

# Code for safe installation of direct-connected whole current electricity metering in NSW

**Minimum requirement for safety management systems**

# Preface

This Code has been prepared by the NSW Department of Industry Skills and Regional Development. The department acknowledges the contribution of industry participants and government agencies as follows:

## NSW Electricity Distributors

- Essential Energy
- Endeavour Energy
- Ausgrid

## NSW Government agencies

- NSW Office of Fair Trading

## Metering Providers

- Metropolis

## Association

- National Electrical and Communications Association (NECA)

An electronic version of the *Code for safe installation of direct-connected electricity metering in NSW* is available at the department's website [www.resourcesandenergy.nsw.gov.au/energy-supply-industry/legislation-and-policy/electricity-legislation](http://www.resourcesandenergy.nsw.gov.au/energy-supply-industry/legislation-and-policy/electricity-legislation)

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# 1 Name of Code

This Code is called the “Code for the Safe Installation of direct-connected whole current electricity metering in NSW”, and is made for the purposes of Part 15 of Schedule 6 of the Electricity Supply Act (the advanced metering regulatory requirements).

# 2 Commencement

This Code commences operation on 1 July 2016.

# 3 Definitions

**AEMO** means the Australian Energy Market Operator Limited (ACN 072 010 327).

**accredited service provider (ASP)** means a person accredited to provide customer connection services in accordance with the Electricity Supply Act 1995.

**advanced meter** means a meter that is a type 4 metering installation referred to in Chapter 7 of the National Electricity Rules.

**advanced metering regulatory requirements** includes requirements set out in Part 15 of Schedule 6 of the Electricity Supply Act.

**Australia/New Zealand Wiring Rules** means the Australian and New Zealand Standard entitled ‘AS/NZS 3000:2007, *Electrical installations*’.

**basic meter** means a meter that is a type 5 or 6 metering installation referred to in Chapter 7 of the National Electricity Rules.

**connection point** has the same meaning as it has in the Service and Installation Rules of NSW.

**consumer mains** has the same meaning as it has in the Service and Installation Rules of NSW.

**customer** has the same meaning as it has in the Service and Installation Rules of NSW.

**distributor** means the electricity distributor within whose distribution district an electrical installation is situated or where the installation work is carried out.

**ECS regime** means the Electricity (Consumer Safety) Act 2004 and the Electricity (Consumer Safety) Regulation 2015.

**electrical installation** has the same meaning as it has in the Electricity (Consumer Safety) Act 2004.

**meter** has the same meaning as it has in the National Electricity Rules.

**metering provider** has the same meaning as it has in the National Electricity Rules.

**Metrology Procedure** means the national metrology procedure published by AEMO in accordance with the requirements of the National Electricity Rules.

**retailer** has the same meaning as has in the National Energy Retail Law(NSW).

**safety management system** means the safety management system of a metering provider for the purposes of advanced metering regulatory requirements.

**WHS regime** includes the Work Health and Safety Act 2011; the Work Health and Safety Regulation 2011, and the WorkCover code of practice: Managing electrical risks in the workplace (July 2015) as in force from time to time.

## 4 Application of Code

This Code applies to metering providers who provide, install or replace advanced meters in NSW for the purposes of Part 15 of Schedule 6 of the Electricity Supply Act 1995.

**Note:** The Accredited Service Provider (ASP) Scheme Rules of NSW continue to apply to the installation of basic meters.

## 5 Scope of Code

- 5.1 This Code deals primarily with meter installation works associated with direct connected whole current electricity meters.
- 5.2 This Code also applies to current transformer (CT) connected meters installed at type 4 installations. However, it is noted that additional requirements apply to this specialist area which are outside the scope of this Code.
- 5.3 This Code does not deal with:
  - a) basic meters (Types 5 and 6) which are covered by the NSW ASP Scheme.
  - b) HV metering installations.

## 6 Regulatory context

- 6.1 This Code sets out the minimum requirements for safety management systems of metering providers who provide, install or replace advanced meters for the purposes of Part 15 of Schedule 6 of the Electricity Supply Act.
- 6.2 This Code operates in addition to the following:
  - a) *Work Health and Safety Act 2011* and *Work Health and Safety Regulation 2011* which require a safe system of work. The WHS regime also has specific requirements that deal with electrical work on energised electrical equipment (in Division 4 Part 4.7 of the Work Health and Safety Regulation 2011).
  - b) *WorkCover code of practice: Managing electrical risks in the workplace* (July 2015) which contains detailed requirements to be followed.
  - c) *Electricity (Consumer Safety) Act 2004* and *Electricity (Consumer Safety) Regulation 2015* set out the standards for a person carrying out meter installation work; applies the Australia/New Zealand Wiring Rules as the standard; allows only a qualified person to carry out a safety and compliance test after completion of the work, in accordance with those Wiring Rules.

- d) *Home Building Act 1989* and *Home Building Regulation 2014* which ensures that the carrying out of electrical wiring work (including meter installations) is within the licensing framework for electrical wiring work and prohibits persons doing this work who are not qualified persons or as otherwise prescribed by that Act.
- e) National Electricity Rules and procedures, which contain requirements to ensure accuracy of meters for the national electricity wholesale market.
- f) Metrology Procedure, which set out the requirements that must be demonstrated by a metering provider to be accredited for a particular type of meter.
- g) Service and Installation Rules of NSW, which ensure that any person doing metering work is required to carry out the work in accordance with connection requirements of distributors.

## 7 Purpose of Code

The purpose of this Code is to provide minimum standards for the content of safety management systems to ensure that:

- a) meters are installed, operated and maintained in a safe and reliable manner.
- b) meter installers carrying out work are appropriately qualified, trained and competent to effect a safe worksite.
- c) the safety of customers, members of the public and the installation is maintained.

## 8 General requirements for safety management systems

8.1 A metering provider must:

- a) establish policies, systems and procedures that enable efficient and effective monitoring of compliance with the requirements of this Code and the advanced meter regulatory requirements.
- b) review its safety management system at least every two years for currency and appropriateness.

8.2 A safety management system must:

- a) cover the minimum requirements set out in Schedule 1 of this Code.
- b) demonstrate how the requirements in clauses 9-22 of this Code have been addressed to achieve the necessary outcomes.

**Note:** The safety management system must also comply with any other requirements under the relevant regulatory frameworks referred to in clause 6, including the 'WorkCover code of practice: Managing electrical risks in the workplace'.

## 9 Training and supervision

### Supervision of apprentices

- 9.1 For the purposes of this Code supervision of apprentices will require close and constant presence at the work site by a qualified person (within the meaning of the Electricity (Consumer Safety) Regulation 2015) who has been trained in accordance with the requirements of this Code (a supervising installing electrician).

### Training

- 9.2 A safety management system must describe the training, assessments and record keeping that is being carried out to ensure and demonstrate competency of each person engaged to carry out work (including supervision of apprentices) for installation of advanced meters.
- 9.3 A metering provider must have installing electricians (or supervising installing electricians) with acceptable competencies equal to or better than, the competencies required under the '*National Quality Framework, UEENEEG171A install, setup and commission interval metering*'.
- 9.4 A safety management system must address, as a minimum, the following training outcomes:
- preparing a safe worksite.
  - identifying sources of supply.
  - disconnection of supply and establishing a safe work area including securing of the worksite.
  - keeping the installer safe during work.
  - safely re-energising an installation.
  - maintaining safety of an installation, its users and the public as a result of the work.
  - testing and proving safe outcomes in accordance with relevant regulatory requirements.

## 10 Electrical testing

- 10.1 A safety management system must describe the appropriate testing and recording procedures when installing, maintaining or replacing an electricity meter, in accordance with:
- Part 1 of Chapter 3 of the *Electricity (Consumer Safety) Regulation 2015*; and
  - 'AS/NZS 3000 and AS4741 Testing of connections to low voltage electricity networks' (as in force from time to time).
- 10.2 Testing may require the presence of power and in all cases, the equipment being tested must be treated as live until proven otherwise in accordance with the safety management system.
- 10.3 Testing activities must require equipment and personal protective equipment (PPE) in accordance with conditions of working live.

## 11 Tools and equipment

- 11.1 A safety management system must provide that tools and equipment must be suitable for the work, in good working order and be maintained, tested and inspected in accordance with manufacturer's instructions.
- 11.2 'AS4836: *Safe working on or near electrical installations and equipment*' provides the minimum requirements to be used.

## 12 Personal protective equipment

- 12.1 A safety management system must provide that when working on or around the meter location, the person installing the meter must use appropriate personal protective equipment (PPE) for the work being performed and the environment in which that work is performed.
- 12.2 'AS/NZS 4836' provides the minimum standard to be used.

**Note:** Attention is drawn to additional levels of arc flash resistance of clothing for high energy risks where standards such as 'ENA NENS 09—2014— *National Guidelines for the Selection, Use and Maintenance of Personal Protective Equipment for Electrical Hazards*' provide guidance.

## 13 Meter design safety

A safety management system must ensure that installed metering equipment complies with the National Electricity Rules and applicable Australian Standard or (if no Australian Standard is applicable), manufacturers' requirements affecting the safe operation of that metering equipment.

**Note:** It is anticipated that Standards Australia will adopt 'IEC62052-31 *Electricity metering equipment: Product safety requirements and tests*'.

## 14 Pre-establishment of a work area

A safety management system must provide that, prior to approaching a metering installation and as a prerequisite of carrying out metering work, the installer must as a minimum, carry out a hazard assessment and implement appropriate controls to ensure:

- a) the area around the main switchboard is accessible and clear of obstructions.
- b) that any metal enclosure is safe to touch.
- c) that any customers affected by the interruption to supply have been given notice in accordance with applicable regulatory requirements.

## 15 Testing prior to isolation

- 15.1 A safety management system must describe how, prior to isolation and as a prerequisite to carrying out any metering work, key electrical characteristics will be checked.
- 15.2 As a minimum, a safety management system must require that the meter installer carry out the following:

- a) identification of isolation points upstream and downstream of the metering equipment.
- b) required pre-testing with supply still connected for:
  - i. neutral integrity tests where the onsite worker has reason to question the electrical safety and or performance of the installation; and
  - ii. multiphase installations-confirmation and recording of Phase Sequence as seen by customer – to which the installation will be returned at the conclusion of the metering installation work.

## 16 Isolation

- 16.1 A safety management system must describe acceptable methods of isolation and securing of that isolation, addressing factors such as:
- a) isolation of the customer load at the Main Switch(es) downstream of the meter.
  - b) extracting any fuse or fuse/link carrier from its base to effect the isolation.
  - c) closing of the cover or remove the fuse/link from the carrier and reinsert into the base to effect the screening any exposed incoming electrical conductor.
  - d) carrying out testing to confirm electricity supply is de-energised.
  - e) securing the worksite at all isolation points.
- 16.2 In circumstances where isolation cannot be effected (refer to clause 18), such as service fuses located on power poles, working at heights or the absence of service fuses, the appropriately qualified accredited service provider is required to isolate the electricity supply.

## 17 Re-energisation

A safety management system must describe:

- a) what tests will be carried out to safely re-energise the worksite.
- b) the appropriate steps required to safely re-energise the worksite.
- c) how to carry out tests required and subsequent re-energisation of the installation.
- d) requirements for the tradesperson carrying out tests must record results on a CCEW in addition to any business requirements.

## 18 Prohibited actions

A safety management system must provide for clear instruction to workers that the following activities are prohibited:

- a) working on an energised installation (excluding testing activities as described in clauses 10.1-10.3).
- b) disconnecting customers without notice or not in accordance with the applicable regulatory timeframes.
- c) removing service fuse carriers that require specialist equipment, training, authorisation and qualifications where the installer does not meet the necessary requirements (for example barge board fuses).

- d) working within the safe approach distances specified by a distributor to their overhead services and equipment.
- e) working on equipment mounted on or within distributor network equipment (for example: substations, poles and pillars).
- f) working on meter boxes on substation poles.

**Note:** It may be acceptable for a metering provider to, as described within their safety management system, overcome some of these prohibitions by engaging additionally qualified and suitably authorised personnel such as an accredited service provider, but only insofar as those additional qualifications and authorisations extend to addressing a prescribed prohibition.

## 19 Dangerous situations found within the installation

- 19.1 A safety management system must describe actions for personnel in the event that a dangerous defect is found in the process of carrying out normal metering related activities.
- 19.2 Dangerous defects include:
- a) any exposure of live parts (except those exposed during the carrying out of work which can be reinstated at the completion of the work).
  - b) incorrect polarity.
  - c) risk of short circuiting.
  - d) immediate risk of an ignition point.
  - e) compromised earthing or neutral integrity through open (or risk of open) circuits.
- 19.3 A safety management system must provide that personnel who find a dangerous defect are obliged to remove any immediate threat and/or dangerous situation by appropriate means. This may include disconnection of part or whole of an electrical installation.
- 19.4 A safety management system must include mechanisms to prevent unscrupulous or predatory behaviour in dealing with dangerous defects as referred to in clause 19.3.

## 20 Asbestos management

A safety management system must provide clear instructions on the following requirements for identifying and working with and around asbestos:

- a) asbestos identification.
- b) preparation for asbestos handling.
- c) performing asbestos work.
- d) contaminated waste disposal.
- e) return of old meters to the owner.

## 21 Inspection regime

- 21.1 A safety management system must have an inspection regime for the metering provider to determine compliance with the requirements of that system and other regulatory requirements.

21.2 An inspection regime must:

- a) be documented.
- b) keep evidence of inspections and results of those inspections.
- c) keep a record of any associated actions, including process improvements.

## 22 Incident reporting obligation

A safety management system must address reporting of incidents including any obligations under the ECS regime and WHS regime.

## Schedule 1 — Minimum requirements for safety management system

For the purposes of this Code, a safety management system must, as a minimum, cover the following matters:

- (a) Safety policies.
- (b) Procedures and Safe Work Method Statements (SWMS) pertaining to work performed in and around metering installations.
- (c) Meter installer qualifications:
  - i. Licences.
  - ii. Certificates of Competency.
  - iii. Training.
  - iv. Evaluations.
- (d) Job safety/risk & hazard assessments required to determine that work can be performed safely.
- (e) Inspection processes to ensure sites are safe and work has been performed properly.
- (f) Personal protective equipment (PPE).
- (g) Tools and equipment.
- (h) Defect management:
  - i. Identification.
  - ii. Action.
  - iii. Third party notification and reporting.
- (i) Incident management injuries (lost time incidents):
  - i. Near misses.
  - ii. Meter incidents (eg. fire).
  - iii. Third party notification and reporting.
- (j) Safety communications to staff, employees and sub-contractors.
- (k) Asbestos management.
- (l) Inspection regime.