مكتب التنظيم و الرقابة
Regulation & Supervision Bureau

Customer Metering Regulations (Second Edition)

Regulations

January 2018 ED/R01/005

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water, wastewater and electricity sector of the Emirate of Abu Dhabi

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Issued by
the Regulation and Supervision Bureau
for the water, wastewater and electricity sector in the Emirate of Abu Dhabi
www.rsb.gov.ae

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Foreword

The Regulation and Supervision Bureau (the Bureau) is established in Abu Dhabi law to oversee the economic and technical activities of the electricity, water and wastewater companies that are licensed to operate in the Emirate of Abu Dhabi.

In addition to its duties in respect of licensed companies, the Bureau has certain responsibilities towards the general public, including assurance for the safe and efficient supply, use and operation of electricity and water customers' meters. These Regulations have been produced with this primary aim in mind.

In order to deliver a continuous and systematic approach to safety, continuity of service and performance, these Regulations consider the role of new technologies for metering equipment and related infrastructures and have been produced following extensive consultation with relevant stakeholders.

These Regulations supersedes the previous Customer Metering Regulations issued in 2005 and shall be effective from 1 January 2018.

These Regulations also available in Arabic, but the reader should note they were first written in English. They may also be downloaded from the Bureau's website at www.rsb.gov.ae.

Saif Saeed Al Qubaisi

Director General

January 2018

Acknowledgements

The Bureau gratefully acknowledges the contributions and comments provided by the following organisations:

(i) Al Ain Distribution Company (AADC)

(ii) Abu Dhabi Distribution Company (ADDC)

(iii) Abu Dhabi Water and Electricity Authority (ADWEA)

(iv) The Quality and Conformity Council (QCC)

(v) Department of Urban Planning and Municipalities (DPM)

List of editions

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ED/R01/005 Second Edition	1 January 2018	Mohammed Yousif Marwan Jamal Mohammed Al Hadrami Aamna Al Zaabi Rama Nemer Tariq Al Hashmi Ramiz Alaileh Mahmoud Alsattari Krzysztof Rzepczynski Subramoniam Sivaramakrish	Ali Al Mashjari Jamal Shadid Dan Burton	Publication

Document numbering

These Regulations use the following numbering system:

Parts	are referenced by integers (e.g. 1, 2, 3, etc)
Regulations	are referenced by one full stop between numbers (e.g. 1.1, 1.2, etc)
Clauses	are referenced by two full stops between numbers (e.g. 3.1.2, etc)
Notes	are indicated below the clause in square brackets and italic text. For example, *[Note: this clause does not apply to Installations that have been …]*

Contents

1. Introduction

1.1 Citation and commencement

1.1.1 These Regulations shall be cited as the Customer Metering Regulations (Second Edition).

1.1.2 These Regulations come into force on 1 January 2018 ('Effective Date').

1.1.3 These Regulations are issued by the Bureau pursuant to Article 62 of Law No (2).

1.1.4 These Regulations supersede and replace Issue No. 1 (Rev 0) of the Customer Metering Regulations issued in 2005.

1.2 Purpose

1.2.1 The purpose of these Regulations is to establish standards and principles to ensure fairness and equity for both the Customer and Distribution Company for any supply of Water or electricity through Water or electricity Meters. In addition, these Regulations promote the installation, operation and maintenance of safe Metering Equipment in Premises.

1.3 Scope and enforcement

1.3.1 These Regulations apply to all Metering Equipment owned by a Distribution Company for the provision of Water and electricity supply to Customers or Premises.

1.3.2 These Regulations are not applicable to Meters for water, or electricity bulk supply from a transmission system or Recycled Water bulk supply from a wastewater treatment or disposal system.

1.3.3 These Regulations apply to Distribution Company, Customer, Manufacturer and Supplier.

1.3.4 These Regulations shall be enforced by the relevant Distribution Company in the Emirate of Abu Dhabi, in accordance with procedures which shall be published by the Distribution Company and approved by the Bureau.

1.3.5 These Regulations apply to Metering Equipment:

(a) associated with purchase orders placed with Suppliers on or after the Effective Date of these Regulations for installation at some time thereafter;

(b) re-cycled on or after the Effective Date of these Regulations, where the equipment is installed sometime thereafter;

(c) currently in service, where a transition period of five Years will be allowed to enable such Meters to be assessed and re-certified or replaced as necessary; and

(d) currently held in stock, where a transition period of one Year from the Effective Date of these Regulations will be allowed to enable such Meters to be installed, and in so doing will move into category 1.3.5(c),

where the Metering Equipment is installed compulsorily by or at the behest of the Distribution Company for measuring any supply of Water or electricity for domestic and non-domestic use.

1.3.6 These Regulations may be amended or revoked by the Bureau at any time.

1.4 Relevant Regulations

1.4.1 These Regulations should be read in conjunction with the following regulatory documents, regulations and codes. Nothing in these Regulations is intended to conflict with or affect the operation of:

a) The Distribution Company Licence;

b) The Water Supply Regulations;

c) The Tankering Regulations;

d) The Electricity Supply Regulations;

e) The Electricity Wiring Regulations;

f) The Incident Reporting Regulations;

g) Streetworks and Access Regulations;

h) Recycled Water and Biosolids Regulations;

i) The Small-scale Solar Photovoltaic Energy Netting Regulation;

j) The Metering and Data Exchange Code (MDEC);

k) Wastewater Flow Monitoring Code of Practice;

l) The Water Distribution Code; and

m) The Electricity Distribution Code.

1.4.2 Where a conflict appears to exist between these Regulations and other regulatory documents, regulations, codes, or any governmental legislation, the matter should be referred to the Bureau for a binding decision in accordance with Part 6 of these Regulations.

1.5 Guaranteed and Overall Service Standards

1.5.1 The Distribution Company shall develop, publish and adhere to any metering guaranteed and overall service standards, as approved by the Bureau in accordance with the Distribution Company Licence conditions.

1.6 Fees and Charges

1.6.1 Any tariffs, fees, fines, charges, deposits, expenses or financial amounts to be imposed on Customers in accordance with these Regulations and the way they are meant to be

imposed or collected by the Distribution Company must be submitted in prior to the Bureau for approval.

1.6.2 The Distribution Company are prohibited from imposing, amending or cancelling any tariffs, fees, fines, charges, deposits, expenses or financial amounts on Customers in accordance with these Regulations without the Bureau's prior approval.

1.7 Relaxation from these Regulations

1.7.1 Relaxation from any requirement under these Regulations should be submitted in prior to the Bureau for consideration in accordance with Part 66 of these Regulations.

1.8 Provision of information

1.8.1 Distribution Company, Customer, Supplier, Manufacturer and relevant persons are required to furnish the Bureau with information on matters relating to these Regulations and their implementation as the Bureau may direct or request from time to time.

2. Definitions

2.1 Interpretation

2.1.1 Words which are defined under this section are used in the Regulations beginning with capital letters.

2.1.2 Words and expressions other than those defined in these Regulations which are defined in Law No (2), shall have the meanings ascribed to them in Law No (2).

2.1.3 Words using the singular or plural number also include the plural or the singular number respectively.

2.1.4 Any reference to a Part or Schedule is a reference to the relevant Part or Schedule in these Regulations.

2.1.5 Unless otherwise specified, days shall mean calendar days.

2.2 Definitions

For the purpose of these Regulations, the following definitions apply:

Accredited Laboratory – means a testing facility accredited to ISO/IEC 17025 or equivalent. Accredited Laboratory can be an Internationally Recognised Laboratory, or local laboratory certified/accredited by the relevant authorities in UAE and Abu Dhabi Emirate as an accredited laboratory in accordance with the relevant UAE and Abu Dhabi legislations.

Advanced Metering Infrastructure (AMI) – means an integrated system of Meters, communication networks and data management systems that collect and analyse electricity and Water usage and communicate with Metering Equipment either on request or on schedule.

AED – means United Arab Emirates Dirhams.

Automatic Meter Reading (AMR) – means the technology which automatically collects consumption, diagnostic and status data from Metering Equipment and transfers that data to a central database for billing, troubleshooting and/or analysing.

Bureau – means the Regulation and Supervision Bureau for the Water, wastewater and electricity sectors in the Emirate of Abu Dhabi as established by Law No (2).

Business Days – means any day other than a Friday or Saturday, when the banks and government departments in the Emirate of Abu Dhabi are required to be open for business.

Certificate or Certification – means the process whereby a meter, following manufacture or refurbishment, is tested in an Accredited Laboratory, prior to installation, and is deemed to meet the accuracy requirements of the current Regulations or IEC standard which has been specified (whichever is the most strict).

Certification Life – means the period which a Meter used for billing purposes can remain in service without being laboratory tested. This period is defined for each type of Meter and is based upon ongoing sample testing.

Check Meter – for electricity meters it means a meter of the same class as the Main Meter but its function is to support the Main Meter readings in the event of its failure or large errors exceeding the limits specified.

for Water meters it means a meter installed at the entry point of a multi-story/multi-tenant building used for the purpose of evaluating Water balance and loss assessment.

Conformity Assessment – means the demonstration that specified requirements relating to a product, process, system, person or body are fulfilled.

Customer – means any person, corporate body, or company who has a connection or supply agreement with a Distribution Company for the provision of electricity and/or Water.

Distribution Company – means an entity holding a Licence from the Bureau to distribute and/or supply electricity, Wholesome Water or Recycled Water issued pursuant to Law No (2).

Environment – means the components of the earth and its interacting natural systems, which includes air, land, Water, organic and inorganic matter and living organisms.

Guard Meter – means a Meter which can only be used to measure the aggregate consumption of multiple meters downstream for the purpose of revenue loss detection, and not for billing purposes.

Indoor Meter – means a Meter which can only be used in areas offering additional protection against environmental influences (e.g. in a room or in a cabinet).

Internationally Recognised Laboratory – means an international Accredited Laboratory, used by international regulatory authorities, to establish suitability, through type-approval, of Meters for billing purposes. Also, Accredited Laboratory may be certified/accredited for the calibration of Reference and Transfer standards, etc.

Interval Data – meter data collected at defined intervals (e.g. every 30 minutes or hourly.

Law – means Law No (2) of 1998 concerning the regulation of the Water and electricity sectors in the Emirate of Abu Dhabi, as amended.

Licence – means the electricity, water and/or recycled water distribution and/or supply licence(s) issued by the Bureau to a Distribution Company, as amended from time to time.

Manufacturer – means the maker of the Metering Equipment (who may also be the Supplier).

Main Meter - the primary Meter used for billing purposes.

Measuring Current Transformer – means a current transformer intended to transmit an information signal to measuring instruments and Meters.

Measuring Voltage Transformer – means a voltage transformer intended to transmit an information signal to measuring instruments, integrating Meters and similar apparatus.

Meter Testing System – means a combination of Meter test bench and Working Standards, used for the testing of Meters.

Meter or Metering Equipment – means Water Meters, electricity Meters, measurement transformers, communications equipment and data collection/outstation equipment plus associated wiring.

Generation Meter – means a Meter which is installed by the Distribution Company to monitor the amount of electricity generated by a solar photovoltaic system.

Outdoor Meter – means a Meter which can be used without additional protection in an exposed Environment.

Premises – means any occupied or unoccupied land, structure, building, enclosure or other place. Such locations include, but are not limited to, apartments, villas, offices, shops, warehouses, hotels, commercial complexes, leisure complexes, public buildings, parks, farms, temporary Electrical Installations, entertainment arenas, construction sites, tents, outbuildings, caravans, street lighting and traffic signs.

Reasonably Practicable – means to qualify a requirement then judge as to what is reasonable, taking into account the magnitude of the risk on one hand and the cost, time and trouble, or effort necessary for averting the risk on the other hand.

Recycled Water – means treated liquid effluent produced by a wastewater treatment system that is suitable for reuse.

Reference Meter – means a Meter used for testing measuring equipment which has been tested by a Reference Standard over the range of energy values or flow rates for which it is intended to be used.

Reference Standard – means an a.c. standard whose measurement traceability to national standards is maintained by periodic calibration at an Accredited Laboratory and is the standard against which Working Standards are directly or indirectly maintained.

Smart Meter – means technology of recording usage, events and alarms from Metering Equipment and providing communication and or control facility to AMI.

Special Customers – means domestic Customers who are elderly, disabled or chronically sick.

Supplier – means a person, nominated representative, company, agency, group or vendor engaged to supply a particular service or commodity.

Transfer Standard – means a standard that has been verified by comparison to a reference standard and is used to compare Working Standards indirectly against Reference Standards.

Water – means collectively Wholesome Water or Recycled Water.

Wholesome Water – means Water that is in compliance with the Water Quality Regulations and is supplied for drinking, washing, cooking or food production.

Working Standard – means a standard that has been verified by comparison to a Reference Standard or to a Transfer Standard and is used for the regulating and testing of electricity Meters. Test equipment used for on-site Meter testing and dispute resolution are deemed ‘Working Standards’.

UAE – means the United Arab Emirates.

Year – means a calendar year according to the Gregorian calendar.

3. General Conditions

3.1 Introduction

3.1.1 Any and each supply of electricity and/or Water by a Distribution Company to Customers or Premises must be metered, unless consented otherwise by the Bureau.

3.1.2 All Metering Equipment used by a Distribution Company for the provision of Water and electricity supply to Customers or Premises must be complying with these Regulations.

3.1.3 The supply of electricity and/or Water through Metering Equipment conforming to these Regulations shall be subject to practices that ensure fairness and equity for both the Customer and the Distribution Company. Both parties must understand their rights and responsibilities and maintain compliance with statutory and regulatory obligations.

3.2 Code of practice for metering management

3.2.1 The Distribution Company shall develop a code of practice for the management of metering related activities and submit it to the Bureau for approval within three months from the Effective Date of these Regulations.

3.2.2 The code of practice shall include but is not limited to the following:

(a) metering management plan which aims to deliver safety, continuity of service, and where applicable, financial performance. As a minimum, the metering management plan shall establish:

I. Metering Equipment objectives;

II. current and future Metering Equipment needs;

III. recovery procedures for Metering Equipment that is no longer operating or accurately recording consumption as intended;

IV. consistent decision making processes;

V. key planning milestones and clear responsibilities for the management of systems including appropriate accountability for their performance;

VI. training and facilitation of asset management techniques, for example, requirements for Metering Equipment data analysis;

VII. provisions for the regular performance measurement, monitoring and continual improvement of established processes; and

VIII. Metering Equipment asset information (e.g. age, service life, condition, failure history, replacements, test results, accuracy, and other key asset monitoring performance metrics).

(b) procedures for metering activities including but not limited to procurement, installation, maintenance, failures, testing, reading, position of meters and accessibility, security of meter installations, reverification and certification of

meters, Sealing, and accuracy requirements along with any forms and templates used for these procedures;

(c) data management of meters (e.g. reading schedule, data registry, data validation, data transmission process and schedule, ownership of and rights to access data, faulty meters, unauthorised energy use etc.);

(d) metering complaints; and

(e) any other matters, as may be applicable.

3.2.3 The Distribution Company should ensure that this code of practice is reviewed and amended sufficiently frequently so that it remains up-to-date and relevant. The code of practice should be amended as and when required by the Bureau.

3.2.4 The Distribution Company is required to provide to the Bureau for review and information a description of the systems and processes and any modifications or updates thereof and to amend the systems and processes or their description to address any concerns or suggestions shared by the Bureau.

3.2.5 The Bureau may from time to time at its discretion inspect or appoint an external consultant to inspect the working and operations of the Distribution Company and the implementation with the systems and processes and the code of practice.

3.3 International Standards

3.3.1 The following international standards, in whole or in part, constitute the minimum requirements for the design and application of Metering Equipment. Provisions contained within these standards shall establish pre-requisites for these Regulations and its conformity. The Distribution Companies may opt to implement an updated version of the standards, where available, however, the Distribution Companies must seek the Bureau's approval in prior.

Table 3.1: Electricity meter normative references

Reference	Title
2004/22/EC	European Parliament and of the Council on Measurement, Directive 2004/22/EC, Annex MI-003 Active Electrical Energy Meters, 2004
BS EN 50470-3	Electricity metering equipment (a.c.). Particular requirements - Part 3: Static meters for active energy (class indexes A, B and C), 2006
BS EN ISO/IEC 17025:2017	General requirements for the competence of testing and calibration laboratories, 2017
BS EN ISO/IEC 17067	Conformity assessment - Fundamentals of product Certification and guidelines for product Certification schemes (ISO/IEC 17067:2013), 2013
BS 8567	Specification for outdoor electricity meter cupboards, 2012
IEC 60145	Var-hour (reactive energy) meters, ed 1.0, 1963
IEC 60256-21	Electricity metering - Data exchange for meter reading, tariff and load control - Part 21: Direct local data exchange, ed 1.0, 2002
IEC 60529	Degrees of protection provided by enclosures (IP Code), ed 2.2 Consol. with am1&2, 2013
IEC / TR 60736	Testing equipment for electrical energy meters, ed 1.0, 1982
IEC 61869-2	Instrument transformers - Part 2: Additional requirements for current transformers, ed 1.0, 2012
IEC 61869-3	Instrument transformers - Part 3: Additional requirements for inductive voltage transformers, ed 1.0, 2011
IEC 61869-4	Instrument transformers - Part 4: Additional requirements for combined transformers, ed 1.0,

	2013
IEC 61968-1	Application integration at electric utilities – System interfaces for distribution management – Part 1: Interface architecture and general recommendations, ed 2.0, 2012
IEC 62052-11	Electricity metering equipment (AC) - General requirements, tests and test conditions - Part 11: Metering equipment, ed 1.0, 2003
IEC 62053-11	Electricity metering equipment (a.c.) - Particular requirements - Part 11: Electromechanical meters for active energy (classes 0,5, 1 and 2), ed 1.0, 2003
IEC 62053-21	Electricity metering equipment (a.c.) - Particular requirements - Part 21: Static meters for active energy (classes 1 and 2), ed 1.0, 2003
IEC 62053-22	Electricity metering equipment (a.c.) - Particular Requirements - Part 22: Static meters for active energy (classes 0,2 S and 0,5 S), ed 1.0, 2003
IEC 62053-23	Electricity metering equipment (a.c.) - Particular requirements - Part 23: Static meters for reactive energy (classes 2 and 3), ed 1.0, 2003
OIML TC 4/N 5	Organisation Internationale De Metrologie Legale, Principles for the establishment of hierarchy schemes for measuring instruments, 2006 (E)
UKAS M3003	The Expression of Uncertainty and Confidence in Measurement, ed 3.0, 2012
WELMEC 11.1	European cooperation in legal metrology, WELMEC 11.1, Common Application for Utility Meters, Issue 5, 2014
WELMEC 11.2	European cooperation in legal metrology, WELMEC 11.2, Guideline on time depending consumption measurements for billing purposes (interval metering), Issue 1, 2010
SI 1998 No. 1566	Electricity – The Meters (Certification) Regulations 1998, SI 1998/1566

Table 3.2: Water meter normative references

Reference	Title
2004/22/EC	Directive 2004/22/EC of the European Parliament and of the Council on Measurement – Annex MI-001 Water Meters
BS EN ISO/IEC 17025:2017	General requirements for the competence of testing and calibration laboratories, 2017
BS EN ISO/IEC 17067:2013	Conformity assessment - Fundamentals of product Certification and guidelines for product Certification schemes (ISO/IEC 17067:2013)
BS EN ISO 4064-1 | OIML R49-1:2013 (E)	Water meters for cold potable water and hot water - Part 1: Metrological and technical requirements, 2014
BS EN ISO 4064-2 | OIML R49-2: 2013 (E)	Water meters for cold potable water and hot water - Part 2: Test methods, 2014
BS EN ISO 4064-3 | OIML R49-3: 2013 (E)	Water meters for cold potable water and hot water - Part 3: Test report format, 2014
BS EN ISO 4064-5	Water meters for cold potable water and hot water - Part 5: Installation requirements, 2014
OIML D4	Installation and storage conditions for cold water meters, 2002 (E)
OIML TC 4/N 5	Organisation Internationale De Metrologie Legale, Principles for the establishment of hierarchy schemes for measuring instruments, 2006 (E)
Water Supply Regulations (WSR)	Water Supply Regulations, 2009, Revision 2
Guide to WSR	Guide to Water Supply Regulations – Issue 3 (2017)

3.4 Ownership and Location

3.4.1 Metering Equipment for the purpose of these Regulations, shall be owned by the Distribution Company, irrespective of the purchaser of the Meter, and installed at a suitable location, and so far as is Reasonably Practicable in the vicinity of the connection point that defines the boundary between the Customers fixed installation at any Premises and the incoming supply equipment owned by the Distribution Company.

3.4.2 Metering Equipment that do not meet the location requirements of 3.4.1, and where justified and approved by the Bureau, a dispensation may be granted which will require compensation for electricity and/or Water losses to be submitted and applied to meet the overall accuracy limits defined in these Regulations.

3.5 Approvals and Accreditation

3.5.1 Before specific Metering related activities can be carried out, written approval must be gained from the Distribution Company. The activities for which approval must be gained are:

(a) provision of Meters;

(b) Meter and standards testing (on-site and laboratory);

(c) Meter installation and commissioning;

(d) Meter repair and or recycling; and

(e) sealing of Metering Equipment

3.5.2 Notwithstanding 3.5.1, the application process for approval of each activity as well as the process for approval of such activities shall be published by the Distribution Company and approved by the Bureau. This includes, but is not limited to, the pre-qualification and type testing against standards stipulated in Clause 3.3.

3.5.3 Each activity for which approval must be gained from the Distribution Company has a set of minimum criteria which have to be met by the applicant. These criteria include, but are not limited to:

(a) International Organisation for Standardisation (ISO) accreditation;

(b) training and competence;

(c) experience in the market;

(d) support network; and

(e) audit and inspection

3.5.4 All Metering Equipment shall be type-tested in accordance with applicable standard(s) by an Accredited Laboratory. Once pre-qualified, the Metering Equipment shall be listed in a statutory register, maintained by the Distribution Company, of all approved Metering Equipment types suitable for use in the network.

3.5.5 Reference must be made, where relevant, to UAE standards which may be issued from time to time by the Emirates Standardization and Metrology Authority (ESMA) and Abu Dhabi specifications and guidelines issued by the Abu Dhabi Quality and Conformity Council (QCC).

3.6 Initial Verification and Certification

3.6.1 Prior to site installation, all Metering Equipment shall be subject to a Conformity Assessment in accordance with BS EN ISO/IEC 17067, and calibrated in accordance with applicable standard(s) by an Accredited Laboratory. Such activity should be subject to initial verification and Certification by an appropriately qualified inspection body.

3.6.2 Each Meter or Metering Equipment shall be tested in accordance with the procedures published by the Distribution Company to verify its characteristics and conformity with

anticipated operational requirements. This includes, but is not limited to, the routine testing and factory acceptance testing against standards stipulated in clause 3.3.

3.6.3 Measuring systems assembled to carry out specified measurements on Metering Equipment shall comply with the requirements of these Regulations.

3.6.4 Each Meter shall clearly display the year it was last tested and certified for continued operation.

3.7 Installation

3.7.1 Metering Equipment shall be installed so as to maintain safe and unrestricted access for the completion of functions as specified in these Regulations. Consideration should be given to a Customer and the ability to read a Meter and / or operate the circuit breaker without requiring any right of access from another party; for example, through an adjacent property.

3.7.2 Where directed by the Bureau or deemed necessary by the Distribution Company, a Guard Meter, Check Meter or Generation Meter shall be installed at a suitable location.

3.7.3 Metering Equipment installed outdoors and above ground level shall be mechanically protected against unauthorised access environmental impact and any other accidental damage. The minimum mechanical protection provided shall meet the following requirements.

(a) **Electricity Meters** - the minimum mechanical protection shall be in accordance with BS 8567; and

(b) **Water Meters** - the minimum mechanical protection shall be in accordance with the latest issue of the Guide to the Water Supply Regulations.

3.7.4 Alternative methods of mechanical protection shall be used only following agreement between the Customer and the Distribution Company who owns the Metering Equipment.

3.7.5 Metering Equipment installed outdoors and below ground level shall be mechanically protected against unauthorised access, environmental impact and accidental damage in accordance with ISO 4064-5. Alternative methods of mechanical protection shall be used only following agreement between the Customer and the Distribution Company who owns the Metering Equipment.

3.7.6 Metering Equipment installed at a distribution substation that is owned by either the Distribution Company or the Customer shall be situated in a room integral to the distribution substation or in a suitably designed housing that is external to, and in the vicinity of, the distribution substation.

3.7.7 The point of installation of the Metering Equipment shall be within reasonable height above floor level, and distance between two adjacent Meters shall be sufficient, so as not to hinder the completion of functions as specified in these Regulations.

3.7.8 Check Metering Equipment (including Guard Meters and Generation Meters) wherever installed shall be in accordance with the requirements above.

3.7.9 Notwithstanding the above provisions, the Distribution Company shall:

(a) determine the point of installation where the Metering Equipment is to be positioned in relation to any Premises. This shall normally be on the Customer's Premises at the Connection Point unless, and so far as is Reasonably Practicable, an alternative position is determined; and

(b) notify the Customer of the location in which they propose to install the Metering Equipment;

3.7.10 The Customer may, in writing and giving reason, request the Distribution Company to:

(a) install the Metering Equipment in a position other than that proposed by the Distribution Company; and

(b) reposition the Metering Equipment in the exact same location as used before if in case of re-installation.

3.7.11 The pecuniary costs associated with the requests expressed in 3.7.10 shall be defined in the Bureau approved Distribution Company's fees and charges.

3.7.12 Meter related services and charges must be documented and shall be made readily available and accessible in the public domain.

3.7.13 Where the Distribution Company agrees to a request made under Regulation 3.7.10, they shall:

(a) notify the Customer in writing giving an estimate of the expenses likely to be incurred stating the tasks that would be carried out by the Distribution Company and highlighting the related terms and conditions. In addition, clearly identifying the undertaken/responsibility of the Customer; and

(b) ensure the Distribution Company's right of access to the Metering Equipment is assured and does not present any risk to an employee carrying out a given task on, with or near the Metering Equipment.

3.7.14 Where the Distribution Company does not agree to a request made under 3.7.10 they shall provide written justification to the Customer within fifteen (15) working days of receiving the initial request.

3.7.15 Where remote out reading, AMR or AMI equipment is used, it shall be installed so as to ensure reasonable access for reading, inspection, testing and maintenance activities. Such equipment shall be non-resettable and sealed in accordance with these Regulations.

3.8 Sealing

3.8.1 A security seal shall be fitted to all Metering Equipment to prevent access to components which may affect its metrological characteristics or its ability to record actual consumption. This security seal shall purposefully:

(a) identify that no internal access has been gained to the Meter device; and

(b) act as confirmation that the Meter functioned to acceptable standards when sealed.

3.8.2 Notwithstanding 3.8.1, the following requirements shall also apply:

(a) the Manufacturer and/or Meter tester's individual identification stamp shall be located on every security seal (as appropriate);

(b) Metering Equipment shall have a suitable security seal fitted by the Manufacturer or its Supplier before any final verification and Certification is issued; and

(c) the security seal shall not be removed from the Meter device cover unless the Meter is returned for repair.

3.8.3 Secondary seals shall be applied as appropriate by the Distribution Company to:

(a) prevent access to live terminals or pipe termination points following installation; and

(b) prevent access to and interference with connections that may affect the continuity or accuracy of the billing data.

3.8.4 Conditional to these Regulations, the security seal and sealing system used for the above applications shall be as per the requirements in the security sealing process formally published by the Distribution Company.

3.8.5 Metrology and secondary security seals shall be considered independent and of different style.

3.9 Illegal tampering

3.9.1 No person shall be permitted to remove or replace a Meter except the Distribution Company, or a person authorized by the Distribution Company.

3.9.2 Illegal tampering of a Meter shall be considered as breach of these Regulations. A person shall be legally liable if found responsible for such an act.

3.10 Inspection, Testing, Operation and Maintenance

3.10.1 The Distribution Company is exclusively responsible for the operation and maintenance of the Metering Equipment. Where the CT/VT are part of the switchgear owned by the Customer they shall be maintained by the Customer in coordination with the Distribution Company.

3.10.2 The Distribution Company or any accredited company duly authorised by them, may at any time; and if so requested in writing by the Customer, test the accuracy of any Metering Equipment installation.

3.10.3 Metering Equipment shall be tested in accordance with these Regulations in order to determine whether it falls within the prescribed limits of error. Conditional to these Regulations the completion of on-site accuracy tests should be carried out using Working Standards. The Customer should be provided with copies of all applicable test results – Pass or Fail status.

3.10.4 The Distribution Company or any duly authorised company may remove Metering Equipment from the Premises of any installation where it is necessary to do so for the purpose of testing. During this process, consideration should be given to the continuity of supply therefore replacement Metering Equipment shall always be provided.

3.10.5 Meter device test procedures upon customer's request should be documented including the related terms and condition, time frame, service channels and shall be made readily available and accessible in the public domain.

3.10.6 Where a test is carried out at the request of the Customer, and the Meter upon being comprehensively tested, falls within the prescribed limits of error, the Distribution Company may recover from the Customer a service fee. This service fee shall be approved by the Bureau and duly published by the Distribution Company.

3.10.7 The Customer should have a copy of the test result, and a written notification of any applicable charges associated.

3.10.8 For electricity Meters, where a test is carried out on-site, the resulting error of the Meter shall be better than ± 2% with an overall uncertainty of ± 0.6% using appropriate Working Standards at a prevailing load of greater than 10% Imax. In certain cases, a laboratory test may also be carried out.

3.10.9 For any Premises where the Distribution Company imposes a tariff corresponding to metered quantity, a reading from the installed Meter shall be evidence of measured consumption, unless the Meter is proved to register incorrectly.

3.10.10 A Meter shall be regarded as registering incorrectly if during testing it is found to exceed the prescribed limits of error detailed in these Regulations.

3.10.11 The Metering Equipment installation shall be visited at least once in every calendar Year either as part of the Distribution Company Meter reading function or as a separate visit to verify the condition of the Metering Equipment.

3.10.12 As part of any visit to the Customer's Premises, the Distribution Company or duly authorised Meter reader shall inspect the condition of the Metering Equipment to confirm its physical state, its continued safe operation and that the function of associated security seals is maintained. Where the Metering Equipment fails to meet the requirements of these Regulations, failings shall be recorded and appropriate action taken.

3.11 Re-verification and Certification

3.11.1 Each Meter type shall have ascribed to it a Certification Life (time allowed to remain on circuit). This Certification Life will be different for electricity and Water Meters;

(a) **Electricity Meters** - If no supporting evidence is available, a period of 10 Years or such time that the Meter ceases to operate within permitted margins of error, whichever is least. In any event no Meter shall remain on circuit for periods exceeding 20 Years. The Meters (Certification) Regulations 1998, Statutory Instrument No. 1566, Schedule 4, may be used as reference for determining Meter Certification periods.

(b) **Water Meters** - If no supporting evidence is available, a period of 5 Years or such time that the Meter ceases to operate within permitted margins of error, whichever is least. In any event no Meter shall remain on circuit for periods exceeding 10 Years. Internationally recognised experience and or expertise may be used for determining meter Certification periods.

3.11.2 The Distribution Company shall maintain auditable records of all Meters on circuit and their projected date of replacement/recertification.

3.11.3 All re-cycled Meters must be re-verified and certified by an Accredited Laboratory. Testing shall be in accordance with standards stipulated in clause 3.3 and as per the re-verification and Certification process published by the Distribution Company. The initial Certification and test date shall be removed or obscured and the Certification and test date of the Accredited Laboratory marked on the Meter.

3.12 Records

3.12.1 The following records shall be retained by the Distribution Company and made available for inspection by the Bureau or its representatives at any time:

(a) test Certificates for all in-service Meters;

(b) Meter test equipment / standards calibration history;

(c) Meter re-Certification or replacement schedules;

(d) results of any adhoc on-site or Accredited Laboratory Meter testing initiated by the Customer or the Distribution Company;

(e) for every account, details of the Metering Equipment installed including:

(i) Manufacturer and serial number

(ii) installation date

(iii) date when it is removed from service

(iv) seal number

3.13 Public Information

3.13.1 The Distribution Company shall ensure Metering Equipment information is made readily available to the public domain. This should include but not be limited to the following:

(a) typical Metering Equipment arrangements

(b) how to read a Meter;

(c) Customer obligations on Meter care;

(d) what to do if you think your bill is too high;

(e) advice on who to contact with queries;

(f) how to get the Meter checked or tested;

(g) how to check for Water leaks;

(h) services to Special Customers;

(i) guaranteed service standards; and

(j) dispute resolution procedure.

3.13.2 Once Metered consumption has commenced, the Distribution Company shall be responsible for maintenance and replacement of the Metering Equipment (irrespective of the purchaser of the Metering Equipment).

3.13.3 The Distribution Company and the Customer shall be responsible for the general upkeep of the Metering Equipment.

3.13.4 The Distribution Company shall record and document the responsibilities defined in 3.10.2 and 3.10.3.

3.13.5 The Distribution Company must handle a complaint by a Customer in accordance with the Distribution Company's published customer complaints handling procedure approved by the Bureau.

3.14 Meter reading and billing

3.14.1 Distribution Company may read meters as follows:

(i) Manually– a reading by a meter reader; and

(ii) Remotely - a reading using remote reading capabilities.

3.14.2 The Distribution Company must endeavour to read all meters remotely as practically possible.

3.14.3 For manual reading of the Meter, only a certified person duly authorised by the Distribution Company shall read the Meter and certify the reading.

3.14.4 The Distribution Company shall develop a procedure for meter reading.

3.14.5 The Distribution Company shall provide a meter read on a monthly basis whether via actual reading or estimated reading and issue a bill accordingly to the Customer.

3.14.6 The Distribution Company must take actual reading at least once every 2 months. No estimated reading is allowed for more than once in a row or for a period exceeding two months.

3.15 AMI and AMR systems

3.15.1 Metering Equipment integral to AMI systems shall meet the requirements of relevant International Standards and be designed so as to permit two-way real-time communication with the central database for the purposes of billing, troubleshooting, analysis, load study/research, Customer awareness, engagement, enrolment in demand side management programmes, implementation of time-of-use tariffs, and implementation of smart grid applications.

3.15.2 Metering Equipment incorporating AMR shall meet the requirements of relevant International Standards and be designed so as to communicate remotely and automatically through a bi-directional fixed communication system with the central database for billing, troubleshooting and/or analysis.

3.15.3 Metering Equipment incorporating AMR shall be designed so as to support a number of functions as defined by the Distribution Company. Such functions shall include but not be limited to:

(a) Remote and automated reading of all Interval Data and measurement registers, logs, status etc.

(b) supply disconnection and reconnection;

(c) re-parameterisation / re-programming of Meters

3.15.4 The technology used for actual data transmission shall be defined by the Distribution Company.

3.15.5 The Distribution Company shall ensure the availability and reliability of the AMI and AMR systems and technologies by fulfilling any additional operation and maintenance requirements beyond those of traditional systems.

3.16 Data Security

3.16.1 Metering Equipment shall as a minimum have a programmable facility to restrict access to recorded data and or associated hardware. Multi-user access is permissible and shall be controlled through the introduction of defined levels of access. These levels of access shall be in accordance with IEC 62056-21.

3.16.2 Consideration should be given to data security vulnerability, in particular the need to ensure a rigorous and robust authentication and authorisation process is used so that unauthorised parties cannot gain access to data or software protocols to initiate a function which may cause disruption or failure.

3.17 Software Protocol

3.17.1 Intelligence software for the configuration, parameterization, running, remote access and update of Metering Equipment parameters shall support all standard protocols as defined by the Distribution Company. Consideration should be given to the compatibility of existing open systems and or system components and their relevant protocols.

3.18 Pre-payment Meters

3.18.1 Either upon the request of the Customer, or upon approval of the Customer, and provided that the required infrastructure and relevant terms and conditions are in place, the Distribution Company may:

(a) reconfigure the existing Meter to be used as a pre-payment Meter; or

(b) remove the existing Meter and install a pre-payment Meter on the Premises.

(c) Install a pre-payment meter on the Premises.

3.18.2 The general terms and conditions for the supply via pre-payment meters must be developed by the Distribution Company and the original terms and any amendments thereto must be approved by the Bureau.

3.18.3 The Distribution Company may recover any expenses incurred with activity 3.18.1 as approved by the Bureau.

3.18.4 The Meters shall be charged by means of tokens / coupons or by online payments or any approved payment method by the Bureau. There shall be no regular billing associated with such installations.

3.18.5 Alarm shall be issued to the user to recharge when the credit is low. On exhaustion of credit the service shall be disconnected.

3.18.6 The service shall resume automatically upon recharge.

3.18.7 Pre-payment Meters shall be interoperable with the metering infrastructure irrespective of the Manufacturer / Supplier of the Meters.

4. Electricity

4.1 Electricity Metering System Equipment Requirements

4.1.1 The requirement for electricity Main and Check Metering Equipment shall be determined by the category of the circuit being metered. Circuit categories are defined in Table 4.1. For each circuit category, the use of electricity Main and Check Metering Equipment shall be in accordance with Table 4.2.

Table 4.1: Electricity metering circuit categories

Circuit category	Circuit capacity
E1	greater than 100 MVA
E2	greater than 10 MVA but less than or equal to 100 MVA
E3	greater than 1 MVA but less than or equal to 10 MVA
E4	greater than 100 kVA but less than or equal to 1 MVA
E5	less than or equal to 100kVA

Table 4.2: Requirements for electricity check metering equipment

Metering equipment	Circuit category E1	Circuit category E2	Circuit category E3	Circuit category E4	Circuit category E5
Active Energy meters	Main & Check	Main & Check	Main & Check	Main	Main
Reactive Energy meters	Main & Check	Main & Check	Main	Main	-
Current transformers	Main & Check	Main & Check	Main	Main	Main
Voltage transformers	Main & Check	Main	Main	Main	N/A

4.1.2 Where applicable, the overall accuracy of the electricity Metering system that consists electricity Meters and electricity measuring transformers shall be determined by the capacity of the circuit being metered. Overall accuracy shall be in accordance with the guideline figures in Table 4.3 and 4.4.

Table 4.3: Electricity metering system overall accuracy for active energy measurement

Current expressed as a percentage of rated measuring current	Power factor	Circuit category E1	Circuit category E2	Circuit category E3	Circuit category E4	Circuit category E5
120% to 10% inclusive	unity	± 0.5%	± 1.0%	± 1.5%	-	-
100% to 20% inclusive	unity	-	-	-	± 1.5%	± 2.5%
below 20% to 5%	unity	-	-	-	± 2.5%	± 2.5%
below 10% to 5%	unity	± 0.7%	± 1.5%	± 2.0%	-	-
below 5% to 1%	unity	± 1.5%	± 2.5%	-	-	-
100% to 10% inclusive	0.5 lag and 0.8 lead	-	-	-	± 2.5%	± 3.0%
120% to 10% inclusive	0.5 lag and 0.8 lead	± 1.0%	± 2.0%	± 2.5%	-	-

Table 4.4: Electricity metering system overall accuracy for reactive energy measurement

Current expressed as a percentage of rated measuring current	Power factor	Circuit category E1	Circuit category E2	Circuit category E3	Circuit category E4	Circuit category E5
120% to 10% inclusive	zero	± 4.0%	± 4.0%	± 4.0%	± 4.0%	± 4.0%
100% to 20% inclusive	zero	-	-	-	± 4.0%	± 4.0%
120% to 20% inclusive	0.866 lag and 0.866 lead	± 5.0%	± 5.0%	± 5.0%	-	-
100% to 20%	0.866 lag and 0.866 lead	-	-	-	± 5.0%	± 5.0%

4.1.3 The accuracies of the electricity Metering Equipment forming the electricity Metering system shall be determined by the category of the circuit being Metered. The accuracy of electricity Metering Equipment shall be in accordance with Table 4.5.

Table 4.5: Electricity metering system equipment accuracy

Metering equipment	Circuit category E1	Circuit category E2	Circuit category E3	Circuit category E4	Circuit category E5
Meters					
-active energy measurement	IEC 62053-22 Class 0.2S	IEC 62053-22 Class 0.2S	EN 50470-3 Class CIEC 62053-22 Class 0.5S	EN 50470-3 Class B IEC 62053-21/ IEC 62053-11 Class 1.0	EN 50470-3 Class A IEC 62053-21/ IEC62053-11 Class 2.0
-reactive energy measurement	IEC 62053-23 / IEC 60145 Class 2.0	IEC 62053-23 / IEC 60145 Class 2.0	IEC 62053-23 / IEC 60145 Class 3.0	IEC 62053-23 / IEC 60145 Class 3.0	IEC 62053-23 / IEC 60145 Class 3.0
current transformers	IEC 61869-2 Class 0.2S	IEC 61869-2 Class 0.2S	IEC 61869-2 Class 0.2	IEC 61869-2 Class 0.5	IEC 61869-2 Class 0.5
voltage transformers	IEC 61869-3 Class 0.2	IEC 61869-2 Class 0.2	IEC 61869-2 Class 0.5	IEC 61869-2 Class 0.5	

4.2 Electricity Meter

4.2.1 The electricity Meter shall be of static type design, that is an energy Meter in which the current and voltage applied to electronic measuring elements produce an output proportional to the measured energy, and meet the requirements of these Regulations.

4.2.2 The electricity Meter shall have a valid European Community (EC) type-approval Certificate issued by an organisation which has been designated as a notified body and allocated an identification number by the European Commission in accordance with Directive 2004/22/EC or by an Accredited Laboratory.

4.2.3 The notified body or Accredited Laboratory shall issue a Certificate to confirm the conformity of the electricity Meter to the EC type-approval Certificate and to the accuracy requirements of these Regulations. The Distribution Company shall maintain evidence and copies of all the Certification issued by the notified body or Accredited Laboratory.

4.2.4 The electricity Meter shall be designed, constructed and tested in accordance with EN 50470-3, so as to meet the requirements of mechanical Environment class M1, electromagnetic Environment class E2 for outdoor conditions. These conditions of use shall be indicated on the nameplate of each electricity Meter.

4.2.5 The electricity Meter shall be designed, constructed and tested in accordance with EN 50470-3 so as to operate in a satisfactory manner for the climatic conditions of the Emirate of Abu Dhabi, in particular the high ambient temperature, high humidity (95% condensing) and extreme dust contamination. In addition, the electricity Meter shall be designed, constructed and tested so as to withstand the effects of solar radiation in accordance with IEC 62052-11.

4.2.6 The ingress protection of the electricity Meter as confirmed by type test shall be minimum IP52 for Indoor Meters and IP54 for Outdoor Meters in accordance with IEC 60529.

4.2.7 Dependent upon its measurement range each electricity Meter shall record, as a minimum:

(a) the cumulative energy consumption in kilowatt-hour (kWh) or megawatt-hour (MWh) corresponding to maximum current, at the supply reference voltage and unity power factor;

(b) where the electricity Meter has an integral reactive energy measurement capability, the cumulative energy consumption in VAr-hours (VArh) shall be recorded; and

either,

(c) active energy demand values, programmable (in 5 minute increments) from 5 minutes duration to 1 hour; or

(d) a voltage free pulse output that can be connected to any data collection device or outstation

4.2.8 Each electricity Meter shall be suitably sized by the Distribution Company for the likely range of load current expected to be drawn by the Customer.

4.2.9 The electricity Meter shall be provided by:

(a) the Distribution Company; or

(b) the Customer, subject to agreement with the Distribution Company

4.2.10 In cases where the Customer refuses or fails to receive the electricity supply through an appropriate electricity Meter provided and installed in accordance with these Regulations, the Distribution Company may refuse to provide or may discontinue the electricity supply with a prior written notification to the Customer.

4.2.11 A register of approved, compliant electricity Meters shall be established documented and maintained by the Distribution Company. This register will include electricity Meters that have been submitted for inclusion by Manufacturers or Suppliers along with the Meter Model / Type and prescribed period of Certification Life for each electricity Meter and shall be readily accessible to the public domain.

4.3 Measuring Transformers

4.3.1 Measuring transformers shall be designed in accordance with the relevant Parts of IEC 61869. For clarity:

(a) IEC 61869-2 is applicable for Measuring Current Transformers;

(b) IEC 61869-3 is applicable for Measuring Voltage Transformers;

(c) IEC 61869-4 is applicable for Combined Transformer.

4.3.2 Where Metering Equipment associated with a measuring transformer is installed on an existing circuit, the errors of accuracy of that measuring transformer shall, so far as is

Reasonably Practicable, be ascertained and applied to the overall accuracy of the installation. The accuracies of the electricity Metering Equipment shall be in accordance with Table 4.5.

4.3.3 Errors of accuracy shall be recorded by the Distribution Company and verified upon request for inspection by the Bureau. Records should include but not be limited to:

(a) the individual measuring transformer Manufacturer's test Certificate;

(b) the individual measuring transformer site test report;

(c) the burden measurement site test report;

(d) the Meter test and Certification record

4.3.4 Wiring and terminals between the metering equipment (CT,VT, Terminal test block and Meters) to be protected and minimised.

4.3.5 Adequate test facilities / sockets shall be provided at the Meter points to allow on-site testing, continuity of data and safe working practices. The test sockets should have provision to be sealed to prevent any unauthorised access to the metering circuits.

4.3.6 No other instrument or protective relay shall be connected to the CT and VT circuits for the Main Meter of Class 0.2S.

4.4 Electricity Meter Standards

4.4.1 All electricity Meters shall be subject to performance testing so as to verify function and accuracy for revenue purposes. In the context of these Regulations, performance testing shall refer to a standard.

4.4.2 Standards shall apply equally to Manufacturers and those facilities of the sector used for the purpose of test and calibration of watt-hour Meters. The principles outlined in IEC/TR 60736 and OIML TC4/N5 shall apply.

4.4.3 The following are deemed by these Regulations to be standards:

(a) Reference Standards;

(b) a.c. Transfer Standards;

(c) Working Standards

4.4.4 All standards shall be maintained and periodically calibrated by the Distribution Company approved Accredited Laboratory. Test reports provided by the approved Accredited Laboratory, shall be retained by the Distribution Company for inspection on request by the Bureau. The maximum intervals between calibrations shall be as indicated in Table 4.6.

Table 4.6 Electricity Meter Standards & maximum period between calibrations

Standard type	Maximum period between calibrations
Reference Standards	2 Years
a.c. Transfer Standards	1 Year
Working Standards	6 months

4.4.5 The overall uncertainty of measurement during any testing shall be calculated in accordance with United Kingdom Accreditation Service (UKAS) publication M3003. The confidence level in the determination of the overall uncertainty shall be 95% or greater.

4.4.6 The overall uncertainty of energy Measuring Systems used for testing the customer meter shall not be greater than those values listed in Table 4.7.

Table 4.7 Maximum uncertainty for electricity meters

Power Factor	Meter class 0.5	Meter class 1	Meter class 2
1.0	± 0.1	± 0.2	± 0.3
0.5 lagging	± 0.15	± 0.3	± 0.45
0.5 leading	± 0.2	± 0.4	± 0.6

4.4.7 Apparatus used for the adjusting and testing of electricity Meters shall be removed from service in the event periodic verification shows the instrument to be inaccurate or unstable. Such apparatus shall not be returned to service until evidence can be shown that it has been repaired and re-calibrated.

4.4.8 For any test load, the load applied to a Working Standard integrating meter shall not be less than 25 % or more than 125 % of its full load rating. For a Working Standard wattmeter, the applied load shall not be less than 40 % or more than 100 % of its full scale or range reading.

5. Water

5.1 Water Metering system equipment requirements

5.1.1 The requirement for the Water Metering system shall be determined by the normal operational flow rate through the pipeline being metered. The Water Metering system shall be selected such that the normal operational flow rate of the pipeline being Metered resides within the upper flow zone of the Metering system (i.e. exceeds the transitional flow rate Q2 of the Meter). The overall accuracy of Water metering systems shall be in accordance with Table 5.1.

Table 5.1 Accuracy class and maximum permissible error (OIML 49-1)

Flow rate range	MPE for class 1 water meter	MPE for class 2 water meter
Q2 ≤ Q ≤ Q4	±1 % (temp 0.1 °C to 30 °C) ±2 % (temp > 30 °C)	±2 % (temp 0.1 °C to 30 °C) ±3 % (temp > 30 °C)
Q1 ≤ Q < Q2	±3 % (regardless of the temperature range)	±5 % (regardless of the temperature range)

Where

Q Flow rate (Q = dV/dt), where V is actual volume and t is time taken for this volume to pass through the meter

Q1 Minimum flow rate (m^3/h)

Q2 Transition flow rate (m^3/h)

Q3 Permanent (highest) flow rate (m^3/h)

Q4 Overload flow rate (m^3/h)

MPE Maximum Permissible Error

The MPEs of a water meter while in service should be twice the MPEs given in Table 5.1, according to the accuracy class of the meter

Temperature as measured at the inlet of the meter

5.2 Water Meter

5.2.1 Where a Water Customer is to be charged for supply usage, wholly or partly by reference to the quantity of Water supplied, the supply shall be given through, and the quantity of Water shall be ascertained by, an appropriate Water Meter.

5.2.2 The Water Meter shall have a valid EC type-approval Certificate issued by an organisation which has been designated as a notified body and allocated an identification number by the European Commission in accordance with Directive 2004/22/EC or an Accredited Laboratory.

5.2.3 The notified body or Accredited Laboratory shall issue a Certificate to confirm the conformity of the Water Meter to the EC type-approval Certificate and to the accuracy requirements of these Regulations. The Distribution Company shall maintain evidence and copies of all the Certification issued by the notified body or Accredited Laboratory.

5.2.4 The Water Meter shall be designed, constructed and tested so as to operate in a satisfactory manner for the climatic conditions of the Emirate of Abu Dhabi, in particular the high ambient temperature (the Meter shall have the correct Meter temperature class), high humidity (95% condensing) and extreme dust contamination. Consideration must also be given to the use of materials that are not adversely affected by Water

temperature variations; are known to be non-toxic, non-contaminating and biologically inert; and are resistant to internal and external corrosion, or which are protected by a suitable surface treatment.

5.2.5 A water meter shall be designated by the numerical value of Q3 in m^3/h and the ratio Q3/Q1; the ratio Q2/Q1 shall be 1.6 and the ratio Q4/Q3 shall be 1.25, as recommended in OIML 49-1.

5.2.6 The ingress protection of the water Meter as confirmed by type test shall be a minimum IP68 for meters installed in underground chambers and IP65 for above ground installation in accordance with IEC 60529.

5.2.7 Each Water Meter shall record, as a minimum:

(a) the cumulative volume consumption in cubic metres (m^3);

(b) the flow rate measured in cubic metres per hour (m^3/h); and

(c) have the ability to indicate the cumulative volume consumption and flow rate measurement to a minimum accuracy of two decimal places.

5.2.8 Each Water Meter shall be suitably sized by the Distribution Company for the likely range of flow to be expected to be drawn by the Customer without any undue pressure loss.

5.2.9 The Water Meter shall be provided by:

(a) the Distribution Company; or

(b) the Customer, subject to agreement with the Distribution Company.

5.2.10 In cases where the Customer refuses or fails to take his Water supply through an appropriate Water Meter provided and installed in accordance with these Regulations, the Distribution Company may refuse to provide or may discontinue the Water supply.

5.2.11 A register of approved, compliant Water Meters shall be established documented and maintained by the Distribution Company. This register will include Water Meters that have been submitted for inclusion by Manufacturers or Suppliers along with the prescribed period of Certification Life for each Water Meter and shall be readily accessible to the public domain.

5.3 Water Meter Standards

5.3.1 All Water Meters shall be subject to performance testing so as to verify function and accuracy for revenue purposes. In the context of these Regulations, performance testing shall refer to a Standard.

5.3.2 Standards shall apply equally to Manufacturers and those facilities of the sector used for the purpose of test and calibration of Water Meters. The principles outlined in su 4/N 5 shall apply.

5.3.3 The following pieces of test equipment are deemed by these Regulations to be Standard:

(a) Calibrated reference device i.e. calibrated tank, Reference Meter, etc.

(b) Time measurement device;

(c) Flow rate measurement device

5.3.4 All Standards shall be maintained and periodically calibrated by the Distribution Company approved Accredited Laboratory. Test reports provided by the approved Accredited Laboratory, shall be retained by the Distribution Company for inspection on request by the Bureau. The maximum intervals between calibrations shall be in accordance with Table 5.3.

Table 5.2 Water Meter maximum period between calibration

Standard type	Maximum period between calibrations
Reference standards	2 Years
Flow standard	1 Year
Timing device	1 Year
Water temperature and pressure measuring devises	1 Year
Weighing device	1 Year
Reference Meter	6 months

5.3.5 The maximum and overall uncertainty of measurement during any testing shall be in accordance with OIML R 49-2 test methods.

5.3.6 Apparatus used for the regulating and testing of Water Meters shall be removed from service in the event periodic verification shows the instrument to be inaccurate or unstable. Such apparatus shall not be returned to service until evidence can be shown that it has been repaired and re-calibrated.

6. Application for a Bureau decision

6.1 Application for decision

6.1.1 An application for an enquiry, clarification, dispute, relaxation or claim relevant to these Regulations must be made in writing to the Bureau and submitted with supporting documents.

6.2 Bureau request for information

6.2.1 The Bureau may request from the person making an application for a decision under this Part any information or documentation it considers reasonable and necessary in the circumstances and the person must provide such information within an agreed period of time.

6.3 Bureau decision

6.3.1 The Bureau shall notify the person which made the application of its final decision.

6.3.2 The Bureau may:

(a) make any decision it sees fit in the circumstances; and/or

(b) issue directions as it sees fit to the person which made the application for a decision and to any third party.

6.3.3 Any decisions or directions issued by the Bureau are binding on the person who made the application for a decision and any third party stated in these decisions or directions.

6.3.4 Failure to comply with the Bureau's decisions or directions shall be considered as a failure to comply with the Regulations.

7. Failure to comply with Regulations

7.1 Reporting failures

7.1.1 Any failure to comply with these Regulations or any act that may be considered as a failure to comply with these Regulations must be reported to the Bureau.

7.2 Enforcement procedures

7.2.1 In case of failure to comply with these Regulations, the Bureau may issue a written warning notice to the non-complying person.

7.2.2 The warning notice shall include:

(a) the name of the person;

(b) the regulation which was been violated;

(c) a tolerance period to comply;

(d) the enforcement procedures to be taken against the person in case it does not comply with the Regulations within the tolerance period.

7.2.3 Pursuant to Article 66 of Law No (2), a person who fails to comply with these Regulations shall be subject to a fine of not less than AED 250,000.

7.2.4 If a person fails to comply with these Regulations for a second time the fine may be doubled.

7.2.5 Failure to comply with these Regulations may be also deemed as a breach of a Licence condition where applicable.

8. Governing Law

8.1 Governing Law

8.1.1 These Regulations and the rights and duties of any parties hereunder shall be governed by the laws of the Emirate of Abu Dhabi and the federal laws of the UAE as applied by the courts of the Emirate of Abu Dhabi.