KOGI STATE ELECTRICITY REGULATORY COMMISSION

DRAFT REGULATIONS FOR DECENTRALIZED MESH GRIDS AND MICRO-NETWORKS 2026

REGULATION NO: KERC - R - 13 - 2026

CHAPTER I: GENERAL PROVISIONS

1. Short Title and Commencement
2. Purpose and Objectives
3. Scope of Application
4. Interpretation and Definitions

CHAPTER II: CATEGORIZATION AND PERMITTING PATHWAYS

5. Regulatory Tiering for Mesh Grids
6. Streamlined Registration and Licensing Exemptions
7. Community Consent and Stakeholder Documentation

CHAPTER III: TECHNICAL AND SAFETY STANDARDS

8. Low-Voltage Distribution and Extra-Low Voltage (ELV) Safety
9. Equipment Standards and Inverter Compliance
10. Battery Energy Storage Systems (BESS) and Environmental Management

CHAPTER IV: COMMERCIAL STRUCTURES AND P2P TRADING

11. Peer-to-Peer (P2P) Energy Trading and Pricing Framework
12. Consumer Protection and Metering Standards

CHAPTER V: TERRITORIAL INTEGRATION AND MAIN GRID ARRIVAL

13. Co-existence with Distribution Licensees (DisCos) and Isolated Mini-Grids
14. Integration Protocol upon Main Grid Arrival

CHAPTER VI: MISCELLANEOUS PROVISIONS

15. Reporting, Monitoring, and Compliance
16. Dispute Resolution and Enforcement

CHAPTER I
GENERAL PROVISIONS

Short Title and Commencement

1) These Regulations may be cited as the Kogi State Electricity Regulatory Commission (Mesh Grids and Micro-Networks) Regulations, 2026.

2) These Regulations shall come into effect on the date approved by resolution of the Commission and signed by the Chairman of the Commission.

Purpose and Objectives

The primary objectives of these Regulations are:

i. To establish a light-touch, flexible, and enabling regulatory framework for decentralized mesh grids, peer-to-peer (P2P) solar networks, and clustered extra-low voltage micro-networks.

ii. To accelerate rural and peri-urban electrification by lowering the regulatory and financial barriers for community-based and private-sector-led micro-scale energy networks.

iii. To safeguard consumer rights, maintain technical and safety standards, and provide clear guidelines for future integration with main distribution networks.

Scope of Application

These Regulations apply to developers, operators, community energy cooperatives, and technology providers deploying localized mesh grids and aggregated micro-networks with an aggregate installed generation capacity not exceeding 50 kW per independent cluster, operating either in total isolation or as decentralized nodes.

Definition of terms

In these Regulations, unless the context otherwise requires:

"Law" means the Kogi State Electricity Law, 2024

"Act" means the Electricity Act 2023 or the applicable federal electricity law.

"Commission" means the Kogi State Electricity Regulatory Commission (KERC).

"Extra-Low Voltage (ELV)" means electrical voltage operating at levels not exceeding 60V DC or 120V ripple-free DC, or 50V AC RMS.

"Mesh Grid" means a decentralized, interconnected energy network comprising multiple distributed solar generation units, energy storage modules, and smart power-sharing controllers deployed across individual or clustered end-user premises, capable of dynamic peer-to-peer energy routing without reliance on a single centralized powerhouse.

"Peer-to-Peer (P2P) Trading" means the automated or semi-automated exchange and commercial settlement of electricity between interconnected end-users within a mesh network.

CHAPTER II
CATEGORIZATION AND PERMITTING PATHWAYS

Regulatory Tiering for Mesh Grids
Mesh grid developments shall be classified into two operational tiers:

Tier	Capacity Limit	Target Application	Permitting & Registration Pathway	Mandatory Fee
Tier 1 (Micro-Mesh)	Up to 10 kW	Small rural clusters, aggregated housing units, or agricultural hubs	Online Registration & Notification	**₦75,000** (Registration)
Tier 2 (Community Mesh)	> 10 kW up to 49 kW	Peri-urban commercial hubs, larger communities, and multi-point setups	Fast-Track Mesh Registration	**₦100,000** (Registration)

Streamlined Registration and Licensing Exemptions
1) **Exemption from Full Licences:** Mesh grid operators falling under Tier 1 and Tier 2 are formally exempt from holding a full electricity generation or distribution licence, provided they operate strictly within the prescribed capacity limits.

2) **Exemption from Statutory Public Notices:** Tier 1 and Tier 2 mesh grid developments are exempt from mandatory statutory newspaper publications, replacing them with localized community resolutions and digital registry submissions to the Commission.

3) **Automated Review Window:** Applications submitted via the Commission's digital portal shall be processed within 10 business days for Tier 1 and 20 business days for Tier 2. If no formal objection is raised within this window, the registration or permit shall be deemed approved automatically.

Community Consent and Stakeholder Documentation
Applicants must file:

- Proof of land use or roof-lease agreements for generation and storage nodes.
- Executed Community Consent Agreement or Tripartite Resolution involving local community leadership.
- Other technical details requirement as requested by the Commission

CHAPTER III
TECHNICAL AND SAFETY STANDARDS

Low-Voltage Distribution and Extra-Low Voltage (ELV) Safety

1. Mesh networks utilizing DC micro-reticulation or low-voltage AC wiring must prioritize public and domestic safety.

2. Distribution voltages across public rights-of-way must adhere to approved safety thresholds (IEC 60364-7-712 / SELV standards) to protect against touch potentials and thermal overloads.

Equipment Standards and Inverter Compliance

All hardware components deployed—including solar PV panels, smart mesh controllers, and bidirectional inverters—must comply with international standards (IEC 62109, IEEE 1547) featuring automated fault isolation and anti-islanding protection.

Battery Energy Storage Systems (BESS) and Environmental Management

1. Battery storage units must utilize advanced battery management systems (BMS) with cell-level temperature monitoring conforming to IEC 62619 standards.

2. Developers must submit an explicit end-of-life battery recycling and e-waste disposal strategy as a pre-condition for operation.

CHAPTER IV
COMMERCIAL STRUCTURES AND P2P TRADING

Peer-to-Peer (P2P) Energy Trading and Pricing Framework

1. **Dynamic Pricing:** Mesh grid operators and participants are authorized to establish flexible, market-reflective P2P pricing structures or Pay-As-You-Go (PAYG) tariffs.

2. **Price Benchmarks**: To protect consumers against price gouging in unserved areas, the Commission may establish a benchmark maximum price cap per kilowatt-hour, indexed against diesel displacement and localized micro-utility benchmarks.

Consumer Protection and Metering Standards

1) Smart meters or digital ledger tokens must be installed at all generation and consumption nodes to record energy flows accurately.

2) Consumers must have real-time access to their credit balances, tariff structures, and consumption metrics via mobile or local display interfaces.

CHAPTER V
TERRITORIAL INTEGRATION AND MAIN GRID ARRIVAL

Co-existence with Distribution Licensees (DisCos)

A Mesh Grid may be deployed within an existing DisCo franchise or isolated mini-grid area only if:

a. The primary franchise holder fails to extend service within 90 days of formal notification or maintains less than 60% operational availability over 90 consecutive days; or

b. A formal wheeling or bulk-supply agreement is executed with the primary holder.

Integration Protocol upon Main Grid Arrival

When the main distribution grid or an expanding utility network reaches the mesh grid coverage zone, the operator and the Commission shall execute one of the following options:

- **(a) Conversion to Interconnected Node:** The mesh network transitions into an embedded sub-network, coordinating bulk energy purchases or export feeds with the incoming grid; or

- **(b) Asset Buy-out or Compensation:** If integration is technically unviable, the incoming utility must negotiate a fair asset buy-out based on depreciated replacement cost plus 12 months of projected net revenue.

CHAPTER VI
MISCELLANEOUS PROVISIONS

Reporting, Monitoring, and Compliance

1) Mesh grid operators shall submit semi-annual operational returns covering system uptime, active user connections, energy traded, and battery health logs.

2) The Commission shall maintain a digital public registry of all active mesh grid deployments across the State.

Dispute Resolution and Enforcement

Any disputes arising from P2P settlements, community agreements, or boundary overlapping shall be submitted to the Commission's Legal and Regulatory Directorate for fast-track mediation and administrative resolution.

THE COMMON SEAL OF KOGI STATE ELECTRICITY REGULATORY COMMISSION was affixed pursuant to the ORDER OF THE COMMISSION

Dated this 20th Day of OCTOBER 2026

Engr. Ibrahim Sunday Abdwaaris
Chairman / CEO