



NIGERIAN ELECTRICITY REGULATORY COMMISSION

REGULATION ON ELECTRIC FENCING IN THE NIGERIAN POWER SECTOR 2016

DRAFT

REGULATION NO: NERC-R-xxxxx

NIGERIAN ELECTRICITY REGULATORY COMMISSION

In exercise of its powers to make Regulations conferred by Section 32(1)(e) and 96 (1) of the Electric Power Sector Reform Act 2005 (Act No. 6 of 2005), the Nigerian Electricity Regulatory Commission makes the following Regulations for Electric Fencing 2015.

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CHAPTER I
GENERAL PROVISIONS

1. Short Title

These regulations may be cited as the NERC Regulations for Electric Fencing in the Nigerian Electric Power Sector 2015.

2. Commencement

These regulations shall come into force on the date on which they are approved by a Resolution of the Commission, and signed by the Chairman who shall cause the seal of the Commission to be affixed thereon.

3. Interpretation

a. In these regulations, unless the context otherwise requires:

'Act' means the Electric Power Sector Reform Act 2005.

'Commission' means the Nigerian Electricity Regulatory Commission

'Day' means a day other than a Saturday, a Sunday or a day which is lawfully declared as a public holiday by the Federal Government of Nigeria, State and Local Governments.

'Distribution Licensee' means an entity granted a distribution licences by the Commission pursuant to Section 62(1)(d) of the Act.

'Authorized Person' means any person authorized to sign the Consent to install an electric fence in his premises In accordance with these regulations.

‘Electromagnetic Compatibility’ (EMC) means the ability of electrical and electronic equipment to function properly in its environment, which might also contain other equipment, without causing any electromagnetic disturbance in the environment. EMC comprises conducted and radiated electromagnetic emissions, and also conducted and radiated electromagnetic susceptibility.

‘Electromagnetic Disturbance’ means electromagnetic phenomena that might degrade the performance of a device, equipment or system, or adversely affect living or inert matter.

‘Electromagnetic Interference’ (EMI) means degradation of the performance of a device, equipment or system caused by electromagnetic disturbance.

‘Energizer’ means a device which converts electric power into brief high voltage pulse which has the effect ranging from uncomfortable to painful but non-lethal.

‘Engineering Personnel’ means Engineers, Technologists, Technicians and Craftsmen registered by the Council for the Regulations of Engineering in Nigeria and holding current and valid practicing licences.

‘Galvanic’ means a process where electricity is chemically produced.

- b. Unless otherwise specified, in these regulations:
- i. Words importing any one gender includes the other gender and the singular includes the plural and vice versa;
 - ii. Words or expressions used in these regulations but not defined shall have the same meanings respectively assigned to them in the Act;
 - iii. Any reference to a statute or statutory provision includes a reference to that provision as amended re-enacted or replaced and any regulations or orders made under such provisions from time to time; and

4. Objective of the Regulation

The objective of these Regulations is to ensure that all electrical fences constructed in Nigeria are constructed in a manner that protects the health and safety of the general public.

CHAPTER II SCOPE AND APPLICATION

5. Scope and Application of these Regulations

1. These Regulations provides the requirements for the installation, earthing and the maintenance of electric fences, outlining ways to improve the performance and safety of electric fences, as well as ways of decreasing the likelihood of electrical hazards, and electromagnetic interference on communication systems.
2. These Regulations apply to electric fences intended for the protection of properties against theft and damage, the safeguarding of human lives, for controlling and/or containing livestock in defined areas, and for the protection of wild animals in national parks or similar areas.
3. These Regulations shall apply to persons intending to have electric fences installed and persons who already have electric fences installed at there residences, premises, farms, parks, and similar areas.
4. Persons with electric fences already installed at their residences, premises, farms, parks, and similar areas should apply and get the Distribution Licensees consent for their installations.

CHAPTER III DUTIES OF THE DISTRIBUTION LICENSEES

6. Granting of Consent by the Distribution Licensee

1. Any persons seeking to install an electric fence must obtain the consent of the Distribution Licensee authorized by NERC to supply electricity to the residence, premises, farm, park or similar areas requiring the installation of the electric fence if on that supply or obtain the permit along with a generator permit from NERC if on own supply.
2. NERC shall give its consent where electricity supply to fence is both from public supply and from private generation.
3. The Distribution Licensee shall give its consent based on an application submitted by the intending electric fence owner, and the satisfaction of all the requirement stated in these Regulations.
4. The Application shall contain all approved information requested by the Distribution Licensee, including the following information:
 - a. Name of applicant;
 - b. Contact address of applicant;

- c. The proposed location for the installation of the electric fence;
 - d. Site map showing proposed location of the electric fence and surrounding structures and natural features;
 - e. Scaled geographical layout of fence installation showing nearby gas, power, water, communications lines, roads, and railways;
 - f. Electrical schematic diagram showing electric connections, energizers, voltage levels, earthing points, signaling leads, etc signed by the approved installer of the electric fence;
 - g. A signed Undertaking signed by the installer and owner of the fence to comply with the provisions of these Regulations; and
 - h. Where an electric fence is shared by more than one owner, mutual consent by all the parties must be obtained.
 - i. Where mutual consent between different owners could not be achieved, such case shall be referred to the nearest NERC Customer Complaint Forum Office for resolution.
 - j. Consents must be issued by the Authorized person and stamped.
5. Consent shall be granted not later than one (1) month from the date the application was submitted, except where the applicant has failed to satisfy all the requirements of these Regulations.
 6. A copy of the Consent if granted by the Distribution Licensee shall be forwarded to the Commission within two weeks.
 7. Persons who have already installed electric fences should re-apply and formalize their installations with their respective DISCOs or NERC as applicable.
 8. Consent renewal every three years is required to ensure maintenance actions are carried out on fence.
 9. The Business Manager of the Business Units should be the signatory of the permit if the Disco is the issuer while Staffs in the Zonal Offices should be the signatory if NERC, Zonal Head and Manager Technical is the permit issuer.
 10. The Consent shall be revoked once there is proof of non-compliance with these Regulations.
 11. The Business Manager of the Business Units should be the signatory of the Consent.
 12. The application procedure for electric fence permit shall be proposed by the Distribution licensee and approved by the Commission.

7. Requirements

1. The requirements for electric security fence components shall ensure effective operation of electric fences upon installation.
2. All electric security fence energizers and installations shall comply with the requirements specified in part 9 of these regulations and clause 4 of IEC 60335-2-76. Voltage Impulse Peak shall not exceed 10kV except in compliance with same section

of the IEC 60335-2-76 Standard. Energizer outputs are either current or energy limited.

3. Any injury or death to a human being or livestock caused by contact with the electric fence must be reported to the Distribution Licensee and NERC within 24 hours of the incident.
4. All electric fence energizers shall comply with the EMC requirements for electric fence supply units as specified in the most recent edition of IEC 60335-2-76.
5. Only industry acceptable, purpose-made insulators shall be used on electric fence installations.
6. The installer shall only use materials that will minimize the galvanic effect between dissimilar metals.
7. The installer shall only use earth rods which are made of conductive corrosive-resistant material, and have a minimum length of 1 meter.

8. Enforcement

1. NERC shall be responsible for monitoring the installation, use, and maintenance of electric fences throughout the country to ensure that electricity is not misused through the installation of electric Fencing.
2. Only electric fences built to IEC 60335 -2- 76 or equivalent standards shall be used in Nigeria. In case of equivalent standards, they must be approved by the Commission in consultation with the Standards Organisation of Nigeria before their application in Nigeria.

CHAPTER IV INSTALLATION AND MAINTENANCE OF ELECTRIC FENCES

9. General

1. Electric fences and their ancillary equipment shall be installed, operated and maintained in compliance with these Regulations to minimize the possibility of endangering the lives of persons and animals, and reduce the risk of persons and animals receiving electric shocks, excluding a situation when a person attempts to enter the premises unlawfully.
2. Electric fences and their ancillary equipment shall be installed, operated and maintained in such a way to avoid electrical contact with underground metallic

structures for other utility installations. and to also minimize interference with communications lines and devices.

3. Barbed wire, razor wire and all metallic parts of the fence must not be electrified by an energizer or by direct electric supply. This is prohibited.
4. The installation of electric fences shall be carried out by Certified/Registered Engineers or Technologists.
5. Mains supply wiring shall not be installed in the same conduit as signaling leads associated with the Electric Fence installation. Where a pulsed conductor is installed underground, suitable mechanical protection shall be provided. Under no circumstance shall a pulse conductor or any electric cable be installed in the same conduit as a communication or data cable.

10. Fitting of Insulators

1. Insulators shall be installed correctly according to the manufacturer's guidelines.
2. Broken or deformed insulators shall not be used.

11. Electrical Connections

Clamps, ferrules or soldering shall be used when an electrical connection or a joint on an electric fence is made, and under no circumstance shall wrap joints be allowed.

12. Warning Signs

1. Electric fences shall be identified by prominently displayed warning signs that are fastened to the fence posts or to the conventional fence, or that are firmly clamped to the electric fence element.
2. A warning sign shall also be displayed on every gate in the electric fence, and shall be readily visible to a person standing on the ground.
3. The warning sign shall be of dimensions at least 200mm × 100mm and shall be marked with an indelible inscription, and the symbol shall comprise a black sign placed on a yellow background, double-sided and shall be displayed at a height of approximately 1.5m above ground level.
4. In urban areas and on farm homesteads, a warning sign shall be so displayed on each run of a straight length of the fence that the signs are not further than 10m apart, with a minimum of two signs on each straight length of the fence. A sign shall also be displayed on the entrance gate.

5. In rural areas, a sign shall be displayed on the rest of the fence at intervals that do not exceed 100 m.

13. Maintenance of an Electric Fence

In order to maintain the fence in a satisfactory condition, the following guidelines should be followed:

- 1) The Distribution Licensees shall conduct monthly overviews and quarterly detailed inspections on the electric fence.
- 2) The monthly overview inspection should comprise the following actions:
 - a. Visual Inspection should be carried out along the length of the fence, and note and correct all obviously visible faults on the fence.
 - b. Clearing the fence of all vegetation and debris that could cause leaks of high-voltage pulses and that could lower the effectiveness of the fence.
 - c. Tightening of wires that are visibly slackened.
 - d. Fixing of all broken parts of the fence.
- 3) The quarterly detailed inspection should comprise the following actions.
 - a. Visual Inspection should be carried out along the length of the electric fence and inspect all components of the fence for faults.
 - b. Fixing of all noted faults.
 - c. Inspection of the energizer installation, tightening of all loose wires, and reporting any damage to the energizer to the installer or manufacturer.
 - d. Inspection of the energizer earth system, tighten of all loose wires, and replacing worn-out clamps and rusted components.
 - e. Inspection of the insulators and ensuring that they are in a satisfactory condition, and replacement of broken and deformed insulators.
 - f. Looking for live wires touching any part of the normal fence or any other non-live component.
 - g. Checking the fence for tautness of wires, and tightening faulty wires.
 - h. Inspection of all joints, re-doing loose joints, replacing broken or rusted clamps, and ensuring that soldered joints are still electrically sound.
 - i. Inspection of the electric fence installation for faults at gates.
 - j. Calling an electric fence specialist to help correct all observed faults on the fence.
 - k. All maintenance actions shall be certified by NERC accredited/appointed Electrical Inspectors.

CHAPTER V LOCATION OF ELECTRIC FENCES

14. Location

1. An Electric Fence along a public road or in an urban area shall, as far as practicable be installed in a way to ensure that the electrified wires or articles cannot inadvertently come into contact with persons and animals.
2. An Electric fencing shall be installed clear of any obstructions, for example, vegetation, shrubbery, creepers, trees, telephone poles, etc.
3. Obstructions shall be removed as follows:
 - a. In Urban Areas, care shall be taken that no obstruction can, in any way, come closer than 1.0m sideways and 1.5 m above the Electric Fence; and
 - b. In Rural Areas, care shall be taken that no obstruction can, in any way, come closer than 1.2m sideways and 1.5m above of the electric fence.
 - c. Where it is not possible to remove an obstruction, derogation must be obtained from NERC.
4. Special permission shall be obtained from the relevant authorities for any part of an electric fence to pass underneath or above a national road.

15. Fences Near Communication Lines

1. When an electric fence is installed and operated near communication lines, steps shall be taken to prevent harmful interference on the nearby communication lines.
2. Where it has been proven that an Electric Fence causes harmful interference on nearby communication lines, the installation (or energizer/s (or both)) will have to be rectified.
3. It shall also be proven that the affected communication lines also comply with standards for installation or configuration specifications (or both) (i.e. balancing levels, proper joints, no split legs on multi-lead cables, etc.).
4. In the case where both installations comply with standards, and the communication line interference persists, the Electric Fence owner shall be required to reconfigure his fence, and, if no solution can be found, have it removed or switched off.
5. When an Electric Fence connection lead or Electric Fence wire crosses an overhead communications line, the crossing shall be at an angle larger than 45°.
6. An electric fence shall not be installed to run parallel to communication lines. In the case of a situation where an electric fence has already been installed parallel to a communication line, the following requirements shall be met:
 - a) Where the fence and a communication line has been installed parallel at a distance less than 100m, the minimum separation distance of at least 1m shall be maintained between the highest part of the electric fence and the communication line.
 - b) Where the fence and line has been installed parallel at a distance exceeding 100m, the minimum separation distance of at least 2.5m shall be maintained between the highest part of the electric fence and the communication line.

CHAPTER VI ELECTRIC FENCE ENERGIZERS

16. Location and Installation of Electric Fence Energizers

1. Electric fence energizers shall not be installed in close vicinity of power or communication distribution boxes, but shall be installed as close to the fence as possible and also in a secured location within the premises of the fence owner.
2. The electrical supply shall be taken to the energizer and not vice versa.
3. The energizer shall not be earthed to the same earth systems as used by the local electricity supplier or communication provider (or both).
4. The minimum distance between the energizer earth and any electric supplier or communication system earth system shall be at least 2 meters.
5. Installers shall ensure that all ancillary equipment connected to the electric fence circuit provides a degree of isolation between the fence circuit and the supply mains equivalent to that provided by the energizer.
6. Special precautions shall be taken if the electric fence security system is connected to any communication device.

17. Use of More Than One Energizer

Where two or more energizers are connected to an electric fence, or where electric fences are at a space of less than 2.5m from another, the operation of the energizers shall be coordinated to ensure effective pulses on any conductor or combination of conductors of the fence, or the combination of fences shall be within a predetermined pulse rate and magnitude range, as defined by the limits of any compliant single energizer.

CHAPTER VII EARTHING OF ELECTRIC FENCES

Where big areas are fenced, earthing at least every 300m is required. Residential electric fences should be earthed at 30m intervals and/or at every corner and every strain post.

18. Earthing Procedure

The following requirements apply for the earthing of electric fences:

- 1) Where practicable, a spot where the earth rods are to be driven into the ground shall be chosen where the soil is damp to ensure good electrical contact with the ground.

- 2) For an effective earth system, the earth rods shall be spaced at distances at least equal to the length of the earth rod, but preferably at distances of at least 1.5 times the depth to which the rods are driven into the ground.
- 3) A minimum of 3 earth spikes shall be used to earth the electric fence energizer.
- 4) If more than one energizer is used, all energizer earth systems shall be integrated to be one large system.
- 5) As an alternative to earth rods, earth electrodes in the form of bare copper conductors (effective 16mm²) could be buried in a trench with a minimum length of at least 20 m and a depth of at least 0.5 m.

19. Connection to Earth Rod

The galvanic corrosion between dissimilar metals shall be taken into account when different metals between earth rods and connecting leads are used. Only clamps shall be used to connect leads or wires to earth rods.

CHAPTER VIII

MISCELLANEOUS

20. Proceedings before the Commission

All proceedings before the Commission under these regulations shall be governed by the Business Rules of the Commission as may be amended from time to time.

21. Complaint Procedure

1. All customer complaints shall be resolved in accordance with the Commission's Regulation on Customer Complaints: Standard and Handling Procedure.
2. Unresolved customer complaint shall be referred to the Forum Office within the closest proximity to the authorized operational area of the Distribution Licensee.
3. Provisions of the Regulations on Customer Services Standard of Performance for Distribution Companies shall apply to the Distribution Licensee.

22. Amendment or repeal

The Commission may amend or repeal, in whole or in part, the provisions of these Regulations.

SIGNED BY THE ORDER OF THE COMMISSION

**On this.....day of.....2015 UNDER THE SEAL OF
THE NIGERIAN ELECTRICITY REGULATORY COMMISSION PURSUANT TO SECTION
32(2) OF THE ELECTRIC POWER SECTOR REFORM ACT 2005**

**Dr. Anthony Akah, mni
Ag. Chairman/CEO**

SCHEDULE A

Schedule A - Fees for Consent to Install Electric Fences

S/N	Plot Size (m ²)	Fees Payable (N)
1.	<300	18,000
2.	300-500	20,000
3.	500-1000	22,000
4.	1000-2000	25,000
5.	2000-5000	30,000
6.	>5000	50,000

Regulation on Electric Fencing in the Nigerian Power Sector

In exercise of the powers to develop Standards and make Regulations conferred by Sections 81 and 96(1) of the Electric Power Sector Reform Act 2005 (Act No. 6 of 2005) respectively, and all other powers enabling it in that behalf, the Nigerian Electricity Regulatory Commission makes the following regulation for physical, electrical and operation of electric fencing in the Nigerian Electricity Supply Industry.

Due to increasing security situation and emergence of modern animal husbandry in Nigeria, the use of electric fencing is on the increase. This calls for the need to curb the indiscriminate use of electricity to power perimeter fencing in the name of security without recourse to safety. A draft regulation, "**Regulation on Electric Fencing in the Nigerian Power Sector**" is hereby presented to the public and stakeholders to peruse and send comments.

Pursuant to the above and in line with the Commission's rulemaking procedures, **NOTICE IS HEREBY GIVEN** to persons interested in sending comments and inputs to review the draft regulation which can be downloaded from the Commission's website by clicking on www.nercng.org. All comments shall reach the Commission at the address below by 30th December, 2016 and in the format attached to the draft regulation.

All comments and further inputs on the proposed regulation should be **IN THE ATTACHED TEMPLATE OR TRACKED ON THE MS WORD COPY OF THE DRAFT REGULATION** and be addressed to:

The Chairman/CEO
Nigerian Electricity Regulatory Commission (NERC)
Adamawa House, Plot 1099, 1st Avenue, Off Shehu Shagari Way,
Central Business District,
P.O.Box 136, G.P.O. Garki
Abuja,
Or

By email: info@nercng.org and networks@nercng.org

For further information, please contact:

Engr. A. B. Mohammed
Head, Engineering Standards and Safety Division
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Regulation on Electric Fencing in the Nigerian Power Sector Public Comments Template

(Comments submitted by ON))

Page	Section/sub section	Heading(if any)	Original Text	Proposed Text	Type of Comment	Comment

Please Note:

- Comments can be sent in form of tracking the original MS word copy of the draft regulation
- “Type” in the template means the comment is either technical or editorial(spelling, or grammar)
- Comments not sent in the template or tracked may not be considered due to time constraints