a breach with severity below a material breach are to be treated as warnings with different levels of magnitude.
- (b) If *AEMO* reasonably determines that a *Metering Provider* or a *Metering Data Provider* has breached the provisions of the *Rules* or of procedures authorised under the *Rules* that applies to *Metering Providers* or *Metering Data Providers* then:
 - (1) *AEMO* must send to that *Metering Provider* or *Metering Data Provider* a notice in writing setting out the nature of the breach; and
 - (2) *AEMO* must, if the *Metering Provider* or *Metering Data Provider* remains in breach for a period of more than 7 days after notice in

accordance with subparagraph (1), conduct a review to assess the *Metering Provider's* or *Metering Data Provider's* capability for ongoing compliance with the *Rules* or procedures authorised under the *Rules*.

- (c) *AEMO* may, following a review conducted under paragraph (b) and in accordance with the procedure under paragraph (a), deregister the *Metering Provider* or *Metering Data Provider*, suspend the provider from some categories of registration or allow the provider to continue to operate under constraints agreed with *AEMO*.
- (d) If following a review under paragraph (c), *AEMO* deregisters or suspends from some categories of registration or allows the *Metering Provider* or *Metering Data Provider* to continue to operate under constraints, then *AEMO* must inform the relevant *responsible person(s)*, the relevant *financially responsible Market Participants* and the relevant *Local Network Service Providers* of the outcome of that review.

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 *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 *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*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

7.5A Disclosure of NMI information

7.5A.1 Application of this Rule

A *retailer* is entitled to information under this *Rule* only if the relevant information is not available to the *retailer* through the *Market Settlement and Transfer Solution Procedures*.

7.5A.2 NMI and NMI checksum

- (a) A *Distribution Network Service Provider* must, at the request of a *retailer*, and within 1 *business day* of the date of the request, provide the *retailer* with the *NMI* and *NMI* checksum for premises identified in the request by reference to:
 - (1) a unique *meter* identifier held by the *Distribution Network Service Provider*; or
 - (2) a street address; or
 - (3) the code used by Australia Post to provide a unique identifier for postal addresses.
- (b) If a computer search by the *Distribution Network Service Provider* does not produce a unique match for the information provided by the *retailer*, the *Distribution Network Service Provider* must provide the *retailer* with any computer matches achieved up to a maximum of 99.

7.5A.3 NMI Standing Data

A *Distribution Network Service Provider* must, at the request of a *retailer*, and within 2 *business days* of the date of the request, provide the *retailer* with the *NMI Standing Data* for premises identified in the request by reference to the *NMI* for the premises.

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.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (2) arrange for the accuracy of the *metering installation* to be restored in a time frame agreed with *AEMO*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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 information held in metering installations

- (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 relevant *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 *responsible persons* to *metering installations* for the purpose of carrying out such random audits where *AEMO* agrees to comply with the *responsible person's* reasonable security and safety requirements and has first given the *responsible person* 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.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

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 and access to metering installation

- (a) The only persons entitled to access *energy data* or to receive *metering data*, *NMI Standing Data*, *settlements ready 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 procedures 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:
 - (i) *retail customer* of:
 - (A) a *retailer*; or
 - (B) a *Distribution Network Service Provider*; or
 - (ii) *customer authorised representative*,
upon request by that *retail customer* its *customer authorised representative* to the *retailer* or *Distribution Network Service Provider* in relation to that *retail customer's metering installation*;
 - (8) the *AER* or *Jurisdictional Regulators* upon request to *AEMO*; and
 - (9) *Metering Data Providers* who have been engaged to provide *metering data services* for that *metering installation* or in accordance with clause 7.14.1A(c)(6).
- (a1) In addition to the persons listed in paragraph (a), an *Exempt Embedded Network Service Provider* may access and receive *metering data* in relation to a *metering installation* at a *child connection point* on its *network*.
- (a2) Without limiting paragraphs (a) or (a1), a:
- (1) *retailer* is entitled to access or receive *NMI Standing Data*;
 - (2) *customer authorised representative* is entitled to access or receive the relevant data referred to in paragraph (a);

- (3) *retailer* or a *Distribution Network Service Provider* is entitled to access or provide the relevant data referred to in paragraph (a) to a *customer authorised representative*; and
- (4) *Exempt Embedded Network Service Provider* is entitled to access or receive the relevant data referred to in paragraph (a1),

after having first done whatever may be required or otherwise necessary, where relevant, under any applicable privacy legislation (including if appropriate making relevant disclosures or obtaining relevant consents from *retail customers*).

- (b) Electronic access to *energy data* recorded by a *metering installation* by persons referred to in paragraph (a) must only be provided where passwords in accordance with clause 7.8.2 are allocated, otherwise access shall be to *metering data* from the *metering data services database* or the *metering database*.

Note

This rule is classified as a civil penalty provision under the National Electricity (South Australia) Regulations.

- (c) The *responsible person* or AEMO (as the case may be) who is responsible for the provision of *metering data services* must ensure that access is provided to *metering data* from the *metering data services database* to persons eligible to receive *metering data* in accordance with paragraph (a).
- (c1) The *responsible person* must ensure that access to *energy data* from the *metering installation* by persons referred to in paragraph (a) is scheduled appropriately to ensure that congestion does not occur.
- (d) Despite anything to the contrary in this *Rule*, AEMO may provide an *energy ombudsman* with *metering data* relating to a *Registered Participant* from a *metering installation*, the *metering database*, or the *metering register* if the ombudsman has received a complaint to which the data is relevant from a *retail customer* of the *Registered Participant*.
- (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*.
- (g) The *Metering Provider* must provide electronic access to the *metering installation* in accordance with the requirements of paragraph (b) and electronic or physical access, as the case may be, to the *metering installation* to facilitate the requirements of rule 7.12(f).

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.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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*, *Metering Provider*, or *Metering Data 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 a *retail customer* of that *Market Participant*;
 - (2) a *Registered Participant* if the seal was broken by the *Registered Participant*;
 - (3) by the *Metering Provider* if the seal was broken by the *Metering Provider*; or
 - (4) by the *Metering Data Provider* if the seal was broken by the *Metering Data 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 *energy data* held in the *metering installation* is protected from direct local or remote electronic access by suitable password and security controls in accordance with paragraph (c).

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (b) The *Metering Provider* must keep records of electronic access passwords secure.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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. For the avoidance of doubt, a *financially responsible Market Participant* may allocate that 'read-only' password to a customer who has sought access to its *energy data* or *metering data* in accordance with rule 7.7(a)(7).

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (d) The *Metering Provider* must hold 'read-only' and 'write' passwords.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (e) The *Metering Provider* must forward a copy of the passwords held under paragraph (d) to *AEMO* on request by *AEMO* for *metering installations* types 1, 2,3 and 4.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (f) *AEMO* must hold a copy of the passwords referred to in paragraph (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* which is for the purpose of managing congestion in accordance with rule 7.7(c1), if a *retail 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* in accordance with paragraph (c); and
 - (2) provide a 'read-only' password to the customer within 10 *business days*.
- (h) The *responsible person* referred to in paragraph (g) must not unreasonably withhold the authorisation required by the *financially responsible Market Participant*.
- (i) The *Metering Provider* must allocate suitable passwords to the *Metering Data Provider* that enables the *Metering Data Provider* to collect the *metering data* and to maintain the clock of the *metering installation* in accordance with rule 7.12.
- (j) The *Metering Data Provider* must keep all *metering installation* passwords secure and not make the passwords available to any other person.

7.8.3 Changes to metering equipment, parameters and settings within a metering installation

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

- (a) authorised by *AEMO* prior to the alteration being made;

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (b) implemented by a *Metering Provider*;

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (c) confirmed by the *responsible person* within 2 *business days* after the alteration has been made; and

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

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

7.8.4 Changes to energy data or to metering data

- (a) The *energy data* held by a *metering installation* 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*, to ensure that the *metering data* in the *metering data services database* and the *metering database* is not materially different from the *energy* consumed at that *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) notify *AEMO* that alteration to the *metering data* is necessary; and
 - (2) advise the *financially responsible Market Participant* of the need to change the *metering data* and the *responsible person* must arrange for the *Metering Data Provider* to:
 - (i) alter the *metering data* for the *connection point* held in the *metering data services database* in accordance with the validation, substitution and estimation procedures in the *metrology procedure*; and
 - (ii) submit the altered *metering data* to the *Registered Participants* and the *Network Service Provider* who are entitled to the data in accordance with rule 7.7.
- (d) If a test referred to in paragraph (b) is based on actual *connection point* loads, no alteration is required.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

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) **[Deleted]**
- (b1) **[Deleted]**
- (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 *metering data*, *settlements ready data*, and information for each *metering installation* registered with *AEMO* in accordance with rule 7.5.
- (e) Rights of access to data held within the *metering database* are set out in rule 7.7.
- (f) **[Deleted]**
- (g) For all types of *metering installations*, the *metering database* must contain *metering data* that is:
 - (1) retained online in an accessible format for at least 13 months; and
 - (2) following the retention under subparagraph (1), archived in an accessible format for an overall period of not less than 7 years.
- (h) The *settlements ready data* held in the *metering database* must be used by *AEMO* for *settlements* purposes.
- (i) The *settlements ready data* held in the *metering database* may be used by *Distribution Network Service Providers* for the purpose of determining *distribution service charges* in accordance with clause 6.20.1.
- (j) *AEMO* must retain *settlements ready data* for all *metering installations* for a period of 7 years.

7.9.2 [Deleted]

7.9.3 [Deleted]

7.9.4 Data validation, substitution and estimation

- (a) **[Deleted]**
- (b) **[Deleted]**

- (c) **[Deleted]**
- (d) If *AEMO* in the preparation of *settlements ready data* detects *metering data* that fails validation *AEMO* must notify the *Metering Data Provider* within 1 *business day* of detection.
- (e) Where a *Metering Data Provider* receives notification under paragraph (d), the *Metering Data Provider* must use its best endeavours to provide corrected *metering data* to *AEMO* within 1 *business day* or advise *AEMO* that this time limit cannot be achieved, and the reason for delay, in which case the parties must agree on a revised time limit by which the corrected *metering data* will be provided.
- (f) Where *metering data* fails validation by *AEMO* in the preparation of *settlements ready data* and replacement *metering data* is not available within the time required for *settlements* then *AEMO* must prepare a substitute value in accordance with the *metrology procedure*.

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, the *responsible person* must ensure the *metering data* is substituted in accordance with clauses 7.9.5 and 7.11.2 as appropriate.
 - (aa) If *AEMO* or the *responsible person* is not aware of the time at which the error that was identified in paragraph (a) 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.
 - (ab) The time that the error was deemed to occur, as determined in paragraph (aa), is to be used by the *Metering Data Provider* in performing substitution of the *metering data*.
- (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 paragraph (b), *AEMO* must request the *responsible person* or the *financially responsible Market Participant* or the *Metering Data Provider*, as appropriate, to arrange for a suitable substitution of the incorrect *metering data* to be undertaken in accordance with the recommendations of any audit report provided by *AEMO* (under clauses 7.6.1(j), 7.6.3(a) and 7.6.3(d)), or if no audit report is provided, in accordance with the substitution requirements of the *metrology procedure*.

7.10 Confidentiality

Energy data, metering data, NMI Standing Data, information included under a scheme for a NMI Standing Data Schedule as referred to in clause 3.13.12A, information in the *metering register* and passwords are confidential and are to be treated as *confidential information* in accordance with the *Rules*.

7.11 Metering Data Arrangements

7.11.1 Metering data performance standards

- (a) **[Deleted]**
- (b) *Metering data* is required by *AEMO* for all *trading intervals* where the *metering installation* has the capability for *remote acquisition* of actual *metering data*, and that data must be:
 - (1) derived from a *metering installation* compliant with clause 7.3.4(a);
 - (2) within the timeframe required for *settlements* and *prudential requirements* specified in the *metrology procedure*, and the relevant *service level procedures*;
 - (3) actual or substituted in accordance with the *metrology procedure*;
 - (4) in accordance with the performance standards specified in the *metrology procedure*;
 - (5) the performance standards specified in subparagraph (4) must be set at a level that does not impose a material risk on *AEMO's* ability to meet its *settlements* and *prudential requirements* obligations imposed by the *Rules*; and
 - (6) *AEMO* may relax or exempt the performance standards specified in subparagraph (4) in circumstances, including those referred to in clause 7.3.4(f), when *AEMO* and the *responsible person* agree on a lower performance standard that does not place a material risk on *AEMO's* ability to meet its *settlements* and *prudential requirements* obligations in the *Rules*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (c) **[Deleted]**
- (d) Where the *metering installation* does not have the capability for *remote acquisition* of actual *metering data*, *metering data* must be provided to *AEMO*:
 - (1) derived from a *metering installation* compliant with clause 7.3.4(a);

- (2) within the timeframe required for *settlements* specified in the *metrology procedure* and the relevant *service level procedures*;
- (3) as actual, substituted or estimated in accordance with the *metrology procedures*; and
- (4) in accordance with the performance standards specified in the *metrology procedure*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

7.11.2 Metering Data Services

- (a) *Metering Data Providers* must provide *metering data services* in accordance with the *Rules* and procedures authorised under the *Rules*, including:
 - (1) collecting *metering data* by manual reading or by *remote acquisition*;
 - (2) the validation and substitution of *metering data* for a type 1, 2, 3 and 4 *metering installation*;
 - (3) the validation, substitution and estimation of *metering data* for a type 5 and 6 *metering installation*;
 - (4) the calculation, estimation and substitution of *metering data* for a type 7 *metering installation*;
 - (5) establishing and maintaining a *metering data services database* associated with each *metering installation*;
 - (6) delivery of *metering data* and relevant *NMI Standing Data* for a *metering installation* to a person entitled to receive data in accordance with rule 7.7;
 - (7) the delivery of *metering data* and relevant *NMI Standing Data* to AEMO for *settlements*;
 - (8) ensuring the *metering data* and other data associated with the *metering installation* is protected from direct local or remote electronic access while being collected and while held in the *metering data services database* and that data is provided only in accordance with rule 7.7;
 - (9) maintaining the standard of accuracy of the time setting of the *metering data services database* and the *metering installation* in accordance with rule 7.12;
 - (10) notifying the *responsible person* of any *metering installation malfunction* of a *metering installation* within 1 *business day*; and

- (11) management and storage of *metering data* in accordance with clause 7.11.3.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (b) *Metering Data Providers* may provide additional data services that exceed the minimum requirements of the *Rules*, *service level procedures* or the *metrology procedure* at the request of a relevant *Market Participant* or *Local Network Service Provider* provided that:
 - (1) the full costs of this work is met by the *Market Participant* or *Local Network Service Provider*; and
 - (2) the provision of additional data services must not impact the provision of *metering data services*.
- (c) Despite anything to the contrary in the *Rules*, *AEMO* may obtain *metering data* directly from a *metering installation* for the *settlements* process.
- (d) **[Deleted]**

7.11.3 Data management and storage

- (a) *Metering Data Providers* must:
 - (1) retain *metering data* for all relevant *metering installations* in the *metering data services database*:
 - (i) online in an accessible format for at least 13 months;
 - (ii) following the retention under subparagraph (1)(i), in an accessible format for an overall period of not less than 7 years; and
 - (2) archive in an accessible format for a period of 7 years:
 - (i) *metering data* in its original form collected from the *metering installation*;
 - (ii) records of each substitution to *metering data* in respect of a *metering installation*.
- (b) *Metering Data Providers* accredited for type 7 *metering installations* must maintain techniques for determining *calculated metering data* for type 7 *metering installations* that are *market loads* under schedule 7.2 in accordance with the *metrology procedure*.
- (c) *Metering Data Providers* must maintain *electronic data transfer* facilities in order to deliver *metering data* from the *metering data services database* to

the *metering database* in accordance with the relevant *service level procedures*.

- (d) *Check metering data*, where available, and appropriately adjusted for differences in *metering installation* accuracy, where applicable, must be used by the *Metering Data Provider* to validate *metering data*.
- (e) If the *Metering Data Provider* becomes aware that the *metering data* that has been delivered into the *metering database* from a *metering data services database* is incorrect, then the *Metering Data Provider* must provide corrected *metering data* to the *financially responsible Market Participant*, the *Local Network Service Provider* and AEMO within 1 *business day* of detection.
- (f) *Metering data* may only be altered by a *Metering Data Provider* except in the preparation of *settlements ready data*, in which case AEMO may alter the *metering data* in accordance with clause 7.9.4(f).
- (g) A *Metering Data Provider* may only alter *metering data* in the *metering data services database* in accordance with the *metrology procedure*.
- (h) *Metering Data Providers* must maintain *electronic data transfer* facilities in order to deliver *metering data* from the *metering data services database* to *Market Participants* and *Network Service Providers* who are entitled to receive *metering data*.
- (i) The *Metering Data Provider's* rules and protocols for the collection of *metering data* from a *metering installation* must be approved by AEMO and AEMO must not unreasonably withhold such approval.
- (j) The *Metering Data Provider* must arrange with the *responsible person* to obtain the relevant *metering data* if *remote acquisition*, if any, becomes unavailable.

7.11.4 Use of check metering data

- (a) *Check metering data*, where available and provided that the *check metering data* has been appropriately adjusted for differences in *metering installation* accuracy, must be used by *Metering Data Providers* or AEMO, as the case may be, for:
 - (1) validation;
 - (2) substitution; and
 - (3) estimation,

of *metering data* as required by clauses 7.9.4(d) and 7.11.2.

7.11.5 Periodic energy metering

- (a) For type 1, 2, 3, 4 and 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 data services database* 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) For type 6 *metering installations*, *metering data* relating to the amount of *active energy* passing through a *connection point* must be converted into *trading intervals* in the *profiling* process undertaken by *AEMO* in accordance with the *metrology procedure* and the *metrology procedure* must specify:
- (1) the parameters to be used in preparing the *trading interval metering data* for each *market load*, including the algorithms;
 - (2) the *metering data* from *first-tier loads* that is to be used in the conversion process;
 - (3) the quality and timeliness of the *metering data* from the *first-tier loads*;
 - (4) the party responsible for providing the *metering data* from the *first-tier loads*; and
 - (5) if required, the method of cost recovery in accordance with clause 7.3A(c).
- (c) For type 7 *metering installations*, *metering data* relating to the amount of *active energy* passing through a *connection point* must be prepared by a *Metering Data Provider* in accordance with clause 7.11.2(a)(4) in *trading intervals* within a *metering data services database*.

7.12 Time settings

- (a) The *Metering Provider* must set the times of clocks of all *metering installations* with reference to *Eastern Standard Time* to a standard of accuracy in accordance with schedule 7.2 relevant to the *load* through the *connection point* when installing, testing and maintaining *metering installations*.

Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (b) **[Deleted]**
- (c) **[Deleted]**

- (d) *AEMO* must ensure that the *metering database* clock is maintained within -1 second and +1 second of *Eastern Standard Time*.
- (e) The *Metering Data Provider* must maintain the *metering data services database* clock within - 1 second and + 1 second of *Eastern Standard Time*.
- (f) The *Metering Data Provider* must:
 - (1) check the accuracy of the clock of the *metering installation* with reference to *Eastern Standard Time* to a standard of accuracy in accordance with schedule 7.2 relevant to the *load* through the *connection point* on each occasion that the *metering installation* is accessed;
 - (2) reset the clock of the *metering installation* so that it is maintained to the required standard of accuracy in accordance with schedule 7.2 relevant to the *load* through the *connection point* where the clock error of a *metering installation* does not conform to the required standard of accuracy on any occasion that the *metering installation* is accessed; and
 - (3) notify the *Metering Provider* where the *Metering Data Provider* is unable to reset the clock of the *metering installation* in accordance with subparagraph (2).

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.

Note

This rule is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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 and service level procedures

7.14.1 Requirements of the metrology procedure

- (a) *AEMO* must establish, maintain 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 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 7.1.4(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;
 - (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*, *financially responsible Market Participants*, *Local Network Service Providers*, *Metering Providers* and *Metering Data 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 delivery of *metering data* relating to 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:
 - (i) the validation and substitution of *metering data*;
 - (ii) the estimation of *metering data*;
 - (iii) the method:
 - (A) by which accumulated *metering data* is to be converted by AEMO into *trading interval metering data*; and
 - (B) of managing the *first-tier load metering data* that is necessary to enable the conversion referred to in subparagraph (A) to take place; and
- (7) other matters in the *Rules* required to be included in the *metrology procedure*.

7.14.1A Requirements of the service level procedures

- (a) AEMO must establish, maintain and *publish* the *service level procedures* that will apply to the relevant categories of registration that apply to *Metering Providers* and *Metering Data Providers*, in accordance with this Chapter 7 and this rule 7.14.
- (b) AEMO must establish and *publish* the *service level procedures* in accordance with clause 7.1.3.
- (c) The *service level procedures* must include:
 - (1) the requirements for the provision, installation and maintenance of *metering installations* by *Metering Providers*;
 - (2) requirements for the systems and processes for the collection, processing and delivery of *metering data* by *Metering Data Providers*;
 - (3) the performance levels associated with the collection, processing and delivery of *metering data*;
 - (4) the data formats that must be used for the delivery of *metering data*;
 - (5) the requirements for the management of relevant *NMI Standing Data*;
 - (6) the requirements for the processing of *metering data* associated with *connection point* transfers and the alteration of *metering installations* where one or more devices are replaced;
 - (7) other matters in the *Rules* required to be included in the *service level procedures*; and

- (8) information to ensure consistency in practice between the *service level procedures* and other documents developed and published by *AEMO*, including the practices adopted in the *Market Settlement and Transfer Solutions Procedures*.
- (d) The *service level procedures* must include requirements for accreditation, and for *Metering Providers* and *Metering Data Providers* (the '**service providers**'), may include requirements for but are not limited to:
 - (1) requirements relating to cooperation with *AEMO*;
 - (2) the confidentiality of information collected by the service providers;
 - (3) the resolution of disputes between *AEMO* and the service providers, including disputes associated with a breach of the *Rules* and procedures authorised under the *Rules*;
 - (4) the access of *AEMO* to and the inspection and audit by *AEMO* of any equipment or database maintained by the service providers;
 - (5) the insurance which must be taken out by or on behalf of the service providers;
 - (6) subcontracting by the service providers;
 - (7) the software and systems that are used by the service providers;
 - (8) maintenance of quality systems accreditation;
 - (9) the ownership of intellectual property that is developed or used by the service providers; and
 - (10) the delivery up to *AEMO* of data, works, material and other property that *AEMO* has the right to in the event of the deregistration of a service provider.
- (e) The *service level procedures* must contain information to ensure consistency in practice between the procedures and other documents developed and published by *AEMO*, including the practices adopted in the *Market Settlement and Transfer Solutions Procedures*.

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*.

- (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 collected as *interval metering 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 metrology procedure 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 *metering 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 *Metering Data Providers*; and
 - (vi) with respect to the provision, installation and maintenance of *metering installations* and the provision of *metering data services*, the obligations of *responsible persons*, *financially responsible Market Participants*, *Local Network Service Providers*, *AEMO*, *Metering Providers* and *Metering Data Providers*;
 - (2) specify in greater detail:
 - (i) the accuracy of *metering installations*;
 - (ii) **[Deleted]**
 - (iii) inspection and testing standards;
 - (iv) *Metering Provider* and *Metering Data Provider* capabilities in accordance with schedule 7.4 and 7.6 respectively, and accreditation standards;
 - (v) the standards and/or technical requirements for the *metering data services database*; 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) contain requirements:
 - (i) for the engagement and payment of *Metering Providers* and *Metering Data 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 *metering data* held in the *metering data services database* 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 [Deleted]

7.15 Miscellaneous

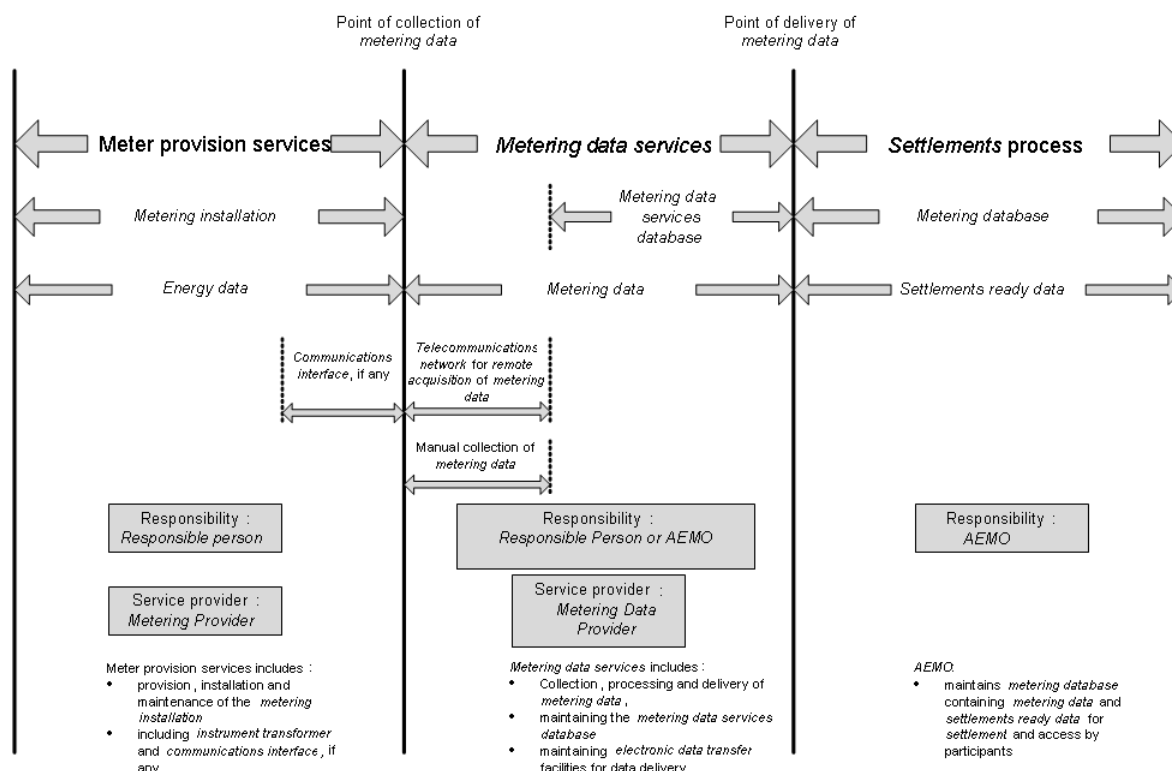
- (a) AEMO in consultation with the *National Measurement Institute* must establish guidelines that clarify the application of the requirements of the *National Measurement Act* to *metering installations*.
- (b) For the avoidance of doubt, to the extent that there is an inconsistency between the *Rules*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

7.16 Metering data provision to retail customers

- (a) AEMO must establish, maintain and *publish* the *metering data provision procedures* in accordance with this rule 7.16, Chapter 7, and otherwise in accordance with the *Rules*.
- (b) The objective of the *metering data provision procedures* is to establish the minimum requirements for the manner and form in which *metering data* should be provided to a *retail customer* (or its *customer authorised representative*) in response to a request for such data from the *retail customer* or *customer authorised representative*.
- (c) The *metering data provision procedures* must:
 - (1) specify the manner and form in which *retail customers' metering data* must be provided, including a:

- (i) detailed data format; and
 - (ii) summary data format;
 - (2) for *retail customers* for whom *interval metering data* is available, specify the summary data format, which, at a minimum should include the *retail customer's*:
 - (i) nature and extent of energy usage for daily time periods;
 - (ii) usage or *load* profile over a specified period; and
 - (iii) a diagrammatic representation of the information referred to in subparagraph (i);
 - (3) for *retail customers* for whom *accumulated metering data* is available, specify a summary data format;
 - (4) include timeframes in which a *retailer* or a *Distribution Network Service Provider* must, using reasonable endeavours, respond to requests made under rule 7.7(a)(7). The timeframe to be included must:
 - (i) be no more than 10 business days, except where requests are made under rule 7.7(a)(7) by a *customer authorised representative* in relation to more than one *retail customer* of either the *retailer* or *Distribution Network Service Provider* to whom the request is made; and
 - (ii) take account of procedures in place relating to the validation of *metering data*; and
 - (5) specify a minimum method of delivery for the requested *metering data*.
- (d) *Retailers and Distribution Network Service Providers* must comply with the *metering data provision procedures* when responding to requests under rule 7.7(a)(7).

Schedule 7.1 Responsibility for metering installation and metering data



Schedule 7.2 Types and Accuracy of Metering Installations

S7.2.1 General requirements

- (a) This Schedule 7.2 sets out the minimum requirements for *metering installations*.
- (b) A *Registered Participant* may require the *responsible person* to arrange for a *metering installation* to meet 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 *AEMO* 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

Type	Volume limit per annum per connection point	Maximum allowable overall error ($\pm\%$) at full load (Item 7) active reactive		Minimum acceptable class or standard of components	Metering installation clock error (seconds) in reference to EST
1	greater than 1000GWh	0.5	1.0	0.2CT/VT/meter Wh 0.5 meter varh	± 5
2	100 to 1000GWh	1.0	2.0	0.5CT/VT/meter Wh 1.0 meter varh	± 7
3	0.75 to less than 100 GWh	1.5	3.0	0.5CT/VT 1.0 meter Wh 2.0 meter varh (Item 1)	± 10
4	less than 750 MWh (Item 2)	1.5	n/a	Either 0.5 CT and 1.0 meter Wh; or whole current general purpose meter Wh: <ul style="list-style-type: none">meets requirements of clause 7.3.1(a)(10); and	± 20 (Item 2a)

Type	Volume limit per annum per connection point	Maximum allowable overall error ($\pm\%$) at full load (Item 7) active reactive		Minimum acceptable class or standard of components	Metering installation clock error (seconds) in reference to EST
				<ul style="list-style-type: none"> meets the requirements of clause 7.11.1(b). (Item 1)	
5	less than x MWh (Item 3)	1.5 (Item 3b)	n/a	Either 0.5 CT and 1.0 <i>meter</i> Wh; or whole current connected general purpose <i>meter</i> Wh: <ul style="list-style-type: none"> meets requirements of clause 7.3.1(a)(11); and meets the requirements of clause 7.11.1(d). (Item 1)	± 20 (Item 3a)
6	less than y MWh (Item 4)	2.0 (Item 4b)	n/a	CT or whole current general purpose <i>meter</i> Wh recording <i>accumulated energy data</i> only. Processes used to convert the <i>accumulated metering data</i> into <i>trading interval metering data</i> and <i>estimated metering data</i> where necessary are included in the <i>metrology procedure</i> . (Item 1)	(Item 4a)
7	volume limit not specified (Item 5)	(Item 6)	n/a	No <i>meter</i> . The <i>metering data</i> is <i>calculated metering data</i> determined in accordance with the	n/a

Type	Volume limit per annum per connection point	Maximum allowable overall error ($\pm\%$) at full load (Item 7) active reactive		Minimum acceptable class or standard of components	Metering installation clock error (seconds) in reference to EST
				<i>metrology procedure.</i>	

- Item 1:
- (a) For a type 3, 4, 5 and 6 *metering installation*, whole current *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 750 MWh, must meet the relevant accuracy requirements of Type 3 *metering* for *active energy* only.
- Item 2a: For the purpose of clarification, the clock error 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) **[Deleted]**
 - (2) the value of "x" must be determined by each *Minister of a participating jurisdiction* and:
 - (i) the "x" value must be provided to *AEMO*; and
 - (ii) *AEMO* must record the "x" value in the *metrology procedure*;
 - (3) the maximum acceptable value of "x" determined under subparagraph (2) must be 750 MWh per annum; and
 - (4) **[Deleted]**
 - (5) **[Deleted]**
 - (6) **[Deleted]**
 - (6) **[Deleted]**

- 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:
 - (i) the "y" value must be provided to *AEMO*; and
 - (ii) *AEMO* must record the "y" value in the *metrology procedure*;
 - (3) the maximum acceptable value of "y" determined under subparagraph (2) must be 750 MWh per annum;
 - (4) **[Deleted]**
 - (5) **[Deleted]**
 - (6) devices within the *metering installation* may record *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 *metering data* that is deemed to correspond to the flow of electricity 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 prevent that *connection point* from being subject to *metering* in the future.

Item 6: [Deleted]

Item 7: The maximum allowable overall error ($\pm\%$) at different *loads* and *power factors* is set out in Table S7.2.3.2 to Table S7.2.3.6.

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%

% Rated Load	Power Factor					
	Unity	0.866 lagging		0.5 lagging		Zero
	active	active	reactive	active	reactive	reactive
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 data* 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:

Metering Installation Type in accordance with Table S7.2.3.1	Check Metering Requirements
1	Check metering installation
2	Partial check metering
3	No requirement
4, 5 and 6	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 *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 the *metrology procedure*.
- (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 *metering*

installation, but must not exceed twice the level prescribed for the *metering installation*.

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

Programmable settings available within a *metering installation* 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 *connection point*, the *current transformer* core and secondary wiring associated with the *meter(s)* shall not be used for any other purpose unless otherwise agreed by *AEMO*.
- (b) For *metering installations* less than 1000 GWh pa per *connection point* the *current transformer* core and secondary wiring associated with the *meter(s)* 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
In Laboratory	CTs ratio	0.05%	0.1%	n/a	n/a	n/a
	phase	0.07 crad	0.15 crad			
	VTs ratio	0.05%	0.1%	n/a	n/a	n/a
	Phase	0.05 crad	0.1 crad			
In Field	Meters Wh	0.05/cos ϕ %	0.1/cos ϕ %	0.2/cos ϕ %	0.2/cos ϕ %	n/a
	Meters varh	n/a	0.2/sin ϕ %	0.3/sin ϕ %	n/a	0.4/sin ϕ %
	CTs ratio	0.1%	0.2%	n/a	n/a	n/a
	Phase	0.15 crad	0.3 crad			
	VTs ratio	0.1%	0.2%	n/a	n/a	n/a
	Phase	0.1 crad	0.2 crad			
	Meters Wh	0.1/cos ϕ %	0.2/cos ϕ %	0.3/cos ϕ %	0.3/cos ϕ %	n/a

Description		Metering Equipment Class				
		Class 0.2	Class 0.5	Class 1.0	General Purpose	Class 2.0
	Meters varh	n/a	0.3/sinφ%	0.4/sinφ%	n/a	0.5/sinφ%

Where cosφ 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 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> .				

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</i>	12 months (2.5 years if <i>check metering</i> installed)	> 10 GWh: 2 years 2 ≤ GWh ≤ 10: 3 years <2 GWh: when	When meter is tested.

Description	Metering Installation Type			
	Type 1	Type 2	Type 3	Type 4, 5 & 6
	<i>installation</i> requirements.		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 licences 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 for *Metering Providers* in relation to the provision, installation and maintenance of *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) Registrations for *Metering Providers* in relation to the provision, installation and maintenance (unless otherwise specified) of *metering installation* types 5 and 6 must be categorised in accordance with Table S7.4.4 with the capabilities established in the *metrology procedures*.
- (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/cosφ% uncertainty and class 0.5 varh meters with <0.3/sinφ uncertainty.
1A	Class 0.2 CTs, VTs, Wh meters; class 0.5 varh meters; the total installation to 0.5%. 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/cosφ uncertainty and class 1.0 varh meters with <0.4/sinφ 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 <i>Communications Interface</i> Installer

Table S7.4.4 Categories of registration for accreditation

Category	Competency
5A Installation only	Class 1.0 and class 1.5 whole current Wh <i>meters</i> with $< 0.3/\cos\Phi\%$ uncertainty.
6A Installation only	Class 1.5 whole current Wh <i>meters</i> with $< 0.3/\cos\Phi\%$ uncertainty.
5B	Class 1.0 and class 1.5 whole current or CT connected Wh <i>meters</i> with $< 0.3/\cos\Phi\%$ uncertainty.
6B	Class 1.5 whole current or CT connected Wh <i>meters</i> with $0.3\leq/\cos\Phi\%$ uncertainty.

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*, and other components of the *metering installation* 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* and, where necessary, the *communications interface* to facilitate the *remote acquisition* of *metering 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 recording is 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 *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*.

- (g) All of the capabilities relevant to that type of *metering installation* which are set out in the *Rules* and procedures authorised under the *Rules*.

S7.4.4 Capabilities of Metering Providers for metering installations types 5 and 6

Metering Providers, who apply for categories of *Metering Provider* accreditation of *metering installations* types 5 and/or 6, 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 set out in the *Rules* and procedures authorised under the *Rules*.
- (b) [Deleted]
- (a) [Deleted]

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 capabilities 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*, *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)* and *Metering Data 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 *energy 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.

Schedule 7.6 Metering Data Provider

S7.6.1 General

- (a) A *Metering Data Provider* must be accredited by and registered by *AEMO*.
- (b) *AEMO* must accredit and register a *Metering Data Provider* only for the type of work the *Metering Data Provider* is qualified to provide.
- (c) *AEMO* must establish a qualification process for *Metering Data Providers* that enables registration to be achieved in accordance with the requirements of this schedule 7.6.
- (d) A *Metering Data Provider* must ensure that *metering data services* are carried out in accordance with the *Rules* and procedures authorised under the *Rules*.

S7.6.2 Categories of registration

Categories of registration are set out in Table S7.6.2.

Table S7.6.2 Categories of registration for accreditation

<i>Metering installation type</i>	<i>Categories of registration</i>	
1, 2 3 and/or 4	Category 1D, 2D, 3D and/or 4D (for <i>remote acquisition</i> , processing and delivery of <i>metering data</i> for <i>connection points</i>)	
5 and/or 6	Category 5C and/or 6C (for manual collection or <i>remote acquisition</i> of <i>metering data</i>)	Category 5D and/or 6D (for manual collection, processing and delivery of <i>metering data</i>) (for <i>remote acquisition</i> , processing and delivery of <i>metering data</i>)
7	Category 7D (for processing and delivery of <i>calculated metering data</i>)	

S7.6.3 Capabilities of Metering Data Providers

Metering Data Providers must be able to exhibit to the reasonable satisfaction of AEMO the following capabilities, as applicable, for the categories of *Metering Data Provider* accreditation sought:

- (a) Detailed understanding of the *Rules*, and all procedures authorised under the *Rules* including the relevant *service level procedures* relating to the function of a *Metering Data Provider* and the carrying out of *metering data services*.
- (b) Detailed understanding of the participant role relationships and obligations that exist between the *Metering Data Provider*, *Metering Provider*, *financially responsible Market Participant*, *Local Network Service Provider*, AEMO and the *responsible person*.
- (c) An understanding of *metering* arrangements, including knowledge of *metering* equipment (*meters*, *current transformers* and *voltage transformers*).
- (d) Authorised access to *metering* software for the:
 - (1) collection of *metering data*;
 - (2) establishment, maintenance and operation of a *metering data services database* for the storage and management of *metering data* and *NMI Standing Data*; and
 - (3) the validation, substitution and estimation of *metering data*.

- (e) Processes and systems for the collection of *metering data* including:
 - (1) knowledge of manual collection and *remote acquisition* of *metering data* (as applicable);
 - (2) collection technologies and methodologies; and
 - (3) *metering* protocols and equipment.
- (f) Systems for the processing of *metering data* including:
 - (1) processes for the verification and commissioning of *metering data* and relevant *NMI Standing Data* pertaining to each *metering installation* into the *metering data services database*;
 - (2) processes for validation, substitution and estimation of *metering data*;
 - (3) processes for the storage, adjustment and aggregation of *metering data*; and
 - (4) the secure storage of historical data.
- (g) Processes for the delivery of *metering data* and relevant *NMI Standing Data* to *Registered Participants* and *AEMO* including:
 - (1) delivery performance requirements for *metering data*; and
 - (2) an understanding of the relevant *metering data* file formats.
- (h) The availability of trained and competent staff to:
 - (1) read or interrogate the *metering installation*;
 - (2) collect and process metering data into the *metering data services database*;
 - (3) validate, substitute or estimate *metering data* as the case may be;
 - (4) maintain the physical and logical security of the *metering data services database* and only allow access to *metering data* by those persons entitled to receive *metering data*; and
 - (5) ensure the ongoing performance and availability of the collection process and the *metering data services database* are maintained inclusive of necessary system supports for backup, archiving and disaster recovery.
- (i) The establishment of a quality system which will:
 - (1) underpin all operational documentation, processes and procedures;
 - (2) facilitate good change control management of procedures, IT systems and software;

- (3) provide audit trail management of *metering data* and *NMI Standing Data*;
 - (4) maintain security controls and data integrity; and
 - (5) maintain knowledge and understanding of the *Rules* and relevant procedures, standards and guides authorised under the *Rules*.
- (j) Understanding of the required logical interfaces necessary to support the provision of *metering data services* including the interfaces needed to:
 - (1) access *AEMO*'s systems for the management and delivery of *metering data*;
 - (2) support *B2B procedures*; and
 - (3) support *Market Settlement and Transfer Solution Procedures* for delivery and update of *NMI Standing Data*.