دائـــــرة الـــطـــاقـــة
DEPARTMENT OF ENERGY

THE ELECTRICITY SUPPLY REGULATIONS (2020)

EFFECTIVE DATE: 01/09/2020

P.O. Box 32800, Abu Dhabi, U.A.E | T+ 971 2 2070777

www.doe.gov.ae

Contents

Foreword

The Department of Energy (DoE) is established in Abu Dhabi pursuant to Law No.11 of 2018 (the Law). Under that Law, the DoE is the successor entity of the Regulation and Supervision Bureau (RSB) and Abu Dhabi Water and Electricity Authority (ADWEA). Accordingly, any references to the Regulation and Supervision Bureau, the Bureau, RSB, the Authority or ADWEA in any document, template or correspondence shall now be interpreted as referring to the DoE.

The DoE's role is to regulate the economic and technical activities of entities operating in the energy sector Emirate of Abu Dhabi and to oversee the economic and technical activities of the energy sector companies that are licensed to operate in the Emirate of Abu Dhabi.

In addition to its duties in respect of licensed companies, the DoE has certain responsibilities towards the general public, including the assurance of safe and efficient electricity supplies to consumers and these regulations have been produced with this aim in mind.

These Regulations are issued by the DoE pursuant to the powers conferred to it under the Law and shall replace the previous regulations issued by the RSB, ADWEA or WED.These Regulations shall be effective from **01/09/2020** and can be downloaded from the DoE's website https://www.doe.gov.ae/en/Publications.

MOHAMMED BIN JARSH AL FALASI

Undersecretary-Department of Energy

Acknowledgements

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

Government organisations:

(a) Abu Dhabi Transmission & Despatch Company (TRANSCO)

(b) Abu Dhabi Distribution Company (ADDC)

(c) Al Ain Distribution Company (AADC)

(d) Abu Dhabi General Services Company (Musanada)

History of revisions

Revision	Date	Prepared by	Checked by	Issued to
ED/R01/012 Issue 1	16/12/2007	T Khan	L Hill	Publication
ED/R01/012 Second Edition	1/1/2018	T Al Hashmi M Alsattari M Yousif S Sivaramakrishnan	A Mashjari	Publication
DoE/PD/R01/002 2020 Edition	01/09/2020	M Iskeirjeh K Al Marzooqi	S Alshkeili	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 …]*

Amendments N/A

1. Introduction

1.1 Citation

1.1.1 These Regulations shall be cited as the Electricity Supply Regulations 2020 (The Regulations)

1.2 Commencement

1.2.1 These Regulations come into force on 1st of September 2020 (Effective Date).

1.2.2 These Regulations are issued by the Department of Energy pursuant to Law No (11) of 2018.

1.2.3 These Regulations supersede and replace the following regulations:

(a) Second Edition of the Electricity Supply Regulations issued by RSB in 2018

(b) Issue No. 1 of the Electricity Supply Regulations issued by RSB in 2007.

1.3 Purpose

1.3.1 The purpose of these Regulations are to:

(a) secure regular and efficient supply of electricity;

(b) protect the general public from Danger related to electricity works and installations;

(c) eliminate or reduce the risk of personal injury related to electricity works and installations;

(d) ensure that the electricity fittings installed and used by a Network Operator are safe; and

(e) promote the conservation and the efficient use of electricity.

1.4 Scope

1.4.1 These Regulations apply to all parties involved in the ownership or operation of any HV and LV electrical equipment or system.

1.4.2 The detailed requirements relating to LV Electrical Installations within Premises are given in the Electricity Wiring Regulations as current and applicable.

1.4.3 The detailed requirements relating to all distribution voltage Electrical Installations are given in the Electricity Distribution Code, the relevant Distribution Company Standards and where appropriate, the relevant International Standards and industry best practice as current and applicable.

1.4.4 The detailed requirements relating to all transmission voltage Electrical Installations are given in the Electricity Transmission Code, the relevant Transmission Company Standards and where appropriate, the relevant International Standards and industry best practice as current and applicable.

1.4.5 Compliance with these Regulations shall be assessed in accordance with specifications and guidelines issued by the DoE from time to time, or issued by the Transmission and Distribution Companies and approved by the DoE (see Relevant Documents under 1.5).

1.4.6 Relaxation of any of the requirements of these Regulations may be approved by the DoE upon written request from the relevant parties.

1.4.7 These Regulations may be amended or revoked by the DoE at any time.

1.4.8 Nothing in these Regulations is intended to conflict with, or affect the operation of any relevant existing Federal or Abu Dhabi Law, Regulation, Decree, Order or other Ordinance.

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

1.4.10 Failure to comply with these Regulations, or any part thereof, shall be deemed as contrary to the Law and subject to punishment by the imposition of a fine and/or administrative

sanction. Any such failures will be addressed in accordance with the Law and Part 7 of these regulations.

1.5 Relevant Documents

1.5.1 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) Electricity Wiring Regulations: covers detailed requirements and guidelines for LV Electrical Installations within Premises, issued by the DoE.

(b) Electricity Distribution Code: prepared and maintained by the Distribution Companies detailing technical parameters and other requirements relating to the connection and the use of the distribution networks owned and operated covers requirements for the development, operation and maintenance of distribution networks owned and operated by Distribution Companies.

(c) Electricity Distribution Licences: define the responsibilities and scope of operation of Distribution Companies, including their obligations to Customers, issued by the DoE.

(d) Incident Reporting Regulations: specify the obligations on Licensees for the reporting of major incidents on their HV or LV networks, issued by the DoE.

(e) Customer Metering Regulations: specify the standards and requirements for billing meters connected to Customers receiving electricity supply, issued by the DoE

(f) Metering and Data Exchange Code: specify minimum technical, design and operational criteria, the rules for metering data collection, and data exchange to enable all licensees to comply with their statutory obligations.

(g) Distribution Company Standards: give details of requirements, standards and operating procedures for activities of the Distribution Companies, including maintenance, plant and equipment specifications. These are issued by the Distribution Companies and, where appropriate, are approved by the DoE.

(h) International Standards: where appropriate these may be referenced or adopted by the Network Operator. These may include, but are not limited to, ISO Standards (International Standardisation Organisation), IEC Standards (International Electro-technical Commission) or British Standards (BS).

(i) UAE Standards: issued by the Emirates Standardisation and Metrology Authority (ESMA). These standards may be referenced where appropriate.

(j) Distribution Company Approved System Safety Rules: these define safe procedures for working on, with or near Distribution Companies' systems, including at the interface with Customers' Installations.

(k) Transmission Company Approved System Safety Rules: these define safe procedures for working on, with or near Transmission Company's systems, including at the interface with Customers' Installations.

(l) Electricity Transmission Code: prepared and maintained by the Transmission Company detailing technical parameters and other requirements relating to the connection and the use of the transmission network owned and operated by Transmission Company.

(m) Transmission Company Standards: give details of requirements, standards and operating procedures for activities of the Transmission Company, including plant and equipment specifications. These are issued by the Transmission Company and, where appropriate, are approved by the DoE.

(n) Code of Practice of Guaranteed and Overall Service Standards: sets out the minimum service standards and performance levels that can be expected from the distribution companies, approved by the DoE.

1.6 Provision of information

1.6.1 All relevant parties are required to furnish the DoE with information on matters relating to these Regulations and their implementation as the DoE may direct or request from time to time.

1.7 Responsibility for Implementation

1.7.1 All parties mentioned in Clause 1.4.1 are responsible for implementing this document.

1.8 References

1.8.1 OSHAD SF, Technical Guideline Process of Risk Management, ver. 3.0. 2016

1.8.2 OSHAD SF, Code of Practice 15.0 - Electrical Safety, ver.3.1. 2017

1.8.3 Standard Technical Specifications, Abu Dhabi Water and Electricity Authority / Abu Dhabi Distribution Company / Al Ain Distribution Company

1.8.4 Standard Technical Specifications, Abu Dhabi Transmission & Despatch Company

1.8.5 BS 9999:2017, Code of practice for fire safety in the design, management and use of buildings

1.8.6 BS 6423:2014, Code of practice for maintenance of electrical switchgear and control gear

1.8.7 BS 6626:2010, Code of practice for Maintenance of electrical switchgear and control gear for voltages above 1 kV and up to and including 36 kV

1.8.8 BS 6867:2013, Code of practice for Maintenance of electrical switchgear and control gear for voltages above 36 kV

1.8.9 BS ISO 31000:2009, Risk management – Principles and guidelines

1.8.10 DIN VDE 0210, Planning and design of overhead power lines with rated voltages > 1kV.

1.8.11 DIN VDE 0211, Planning and design of overhead power lines with rated voltages < 1kV.

1.8.12 Regulation (EU) No. 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gas and repealing Regulation (EC) No. 842/2006

1.8.13 Information Sheet 11 : High Voltage Switchgear – EU F-Gas Regulation Guidance; Gluckman Consulting www.gluckmanconsulting.com

1.8.14 ENA ER G69-1 - The Networks Association Engineering Recommendation, ENA ER G69-1 Guidance on Working with Sulphur Hexaflouride, Issue 1. 2005

1.8.15 Civil Defence Fire Code Council, U.A.E. Fire and Life Safety Code of Practice, Directorate General of Civil Defence – Dubai, 2011.

1.9 Distribution

1.9.1 Soft copy of these regulations is available on DoE website

2. Definitions

2.1 Interpretation

2.1.1 Words defined in this Part begin with capital letters when used in the Regulations.

2.1.2 Terms in common use are not defined here and normal dictionary definitions apply.

2.1.3 Words and expressions other than those defined in these Regulations which are defined in the Law, shall have the meanings ascribed to them in the Law.

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

2.1.5 Unless otherwise specified, days shall mean calendar days.

2.2 Definitions

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

2.2.1 **Abu Dhabi Water and Electricity Authority** - the former Abu Dhabi Water and Electricity Authority (ADWEA) as established in Abu Dhabi pursuant to Law No.2 of 1998 (the Law).

2.2.2 **Alternating Current (AC)** - is an electric current which periodically reverses direction.

2.2.3 **Appliance** – an item of current using equipment.

2.2.4 **Bureau** – the former Regulation and Supervision Bureau (RSB) for the water, wastewater and electricity sectors in the Emirate of Abu Dhabi, as established under Law No. 2 of 1998.

2.2.5 **Connection Point** – the point which defines the boundary between the Owner's Electrical Installation installed at a Premises and the main cable or equipment owned by the Transmission or the Distribution Company.

2.2.6 **Customer** – any Person or Entity who is connected to a Transmision or a Distribution Company network for the supply of electricity.

2.2.7 **Danger** – risk of injury to people from fire, electric shock, burns, and explosion or from mechanical movement of electrically controlled equipment, or the risk of damage to property.

2.2.8 **Direct Current (DC)**- is the unidirectional flow of an electric charge

2.2.9 **Department of Energy (DoE)**- established in Abu Dhabi pursuant to Law No.11 of 2018 (the Law).

2.2.10 **Distribution Company** – an Entity holding a Licence from the Bureau to distribute electricity issued pursuant to the Law.

2.2.11 **Earth** – the conductive mass of earth, whose electrical potential (voltage) at any point is conventionally taken as zero.

2.2.12 **Earthing or Earthed** – a general term used to describe the connection of conductive parts of an Electrical Installation or an Appliance to Earth.

2.2.13 **Earth Electrode** – a conductor or group of conductors in intimate contact with Earth, providing an electrical connection to Earth, and normally having a known and measurable value of Earth Resistance.

2.2.14 **Earth Resistance** – the resistance (in Ohms) from any point on an Electrical Installation to Earth, being measured using an approved testing device and approved procedure.

2.2.15 **Electrical Installation** – an Electrical Installation generally comprises any fixed or temporary cable, switchgear, transformer or other electrical equipment within a Premises or other place where there is an electricity supply (including outdoor locations).

2.2.16 **Entity** – an individual, company, association, society, partnership, corporation, municipality, institution, government organisation, agency or group.

2.2.17 **High Voltage (HV)** – in the context of these Regulations means an AC voltage greater than Low Voltage.

Note: In the Emirates of Abu Dhabi the High Voltage at distribution level is defined as voltages below 36kV phase to phase. At transmission level, High Voltage are voltages equal or above 132kV phase to phase.

2.2.18 **Law** – means Law No (2) of 1998 concerning the regulation of the water, and electricity sectors in the Emirate of Abu Dhabi (as amended). and Law No (11) of 2018 cocnerning the establishment of DoE.

2.2.19 **Licence** – means a licence issued by the DoE in accordance with the Law.

2.2.20 **Licensee** – means the holder of a Licence issued by the DoE.

2.2.21 **Low Voltage (LV)** – an AC voltage below 1000 V between phases, or below 600 V between any phase and Earth, or a DC voltage below 1500 V between conductors, or below 900 V between any conductor and Earth.

2.2.22 **Network Operator** – an Entity operating any HV or LV network.

2.2.23 **Owner** – the legal owner of the Premises in which an Electrical Installation is installed.

2.2.24 **Person** – anybody corporate, partnership, person or other Entity having an independent legal personality.

2.2.25 **Premises** – any occupied or unoccupied land, structure, building, enclosure or other place. Such locations include, but are not limited to, domestic premises, commercial premises, industrial premises, public buildings, parks, farms, temporary supplies, construction sites, wedding tents, outbuildings, caravans, roadway lighting and traffic signs.

2.2.26 **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.

2.2.27 **Safe System of Work** – a set of documented management and operational processes and procedures which are based on identified hazards, and are designed, as far as reasonably practicable, to prevent Danger.

2.2.28 **System Safety Rules** – a mandatory set of rules that specify the minimum electrical safety standards for all work activity on, with, or near an electrical system. System Safety Rules as read with related documents and procedures ensure Safe Systems of Work for specified activities to be carried out without Danger so far as is reasonably practicable.

2.2.29 **Transmission Company** - an Entity holding a transmission Licence, granted by the DoE, pursuant to the Law.

2.2.30 **UAE** – means the United Arab Emirates.

3. Electricity Supply Parameters

3.1 Voltage and Frequency

3.1.1 Under normal operating conditions the supply voltage at the Connection Point shall not exceed the following:

(a) for LV supply operating at a voltage of 230V single-phase or 400V three-phase, a variation not exceeding + 10% / - 6% of the declared voltage;

(b) for HV supply operating at a voltage < 132kV, a variation not exceeding ± 6% of the declared voltage; and

(c) for HV supply operating at a voltage ≥ 132kV, a variation not exceeding ± 10% of the declared voltage.

3.1.2 Notwithstanding the supply voltage, the nominal frequency at the Connection Point shall be 50Hz.

3.1.3 The permissible variation of the nominal frequency at the Connection Point shall not exceed ± 1%.

3.2 Voltage Disturbances and Harmonic Distortion

3.2.1 Electrical Installations, and the use of electrical equipment therein, must be designed to avoid the generation of disturbances in the electricity supply, such as voltage fluctuations, voltage dips, voltage unbalance and harmonics, which are of a magnitude that adversely affect other Customers.

3.2.2 The permitted limits of such disturbances are given in the Electricity Distribution Code, Annex 1. Owners and Customers will be required to install filters or other equipment to mitigate against such disturbances that are outside the permitted limits.

3.2.3 The permitted limits of such disturbances for the connections at transmission voltages are given in the Electricity Transmission Code, Chapter 3. Owners and Customers may be required to install filters or other equipment to ensure any such disturbances are maintained within the permitted limits

3.2.4 The power factor value at any Connection Point to the Transmission Company shall be in accordance with the Electricity Transmission Code. Power factor values at all Connection Points to the Distribution Company shall be maintained as per Electricity Distribution Code and The Electricity Wiring Regulations.

3.3 Information Request

3.3.1 The Transmission and Distribution Companies shall provide, in respect of any existing or proposed Electrical Installation which is connected or is to be connected to their respective networks, to any Person who can show a reasonable cause for requiring the information, a written statement of system parameters in accordance with Electrical Transmission Code / Electrical Distribution Code / The Wiring Regulations. These include but not limited to system voltage, frequency, the maximum prospective short circuit current at the Connection Point, type of Earthing system, X/R Ratio etc.

4. Electricity Network Requirements

4.1 General Requirements for Safety

4.1.1 All Network Operators must safeguard its staff, other workers and the general public from their Electrical Installations when in normal use and under all other reasonably foreseeable circumstances.

4.2 Design and Construction

4.2.1 Security of supply

(a) The Transmission and Distribution Companies shall ensure that the electricity supply to Customers meet a specified level of continuity and quality as defined in relevant security of supply standards for the distribution and transmission networks and Code of Practice for Guaranteed and Overall Service Standards approved by the DoE.

4.2.2 Interruption of supply

(a) The Transmission Company and Distribution Companies shall report to the DoE interruptions of supply to Customers, as well as other system incidents, in accordance with the DoE's regulatory framework in effect at the time.

(b) The Transmission and Distribution Companies shall operate its network so as to minimise interruptions of supply to Customers in accordance with the Electricity Transmission System Security Standards and Security of Supply Standards for Electricity Distribution System.

(c) The Transmission and Distribution Companies shall have a right to interrupt the supply to Customers, without prior notice, in the event of an emergency (for example, in the case of fire, or risk to life).

(d) Where the Distribution Companies have a reasonable need for a planned interruption of supply (e.g. for essential network maintenance) to Customers, they shall give a written notice, or by such a manner as approved by the DoE, at least 2 calendar days in advance of the interruption.

(e) Where the Distribution Companies have a reasonable need for a planned interruption of supply (e.g. for essential network maintenance) to one or more essential service provider such as healthcare facilities, schools, or military sites, it shall give a written notice, or by such a manner as approved by the DoE, at least 2 calendar days in advance of the interruption.

(f) Where the Distribution Companies provide supply to Customers through third party electrical equipment (e.g. Customers residing in high rise buildings), the Distribution Companies shall use its best endeavours to ensure, so far as is Reasonably Practicable, that such Customers are not at risk of prolonged interruptions due to failure of the third party equipment. In this regard, the Distribution Companies shall develop and submit to the DoE for its approval, a Code of Practice detailing the procedure for minimising such risk.

4.2.3 Conservation and efficiency of use

(a) The Transmission Company and the Distribution Companies shall promote the conservation and the efficient use of electricity, in accordance with the Law, these Regulations and any other applicable regulations issued by DoE.

(b) The Transmission Company and the Distribution Companies shall ensure the design, engineering and operation of, and the work practices used on, their respective networks are regularly reviewed for efficiency and effectiveness.

(c) Customers shall comply with all governing asset management policies, strategies and plans, the purpose of which is to promote the conservation and

the efficient use of electricity, as issued by the Distribution Companies and approved by the DoE from time to time.

4.2.4 General Adequacy of Electrical Equipment

(a) Network Operators shall select and install their equipment to satisfy the following requirements:

(i) Comply with the applicable national and/or local codes, standards and regulations or where appropriate, the relevant International Standards and industry best practice;

(ii) Constructed, installed, protected (both electrically and mechanically), used and maintained as to prevent Danger

(iii) Deliver safe and sufficient performance taking into account the external influences that can be expected at the intended location;

(iv) Safe and sufficient performance during normal operation and in the event of reasonably expected conditions of overload, abnormal operation and fault, without suffering damage that would compromise the safety of the equipment; and

(v) Suitably located so as to provide safe access for operation, maintenance and repair and must be protected against accidental damage or deliberate interference.

4.3 Protection

4.3.1 A Network Operator shall be responsible for the application of protective devices appropriately located and set so that, as far as is Reasonably

Practicable, any current flow including fault current is disconnected with sufficient speed to prevent Danger.

4.3.2 A Network Operator shall, in the design, construction, maintenance or operation of its network, take all reasonable precautions to ensure continuity of the supply neutral conductor, where applicable.

4.3.3 Electrical Installations shall be designed and constructed to safely withstand the mechanical and thermal effects resulting from short-circuit currents.

4.3.4 Devices that are intended to interrupt short-circuit current shall be capable of safely interrupting the maximum short-circuit current they are intended to interrupt, and for the circumstances under which they are designed to operate. The interrupting capacity should be reviewed prior to each significant system change.

4.4 Earthing

4.4.1 A Network Operator shall ensure that, so far as is Reasonably Practicable, its network does not become disconnected from Earth in the event of any foreseeable current due to a fault.

4.4.2 A Network Operator shall, in respect of any HV network which it owns or operates, ensure that:

(a) the network is connected with Earth at, or as near as is Reasonably Practicable to, the source/s of voltage.

(b) the Earth Electrodes are designed, installed and used in such a manner so as to prevent Danger occurring in any LV network as a result of any fault in the HV network; and

4.4.3 A Network Operator shall, in respect of any LV network which it owns or operates, ensure that:

(a) the outer conductor of any electric line which has concentric conductors is connected with earth;

(b) every supply neutral conductor is connected with earth at, or as near as is Reasonably Practicable to, the source of voltage; and

(c) no impedance is inserted in any connection with earth of a LV network other than that required for the operation of switching devices or of instruments or equipment for control, telemetry or metering.

4.4.4 A Network Operator shall, in respect of any LV network within a premises which it owns or operates, comply with the Earthing requirements as stipulated in the Electricity Wiring Regulations and the Electricity Distribution Code.

4.4.5 A Network Operator shall ensure that any metalwork enclosing, supporting or otherwise associated with its equipment in a network and which is not intended to serve as a phase conductor is, where necessary to prevent Danger, connected with Earth.

4.5 Metering

4.5.1 All meters used for measuring any supply of electricity for revenue purposes shall be in compliance with the Customer Metering Regulations issued by the DoE.

[Note: For Customers connected at transmission voltage levels, the Metering and Data Exchange Code (MDEC) applies]

4.6 Labelling

4.6.1 All electrical equipment shall have clear identification and unambiguous labelling to avoid incorrect operation, human error, accidents, etc. while operation and maintenance is carried out.

4.6.2 Signs, boards and notices shall be made of durable and non-corrosive material and printed with indelible characters and fixed with permanent fixing arrangement such as screws, rivets etc.

4.6.3 The operational state of switchgear and control gear shall be clearly shown by mechanical indicators coupled to the main operating mechanisms in addition to any electrical indications. In critical equipment as Reasonably Practicable the state of the main contacts shall clearly be viewed by the operator.

4.6.4 Cable terminations and components shall be identified. Relevant details making identification possible in accordance with a wiring schedule or diagram shall be provided.

4.7 Environment, Health and Safety

4.7.1 Notwithstanding any other regulatory requirements covering environment, health and safety in the Emirate of Abu Dhabi, the following clauses in this Regulation 4.7 shall apply.

4.7.2 Measures shall be taken to contain any leakage from liquid immersed equipment to prevent environmental damage. National and/or local regulations may specify the minimum quantity of liquid contained in equipment for which containment is required.

4.7.3 For indoor installations, spills of insulating liquid shall be contained by providing impermeable floors with thresholds around the area where the equipment is

located or by collecting the spilled liquid in a designated holding area in the building.

4.7.4 The quantity of insulating liquid in equipment, and all other potential sources of liquid (e.g. water from rain and/or fire protection systems) shall be considered in the selection of a containment system. A pollution risk assessment shall accompany any containment system, taking into account factors such as the proximity to local water courses, sensitive groundwater locations, public water abstraction points, soil conditions and environmentally sensitive areas.

4.7.5 Sulphur Hexafluoride (SF6) being used for insulation in electrical equipment extensively, it must be noted that it is a fluorinated greenhouse gas with a global warming potential of 22,800 times that of carbon dioxide over a 100 year period. Strict controls must be put in place to prevent any discharges to the atmosphere.

4.7.6 In case of a SF6 leak adequate safety measures in accordance with the Network Operators System Safety Rules and HSE policy or procedures shall be observed to handle SF6 or any decomposed products and shall be managed in accordance with relevant UAE regulations or equivalent international standards / regulations.

4.7.7 Other waste products from installations such as insulation materials, battery electrolytes, refrigerants etc. shall be managed in accordance with relevant UAE regulations or equivalent international standards / regulations.

4.7.8 In rooms with SF6 installations, which are below ground, mechanical ventilation should be considered. A pollution risk assessment shall be carried out to confirm the existence of gas quantities that pose an intolerable risk to the health and safety of persons. In cases where gas levels pose such a risk, mechanical ventilation shall always be installed.

4.8 Inspection and Testing

4.8.1 Inspections and tests shall be carried out by the Network Operator, so far as is Reasonably Practicable, to verify compliance of all installations under their control with these Regulations and compliance of the equipment with the applicable technical specifications.

4.8.2 A Network Operator shall provide all needed information to an inspector, appointed by the DoE, as may be required for the purposes of performing inspection functions under these Regulations.

4.8.3 A Network Operator whose equipment is subject to inspection, test or examination for the purpose of determining whether a breach of these Regulations may have occurred shall facilitate the inspection process.

4.9 Maintenance

4.9.1 A Network Operator must ensure that adequate work procedures and practices are developed and implemented for all operation and maintenance activities.

4.9.2 A Network Operator must ensure adequate instruction, training and supervision are provided taking into account the nature of the activity and the competency of the persons carrying out the activity.

5. Safe Systems of Work

5.1 Risk Management

5.1.1 Every Network Operator shall ensure that for any authorised activity on, with, or near electrical equipment forming part of the Electrical Installation, risk is managed effectively, efficiently and coherently through the adoption of a consistent process within a comprehensive framework. The process shall be in accordance with OSHAD SF Technical Guideline Process of Risk Management and the principles and guidelines of risk management as defined in ISO 31000.

5.2 System Safety Rules

5.2.1 Every Network Operator shall ensure that a defined set of System Safety Rules exist, and are enforced, so as to provide safe operation of work activity on, with, or near electrical equipment forming part of the Electrical Installation.

5.2.2 System Safety Rules shall be developed so as to meet a set of criterion and be appropriate to the application. The minimum set of criterion shall include, where appropriate, those listed in Appendix A.

5.2.3 Safety documents shall only be issued to a designated and competent person, who through the appropriate training and experience is able to control specified parts of the Electrical Installation.

5.2.4 All Persons governed by the System Safety Rules shall have an appropriate understanding of its contents and applications.

5.3 Substations

5.3.1 Every Network Operator shall, for every substation which they own or operate:

(a) Enclose the substation where necessary to prevent, as far as is Reasonably Practicable, Danger or unauthorised access. Enclosures shall commensurate with their surroundings and include suitable locking arrangements which are tamper resistant and non-removable;

(b) Enclose any part of the substation, which is open to the air and contains live exposed conductors, with a fence or wall with a defined height to prevent, so far as is Reasonably Practicable, Danger or unauthorised access;

(c) Ensure that, so far as is Reasonably Practicable, there shall be at all times displayed:

(i) Safety signs of an appropriate size and placed in such positions as are necessary to give due warning of inherent Danger, as is reasonably foreseeable in the circumstances;

(ii) A property notice which is placed in a conspicuous position and which gives the location or identification of the substation, the name of each Network Operator who owns or operates the substation equipment, and an emergency telephone number; and

(iii) Other signs, which are of such size and placed in such positions, as are necessary to give due warning of Danger having regard to the siting of, the nature of, and the measures taken to ensure the physical security of the substation equipment.

(d) Take all reasonable precautions to minimise the risk of fire associated with the substation and the equipment contained within. Factors to be considered should include the switchgear insulation medium, immediate environment, and the need for automatic fire extinguishing equipment in accordance with the UAE Fire and Life Safety Code of Practice.

5.4 Underground Cables

5.4.1 Every underground cable shall be installed at such a depth, or be otherwise protected to maintain the depth, so far as is Reasonably Practicable, to avoid any damage or Danger.

5.4.2 In addition to satisfying the requirements of Clause 5.4.1, an underground cable shall be protected, marked or otherwise indicated so as to ensure, so far as is reasonably practicable, that any person excavating the land above the cable will be given sufficient warning of its presence.

5.4.3 The protection, marking or indication required by Clause 5.4.2 shall be made by placing the cable in a pipe or duct or by overlaying the cable at a minimum depth as specified by the Network Operator specifications relevant to the voltage level with protective tiles and warning tape and provision of mark or indication for the presence of cables underground, or by a suitable combination of such measures installed above the cable position.

5.4.4 The Network Operator shall have and, so far as is Reasonably Practicable, keep up to date, a map or series of maps indicating the position and depth below surface level of all electricity networks or parts thereof which it owns or operates. Such information may be prepared and maintained through electronic means so long as reproductions can be generated in printed form.

5.4.5 Upon request, the information referenced in Clause 5.4.4 shall be made available by the Network Operator for inspection by any person who can show reasonable cause.

5.5 Overhead Lines

5.5.1 The Network Operator shall, for every overhead line conductor, which they own or operate, ensure minimum safe working and access clearances exist, taking into account the maximum likely temperature for that conductor and the possible effects of line-sag. The minimum safety clearances of overhead lines shall be in accordance with DIN VDE 0210 and DIN VDE 0211.

5.5.2 Any part of an overhead line which is live and within reach from a nearby building or structure shall be supported on insulators or be covered by insulation, so as to prevent leakage to Earth.

5.5.3 Developers or other persons erecting buildings or structures in the immediate vicinity of live overhead lines shall not encroach upon the right of way of the overhead lines and shall notify the relevant Network Operator concerning their plans.

5.5.4 For LV overhead lines equipped with separate phase and neutral cables, the lowest conductor must be the Earth or neutral conductor and the phase conductors must be mounted directly above it.

5.5.5 No overhead line shall, so far as Reasonably Practicable, come close to any building, tree or structure as to cause Danger.

5.5.6 Wherever overhead lines cross roads, warning signs shall be provided facing the direction of traffic to bring to the notice of general public the danger above while passing them. The maximum height of the vehicles that may pass under the overhead lines should be clearly indicated on these sign boards in addition to the voltage level of the overhead line. The warning signs shall be placed at a distance of at least 250m before the crossings so as to warn the road users of the hazard and to be able take action to avoid it.

5.5.7 Overhead line sections located in height restricted areas shall be provided with aviation warning system to denote obstacles conforming to the Convention on International Civil Aviation.

5.5.8 Every support carrying a HV overhead line shall carry a sign visible from ground level that clearly identifies the individual support and overhead line circuit and if the circumstances reasonably require, must be fitted with anticlimbing devices to prevent, so far as is Reasonably Practicable, any unauthorised person from reaching a position at which any such line would be a source of Danger.

5.5.9 Every support carrying a HV overhead line, and every support carrying a LV overhead line incorporating bare phase conductors, shall have attached to it sufficient safety signs of such size, and placed in such positions as are necessary to give due warning of such Danger, as is reasonably foreseeable in the circumstances.

5.5.10 Every stay wire which forms part of, or is attached to, any support carrying an overhead line incorporating bare phase conductors, (except where the support is a lattice steel structure or other structure entirely of metal and connected to

Earth) shall be fitted with an insulator no less than a defined safe working distance above ground.

6. Review of DoE decision

6.1 Application for review

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

6.2 Timescale of application for review

6.2.1 The time scale for application to be reviewed by DoE is 30 calendar days.

6.3 Extension of time of application for review

6.3.1 Applicant will be informed in case of any extension of time required for application review.

6.4 DoE request for information

6.4.1 DoE may request from an Entity making an application for a decision, any information or documentation it considers reasonable and necessary in the circumstances and the Entity must provide such information within the period specified by the DoE.

6.5 DoE decision

6.5.1 The DoE shall notify the person which made the application of its final decision.

6.5.2 The DoE 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.

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

6.5.4 Failure to comply with the DoE'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 DoE.

7.2 Enforcement procedures

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

7.2.2 The warning notice shall include:

(a) The name of the Entity;

(b) The regulation which was been violated;

(c) A tolerance period to comply;

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

7.2.3 Without prejudice to any other stricter punishment provided in any other legislation, an administrative fine of not more than (AED 10,000,000) ten million dirhams shall be imposed on anyone who contravenes the provisions of these Regulations and the rules, policies, decisions, circulars, codes issued thereunder pursuant to Article (10) Law No (11) of 2018.

7.2.4 After Executive Council's approval, the DoE Chairman shall issue the table of offenses and fines for violating any of these Regulations and the rules, policies, decisions, circulars, and codes issued thereunder. If an Entity fails to comply with these Regulations for a second time the fine shall be doubled.

7.2.5 The DoE shall remove any violation of these Regulations at the expense of the violator if the latter does not remove it as specified by DoE.

7.2.6 The DoE reserves the right to take further administrative sanctions against violators in accordance with Article (11) of Law No (11) of 2018

7.2.7 Failure to comply with these Regulations (or any party herein) may be also deemed as a breach of a license 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.

9. References

1. OSHAD SF, Technical Guideline Process of Risk Management, ver. 3.0. 2016
2. OSHAD SF, Code of Practice 15.0 - Electrical Safety, ver.3.1. 2017
3. Standard Technical Specifications, Abu Dhabi Water and Electricity Authority / Abu Dhabi Distribution Company / Al Ain Distribution Company
4. Standard Technical Specifications, Abu Dhabi Transmission & Despatch Company
5. BS 9999:2017, Code of practice for fire safety in the design, management and use of buildings
6. BS 6423:2014, Code of practice for maintenance of electrical switchgear and control gear
7. BS 6626:2010, Code of practice for Maintenance of electrical switchgear and control gear for voltages above 1 kV and up to and including 36 kV
8. BS 6867:2013, Code of practice for Maintenance of electrical switchgear and control gear for voltages above 36 kV
9. BS ISO 31000:2009, Risk management – Principles and guidelines
10. DIN VDE 0210, Planning and design of overhead power lines with rated voltages > 1kV.
11. DIN VDE 0211, Planning and design of overhead power lines with rated voltages < 1kV.
12. Regulation (EU) No. 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gas and repealing Regulation (EC) No. 842/2006
13. Information Sheet 11 : High Voltage Switchgear – EU F-Gas Regulation Guidance; Gluckman Consulting www.gluckmanconsulting.com

14. ENA ER G69-1 - The Networks Association Engineering Recommendation, ENA ER G69-1 Guidance on Working with Sulphur Hexafluoride, Issue 1. 2005

15. Civil Defence Fire Code Council, U.A.E. Fire and Life Safety Code of Practice, Directorate General of Civil Defence – Dubai, 2011.

10. Annexes

The System Safety Rules shall include, where appropriate, but not limited to the following:

1. Scope and application
2. Other related safety rules, related documents and procedures
3. Information, instruction and training
4. Issuance of the safety documents
5. Variation of the System Safety Rules
6. Special procedures
7. Objectives
8. Reporting of accident and dangerous occurrences
9. Duties
10. Use and wearing of safety equipment and protective clothing
11. Treatment of electric shock
12. General safety provisions
13. Safety precautions for work on or near HV systems
14. Procedures for work on particular items of plant, apparatus or conductors
15. Safety procedures for HV live line work on HV lines
16. Safety procedures for the testing of HV apparatus
17. Safety precautions and procedures for work on LV systems
18. Responsibilities of persons