METROLOGY PROCEDURE:
PART A

NATIONAL ELECTRICITY MARKET

PREPARED BY: AEMO MARKETS
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<th>Effective Date</th>
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</thead>
<tbody>
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</tr>
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<td>• National Electricity Amendment (Expanding competition in metering and related services) Rule 2015. No.12;</td>
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1. INTRODUCTION

1.1. Purpose and Scope

This is the Metrology Procedure: Part A (Procedure), made under clauses 7.16.3, 7.16.4 and 7.16.5 of the NER. This document also contains, for the sake of convenience, the following procedures:

(a) minimum services specification procedures, which AEMO is required to publish under clause 7.8.3(b) of the NER;
(b) emergency priority procedures, which AEMO is required to publish under clause 7.8.5(b) of the NER;
(c) network device procedures, which AEMO is required to publish under clause 7.8.6(1) of the NER; and
(d) meter churn procedures, which AEMO is required to publish under clause 7.8.9(f) of the NER.

This Procedure has effect only for the purposes set out in the NER. The NER and the National Electricity Law prevail over this Procedure to the extent of any inconsistency.

1.2. Definitions and Interpretation

The Retail Electricity Market Procedures – Glossary and Framework:

(a) is incorporated into and forms part of this Procedure; and
(b) should be read with this Procedure.

1.3. Related AEMO Documents

<table>
<thead>
<tr>
<th>Title</th>
<th>Location</th>
</tr>
</thead>
</table>

2. RESPONSIBILITY FOR METERING Provision

(a) MCs must use MPs to provide, install, test and maintain the relevant components, characteristics and service requirements of the metering installation as specified in the NER and this Procedure, as appropriate.

(b) MCs are responsible for the design of a metering installation and warrant that the design complies with the components, characteristics and service requirements specified in the NER and this Procedure.

(c) MCs must ensure the components have been selected, installed, tested and commissioned by the MPs so that the metering installation satisfies the relevant accuracy and performance requirements in the NER and this Procedure.

(d) An MP must be able to provide detailed specification and design requirements for those metering installations for which accreditation has been provided.

3. METERING INSTALLATION COMPONENTS

The components, their characteristics, and associated service requirements for metering installations not detailed in the NER are detailed in this section.
3.1. Requirements under National Measurement Act and Use of Standards

(a) Meters used in type 1, 2, 3, 4, 4A, 5, and 6 metering installations must comply with any applicable specifications or guidelines (including transitional arrangements) specified by the National Measurement Institute under the National Measurement Act, and must also meet the relevant requirements of Australian Standards and International Standards:

(i) For type 1, 2, 3, 4, 4A, and 5 (including type 3 and 4 whole current) metering installation measurement elements: AS 62052.11, AS 62053.21 and AS 62053.22.

(ii) For type 6 metering installation measurement elements: AS 1284.1, AS 62053.21 and AS 62052.11.

(b) CTs for type 1, 2, 3, 4, 4A, 5 and 6 metering installations must meet the relevant requirements of AS 60044.1 and must also comply with any applicable specifications or guidelines specified by the National Measurement Institute under the National Measurement Act.

(c) VTs for type 1, 2, 3, 4, 5 and 6 metering installations must meet the relevant requirements of AS 60044.2, AS 60044.3, AS 60044.5 and AS 1243 and must also comply with any applicable specifications or guidelines (including transitional arrangements) specified by the National Measurement Institute under the National Measurement Act.

(d) New CTs and VTs must comply with current Australian Standards.

(e) In-service and grandfathered CTs and VTs must comply with the Australian Standard that applied at the time of installation (for in-service) or purchase (for grandfathered).

(f) Unless otherwise permitted by the NER, the MC must ensure that new meters and related equipment used at a connection point 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 issued by a NATA accredited laboratory or a body recognised by NATA under the ILAC mutual recognition scheme. Relevant approval certificates must be provided to AEMO on request.

(g) A visible display must be provided to display, at a minimum, the cumulative total energy for each register measured by that metering installation.

(h) Any programmable settings available within the metering installation, or any peripheral device that will affect the resolution of displayed or stored data, must meet the relevant requirements of AS 62052.11, AS 62053.21 and AS 62053.22 and must comply with any applicable specifications or guidelines specified by the National Measurement Institute under the National Measurement Act.

3.2. Use of Optical Ports and Pulse Outputs

(a) Where requested by a FRMP, the MC must provide pulse output facilities representing the quantity of electricity measured in accordance with the relevant Australian Standard for that meter within a reasonable time of receiving the request.

(b) For type 1, 2, 3, 4, 4A and 5 metering installations with a pulse output, the measurement element pulse output must provide a number of energy pulses in each integrating period commensurate with the accuracy class of the metering installation when operating at the top of the range of measurement of the metering installation but may be set at a lower rate where the anticipated operating range is significantly lower than the top of the range of measurement of the metering installation.

(c) A type 4A or 5 metering installation must have an optical port that meets the AS 1284.10.2 or AS 62056.21 or a computer serial port to facilitate downloading of 90 days of interval energy data for each meter associated with the metering installation in 35 seconds or less.

3.3. Password Allocation

The MP must allocate "read-only" passwords to FRMPs, LNSPs and AEMO, except where separate "read-only" and "write" passwords are not available, in which case the MP must allocate a password to AEMO and the MDP only.
3.4. “x” values – Calculation and Use

(a) For connection points with a type 5 metering installation, the volume of electricity flowing through the connection point is to be less than “x” MWh per annum, where “x” varies according to Jurisdiction, except for first-tier load type 5 metering installations that meet clause 11.20.3(a) of the NER.

(b) The type 5 metering installation values of “x” applicable to a Jurisdiction are specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>Value of “x” is 160 MWh per annum</td>
</tr>
<tr>
<td>New South Wales</td>
<td></td>
</tr>
<tr>
<td>South Australia</td>
<td></td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td></td>
</tr>
<tr>
<td>Queensland</td>
<td>Value of “x” is zero (0) MWh per annum.</td>
</tr>
<tr>
<td>Tasmania</td>
<td></td>
</tr>
</tbody>
</table>

(c) For connection points with a type 4A metering installation, the volume of electricity flowing through the connection point is to be less than “x” MWh per annum, where “x” varies according to Jurisdiction.

(d) The type 4A metering installation values of “x” applicable to a Jurisdiction are specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Capital Territory</td>
<td>Value of “x” is 100 MWh per annum</td>
</tr>
<tr>
<td>New South Wales</td>
<td>Value of “x” is 100 MWh per annum</td>
</tr>
<tr>
<td>Queensland</td>
<td>Value of “x” is 100 MWh per annum</td>
</tr>
<tr>
<td>South Australia</td>
<td>Value of “x” is 160 MWh per annum</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Value of “x” is 150 MWh per annum</td>
</tr>
<tr>
<td>Victoria</td>
<td>Value of “x” is zero (0) MWh per annum.</td>
</tr>
</tbody>
</table>

(e) Connection points must not be aggregated when determining the annual consumption or the ADL as the basis of the comparison with the volume threshold for “x”

(f) The manner in which the volumes of electricity referred to in the table above are to be calculated in each Jurisdiction is specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>The volume threshold for a connection point must be determined from the annual consumption for the billing periods over the most recent 12 month period, or prorated over a 12-month period based on the Average Daily Load where consumption over the most recent 12 month period is not available. Where no metering data is available, the annual consumption may be calculated based on an engineering report or metering data from the loads of similar customers.</td>
</tr>
<tr>
<td>New South Wales</td>
<td></td>
</tr>
<tr>
<td>Queensland</td>
<td></td>
</tr>
<tr>
<td>South Australia</td>
<td>The volume threshold for a connection point must be determined from: (1) the consumption at that connection point for any period of 12 consecutive months in the previous 2-year period, or (2) where such consumption data is not available or has not been accurately recorded, a calculation of the annual consumption at that connection point taking into account past electricity consumption levels, the electricity consumption capacity of plant and equipment, the operations for which electricity is required and any other matter considered relevant.</td>
</tr>
</tbody>
</table>
3.5. “y” values – Calculation and Use

(a) For connection points with a type 6 metering installation, the volume of electricity flowing through the connection point is to be less than “y” MWh per annum, where “y” varies according to Jurisdiction, except for first-tier load type 6 metering installations that meet the requirements of clause 11.20.3(a) of the NER.

(b) The value of “y” applicable to each Jurisdiction is specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Capital Territory</td>
<td>The volume threshold for a connection point must be determined from: (1) the annual consumption over the most recent 12-month period, (2) the annual consumption over the most recent 12-month period plus an allowance of 2%; or (3) calculated where consumption over the most recent 12-month period is not available or has not been accurately recorded. Where no consumption data is available, the potential annual consumption may be calculated having regard to relevant circumstances including: (a) the consumption capacity of the connection point and the extent to which that capacity is likely to be utilised in the future; (b) any recent or proposed change in ownership or use of the Site supplied at the connection point; or (c) any recent or proposed increase in the consumption capacity of the connection point.</td>
</tr>
<tr>
<td>Victoria</td>
<td>Value of “y” is 160 MWh per annum.</td>
</tr>
<tr>
<td>South Australia</td>
<td>Value of “y” is 100 MWh per annum.</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>Value of “y” is:</td>
</tr>
<tr>
<td>New South Wales</td>
<td>Value of “y” is 100 MWh per annum.</td>
</tr>
<tr>
<td>Queensland</td>
<td>Value of “y” is:</td>
</tr>
<tr>
<td></td>
<td>a) 750 MWh per annum for customers that are not Queensland Market Customers in accordance with (c), below, and,</td>
</tr>
<tr>
<td></td>
<td>aa) For the period 1 July 2012 to 30 June 2013, 750 MWh per annum for end-use customers who cease to be Queensland Non-Market Customers on 1 July 2012 by operation of the Act and/or Queensland Electricity Regulation 2006, and,</td>
</tr>
<tr>
<td></td>
<td>b) 100 MWh per annum for Queensland Market Customers in accordance with (c), below of this metrology procedure.</td>
</tr>
<tr>
<td></td>
<td>c) The metering coordinator must ensure that the meters installed in the type 6 metering installations under (a) and (b), above, are interval meters which must be capable of being upgraded for use in a type 4 metering installation without replacing the meter.</td>
</tr>
<tr>
<td></td>
<td>d) 100 MWh per annum for end-use customers where:</td>
</tr>
<tr>
<td></td>
<td>(i) card operated meters are installed in accordance with the regulatory framework, or</td>
</tr>
<tr>
<td></td>
<td>(ii) meters are installed temporarily in a place other than the meter’s permanent location.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Value of “y” is 150 MWh per annum.</td>
</tr>
</tbody>
</table>

(c) Connection points must not be aggregated when determining the annual consumption or the ADL as the basis of the comparison with the volume threshold for “y”.

(d) The manner in which the volumes of electricity flowing through connection points are to be determined is specified for each Jurisdiction in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>The volume threshold for a connection point must be determined from the annual consumption for the billing periods over the most recent 12-month period, or prorated over a 12-month period based on the Average Daily Load where consumption over the most recent 12-month period is not available. Where no metering data is available, the annual consumption may be estimated based on an engineering report or metering data from the loads of similar customers.</td>
</tr>
<tr>
<td>South Australia</td>
<td></td>
</tr>
<tr>
<td>New South Wales</td>
<td></td>
</tr>
<tr>
<td>Queensland</td>
<td></td>
</tr>
<tr>
<td>Tasmania</td>
<td></td>
</tr>
</tbody>
</table>
3.6. Grandfathering

(a) Meters and components for a type 5 or 6 metering installation, which were installed, or which were held in stock prior to the following dates:

(i) 1 January 2007 for second-tier loads

(ii) 1 July 2008 for first-tier loads

and which met the requirements of a Jurisdiction at that time, are deemed to meet the requirements of the metrology procedure.

(b) Metering installations that have been installed, or are held in stock for the MC in a Jurisdiction prior to the effective date of that Jurisdiction’s initial metrology procedure and do not comply with the NER or the metrology procedure, may be used where approval from a Jurisdictional Regulator had been obtained prior to the effective date of the metrology procedure or approval is obtained from AEMO.

(c) First-tier load summation metering installations that were commissioned prior to 1 July 2008 that complied with the Jurisdictional requirements as at this date and continue to meet the Jurisdictional requirements are taken to be NER and metrology procedure compliant. The summation metering installations are deemed non-compliant if they do not meet the applicable Jurisdictional accuracy standards at 30 June 2008. Defective first-tier load summation metering installations that were commissioned prior to 1 July 2008 must be repaired or replaced so as to ensure the summation metering meets the minimum standards in accordance with the NER and the metrology procedure.

3.7. Data Storage Requirements for Meters

Section 3.7 supplements clause 7.8.2(a)(10) of the NER.

Components of a type 5 metering installation installed prior to 1 January 2007 must have the capability of storing interval energy data for a period of at least two Meter Reading cycles plus 15 days, or 35 days, whichever is the greater.

3.8. Metering Installation Clock

(a) A type 4A, 5 or 6 metering installation clock is to be reset to within ± 20 seconds of Eastern Standard Time on each occasion that the metering installation is accessed in the circumstances referred to in paragraphs (a) and (b), and the maximum drift in the type 4A or 5 metering installation clock permitted between successive Meter Readings is ± 300 seconds.

(i) MP must reset a type 4A, 5 or 6 metering installation clock when inspecting, maintaining or commissioning the metering installation.

(ii) MDP must reset a type 4A, or 5 metering installation clock when interval metering data is collected from the metering installation.

(b) A CT-connected type 5 metering installation with a slower download time than specified in section 3.2 may be used where approved by AEMO.
(c) For type 6 metering installations with different time of day rates, the metering installation must meet AS 62054.11, AS 62054.21 and AS 62052.21, or have the switching between the different rates controlled by a frequency injection relay or time clock operated by the LNSP.

3.9. Interval Meters

Where a metering installation records interval energy data the interval periods are based on TIs or parts of a TI:

(a) The end of each interval for a 15-minute interval period must be on the hour, on the half-hour and on each quarter of an hour (EST).

(b) The end of each interval for a 30-minute interval period must be on the hour and on the half-hour (EST).

(c) Other sub-multiple intervals, where agreed with AEMO, the LNSP and the relevant Market Participant, provided that the ends of the intervals correspond each and every exact hour (EST) and half-hour (EST).

3.10. Alarm settings

(a) Where an Interval Meter supports alarm functionality, the MP is required to enable the following alarms:

(i) Power failure/meter loss of supply for instrument transformer connected metering installations only;

(ii) VT or phase failure;

(iii) Pulse overflow;

(iv) Cyclic redundancy check error; and

(v) Time tolerance.

(b) Where there are alarm sensitivity settings, these must be set at appropriate levels to ensure meaningful alarm outputs (e.g. for contestable supplies a voltage drop of -15% is nominally appropriate).

4. MINIMUM SERVICES SPECIFICATION

(a) For a type 4 metering installation to become a small customer metering installation, it must meet the minimum services specification, which is specified in Schedule 7.5 of the NER.

(b) The services set out in the minimum services specification apply to the capability of the metering installation itself.

4.1. Minimum Service Levels

The minimum service levels are made up of two elements: service availability and completion timeframes.

4.1.1. Service Availability

Except for periods of a loss of supply, metering installations must be capable of meeting the minimum services specification at all times.

4.1.2. Completion Timeframes

The completion timeframes for each service are detailed in Table 5.1. They will be measured from the time a request is received by the metering installation to the time of notification of completion of the relevant service by the metering installation appears at the communication interface at or near the metering point(s) where it is made available for collection.
4.1.3. Completion Rates
(a) The services and completion rates for each service are detailed in Table 5.1. The timeframes will be measured from the time a request is received by the metering installation to the time of completion of the relevant service by the metering installation.
(b) Upon request from AEMO, the MC must be able to provide evidence demonstrating that small customer metering installations are capable of performing to the completion rates.

4.2. Technical Requirements
A small customer metering installation must comply with the following technical requirements:
(a) It must be capable of measuring active energy (Wh) and leading and lagging reactive energy (varh) for both import and export energy flows, i.e. 4 quadrant metering.
(b) Where a poly-phase metering device is installed, the metering installation must be capable of recording and providing the average voltage and current per phase for all connected phases over one or more nominated TIs.

Table 5.1 Minimum Service Levels, Standards and Completion Rates

<table>
<thead>
<tr>
<th>Service</th>
<th>Completion Timeframe</th>
<th>Completion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote Disconnection Service</td>
<td>Completed within 1 minute of the command being received by the metering installation</td>
<td>99.5% completed within Minimum Service Levels</td>
</tr>
<tr>
<td>Remote Reconnection Service</td>
<td>Completed within 1 minute of the command being received by the metering installation</td>
<td>99.5% completed within Minimum Service Levels</td>
</tr>
<tr>
<td>Remote On-Demand Meter Read</td>
<td>Completed within 1 minute of the command being received by the metering installation</td>
<td>99.5% completed within Minimum Service Levels</td>
</tr>
<tr>
<td>Remote Scheduled Meter Read</td>
<td>Completed within 1 minute of the command being received by the metering installation</td>
<td>99.5% completed within Minimum Service Levels</td>
</tr>
<tr>
<td>Metering Installation Inquiry</td>
<td>Completed within 1 minute of the command being received by the metering installation</td>
<td>99.5% completed within Minimum Service Levels</td>
</tr>
<tr>
<td>Advanced Meter Reconfiguration</td>
<td>Completed within 1 minute of the command being received by the metering installation</td>
<td>99.5% completed within Minimum Service Levels</td>
</tr>
</tbody>
</table>

5. SUMMATION METERING
These provisions are included to support legacy arrangements for existing metering installations which are allowed by Jurisdictional transitional arrangements in Chapter 11 of the NER.
(a) If summation metering is achieved by paralleling CT secondary circuits, the overall metering installation must meet the minimum standards for a new metering installation under all load combinations of the individual CT secondaries.
(b) If summation metering is achieved by the arithmetic sum of data registers or the accumulation of pulses, each individual metering point must meet the minimum standards for a new metering installation and the MC must on request demonstrate that the summation techniques reliably and accurately transfer data.
(c) CT secondaries can only be paralleled using appropriate arrangements of links; this must not be done at the meter terminals.
(d) For type 2 metering installations only: Direct summation, in which secondary wiring from a multiple number of feeders is connected directly into the terminals of a meter, or summation CTs are permitted provided that the overall errors of the metering installation are considered.

6. EMBEDDED NETWORKS
This requirement only applies in the Jurisdiction specified in the following table:
## Jurisdiction | Variation in accordance with Jurisdictional policy
--- | ---
**Victoria, South Australia** | Should a Child Metering Point in an embedded network elect to purchase electricity from a retailer other than the parent’s retailer, the metering coordinator must ensure that:
(a) the child has an interval meter installed; and
(b) the parent of the embedded network has an Interval Meter installed.

**New South Wales** | (1) Should a child in an embedded network elect to purchase electricity from a retailer other than the parent’s retailer, the metering coordinator must ensure that, at the time the child switches retailer and at the cost of the child:
(a) if the parent has an Interval Meter that is settled on the basis of interval energy data, the child must have a type 4 or type 5 metering installation that is settled on the basis of interval energy data;
(b) if the parent has an Accumulation Meter or an Interval Meter that is settled on the basis of accumulated energy data, the child must have a type 6 metering installation or, if the child has an Interval Meter, it must be settled on the basis of accumulated energy data.
(2) Where a child in an embedded network has switched retailer in accordance with clause (NSW)(1)(b) above and the parent subsequently:
(a) installs an Interval Meter and elects to have its meter settled on the basis of interval energy data; or
(b) elects to have its existing Interval Meter settled on the basis of accumulated energy data in accordance with clause 12.2(b)(NSW)(3); or
(c) elects to have its existing Interval Meter settled on the basis of interval energy data, the MC must ensure that at the time the parent changes, and at the cost of the parent, the child’s metering installation meets the requirements of paragraph (a) or (b) of [NSW](1), as applicable.

**Australian Capital Territory** | (1) The metering coordinator must ensure that the metering installation is not for a child in an embedded network.
(2) Where the metering installation is for a child in an embedded network, the metering coordinator must ensure that additional metering is installed to ensure that clause [ACT](1) is met.

## 7. REVERSION OF METERING INSTALLATION TYPES

This requirement only applies to the Jurisdiction specified in the following table:

## Jurisdiction | Variation in accordance with Jurisdictional policy
--- | ---
**Victoria** | The metering coordinator must ensure that a type 4 or type 5 metering installation is not replaced by a type 6 metering installation.

**New South Wales** | (1) The metering coordinator must ensure that a meter that meets the requirements of a type 5 metering installation, and is installed at a connection point consuming between 100 MWh per annum and 160 MWh per annum is not removed from a metering point, unless:
(a) the metering installation is to be replaced by a metering installation type 1, 2, 3, 4, or 5; or
(b) the NMI is deregistered.
(2) Where an interval meter has been installed in accordance with clause 12.2(b)(NSW)(1), the metering coordinator must ensure that it is not replaced with an Accumulation Meter.
(3) The MC must ensure that a meter, which is a sample Interval Meter installed for the purposes of calculating a CLP is not removed without the consent of the LNSP.
(4) The MC must ensure that the energy measured by a meter, which is a sample interval meter installed for the purposes of calculating a CLP is settled market on the basis of a metering installation type 6.

**South Australia** | (1) Subject to [SA](2), the MC must ensure that a type 4 or type 5 metering installation is not replaced by a type 6 metering installation.
(2) A type 4 or type 5 metering installation may be replaced by a type 6 metering installation in relation to a specified connection point where approved by the Minister and written notice of that approval has been provided to AEMO.
(3) The metering coordinator must ensure that a sample Interval Meter installed for the purposes of calculating the CLP is not removed without the consent of the LNSP.

**Australian Capital Territory** | (1) The metering coordinator must ensure that a type 4 or type 5 metering installation is not replaced by a type 6 metering installation.
(2) The metering coordinator must ensure that where an Interval Meter is installed, the metering installation complies with the requirements of a type 4 or type 5 metering installation.
<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
</table>
| Queensland   | (1) The metering coordinator must ensure that an Interval Meter is not replaced by an Accumulation Meter.  
(2) The metering coordinator may convert a remotely read Interval Meter to a manually read Interval Meter if the consumption drops below 100MWh per annum.  
(3) The metering coordinator must ensure that a sample Interval Meter installed for the purposes of calculating a CLP is not removed without the consent of the LNSP.  
(4) The metering coordinator must ensure that the energy measured by a sample Interval Meter installed for the purposes of calculating the CLP is settled in the market on the basis of a type 6 metering installation. |
| Tasmania     | (1) The metering coordinator must ensure that a type 4 or type 5 metering installation is not replaced by a type 6 metering installation.  
(2) A type 4 or type 5 metering installation may be replaced by a type 6 metering installation in relation to a specified connection point where approved by the Minister and written notice of that approval has been provided to AEMO. |

8. **ROUTINE TESTING AND INSPECTION OF METERING INSTALLATIONS**

(a) Unless an MC has an Asset Management Strategy, metering installations must be tested and inspected in accordance with clause 7.9 and schedule 7.6 of the NER. Section 8 provides AEMO’s guidelines in respect of a proposed Asset Management Strategy that the MC will need to take into consideration when seeking approval of an Asset Management Strategy.

(b) An acceptable alternative testing practice or test plan for in-service meter performance must demonstrate compliance with Australian Standard “AS 1284.13: Electricity Metering in-service compliance testing”.

(c) Unless the MC has developed an alternative accuracy assessment method for type 5 and 6 metering installations that meets the intent of clauses S7.4.3.5 and S7.4.3.6 of the NER and is approved by AEMO, the overall metering installation error is calculated by the vector sum of the errors of each metering installation component, i.e. a + b + c.

\[
\begin{align*}
a &= \text{error of VT and wiring} \\
b &= \text{error of CT and wiring} \\
c &= \text{error of meter}
\end{align*}
\]

(d) Where the MC is not testing and inspecting metering installations in accordance with clauses 7.9 and 7.6 of the NER (i.e. not time-based), the MC must include in its Asset Management Strategy an alternative inspection practice that meets the requirements of clause S7.6 of the NER.

(e) The MC must provide a copy of the Asset Management Strategy to each relevant MP.

(f) For those meters for which new or amended pattern approval has been received from the National Measurement Institute or, in the absence of pattern approval, new or amended type testing has been undertaken by a NATA accredited laboratory or a body recognised by NATA under the ILAC mutual recognition scheme, the MC must ensure that the Sample Test Plan stipulates that this population of meter is tested at least once in the first three years of being placed in service.

9. **INSTALLATION OF METER(S)**

9.1. **General Requirements**

The MC must use reasonable endeavours to ensure that, at the time of installation, a metering installation is:

(a) protected against damage;

(b) installed in such a way that it allows safe and unimpeded access to the End User or any person whose obligation it is to test, adjust, maintain, repair, or replace the metering installation, or to collect metering data from the metering installation; and
(c) available to the End User or any person whose obligation it is to test, adjust, maintain, repair, or replace the metering installation, or to collect metering data from the metering installation via safe, convenient and unhindered access when it is not located at the Site.

9.2. Type 4A Metering Installations Only
The MC must ensure that when each meter of a type 4A metering installation is installed, it is checked such that it has the optical port, communications port and visual display located so that the optical port, communications port, or visual display can be readily accessed for Meter Reading.

9.3. Queensland Only
This requirement only applies to the Jurisdiction specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland</td>
<td>Complies with the Queensland Electricity Connection and Metering Manual, which each LNSP must publish and update from time to time.</td>
</tr>
</tbody>
</table>

10. METER CHURN

10.1. Initiation of a Meter Churn
The Current MC for a metering installation can initiate a Meter Churn at any time.

10.2. Performance of a Meter Churn
Only MPs with the appropriate accreditation can perform a Meter Churn.

10.3. Meter Churn Process
When a Meter Churn is initiated, the MC must ensure:

(a) information is made available to any New MPB to facilitate the Meter Churn, which includes:
   (i) the NMI;
   (ii) the Site address;
   (iii) the Meter Serial ID(s) of the meter(s) to be removed;
   (iv) the name of the Current MPB and its Participant ID;
   (v) the name of the Current MDP and its Participant ID;
   (vi) the current metering installation type; and
   (vii) instructions on the required changes;

(b) all Role assignments in MSATS for the connection point comply with the MSATS Procedures within 2 business days of the Meter Churn; and

(c) the Start Date for any New MPB or New MDP is the meter change date.

11. DE-COMMISSIONING AND REMOVAL OF METERING EQUIPMENT AND NETWORK DEVICES

11.1. Preliminary Requirements
Before de-commissioning all or any part of an existing metering installation, including any network device, the MC must ensure that directions are provided to the MP undertaking the work to return the removed meter or network device to its owner within 10 business days unless otherwise agreed with the owner.
11.2. Network Devices

11.2.1. Deemed Network Devices
AEMO does not consider there to be any circumstances where it is necessary for AEMO to deem certain devices at or adjacent to a metering installation to be network devices, for the purposes of clause 7.8.6 of the NER.

11.2.2. Obligations if Alterations to Metering Installations or Network Devices are Required
(a) Where an LNSP considers that an isolation or alteration is required to a metering installation to facilitate the installation, removal, or replacement of a network device at or near the metering installation, including the removal of any seal, the LNSP must:
   (i) agree the isolations or alterations with the affected MC and MP prior to the commencement of any alterations;
   (ii) ensure any work performed on the metering installation is undertaken by a suitably accredited MP; and
   (iii) ensure that the MC and MP are provided with details of the isolation or alteration, including any new seals.
(b) Where a network device needs to be altered to accommodate a change to the metering installation, including the removal of any seal, the MC must ensure that the LNSP is provided with details of the isolation or alteration, including any new seals.

11.2.3. Notifications following Network Device Removal without LNSP Consent
If an MC arranges for the removal of a network device in accordance with clause 7.8.6(f) of the NER, the MC must, in addition to providing the notifications required by clause 7.8.6(g) of the NER, provide the following records in electronic format to the LNSP:
(a) The type, asset number and serial number of the network device removed, the name of the network device owner, where those details are provided on the network device itself; and
(b) The type, asset number and serial number of any additional network device that was not removed, the name of the network device owner of any other network device where those details are provided on the network device itself.

12. RESPONSIBILITY FOR METERING DATA SERVICES

12.1. Metering Data Services
(a) The MC or FRMP (as applicable) must use MDP(s) for the provision of metering data services in accordance with clauses 7.3.2 and 7.8.1 of the NER.
(b) The MC or AEMO (as applicable) must ensure that the calculation, Validation, Substitution and Estimation of metering data, where appropriate, is undertaken in accordance with Metrology Procedure: Part B.

12.2. Metering Data Collection
(a) For type 1, 2, 3, 4, 4A, 5 and 6 metering installations, an MC or AEMO (where applicable) must ensure that metering data is collected in accordance with the Service Level Procedure (MDP).
(b) This requirement only applies to the Jurisdiction specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>Subject to section 12.2(c)[Vic], the type 5 accumulation boundary is zero MWh per annum.</td>
</tr>
</tbody>
</table>
Jurisdiction | Variation in accordance with Jurisdictional policy
---|---
New South Wales | (1) Subject to section 7[NSW](4), the type 5 accumulation boundary is 100 MWh per annum.
(2) Subject to clause 7[NSW](4), where an Interval Meter has been installed in accordance with clause [NSW](1), it may be read as a metering installation type 5 at any time.
(3) Where an Interval Meter has been installed, the metering coordinator must ensure that the reading of that Interval Meter may only be changed from being read as a metering installation type 5 to being read as a metering installation type 6 when:
(a) a transfer of the customer to a New Retailer has been effected; or
(b) the Interval Meter has been read as a metering installation type 5 for a period of at least 12 contiguous months with the existing retailer.

South Australia | (1) The type 5 accumulation boundary is zero MWh per annum.
(2) The metering coordinator must ensure that the energy consumed and measured by a sample Interval Meter installed for the purposes of calculating the CLP, is settled in the market on the basis of a type 6 metering installation.

Australian Capital Territory | (1) In accordance with section 7[ACT](2), the type 5 accumulation boundary is 100 MWh per annum.
(2) If an Interval Meter has been installed for sites where the type 5 accumulation boundary is less than 100 MWh per annum, it may be read as a metering installation type 5 at any time.

Queensland | The type 5 accumulation boundary is 750 MWh per annum.

c) This requirement only applies to the Jurisdiction specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>Section 12.2(b)(Vic) and 12.2(f) do not apply to type 5 metering installations installed on or after 27 February 2005. For type 5 metering installations installed on or after 27 February 2005, the type 5 accumulation boundary is 160 MWh per annum.</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>Clause 3.4.6 does not apply to type 5 metering installations with consumption less than is specified in clause 12.2(b)<a href="1">ACT</a> where that metering installation is being read as a type 6.</td>
</tr>
</tbody>
</table>

d) This requirement only applies to the Jurisdiction specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>During the period in which the metering coordinator is not required to collect interval energy data from any type 5 metering installation because of the operation of clause 12.2(c)[Vic], if it does not collect interval energy data from that metering installation, it must collect accumulation energy data from that metering installation as if it were a type 6 metering installation.</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>During the period in which the metering coordinator is not required to collect interval energy data from any type 5 metering installation because of the operation of clause 12.2(b)<a href="2">ACT</a>, if it does not collect interval energy data from that metering installation, it must collect accumulation energy data from that metering installation as if it were a type 6 metering installation.</td>
</tr>
</tbody>
</table>

e) This requirement only applies to the Jurisdiction specified in the following table:
Subject to the dates specified in clause 13.2(c)(Vic), for type 5 metering installations (excluding sample profile meters) for the purposes of developing the CLPs in accordance with section 13.3 of Metrology Procedure: Part B), the MC must:

(i) ensure that interval metering data is collected from a metering installation in accordance with the Service Level Procedure (MDP); and

(ii) use reasonable endeavours to ensure that interval metering data is collected from every type 5 metering installation once every three months and that this metering data is transferred to the metering data services database.

For type 6 metering installations, the MC must:

(i) ensure that accumulated energy data is collected from metering installations in accordance with the Service Level Procedure (MDP); and

(ii) use reasonable endeavours to ensure that accumulated energy data is collected from every type 6 metering installation once every three months and that this metering data is transferred to the metering data services database.

An MC must use reasonable endeavours to ensure that energy data is collected from a type 4A, 5 or 6 metering installation and transferred to the relevant metering data services database no more than two business days prior to, or two business days subsequent to, the Scheduled Reading Date for that metering installation.

This requirement only applies to the Jurisdiction specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>Nothing in section 12.2(h) prevents the metering coordinator from additionally collecting energy data from a type 5 metering installation and transferring that data to the relevant metering data services earlier than 2 business days prior to the scheduled reading date for that metering installation.</td>
</tr>
</tbody>
</table>

Note: The effective date of this Jurisdictional provision is 1 July 2009. The review date of this Jurisdictional provision is 31 December 2017.

For metering installations that do not have remote acquisition, and where an MC is not a TNSP, the MC must use reasonable endeavours to ensure that each metering installation is read at least every three months, and the Meter Reading frequency is agreed with the FRMP.

### 12.3. Metering Data Storage

(a) The MDP must provide a metering data services database containing metering data in accordance with clause 7.10.1 of the NER.

(b) The Load Tables, Inventory Tables and On/Off Tables for type 7 metering installations must be stored within the metering data services database.
12.4. Access to Metering Data

(a) Access to metering data must be provided in accordance with clause 7.15.5 of the NER and the Service Level Procedure (MDP).

(b) This requirement only applies to the Jurisdiction specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>Despite section 12.4(a), where metering data for a type 5 metering installation is collected more frequently than required under clause 12.2(h) (as allowed under section 12.2(i)(Vic)) access to metering data need not be provided until 5pm on the second business day after the next scheduled reading date for that metering installation.</td>
</tr>
</tbody>
</table>

Note: The effective date of this Jurisdictional provision is 1 July 2009. The review date of this Jurisdictional provision is 31 December 2017.

(c) The MC must ensure that metering data from the following is transferred to AEMO:

(i) interval metering data for first-tier loads, including First-Tier Controlled Loads calculated metering data for first-tier loads; and

(ii) accumulated metering data for First-Tier Controlled Loads in New South Wales and Queensland.

(d) The MC must notify AEMO of the interval metering data for first-tier loads that are to be transferred to AEMO.

12.5. Verification of Metering Data for whole current Small Customer Metering Installations, Type 4A, 5, 6 and 7 Metering Installations

To facilitate the verification of metering data for whole current small customer metering installations, and type 4A, 5, 6 and 7 metering installations:

(a) Each MC must ensure that a Sample Test Plan is established and maintained in accordance with Australian Standards “AS 1199: Sampling procedures for inspection by attributes – Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection” or “AS 2490: Sampling Procedures and Charts for Inspection by Variables for Percent Nonconforming” to Validate that all metering data stored in the metering data services database is consistent with the energy data stored in the metering installation or the Physical Inventory (as applicable).

(b) Verification tests must be conducted in accordance with the Sample Test Plan, which must not be less than once every 12 months.

(c) If there is an inconsistency between the energy data held in a metering installation and the metering data held in the metering data services database, the energy data in the metering installation is to be taken as prima facie evidence of the amount of electricity supplied to that metering point, except if the meter or components of the metering installation are found to be not compliant with the NER.

(d) The calculated metering data stored in a metering data services database for a NMI is consistent with the Physical Inventory if the error associated with calculating the energy value for the sample, that is:

\[
\sum_{i=1}^{n} \left( \text{Agreed load per Unmetered Device type as per Load Table}\right)_i \times (\text{Actual number of Unmetered Device types in the sample geographic area}) - 1
\]

\[
\sum_{i=1}^{n} \left( \text{Agreed load per Unmetered Device type as per Load Table}\right)_i \times (\text{Number of Unmetered Device types in the sample geographic area as per Inventory Table})
\]

where: \( i \) = Unmetered Device type
is within ± 2.0%. Where the existing error is greater than ± 2.0% a date for reaching an error level within ± 2.0% and a transition plan to reach that error level must be determined by AEMO in consultation with the relevant MC and affected Registered Participants.

(e) If there is an inconsistency between the Inventory Table held in a metering data services database for a type 7 metering installation and the Physical Inventory, the Physical Inventory is to be taken as prima facie evidence of the actual number of Unmetered Devices.

12.6. Metering Installation Type 7 – Sample Testing

(a) For the purposes of sample testing type 7 metering installations, the MC must ensure that the sample size is determined using Table 3.8. The sample is to be selected from Unmetered Devices in the Inventory Table for an MC.

(b) The MC must ensure that the sample size for the first two Validation tests is based on a ‘normal’ sample size indicated in Table 3.8.

**Table 3.8 - Unmetered Devices in Inventory Table**

<table>
<thead>
<tr>
<th>Number of Unmetered Devices in Inventory Table</th>
<th>Sample Size</th>
<th>Reduced</th>
<th>Normal</th>
<th>Tightened</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 to 8</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>9 to 15</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>16 to 25</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>26 to 50</td>
<td>5</td>
<td>8</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>51 to 90</td>
<td>5</td>
<td>13</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>91 to 150</td>
<td>8</td>
<td>20</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>151 to 280</td>
<td>13</td>
<td>32</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>281 to 500</td>
<td>20</td>
<td>50</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>501 to 1200</td>
<td>32</td>
<td>80</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>1201 to 3200</td>
<td>50</td>
<td>125</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>3201 to 10000</td>
<td>80</td>
<td>200</td>
<td>315</td>
<td></td>
</tr>
<tr>
<td>10001 to 35000</td>
<td>125</td>
<td>315</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>35001 to 150000</td>
<td>200</td>
<td>500</td>
<td>800</td>
<td></td>
</tr>
<tr>
<td>150001 to 500000</td>
<td>315</td>
<td>800</td>
<td>1250</td>
<td></td>
</tr>
<tr>
<td>5000001 to over</td>
<td>500</td>
<td>1250</td>
<td>2000</td>
<td></td>
</tr>
</tbody>
</table>
(c) The MC must ensure that the sample size for subsequent Validation tests is based on the following:

(d) The MC must select sample Unmetered Devices for a Validation test from random geographic areas depending on the sample size. The selection of the geographic area must be such that each Unmetered Device has an equal chance of being included in the sample.

(e) The MC must ensure that the Validation test is conducted at least once every six months, commencing from the first Validation test.

(f) Should the results of two consecutive Validation tests, based on a reduced sample size, be within the accuracy requirements for that test, the MC must ensure that the next Validation test is conducted at least once every 12 months.

12.7. Request for Test of Calculated Metering Data

(a) If requested to test a type 7 metering installation by a Registered Participant under clause 7.9.1 of the NER, the MC or AEMO (as applicable) must:

(i) arrange to test that the calculated metering data stored in the metering data services database reflects the Physical Inventory for the type 7 metering installation;

(ii) use reasonable endeavours to conduct the test within 15 business days of the request; and

(iii) prior to any test being undertaken, provide an estimate of costs associated with the test.

(b) Where there is a discrepancy between the Inventory Table held in the metering data services database for a type 7 metering installation and the Physical Inventory, the Physical Inventory is to be taken as prima facie evidence of the actual number of Unmetered Devices.
12.8. AEMO’s Metering Data Obligations

12.8.1. Substitutions
Where metering data has been Substituted, AEMO must advise affected Registered Participants at the same time as that metering data is sent to Market Participants for settlements.

12.8.2. Load Profiling
(a) This requirement only applies to the Jurisdiction specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales, South Australia, Queensland</td>
<td>AEMO must prepare a CLP for each relevant Profile Area in accordance with sections 11.4 and 11.5 of Metrology Procedure Part B apply the CLP(s) by Profile Area to the consumption energy data from the applicable first tier controlled load Accumulation Meters and from the applicable Second Tier Controlled Load type 6 metering installations in accordance sections 11.4 and 11.5 of Metrology Procedure Part B to produce interval metering data. This requirement does not apply to Ergon Energy’s distribution area.</td>
</tr>
</tbody>
</table>

(b) AEMO must prepare an NSLP by each Profile Area in accordance with section 15 of Metrology Procedure: Part B and apply it by Profile Area to the metering data from type 6 metering installations to produce interval metering data for type 6 metering installations.

(c) This requirement only applies to the Jurisdiction specified in the following table:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Variation in accordance with Jurisdictional policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales, Queensland, South Australia, Australian Capital Territory</td>
<td>AEMO must enable the transfer to AEMO of parameters for the calculation of a weekly load scaling factor, which represents the estimated data for First Tier Controlled Loads.</td>
</tr>
</tbody>
</table>

13. EMERGENCY PRIORITY PROCEDURES

While AEMO does not intend to restrict LNSPs and MCs from agreeing on a definition of ‘emergency condition’ in their service agreements, the definition must take into consideration the following criteria:

(a) Unplanned disruption to power supply to one or more Sites, regardless of duration.
(b) Risk of environmental damage, injury or fatality to any person from distribution network equipment due to their proximity to that equipment.
(c) Potential for or the presence of risk to public safety.
(d) Mandatory restriction of power supply.
(e) Disruption to communications network used in the delivery of metering data.
(f) Operational difficulties due to acts of nature, such as flooding and cyclones.

13.2. Metering Installations Affected
(a) LNSPs and MCs may adopt different definitions of ‘emergency condition’ where Accumulation Meters are situated and where Interval Meters are situated.
(b) In no circumstances will type 7 metering installations be affected by an ‘emergency condition’.

13.3. Prioritisation of Services by MC in Emergency Condition
LNSPs may prioritise the delivery of services from MCs by agreement provided that those services that are required for safety purposes, such as disconnection or reconnection must be prioritised over those services that are required solely for commercial reasons.
13.4. **Other Laws Prevail**

(a) Nothing in section 13, or in a services agreement between an LNSP and MC, overrides any requirement to comply with the NER or any other law relating to the safety of any person, property or the environment.

(b) Whilst an MC may agree to supply services to an LNSP related to an emergency condition, the MC is not able to contract out of its obligations in the NER through that agreement.