Republic of the Philippines
ENERGY REGULATORY COMMISSION
Pasig City

RESOLUTION NO. 11, SERIES OF 2026

A RESOLUTION ADOPTING THE RULES GOVERNING MICROGRID SYSTEMS PURSUANT TO THE MICROGRID SYSTEMS ACT AND ITS IMPLEMENTING RULES AND REGULATIONS

WHEREAS, Section 2 of Republic Act No. 9136, otherwise known as the Electric Power Industry Reform Act of 2001 (EPIRA), declares the policy of the State, among others, to: (i) ensure and accelerate the total electrification of the country; (ii) ensure the quality, reliability, security, and affordability of the supply of electric power; and (iii) ensure transparent and reasonable prices of electricity;

WHEREAS, on 21 January 2022, Republic Act No. 11646, otherwise known as the Microgrid Systems Act, was enacted;

WHEREAS, Section 2 of the Microgrid Systems Act declares the policy of the State, among others, to ensure the adoption of a dynamic regulatory environment that does not impair nor inhibit end-user from accessing or enjoying the benefits of technologies and innovations in the electric power industry;

WHEREAS, on 24 May 2022, pursuant to Section 26 of the Microgrid Systems Act, the Department of Energy (DOE) issued Department Circular No. DC2022-05-0017, governing the rules and regulations to implement the provisions of the said Act;

WHEREAS, on 08 April 2025, the DOE issued Department Circular No. DC2025-04-0007, revising the implementing rules and regulations of the Microgrid Systems Act;

WHEREAS, Section 11 of the Microgrid Systems Act, as well as Section 26 of DOE Department Circular No. DC2025-04-0007, specify, among others, the function and responsibility of the Energy Regulatory Commission (ERC) to: (i) provide a simplified and streamlined permitting process for Microgrid Service Providers (MGSPs) and DU-operated Microgrid Systems; and (ii) to develop, establish, and promulgate the minimum technical and service performance standards for microgrid systems;

WHEREAS, on 26 November 2025, the Commission, approved for posting and comments on its official website the Draft Rules Governing Microgrid Systems docketed under ERC Case No. 2025-021 RM. Accordingly, the Commission has set the public consultation for the Draft Rules Governing Microgrid Systems on 10 December 2025, 12 December 2025, and 16 December 2025, for Luzon, Visayas, and Mindanao stakeholders, respectively;

WHEREAS, on various dates, the Commission received comments from the following: 1) Maharlika Consortium; 2) First Gen Corporation; 3) Manila Electric Company (MERALCO); 4) Aboitiz Power; 5) Olongapo Electricity Distribution Company, Inc. (OEDC); 6) National Power Corporation (NPC); 7) Power Sector Assets and Liabilities Management Corporation (PSALM); 8) National Transmission Corporation (TransCo); and 9) Cebu II Electric Cooperative, Inc. (CEBECO II);

WHEREAS, on 10 December 2025, 12 December 2025, and 16 December 2025, public consultations were held for the Luzon, Visayas, and Mindanao stakeholders. Stakeholders and interested parties were present and were given the opportunity to manifest their respective positions and concerns on the Draft Rules Governing Microgrid Systems;

NOW, **THEREFORE**, after careful deliberation, taking into consideration the comments received, and discussions and inputs during the public consultations, the Commission hereby **RESOLVES** to **APPROVE** and **ADOPT** the Rules Governing Microgrid Systems, including Annexes "A" to "D", hereto attached and made an integral part of this *Resolution*.

This *Resolution* shall take effect fifteen (15) days following its publication in a newspaper of general circulation, or in the Official Gazette.

Let copies of this *Resolution* be furnished to all parties concerned and to the University of the Philippines Law Center – Office of the National Administrative Register (UPLC-ONAR) and be posted on the ERC website and such other online platforms available to the ERC.

Pasig City. April 14, 2026

FRANCIS SATURNINO C. JUAN
Chairperson and CEO

FLORESINDA G. BALDO-DIGAL
Commissioner

MARKO ROMEO L. FUENTES
Commissioner

AMANTE A. LIBERATO
Commissioner

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Commissioner

LS: VMA/MCCG ROS: GDB/AJMO/LLG MOS: JPM/JRDC/JLSM/ASP/SOM

**Deliberated and approved during the 19 February 2026 Commission Meeting.*

RULES GOVERNING MICROGRID SYSTEMS

Pursuant to Section 11 of Republic Act No. 11646, otherwise known as the *Microgrid Systems Act*, and its Revised Implementing Rules and Regulations (Revised IRR) under the Department of Energy (DOE) Circular No. 2025-04-0007, the Energy Regulatory Commission (ERC) hereby promulgates these Rules Governing Microgrid Systems.

ARTICLE I
GENERAL PROVISIONS

Section 1. Governing Principles

The implementation of these Rules shall be guided by the following governing principles:

a) Promote acceleration of total electrification and protect consumer interest in unserved and underserved areas, by ensuring quality, reliable, and secure supply of power;

b) Ensure least cost and reasonable rates to be charged to electricity consumers, through the promotion of the use of low-cost, indigenous, renewable, and environment-friendly energy sources;

c) Encourage private sector participation in the electrification of unserved and underserved areas, by providing ample regulatory support and promoting fair competition;

d) Ensure that the procurement of equipment, materials, and services for microgrid system is transparent, competitive, and compliant with applicable laws, rules and regulations;

e) Guarantee compliance of Microgrid System Providers (MGSPs) with the prescribed technical and operational standards for power quality and reliability of microgrid systems;

f) Provide a simple, streamlined, and efficient licensing and permitting process for MGSPs; and

g) Enhance regulatory efficiency in the process of evaluation and approval of Microgrid System Provider Service Contract (MSC) and Authority to Operate (ATO) on a timely basis.

Section 2. Scope

These Rules shall strictly apply to the following:

a) MGSPs operating an isolated microgrid system or grid-tied microgrid systems in island mode; and

b) Distribution Utility-Operated Microgrid System Provider (DU-MGSP) operating an isolated microgrid system or grid-tied microgrid systems in island mode.

Section 3. Definition of Terms

These Rules hereby adopt, by reference, the definitions provided under the *Microgrid Systems Act* and its IRR, insofar as such definitions are applicable to these Rules. Moreover, relevant terms defined in other ERC and DOE issuances, as well as internationally recognized standards, are likewise adopted and shall apply to all the provisions and Annexes of these Rules.

Authority to Operate (ATO) refers to the document issued by the ERC to the MGSP, which shall constitute as the latter's license to provide integrated power generation and distribution services to unserved or underserved areas, in lieu of the Certificate of Compliance (COC) and Certificate of Public Convenience and Necessity (CPCN).

Capacity refers to the amount of electric power for which a generating unit, generating station, or other electrical apparatus is rated either by the user or manufacturer.

Capital Recovery Fee (CRF) refers to a rate component intended to recover the capital investment costs in generation, energy storage, distribution, and related facilities of a microgrid system over their economic life, including a reasonable rate of return consistent with ERC's prescribed standards.

Decentralized Power Generation (DPG) refers to small-scale power generation facilities that operate locally and are connected to the Distribution System of the microgrid or End-user that could be aggregated to provide electric power necessary to meet demand, including, but not limited to, mini-wind turbines connected to a microgrid, energy storage, and solar photovoltaic rooftop of an End-user;

Demand refers to the level at which electricity is delivered to users at a given point in time. Electric demand is expressed in kilowatts. The average value of power or a related quantity over a specified interval of time. Demand is expressed in kilowatts (kW), kilovolt-amperes (kVA), kilovolt-amperes reactive (KVAR), or other suitable units.

Distribution Network refers to the electrical facility and its components including poles, transformers, disconnects, relays, isolators, wires, and meters that are owned or operated by a distribution utility for the purpose of distributing electrical energy.

Distribution System refers to the system of wires and associated facilities extending between the delivery points on the transmission, subtransmission system, or power generation facility connection and the point of connection to the premises of the End-User, whichever is applicable.

Distribution Utility (DU) refers to any electric cooperative, private corporation, government-owned utility, or existing local government unit which has a franchise to operate a distribution system in accordance with its franchise and Republic Act No. 9136, otherwise known as the "Electric Power Industry Reform Act of 2001" (EPIRA).

DSOAR refers to the Distribution Services and Open Access Rules, including any amendments thereto.

DU-Operated Microgrid System (DU-MGS) refers to a microgrid system owned and operated by a DU in a DU-identified unserved area in its Local Total Electrification Roadmap (LTER). For purposes of these Rules, DU-MGS shall generally be deemed an MGSP, except where a provision specifically and exclusively applies to DU-operated microgrid systems.

Efficiency refers to the ratio of the useful energy delivered by a dynamic system (such as a machine, engine, or motor) to the energy supplied to it over the same period or cycle of operation. The ratio is usually determined under specific test conditions.

Electric Meter refers to a device which measures and records the consumption or production of electricity.

Electric Cooperative (EC) refers to a cooperative or corporation authorized to provide electric services pursuant to Presidential Decree No. 269, as amended, and Republic Act No. 6938 within the framework of the national rural electrification plan.

End-User refers to any natural or juridical person requiring the supply and delivery of electricity for its own use.

Energy Regulatory Commission (ERC) refers to the independent and quasi-judicial regulatory agency created under Section 38 of the EPIRA, which is mandated to promote competition, encourage market development, ensure customer choice, and penalize abuse of market power in the restructured electricity industry and among other functions, promulgate and enforce the Philippine Grid Code (PGC) and the Philippine Distribution Code (PDC).

Energy Storage System (ESS) refers to the commercially available technology capable of absorbing energy, storing it for a period of time, and dispatching the energy in response to an external control input according to some predefined control function.

Entity refers to any person or body corporate and may include a cooperative or a local government. Private corporations, Local Government Units, Cooperatives, non-government organizations, generation companies, and their subsidiaries, distribution utilities and their subsidiaries.

Fixed O&M Fee (FOMF) refers to a recoverable cost component of a microgrid system that remains constant regardless of the level of electricity production, including, but not limited to salaries, insurance, and maintenance contracts.

Force Majeure (FM) refers to an unforeseeable, unavoidable, and insurmountable event that arises beyond the reasonable control of an entity and directly prevents the performance of contractual obligations despite the exercise of due diligence. It typically includes severe natural or environmental occurrences such as typhoons, tropical storms, floods, droughts, volcanic eruptions, earthquakes, tidal waves, and landslides.

Forced Outage Rate (FOR) refers to the ratio of Forced Outage Hours to the Period Hours of a Unit and/or Component, expressed in percent.

Fortuitous Event (FE) refers to an unexpected and unavoidable occurrence that happens independently of human will and without the fault or negligence of the affected party, rendering the performance of an obligation impossible. It typically includes sudden human-induced or societal disruptions such as acts of public enemy, war (declared or undeclared), sabotage, blockades, revolutions, riots, insurrections, civil commotions, and similar violent or threatening events.

Fuel Fee (FF) refers to a rate component intended to recover fuel costs, subject to ERC-approved efficiency benchmarks or caps.

Full Cost Recovery Rate (FCRR) refers to the rate, measured in Peso per kilowatt-hour (PhP/kWh), that covers the complete efficient costs of delivering electricity services, ensuring that MGSPs can operate sustainably.

Generating Unit refers to a unit conversion apparatus including auxiliaries and associated equipment, functioning as a single unit, which is used to produce electric energy from some other form of energy.

Generation Forecast refers to the forecast of the expected production of the DPG in the microgrid.

Grid refers to the high voltage backbone system of interconnected transmission lines, substations, and related facilities, located in each of Luzon, Visayas, and Mindanao, or as may be determined by the ERC in accordance with Section 45 of the EPIRA.

Grid-Tied Microgrid System refers to a microgrid system that is electrically connected to the distribution system of a DU and can operate in synchronized mode or in island mode.

Ground refers to a conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

Island refers to a part of an electric power system that is disconnected from the remainder of the interconnected system but remains energized.

Island Mode refers to grid-tied microgrid system operating as a stand-alone system in supplying and delivering electric power to connected end-users.

Isolated Microgrid refers to a group of interconnected loads and distributed energy resources forming a local electric power system at distribution voltage levels not currently capable of being connected to a wider electric power system.

Isolated Microgrid System refers to a microgrid system that is not electrically connected to a distribution system of a DU and is operating as stand-alone system in supplying and delivering power to connected end-users.

Load Forecast refers to the expected projected load of a network at a given future date.

Load Profile refers to the curve representing supplied electric power against the time of occurrence to illustrate the variance in a load during a given time interval.

Low Voltage (LV) refers to a voltage level not exceeding 1000 volts.

Magna Carta for Residential Electricity Consumers (MCREC) refers to the rules, regulations, and guidelines implementing the same, and any amendments thereto issued by the ERC. It contains the rights and obligations of residential electricity consumers, ensuring access to fair, reliable, and transparent service while upholding due process and promoting accountability among Distribution Utilities (DUs) or distribution service providers.

Medium Voltage (MV) refers to a voltage level exceeding one (1) kV up to 34.5 kV.

Metering Data refers to the measurement data obtained from metering facilities for purposes of commercial settlements, operational monitoring and planning.

Metering Equipment refers to the apparatus necessary for measuring electrical Active and Reactive Power and Energy, inclusive of a multi-function meter and the necessary instrument potential, current and phase shifting transformers and all wiring and communication devices provided.

Metering Point refers to a location where the Metering Equipment is installed.

MGSP Proponent refers to any entity that is eligible to provide integrated power generation and distribution services in unserved and underserved areas and which has expressed its interest to participate in a CSP for MGSP to develop and operate a Microgrid System in the said areas.

Microgrid refers to a group of interconnected loads and distributed energy resources with defined electrical boundaries that acts as a single controllable entity and is able to operate in both grid-connected and island mode.

Microgrid System refers to a group of interconnected loads and a generation facility or Decentralized Power Generation (DPG) with clearly defined electrical boundaries that act as an integrated power generation and distribution system, whether or not connected to a distribution or transmission system.

Microgrid Systems Act refers to Republic Act No. 11646, entitled, "*An Act Promoting the Use of Microgrid Systems to Accelerate the Total Electrification of Unserved and Underserved Areas Nationwide*."

Microgrid System Provider (MGSP) refers to a natural or juridical person whose business includes the installation, operation, and maintenance of microgrid systems in unserved or underserved areas nationwide.

Microgrid System Provider Service Contract (MSC) refers to the contract between the MGSP and the National Power Corporation (NPC) whereby the MGSP performs the missionary electrification function on behalf of the NPC and provides integrated power generation and distribution services in an unserved or underserved area, and receives subsidy whenever applicable.

Occupational Safety and Health Standards refer to the set of Rules issued by the Department of Labor and Employment (DOLE) which mandates the adoption and use of appropriate practices, means,

methods, operations or processes, and working conditions reasonably necessary to ensure safe and healthful employment.

Off-Grid Area refers to any area not connected to the Grid as defined under Article 4(z) of EPIRA.

On-Grid Area refers to any area that is connected to the Grid as defined under Article 4(z) of EPIRA.

Operating and Maintenance (O&M) Fee refers to a rate component intended to recover costs associated with the operation, maintenance, and administration of the microgrid system, further categorized into: (a) Fixed O&M Fee (FOMF); and (b) Variable O&M Fee (VOMF).

Outage refers to the state of a Component when it is not available to perform its intended function due to some Event directly associated with that Component. An Outage may or may not cause an Interruption of service to Customers.

Overvoltage refers to a Long Duration Voltage Variation where the root-mean-square (RMS) value of the voltage is greater than or equal to one hundred ten percent (110%) of the nominal voltage.

Philippine Distribution Code (PDC) refers to the set of rules, requirements, procedures, and standards governing DUs and Users of Distribution System in the operation, maintenance, and development of their Distribution System. It also defines and establishes the relationship of the Distribution System with the facilities or installations of the parties connected thereto.

Philippine Electrical Code (PEC) refers to the electrical safety code that establishes basic materials quality and electrical work standards for the safe use of electricity for light, heat, power, communications, signaling, and for other purposes.

Philippine Grid Code (PGC) refers to the set of rules, requirements, procedures, and standards to ensure the safe, reliable, secured and efficient operation, maintenance, and development of the Grid and its related facilities.

Philippine Small Grid Guidelines (PSGG) refers to Resolution No. 15, Series of 2013 issued by the ERC that promulgates the set of rules, requirements, procedures, and standards governing the operation, maintenance and development of Small Grid systems.

Photovoltaic (PV) refers to a method of generating electrical energy by converting solar radiation into direct current electricity using semiconductors that directly produce electricity when exposed to light.

Plant Outage Factor (POF) refers to the ratio of Planned Outage Hours to Period Hours of a Unit and/or Component, expressed in percent.

Point of Connection (POC) refers to the reference point on the electric power system where the end-user's electrical facility is connected.

Point of Interconnection (POI) refers to the reference point where microgrid is connected to the distribution network.

Power Quality refers to the characteristics of the electric current, voltage and frequencies at a given point in an electric power system, evaluate against a set of reference technical parameters. The quality of the voltage, including its frequency and resulting current, that are measured in the Grid, Distribution System, or any User System during normal conditions.

Provisional Authority to Operate (P-ATO) refers to the interim authority granted by the ERC in favor of a person(s) or entity(ies) to operate a combination of generation and distribution facilities used in the generation of electricity as MGSP, pending the completion of requirements for issuance of ATO, and as the power demand and supply situation warrants, provided the requirements for grant of P-ATO are complied with, and that the government permits issued thereto are valid. The P-ATO shall be issued in the form of a letter to the Applicant and shall be valid for a period of one (1) year from issuance thereof.

Reliability refers to the probability that an electric power system can perform a required function under given conditions for a given time interval. The probability that a system or component will perform a required task or mission for a specified time in a specified environment. It is the ability of a power system to continuously provide service to its customers.

Renewable Energy refers to the primary energy, the source of which is constantly replenished and will not become depleted.

Retail Rate refers to the total price in PhP/kWh, paid by end-users consisting of the charges of generation, distribution, supply and other related charges for electricity services as defined in Rule 4 of the EPIRA-IRR.

Security refers to the ability of an electric power system to operate in such a way that credible events do not give rise to loss of load, stresses of system components beyond their ratings, bus voltages or system frequency outside tolerances, instability, voltage collapse, or cascading. The continuous operation of a power system in the normal state, ensuring safe and adequate supply of power to end-users, even when some parts or components of the system are on outage.

Subsidized Approved Retail Rate (SARR) refers to the rate, expressed in Peso per kilowatt-hour that the ERC has determined to be the maximum that an end-user shall pay for the electricity service provided by an MGSP in the Unserved or Underserved Areas.

Switch refers to the device for changing the electric connections among its terminals.

Synchronized Mode refers to the operation of grid-tied microgrid systems whose generation facility or DPG is able to operate in the same frequency at its connection point to the distribution system of a DU and allows the grid-tied microgrid system to supply to or draw power from the grid.

System Average Interruption Duration Index (SAIDI) refers to the total duration of interruption for the average customer during a predefined period of time. It is commonly measured in customer minutes or customer hours of interruption.

System Average Interruption Frequency Index (SAIFI) refers to how often the average customer experiences a sustained interruption over a predefined period of time.

System Loss refers to the difference between the electric energy delivered to the Distribution System and the Energy delivered to the End-Users and other entities connected to the System.

Underserved Area refers to a currently served area where supply of electricity is less than twenty-four (24) hours daily because of the non-implementation of the approved capital expenditure projects, noncompliance with the service parameters of the PDC, or any other reason resulting to an overall failing mark based on the ERC's latest annual technical evaluation of the performance of distribution systems.

Undervoltage refers to a Long Duration Voltage Variation where the RMS value of the voltage is less than or equal to ninety percent (90%) of the nominal voltage.

Universal Charge for Missionary Electrification (UC-ME) refers to the portion of the non-by passable charge passed on and collected from all end-users on a monthly basis by the DUs pursuant to Republic Act 9136, a portion of which is allocated for the provision of integrated power generation and distribution services in unserved and underserved areas not connected to the grid or within a franchise area where the distribution system is not connected to the grid.

Unserved Area refers to an area, upon the effectivity of the *Microgrid System Act*–with no electricity access, no distribution system lines, no home power systems, no connection to any microgrid system, or for

which no distribution grid extension has been developed of implemented by the DU.

Variable O&M Fee (VOMF) refers to a recoverable cost component of a microgrid system that varies with energy output, including, but not limited to consumables, spare parts, and other variable plant-related expenses.

Voltage Variation refers to the deviation of the RMS value of the voltage from its nominal value, expressed in percent.

ARTICLE II
OPERATIONAL AND PLANNING CRITERIA FOR MICROGRID SYSTEMS

Section 1. General Operating Principles

The MGSP shall design, construct, install, operate, and maintain its microgrid systems in accordance with engineering and economic principles to ensure continuous, reliable, and least-cost electricity service to all existing and future households within the awarded service area.

The MGSP shall ensure the following mandates:

a) Continuous twenty four-hour and seven-day (24/7) electricity service in accordance with its approved MSC;

b) Accomplishment of one hundred percent (100%) household electrification within the awarded area; and

c) Compliance with all the requirements pursuant to their respective MSCs.

Section 2. Operational Criteria for Grid-Tied Microgrid Systems in Island Mode

A grid-tied microgrid system shall have sufficient generating capacity to sustain its load independently from the concerned DU when operating in island mode. It shall be connected to the distribution system through a designated POI and designed to operate safely and seamlessly between synchronized and island modes.

Subject to the arrangement between the parties, the MGSP may draw power from the DU system only for purposes of restoring the microgrid's generating facilities or resuming system operations. To ensure stable and reliable performance, the MGSP shall install the necessary power quality and reliability equipment within its microgrid systems, including but not limited

to harmonic filters, voltage regulators, and reactive power compensators, in accordance with the technical standards set forth in Annex A of these Rules.

Section 3. Operational Criteria for Isolated Microgrid Systems

An isolated microgrid system operates independently from the local distribution system and is designed to function permanently in island mode. These systems are typically deployed in remote, unserved, or underserved areas and are not physically connected to any DU network.

The MGSPs shall ensure continuous and reliable power supply through adequate energy storage capacity and dispatchable DPGs, complemented by demand-side management measures ensuring stable operation regardless of the availability of renewable energy sources. It shall likewise maintain power balance, frequency stability, and voltage regulation under all operating conditions, in accordance with the technical standards set forth in Annex A of these Rules.

Section 4. Planning and Design Criteria

The following subsections set the minimum criteria for the preparation and implementation of microgrid system projects:

4.1. Economic Efficiency and Scalability

The microgrid system shall be planned and designed to achieve least-cost operation while ensuring scalability for future load growth, integration of additional generation resources, and potential interconnection with other microgrid systems. The MGSP shall evaluate alternative configurations, balancing the cost implications of energy storage, renewable penetration, and fuel logistics to achieve the most economically viable design.

4.2. Planning Period and Horizon

The development plan for microgrid system projects shall demonstrate economic efficiency, ensuring that assets are neither underutilized nor excessively oversized relative to projected demand. The planning horizon shall not exceed the duration of the approved MSC.

The development plan within the planning period shall consider, among others, the following:

a) Anticipated customer load growth and demand levels by the end of the planning horizon; and

b) Validity of future economic factors, such as inflation, discount rates, and projected fuel costs, particularly toward

the end of the planning period, for use in engineering and financial analysis.

4.3. Capital and Operating Expense Parameters

The MGSP shall describe its approach to capital and operational costs planning, including O&M strategies, consistent with the information provided in the MSC application.

Section 5. Tariff and Cost Recovery Principles

The MGSP shall impose rates only upon prior approval by the ERC, based on the FCRR and applicable SARR, as determined in accordance with the applicable ERC regulations, and after ERC issuance of the ATO or P-ATO. Such rates shall ensure fair, reasonable, and transparent cost recovery while promoting consumer protection and least-cost electrification objectives.

Section 6. Integration with National Electrification and Renewable Energy Policies

Microgrid systems shall be consistent with the national electrification and renewable energy development policies. The MGSP's design and operation shall prioritize the use of indigenous and renewable energy resources, in accordance with the DOE's Renewable Energy and Missionary Electrification programs and shall qualify for applicable benefits and obligations under relevant government issuances.

ARTICLE III

COMPLIANCE WITH MICROGRID SYSTEM SERVICE STANDARDS

Section 1. General Compliance Requirements

The MGSP shall ensure that the design, construction, operation, and maintenance of its microgrid facilities fully comply with the Microgrid System Service Standards prescribed under Annex A of these Rules.

Such compliance shall likewise extend to other relevant technical and service standards issued or recognized by the ERC, including but not limited to the PGC, PDC, PSGG, and other applicable ERC rules and regulations.

The applicable standards and service performance requirements shall be expressly stipulated in the MSC and shall be strictly observed by the MGSP upon the issuance and throughout the validity of its ATO or P-ATO.

Section 2. Enforcement of Service Standards

The ERC shall apply and enforce the relevant technical and service performance standards for each MGSP in accordance with Annex A and other pertinent ERC rules and issuances.

During the review and evaluation of the microgrid system's technical design, and subsequent inspection, testing, and commissioning of microgrid facilities, the ERC shall verify compliance with the prescribed standards prior to the issuance of the ATO or P-ATO, and during the validity thereof.

The ERC may adopt, modify, or supplement applicable standards when technically justified, particularly for low-cost electrification projects serving consumers in unserved or underserved areas, provided that such modifications uphold the minimum safety, quality, reliability, efficiency, and other customer service requirements prescribed under Annex A of these Rules and upon verification during the conduct of technical inspection.

Section 3. Reference to Applicable Technical and Service Performance Standards

In cases where Annex "A" does not expressly provide a specific standard for a given technical parameter, condition, or performance indicator, the MGSP shall comply with the relevant provisions of the PGC, PDC, PSGG, or other internationally recognized standards, as provided in Annex "A" of these Rules.

The ERC may prescribe supplementary or higher standards when necessary to ensure public safety, power quality, reliability, efficiency, and consumer protection, consistent with national policies and the objectives of the *Microgrid Systems Act*.

ARTICLE IV

CONTENTS AND REGULATORY OVERSIGHT OF THE MICROGRID SERVICE CONTRACT (MSC)

Section 1. General Policy

The MSC shall serve as the principal instrument defining the rights and obligations of the MGSP and the NPC in relation to the provision of microgrid system services. The MSC shall be subject to the review and approval of the ERC to ensure consistency with applicable laws, regulatory policies, and the objectives of promoting reliable, affordable, and sustainable electricity access in unserved and underserved areas.

Section 2. Minimum Contractual Provisions

The MSC shall include, but not be limited to, the following provisions:

2.1. Scope of Services and Delivery Obligations

The MSC shall clearly define the scope of services to be rendered by the MGSP, including, but not limited to, the service coverage area, target number of customer connections, energization schedule, service levels, and payment modalities applicable to NPC and consumers.

2.2. Tariff Rates and Adjustment Mechanism

The MSC shall specify the proposed FCRR and SARR, together with the adjustment mechanism ensuring fair, reasonable, and transparent consumer tariffs consistent with ERC-accepted methodologies specified in Article V of these Rules.

In cases where an alternative or best-practice methodology is proposed aside from the framework provided in Article V, the MGSP shall submit sufficient justification and complete documentation demonstrating its applicability, technical dependability, and alignment with regulatory and market conditions, subject to ERC evaluation and approval.

2.3. Risk Allocation and Contract Term

The MSC shall provide for an equitable allocation of commercial, operational, and regulatory risks between the parties. The contract term shall be commensurate with the economic life and cost recovery period of the MGSP's investment but shall in no case exceed twenty (20) years, unless otherwise authorized by law.

2.4. Continuity of Service Obligation

The MSC shall contain provisions ensuring the uninterrupted electricity service within the awarded service area(s) in the event of contract expiration, amendment, or termination. Such provisions shall include measures for orderly transition or assumption of operations, subject to DOE and ERC oversight.

The term of the MSC shall in no way be affected by the amendment, expiration, or revocation of the franchise of the DU covering the said area.

2.5. Early termination of MSC

In case of early termination of the MSC, the NPC or DU that assumes responsibility for providing electricity services may charge the

rate last approved and authorized by the ERC for the former MGSP.

2.6. Expiration of the MSC

Should the DU choose to exercise its option to acquire and take over the operations of the microgrid system upon the expiration of the MSC, in accordance with the detailed transition procedure to be established by the DOE, it must apply with the ERC for approval of the valuation and the applicable rate to be imposed in the area at least one year before the MSC expires.

If the DU's distribution system is connected to the grid and the acquired microgrid system can be integrated into its distribution system, the DU's takeover and operation of the microgrid system will no longer entitle the end-users in that area to the UC-ME Subsidy.

2.7. Consumer Safety and Protection

The MGSP shall ensure that all microgrid facilities and operations comply with standards provided in Annex A of these Rules, DSOAR, MCREC, PSGG, PEC, and other applicable ERC regulations on safety and customer service performance, including any amendments thereto.

2.8. Applicable Technical and Service Standards

The MSC shall expressly provide for compliance with the technical and service performance standards prescribed in Annex A of these Rules, or other applicable standards issued by the ERC, and any subsequent amendments or issuances.

2.9. Joint Venture Liability

In cases where the MGSP is organized as a joint venture, the MSC shall include a stipulation of solidary liability among the participating entities or persons for the faithful performance of contractual and regulatory obligations.

Section 3. Regulatory Oversight

The ERC shall exercise continuing regulatory oversight over the implementation of the MSC to ensure compliance with approved terms and conditions, rate structures, and performance standards.

The MGSP and NPC shall submit periodic technical, operational, and financial reports, in accordance with Article XII of these Rules, or as may be required by the ERC to facilitate monitoring, evaluation, and enforcement of compliance with regulatory and service performance obligations.

The ERC reserves the right to revise, amend, or supplement the reporting and compliance requirements under this Article to align with future regulatory, policy, or market developments affecting missionary electrification and microgrid operations.

ARTICLE V
TARIFF RATE SETTING FRAMEWORK

Section 1. Determination of the Full Cost Recovery Rate (FCRR)

The FCRR represents the levelized rate that enables the MGSP to recover its total prudent and reasonable costs of providing electricity service, including a fair return on investment, in accordance with the following principles:

1.1. FCRR Cost Components

The FCRR shall be itemized, but not be limited to, the following cost components:

a) Capital Recovery Fee (CRF);

b) Operating and Maintenance (O&M) Fee, composed of Fixed O&M Fee (FOMF) and Variable O&M Fee (VOMF); and

c) Fuel Fee (FF).

The proposed FF shall be supported by sufficient documentation, including specific fuel and lube oil consumption rates consistent with each generator model and operating parameters, subject to ERC validation and benchmarking against verified technical specifications, manufacturer data, and actual field performance records.

1.2. Cost Disaggregation

All cost components shall be disaggregated by functional element, comprising:

a) Generation Sector, which covers renewable and conventional generation units, energy storage systems, and associated logistics;

b) Distribution Sector, which covers the distribution network and non-network assets, and associated logistics; and

c) Shared components for both Generation and Distribution

Sectors, with details on the allocation factors used, if applicable.

1.3. Rate Methodology for Microgrid Systems

A blended FCRR shall be applied for microgrid systems, subject to ERC validation using verified cost data, procurement records, and supporting technical documentation to ensure prudence and least-cost compliance.

1.4. Regulatory Evaluation Principles

The ERC shall adopt a financial and technical evaluation framework based on a modular approach in accordance with Sections 1.1 to 1.3 of this Article.

In determining the FCRR, the ERC shall consider, among others:

a) Contractual arrangements with third parties and supplier agreements;

b) Verified procurement and cost documentation; and

c) Consistency with the principles of efficiency, transparency, least-cost development, and long-term financial sustainability.

Section 2. Determination of the Subsidized Approved Retail Rate (SARR)

The SARR represents the retail rate payable by customers of the MGSP, and shall be established as follows:

a) The SARR shall be benchmarked against the effective retail rate of the DU having jurisdiction over the unserved or underserved area, subject to adjustments to account for cost variations or unique operating conditions as determined by the ERC;

b) The MGSP may propose separate SARRs for different customer classes, subject to ERC approval, to ensure fair, equitable, and cost-reflective treatment among consumers, consistent with existing rate-setting policies for DUs; and

c) The MGSP shall submit a proposed tariff structure and billing scheme consistent with the computed SARR, showing rate breakdowns per customer class and applicable consumption thresholds. The ERC may modify such structure to align with affordability objectives and the national electrification policies.

The ERC, subject to evaluation and approval, may adopt the SARR recommended by the NPC, based on its periodic studies and in accordance with the succeeding section.

Section 3. NPC Petition for Periodic Review and Adjustment of SARR

To ensure that the SARR remains reflective of updated costs and prevailing market and subsidy conditions, the NPC shall:

a) Conduct a comprehensive study of the applicable SARRs for identified MGSP service areas every three (3) years, or at such intervals as may be deemed necessary; and

b) File before the ERC a petition for the adoption or adjustment of SARRs based on such study, supported by relevant technical, financial, and subsidy analyses.

The ERC shall evaluate the NPC's petition pursuant to these Rules and applicable regulatory frameworks governing missionary electrification and UC-ME Subsidy administration.

Section 4. Transitory Provision for NPC Petition

Within one (1) year from the effectivity of these Rules, the NPC shall undertake and file the initial study and petition for the adoption or adjustment of SARRs applicable to all existing identified MGSP service areas.

ARTICLE VI
MSC APPLICATION FILING PROCESS

Section 1. Applicability

This Article shall govern the pre-filing and filing procedures for applications seeking the ERC's approval of the MSCs executed between MGSP and NPC.

Such application shall include a prayer for approval of the FCRR, the corresponding SARR for each applicable customer classification, and the proposed recovery scheme for the installation and operation of microgrid systems. Complete computation details and supporting documentation for the proposed rates shall likewise be submitted.

Except as otherwise provided in these Rules, the ERC's Revised Rules of Practice and Procedure (RRPP),[1] the Electronic Filing Guidelines,[2] and any subsequent amendments thereto shall apply.

Section 2. Pre-Filing Requirements

All MSC applications shall comply with the information and documentary requirements prescribed in the MSC Pre-Filing Checklists posted on the ERC's official website at https://www.erc.gov.ph.

Moreover, each MSC application shall cover only one (1) MSC.

Section 3. Initiation of the Filing, Pre-Filing Process, and Timelines

The MSC application filing shall be initiated through the pre-filing process within thirty (30) calendar days from the execution of the MSC with NPC. The MGSP as the applicant shall undergo the pre-filing process either via electronic pre-filing or physical pre-filing at the designated offices of the ERC.

Failure to initiate the pre-filing process within the prescribed period, without justifiable cause, may warrant the imposition of penalties pursuant to Article XIII, Section 1 of these Rules.

The procedures for the pre-filing, filing, and proceedings of the MSC application shall adhere to those applicable to a Rate Case (RC) application as outlined in the RRPP, including any amendments.

Section 4. Filing of the MSC Application

An MSC application shall be deemed officially filed upon completion of the pre-filing process, payment of the applicable filing fees, and docketing of the case by the ERC.

Any MSC application that fails to comply with the pre-filing requirements, including payment of the prescribed filing fee, shall not be accepted for docketing. Such rejection, however, shall not preclude the applicant from refiling upon full compliance with all requirements.

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1 Energy Regulatory Commission. *A Resolution Adopting the Revised Rules of Practice and Procedure of the Energy Regulatory Commission*, Resolution No. 01, Series of 2021 [ERC RRPP] (03 April 2021).

2 Energy Regulatory Commission. *A Resolution Adopting the Guidelines Governing Electronic Applications, Filing and Virtual Hearings Before the Energy Regulatory Commission*, Resolution No. 09, Series of 2020 [ERC E-Filing Guidelines] (02 December 2020).

Section 5. MSC Application Fees

An application fee shall be imposed on all MSC applications in accordance with the ERC Schedule of Fees and Charges,[3] or any subsequent amendments thereto.

Section 6. Provisional Authority to Implement the Awarded Rates

Upon official filing of the MSC application, the ERC shall issue a *Certificate of Acceptance of Application*, bearing the date of award by the DOE or its authorized entity of a microgrid service area to the MGSP, the date of execution of the MSC, and the date of docketing of the case by the ERC. The template for the *Certificate of Acceptance of Application* is provided in Annex B of these Rules.

Pursuant to Section 18.1 of the IRR, the issuance of such Certificate shall authorize the MGSP to provisionally collect the awarded rates — consisting of the FCRR, SARR, and the corresponding UC-ME Subsidy, and as specified in the DOE's Notice of Award (NOA) or other similar document, the duly executed MSC, and the duly filed MSC application – upon commencement of commercial operations or the initial delivery of electricity in the awarded area.

The provisional authority mentioned in the preceding paragraph shall be subject to adjustment, confirmation, or modification upon final determination and approval by the ERC in the MSC application.

Section 7. NPC as Necessary Party to the MSC Application

Upon filing the MSC application, the applicant shall furnish NPC with a complete copy of the docketed application, including all annexes. Accordingly, NPC, as Necessary Party thereto, shall file its *Verified Comment on the MSC Application* within fifteen (15) calendar days from date of filing.

Section 8. Legal Proceedings

The ERC shall schedule and conduct hearings relative to the MSC application within thirty (30) calendar days from the receipt of complete application, following due publication and notice to all affected parties.

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[3] Energy Regulatory Commission. *A Resolution Approving the Revised Schedule of ERC Fees & Charges*, Resolution No. 21, Series of 2007 [ERC Fees and Charges Matrix] (01 September 2007).

ARTICLE VII
EVALUATION OF MSC APPLICATION

Section 1. Evaluation of the MSC Application

The ERC shall review and evaluate applications for the approval of MSC, and determination of the FCRR, SARR, and UC-ME Subsidy rates, in accordance with the principles and standards prescribed under Articles II, III, IV, and V of these Rules.

The evaluation process shall include the financial, technical, and legal assessment of the application, subject to the submission of complete documentary and data requirements prescribed in the Pre-filing Checklists posted on the ERC's official website.

In the course of the evaluation, the ERC may, at its discretion, require the applicant to submit additional data, clarifications, or computations necessary to resolve issues material to the approval of rates and contract terms.

Any assignment or transfer of the parties' rights or obligations under the MSC, as well as any amendments or modifications to its provisions or attachments, requires prior notification to and approval from the ERC. In this regard, the MGSP must file the appropriate pleading or motion, with the agreement of the NPC and, when applicable, the endorsement of the DOE.

Section 2. Non-Compliance with Documentary or Data Requirements

Failure by the applicant to submit any required information, clarification, or supporting document within the prescribed period shall constitute sufficient ground for the denial or dismissal of the application, without prejudice to its re-filing upon full compliance.

Submissions made beyond the prescribed deadline may be excluded from consideration, and such omission shall be deemed adverse to the applicant's interest in the evaluation and resolution of the case.

In meritorious cases, the ERC may grant an extension for submission of additional information, provided that such extension shall not unduly delay the resolution of the case.

Section 3. Decision Timeline

The ERC shall render its final Decision within one hundred thirty-five (135) calendar days from the date of receipt of a complete application, in accordance with the Microgrid Systems Act and its IRR.

Section 4. Post-Approval Compliance and Monitoring

Upon approval of the MSC, the MGSP shall comply with the post-approval reporting, monitoring, and audit requirements prescribed under Article XII, Section 1 of these Rules.

ARTICLE VIII
ISSUANCE OF AUTHORITY TO OPERATE

Section 1. Requirement for Authority to Operate (ATO)

No person shall engage in the operation of a microgrid system without an ATO or P-ATO duly issued by the ERC.

Pending the completion of all requirements for the issuance of an ATO, the ERC may issue a P-ATO upon filing of the ATO application, if the prevailing power demand and supply situation in the covered area warrants the same, subject to such conditions as the ERC may impose.

A copy of the prescribed ATO application form and checklist shall be posted on the ERC's official website at https://www.erc.gov.ph.

Section 2. Validity and Effectivity

Upon determination that all legal, technical, and commercial documentary requirements have been fully complied with, the ERC shall issue an ATO in favor of the MGSP. The ATO shall have the same validity with the term of the MSC, subject to annual monitoring of compliances.

Section 3. Applicant Qualification

The application for an ATO or P-ATO shall be filed under the name of the MGSP. For purposes of this Section, the ATO or P-ATO shall be issued to the person(s) or entity/entities granted a Notice of Award (NOA) or other similar document, or Certificate of Endorsement (COE) by the DOE, and is the counterparty of the NPC to the MSC.

In case of a consortium, the ATO or P-ATO shall be issued in the name of the designated lead entity, as identified in the DOE award and MSC.

Section 4. Test and Commissioning

Prior to the commencement of commercial operations and after the execution of the MSC, the MGSP or a reputable third-party entity shall conduct the test and commissioning of the MGSP's microgrid facilities in accordance with the applicable technical standards prescribed in Annex A of

these Rules, the PDC, the PSGG, and other internationally accepted testing procedures.

The MGSP shall invite the ERC and NPC to witness the conduct of the test and commissioning of the microgrid system facilities.

As part of its evaluation of the ATO or P-ATO application, the ERC shall assess the test and commissioning results to determine compliance of the microgrid facilities with the prescribed technical, safety, and performance standards under these Rules and other applicable regulations.

Section 5. Terms and Conditions of the ATO or P-ATO

The ATO or P-ATO shall stipulate all obligations, limitations, and conditions imposed upon the grantee, consistent with the standards prescribed in these Rules and other applicable ERC regulations. The ERC may, from time to time, impose additional conditions necessary to ensure compliance with regulatory, technical, and operational requirements.

The ATO or P-ATO shall, at a minimum, include the following provisions:

a) The detailed terms and conditions of the ATO or P-ATO, including the technical specifications of the generation facilities — such as, but not limited to, rated capacity (MW), dependable capacity (MW), maximum load (Pmax in MW), minimum stable load (Pmin in MW), ramp-up (MW/min) and ramp-down rates (MW/min) — shall form an integral part of the ATO or P-ATO;

b) The capacity indicated on the ATO or P-ATO shall refer to the rated capacity of the generating unit(s), rounded to three (3) decimal places in MW/MWp/MWh, or to the nearest kW/kWp/kWh, as applicable; and

c) The rated capacity reflected in the ATO or P-ATO shall be consistent with the capacity indicated in the DOE's COE or NOA.

Section 6. Phased Installation and Amendment of ATO or P-ATO

In cases where the microgrid system consists of multiple generating units to be installed and commissioned in phases (various implementation dates), the MGSP shall file an ATO or P-ATO application for the initial generating units scheduled for commissioning.

For each subsequent phase of installation or commissioning, the MGSP shall file an application for amendment of its existing ATO or P-ATO. The amended authority shall clearly identify the additional generating units and those units previously authorized under the preceding ATO or P-ATO,

indicating their respective technical specifications, ERC approval dates, and other relevant details.

Section 7. Transfer of Generating Units

The transfer of generating units to a different location shall automatically invalidate the corresponding ATO or P-ATO covering such units.

In the case of ATOs or P-ATOs covering multiple generating units, where only certain units are transferred, the MGSP shall file an application to exclude the transferred units from the existing ATO or P-ATO and secure a new ATO or P-ATO for the generating unit(s) transferred to new location.

Section 8. Black Start, Standby, and Backup Units

Applications for black start resources and standby or backup generating unit(s), including emergency units directly connected to the microgrid generation facility, shall be included in the ATO or P-ATO application for the main generating units or amendments thereof. Once approved, such auxiliary units shall be incorporated into the issued ATO or P-ATO.

Section 9. Addition, Replacement, Conversion, or Repowering

Any addition, replacement, conversion, or repowering of any generating unit(s) or its associated equipment that alters the technical configuration, capacity, or performance of the microgrid's generation system shall require the prior approval of the ERC through an amendment of the ATO or P-ATO.

The amended ATO or P-ATO shall take effect from the date of issuance and shall supersede the previous authorization insofar as the modified units or components are concerned.

Section 10. Expansion of Microgrid System

Expansion of the microgrid system, as defined under these Rules, shall require the filing of an application for the amendment of the issued ATO or P-ATO, and shall be subject to technical inspection.

Section 11. Filing Period

Applications for a new ATO or P-ATO shall be filed not later than thirty (30) calendar days from the last day of scheduled test and commissioning and shall be accompanied by the required supporting documents.

Applications for the amendments of existing ATOs or P-ATOs, due to generating unit(s) or associated equipment modification, replacement, repowering, expansion, or addition of black start or standby units, shall likewise be filed within thirty (30) calendar days from completion of the corresponding test and commissioning.

If the MGSP cannot yet comply with the requirements and conditions of the issued P-ATO, it shall file an application for extension of P-ATO not later than sixty (60) calendar days prior to the expiration of the existing P-ATO, with a written verified explanation as to the efforts undertaken to comply with the requirements, and the reasons for their continued failure to comply with all the requirements for ATO issuance.

Section 12. ERC Action

The ERC shall act on an ATO or P-ATO application within sixty (60) calendar days from receipt of the complete application. Where the ERC determines that additional information is necessary, it may issue an order requiring the submission of supplemental data, and the period for action shall be reckoned from the receipt of complete compliance.

Section 13. Decommissioning and Mothballing

No MGSP with an existing ATO shall decommission or mothball any of its generating units without prior authorization from the DOE. Upon receipt of the DOE's Letter of Confirmation approving the decommissioning or mothballing, the MGSP shall furnish a copy to the ERC within seven (7) calendar days for proper record updating.

Section 14. Suppletory Application of the Revised Certificate of Compliance (COC) Rules

In the absence of any applicable provision in these Rules, the pertinent provisions of the ERC's 2023 Revised COC Rules[4] as may hereafter be amended, shall apply suppletorily or by analogy in the interest of expeditious disposition of ATO or P-ATO applications.

Section 15. Transitory Provision Regarding the Propriety and Validity of Previously Issued COCs

COCs previously issued to MGSPs pursuant to the 2023 Revised COC Rules shall automatically be converted to an ATO.

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4 Energy Regulatory Commission. *A Resolution Adopting the 2023 Revised Rules for the Issuance of Certificates of Compliance for Generation Facilities*, Resolution No. 17, Series of 2023 (Revised COC Rules), 13 September 2023.

Existing MGSPs that have been issued with COCs or Provisional Authority to Operate (PAOs) pursuant to the 2023 Revised COC Rules must file an application for an ATO or P-ATO within sixty (60) calendar days from the effectivity of these Rules.

For MGSPs with applications pending for the issuance of a COC or PAO under the 2023 Revised COC Rules, the ERC will consider these applications as applications for an ATO or P-ATO in accordance with these Rules.

ARTICLE IX
AVAILMENT OF UC-ME SUBSIDY FOR MGSP

Section 1. Eligibility for Availment UC-ME Subsidy

Only duly authorized MGSPs with an ATO or PAO license shall be entitled to avail of the UC-ME Subsidy, pursuant to Section 10 of the *Microgrid Systems Act* and its IRR.

An MGSP shall charge and collect from its end-users the applicable SARR. Should the FCRR be higher than the SARR, the MGSP shall be entitled to recover the differential through the UC-ME Subsidy.

No UC-ME Subsidy shall be granted without the ERC's prior approval of both the FCRR and SARR. Accordingly, the ERC's approval relative thereto shall have no retroactive application, unless otherwise stated.

Section 2. Determination and Validation of UC-ME Subsidy

The UC-ME Subsidy shall represent the difference between the ERC-approved FCRR and SARR, funded through the UC-ME administered by the NPC.

The ERC shall conduct the following:

a) Validate the proposed UC-ME Subsidy based on verified cost components, approved FCRR and SARR, and projected energy sales, ensuring that the subsidy covers only efficiently incurred and reasonable costs supported by verified operational data;

b) Ensure that the computation of the ME Subsidy does not result in over-recovery or duplication of costs already recovered through other mechanisms; and

c) Evaluate and approve any adjustment to the UC-ME Subsidy upon petition by the NPC, supported by updated data on actual costs, sales, and performance indicators.

Section 3. Petition for UC-ME Subsidy Allocation

In accordance with the *Amended Guidelines for Setting Generation Rates and Subsidies for Missionary Electrification Areas (Amended UC-ME Guidelines),*[5] or any amendments thereto, the NPC shall file with the ERC, on or before March 15 of every calendar year, a petition to establish the UC-ME amount sufficient to cover the total subsidy requirements for all NPC-SPUG areas, including those areas awarded to MGSPs.

To facilitate the preparation of the said petition, each MGSP shall submit to the NPC, on or before May 15 of every calendar year, its forecasted UC-ME Subsidy requirement for two (2) years. This forecast shall be computed based on the difference between its approved FCRR and SARR.

For clarity, the subsidy forecast submitted on May 15 of a given year shall correspond to the subsidy requirement to be computed by the MGSP for the calendar year two (2) years thereafter.

For MGSPs awarded after the May 15 deadline and intending to commence commercial operations within the relevant subsidy period, the concerned MGSP shall submit to NPC its forecasted UC-ME Subsidy requirement within fifteen (15) days from the issuance of the Notice of Award (NOA) by the DOE.

NPC shall consolidate the submitted forecasts and incorporate the same in its UC-ME petition to be filed with the ERC.

The NPC's UC-ME petition must include, but is not limited to, the following documents relevant to MGSP subsidy requirements:

a) Calculation of the FCRR and SARR for each MGSP based on the approved rates; and

b) The DOE-issued Certificate of Commercial Operation for each generating unit.

The true-up mechanism, which mandates the reconciliation of actual UC-ME subsidies as outlined in the Amended UC-ME Guidelines or any subsequent amendments, shall also apply to the subsidy requirements for MGSPs.

Section 4. Administration and Disbursement of UC-ME Subsidy

Pursuant to Section 14 of the *Microgrid Systems Act* and its IRR, the NPC shall administer the UC-ME funds allocated for MGSPs and establish a separate Special Trust Fund (STF) with the Bureau of the Treasury or a

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5 Energy Regulatory Commission. A Resolution Adopting the Amended Guidelines for the Setting and Approval of Electricity Generation Rates and Subsidies for Missionary Electrification Areas, Resolution No. 21, Series of 2011 (SAGR and UC-ME Subsidy Guidelines] (19 October 2011).

government financial institution approved by the Department of Finance (DOF).

The UC-ME Subsidy shall be disbursed directly to eligible MGSPs within forty-five (45) days from receipt of the complete billing invoice and supporting documents. The disbursement and fund management shall be conducted in an open, transparent, and auditable manner. Funds earmarked for MGSP UC-ME subsidies shall not be used to finance shortfalls or requirements of other UC-ME beneficiaries.

For this purpose, NPC Circular No. 2022-020, attached as Annex C of these Rules, is hereby adopted as the official disbursement procedure for UC-ME subsidies of MGSPs. Any subsequent amendment to the aforesaid Circular shall automatically be implemented and serve as the governing procedure for future disbursements, unless otherwise directed by the ERC.

Section 5. Exemption of End-Users in Unserved and Underserved Areas from the Payment of Feed-In-Tariff (FIT) Allowance and the Universal Charges

Pursuant to Section 16 of the *Microgrid Systems Act* and its IRR, the end users in unserved and underserved areas not connected to the grid or within a franchise area where the distribution system is not connected to the grid shall be exempt from the following:

a) The payment of the feed-in-tariff (FIT) allowance under the FIT system in Section 7 of the Republic Act No. 9513, otherwise known as the “Renewable Act of 2008”; and

b) The payment of universal charges under Section 34 of EPIRA, and the Green Energy Auction Allowance (GEA-All) as established and fixed by the ERC pursuant to the relevant DOE and ERC issuances.

ARTICLE X
FORCE MAJEURE OR FORTUITOUS EVENT CAPEX

Section 1. Coverage

This Article shall govern capital expenditures implemented by the MGSP due to Force Majeure or Fortuitous Events, as defined in these Rules, which require immediate construction, replacement, or repair of facilities necessary for the continuous, safe, and reliable delivery of electricity service.

Section 2. Force Majeure (FM) or Fortuitous Event (FE) CAPEX Application

In the event of a Force Majeure or Fortuitous Event, the affected MGSP shall file an application with the ERC for confirmation of the capital expenditures (CAPEX) incurred, in accordance with the procedures specified in the ERC RRPP.

To ensure timely regulatory notification, the MGSP shall submit a Notice of Force Majeure or Fortuitous Event within one (1) month from the occurrence of the event, providing a complete narrative of the circumstances and initial assessment of the damage. The MGSP must also provide the DOE and NPC with a copy of the notice and formally inform them that it plans to file an application with the ERC to confirm the CAPEX it incurred.

Section 3. Minimum Requirements for Filing FM/FE CAPEX Application

The formal application shall include, at a minimum, the following information and supporting documents:

3.1. Description of the Event

a) Narrative account of the event, including its nature, timeline, and impact on the MGSP's facilities and operations.

b) Proof of occurrence issued by the appropriate authority (e.g., PAGASA report or equivalent).

3.2. Justification for the Rehabilitation Works

a) Description of the circumstances necessitating the rehabilitation or construction of facilities.

b) Explanation and justification of the CAPEX incurred as a direct and immediate consequence of the event.

3.3. Details of Incurred Rehabilitation CAPEX

a) Itemized list of actual rehabilitation costs, including Bill of Materials (BOM) consistent with the templates in Annex D of these Rules.

b) Supporting documents substantiating that the costs are reasonable, necessary, and directly attributable to the restoration of service.

c) Actual implementation schedule of the rehabilitation works, with supporting evidence where applicable.

3.4. Compliance with Technical Standards

Documentation demonstrating that the rehabilitated or newly installed facilities comply with technical and safety requirements under these Rules, the PDC, and other relevant regulations.

3.5. CRF Computation

The MGSP shall submit complete Capital Recovery Fee (CRF) calculations, reflecting the prudent and reasonable actual costs incurred, including the proposed cost recovery period, and supporting assumptions used in the computation.

The cost recovery period shall take into account the remaining term of the MGSP's contract period and shall be structured to ensure that the resulting CRF remains reasonable and does not result in undue rate impacts to end-users or the UC-ME.

As far as practicable, the cost recovery period shall not extend beyond the remaining term of the MGSP's contract period. However, the ERC may approve a recovery period extending beyond the contract term, particularly in cases where the FM or FE occurs near the end of the contract period, and where limiting recovery to the remaining contract term would result in a higher CRF or rate impact.

Any unrecovered capital cost at the end of the MGSP's contract period, if applicable, shall be subject to determination by the ERC, taking into account the circumstances of the investment and the need to ensure fair and reasonable treatment of both consumers and the MGSP.

Section 4. Confirmation of FM or FE CAPEX Applications

The ERC shall resolve the confirmation of the rehabilitation expenditures and applicable additional CRF within ninety (90) days from the time the MGSP formally offers its evidence.

Section 5. Provisional Implementation and Timelines of Filing an Application Arising from FM or FE

Consistent with Section 20(b) of the Public Service Act, as amended,[6] an MGSP may immediately undertake the construction, replacement, or extension of facilities in extraordinary cases–without prior ERC approval–

[6] Republic Act No. 11659. (2022). *An Act Amending Commonwealth Act No. 146* [Public Service Act, as amended]. Official Gazette of the Republic of the Philippines. https://www.officialgazette.gov.ph

when the event is beyond the MGSP's control and necessitates urgent action to restore or maintain service.

In such cases, the MGSP shall file an application for confirmation of the Force Majeure or Fortuitous Event CAPEX upon completion of the rehabilitation or construction works to allow submission of actual, substantiated expenditures.

Section 6. Regulatory Confirmation and Cost Recovery

The ERC shall evaluate and confirm the reasonableness of costs incurred under this Article and determine whether such costs are eligible for recovery through the approved rates or the UC-ME Subsidy, as applicable. Only assets determined by the ERC as useful and necessary for the provision of microgrid service shall be included in the computation of the additional CRF, which shall be reflected as a separate line item in the MGSP's billing to end-users and in its UC-ME Subsidy claims with NPC.

ARTICLE XI
MONITORING OF MICROGRID SYSTEM IMPLEMENTATION

Section 1. Annual Monitoring and Site Inspection

The ERC may conduct annual site inspections, with prior notice to the MGSPs, to verify and monitor the status and progress of microgrid system implementation. The inspection shall assess compliance with the approved microgrid system program, service performance standards, technical requirements, and implementation timelines.

Moreover, the ERC may undertake post-audit reviews or compliance inspections to validate the accuracy of submitted reports, confirm the proper implementation of approved rates, and ensure fulfillment of all service obligations under the MSC.

Section 2. Submission of Records and Documents

MGSPs shall provide the ERC inspection team with all relevant project records and documentation necessary to support the evaluation of system implementation. These shall include, but are not limited to:

a) Project records and implementation reports;

b) Approved engineering plans and specifications;

c) Bills of Materials (BOM) and procurement records;

d) Variation orders and justifications; and

e) Construction, commissioning, and energization reports.

Section 3. Access to Facilities

The MGSP shall grant the ERC inspection team reasonable access to facilities, equipment, and sites for purposes of conducting physical verification, performance assessment, and compliance monitoring.

ARTICLE XII
REPORTORIAL REQUIREMENTS

Section 1. Requirements upon Approval of MSC Application

Upon approval of the MSC application, the MGSP shall submit the following post-approval reports and audit requirements, *to wit*:

a) A certified true copy of its complete Audited Financial Statements (AFS) shall be submitted within one hundred fifty (150) calendar days from the end of its calendar or fiscal year after completing one (1) full year of commercial operations for the validation of actual capital, operating, and maintenance expenditures;

b) Results of the competitive bidding conducted for the approved capital expenditures not later than two (2) months upon completion of the microgrid facilities. The submission shall include all proposals, purchase orders, as-built drawings, and the corresponding BOM, consistent with the requirements under Annex D of these Rules; and

c) A consolidated summary report of the actual costs incurred and the corresponding implementation timelines for the approved capital expenditures shall be submitted together with the documentation required under the preceding item of this Section.

Section 2. Requirements upon Issuance of ATO

Upon approval of the ATO, the MGSP shall comply with the following post-approval reporting and audit requirements, to wit:

a) On or before the 30th day of January of each year, the MGSP shall submit to the ERC an MGSP Management Report which shall contain the following:

   (i) Report on capacity utilization, electricity dispatch/sales volume, maintenance schedules, and unscheduled

downtimes during the period;

(ii) Report on energy revenues during the period, detailing volumes, customer classification, and prices broken down as follows: fuel cost, fixed operating and maintenance expenses, variable operating and maintenance expenses, and capital recovery charge; and

(iii) Information on individual units Rated Capacity, Maximum Load (Pmax), Minimum Stable Loading (Pmin), Ramp Up Rate (MW/min), Ramp Down Rate (MW/min), Maximum Available Output, and Heat Rate (BTU/kWh, kCal/kWh, kJ/kWh), if applicable;

b) The MGSP shall submit to the ERC the updated ATO Form No. 4 (General Plant Description) on or before the 30th day of January of each year;

c) The MGSP shall submit a certified true copy of a complete set of its Audited Financial Statement within one hundred fifty (150) days from the end of its calendar or fiscal year; and

d) The MGSP shall apply for the renewal of its expiring permits indicated in the ATO Checklist, based on the existing guidelines of the agencies concerned. The MGSP shall submit copy/ies of the renewed permits to the ERC within thirty (30) days from receipt from the agencies concerned.

Section 3. Periodic Performance and Compliance Reports

The MGSP shall submit operational performance reports to the ERC in accordance with the frequency, coverage period, and legal bases prescribed under existing ERC regulations. All reports shall be supported by verifiable data and documentation sufficient to demonstrate compliance with applicable technical and service performance standards.

3.1. Semestral Reporting Requirements

All semestral reports shall contain consolidated monthly data for the applicable reporting period. Reports covering January to June shall be submitted not later than the end of July of the same year, while reports covering July to December shall be submitted not later than the end of January of the succeeding year.

The following performance reportorial requirements are as follows:

a) **Power Quality Performance Report** – Voltage test results and related performance data consistent with submission formats prescribed in ERC Resolution No. 11, Series of 2006 or any amendments thereto;

b) **System Reliability Performance Report** – Monthly outage summaries, interruption causes, response time performance, and restoration data, consistent with the submission formats prescribed in ERC Resolution No. 12, Series of 2006, or any amendments thereto; and

c) **System Efficiency Report (System Loss)** – Includes consolidated monthly system loss data and analysis, consistent with the submission formats prescribed in ERC Resolution No. 10, Series of 2018, or any amendments thereto.

3.2. Annual and Other Periodic Reporting Requirements

Annual reports shall cover the immediately preceding calendar year and shall be submitted within the prescribed deadlines. The following performance reportorial requirements are as follows:

a) **Safety Performance Report** – An annual report covering the immediately preceding calendar year shall be submitted not later than the end of January of the following year, pursuant to Section 3.2.3 of the PSGG or any amendments thereto;

b) **Customer-Level Standards Compliance Report** – An annual report on service performance against prescribed customer standards covering the immediately preceding calendar year shall be submitted not later than the end of January of the following year, pursuant to Table 3-1, Section 3.5 of the PDC or any amendments thereto;

c) **Customer and Meter Data Report** – An annual report covering customer and metering data for the immediately preceding year shall be submitted not later than the end of May of the following year, consistent with the submission formats prescribed in Section 10.3 of ERC Resolution No. 12, Series of 2009 or any amendments thereto; and

d) **Two-Year Statistical Sampling and In-Service Meter Testing Plan** – A biennial testing plan covering a two-year period shall be submitted not later than the end of March of the year preceding the test period, consistent with submission formats prescribed in Section 6.2 of ERC Resolution No. 12, Series of 2009 or any amendments thereto.

Section 4. Exemptions. The MGSPs shall be exempt from compliance with the following:

a) The public listing requirement under Section 28 of the EPIRA; and

b) The market share limitation requirement under Section 45 (a) of the EPIRA.

ARTICLE XIII
FINAL PROVISIONS

Section 1. Administrative Sanctions

Violations of these Rules shall be subject to administrative fines and penalties pursuant to Section 24 of the *Microgrid Systems Act* and existing ERC regulations, including ERC Resolution No. 3, Series of 2009, entitled, *"Resolution Amending the Guidelines to Govern the Imposition of Administrative Sanctions in the Form of Fines and Penalties pursuant to Section 46 of Republic Act No. 9136",* and other applicable issuances.

Non-compliance with approved rates, performance standards, reporting obligations, or directives issued by the ERC shall constitute a violation subject to enforcement and corrective actions under the foregoing framework.

Failure of an MGSP or a DU-operated microgrid system to fulfill its obligations under Section 16 of the *Microgrid Systems Act* and these Rules—including ensuring continuous twenty-four (24)-hour electricity service within the awarded service area for the duration of the MSC, adhering to ERC directives, and complying with contractual obligations with the NPC—shall constitute grounds for administrative action.

Upon determination of such non-compliance, the ERC shall issue a *Show Cause Order (SCO)* requiring the concerned MGSP to explain why no administrative sanctions should be imposed. If the failure is determined to be unjustifiable, the ERC may impose appropriate penalties and recommend blacklisting or disqualification from future competitive selection processes conducted by the DOE or NPC.

Section 2. Interpretation

If any provision in these Rules is found to be inconsistent with its Appendices, these Rules shall prevail.

Section 3. Exception Clause

Where good cause appears, the ERC may allow an exception from any provisions of these Rules if such exception is found to be for the interest of the public and is not contrary to law or any other related rules and regulations.

Section 4. Separability Clause

If, for any reason, any provision of these Rules is declared unconstitutional or invalid, the other parts or provisions hereof which are not affected thereby shall continue to be in full force and effect.

Section 5. Transitory Provision

Pursuant to Section 22 of Microgrid Systems Act, benefits or incentives extended to Qualified Third Parties (QTPs) under existing laws and regulations prior to its effectivity shall remain in full force and effect, unless otherwise amended or repealed. Applications filed under ERC Resolution No. 22, Series of 2006, as amended, shall be processed under the old rules, while applications for approval of rates and issuance of ATO filed after the effectivity of Microgrid Systems Act shall be processed under the new framework prescribed in these Rules.

Section 6. Repealing Clause

Any other rules or regulations inconsistent with the provisions of these Rules are hereby repealed and modified accordingly.

Section 7. Effectivity

These Rules shall take effect fifteen (15) calendar days after publication in a general circulation newspaper or in the Official Gazette.

MICROGRID TECHNICAL AND SERVICE PERFORMANCE STANDARDS

This document defines technical and performance standards for Microgrid Systems, covering planning, design, operation, protection, and cybersecurity to ensure safe, reliable, and efficient energy delivery in line with international best practices.

Annex A of Resolution No. __, Series of 2026, or the Microgrid Rules

TABLE OF CONTENTS

MICROGRID SYSTEM TECHNICAL AND SERVICE PERFORMANCE STANDARDS

1. Overview

1.1. Scope

These standards focus on factors that shall be considered for planning, designing, and operating isolated microgrid and grid-tied microgrid systems operating in island mode.

1.2. Limitations

The criteria and requirements in this document shall solely apply to isolated microgrid and grid-tied microgrid systems operating in island mode with an aggregate capacity of distributed energy resource technologies of 10 MVA or less.

2. Microgrid System in Unserved and Underserved Areas

In general, the microgrid system has two classifications: Isolated and Grid-tied microgrid systems operating in island mode, detailed of which are provided hereunder as follows:

2.1. Isolated Microgrid System

This microgrid system serves an unserved area, has no electrical connection to a distribution or transmission system.

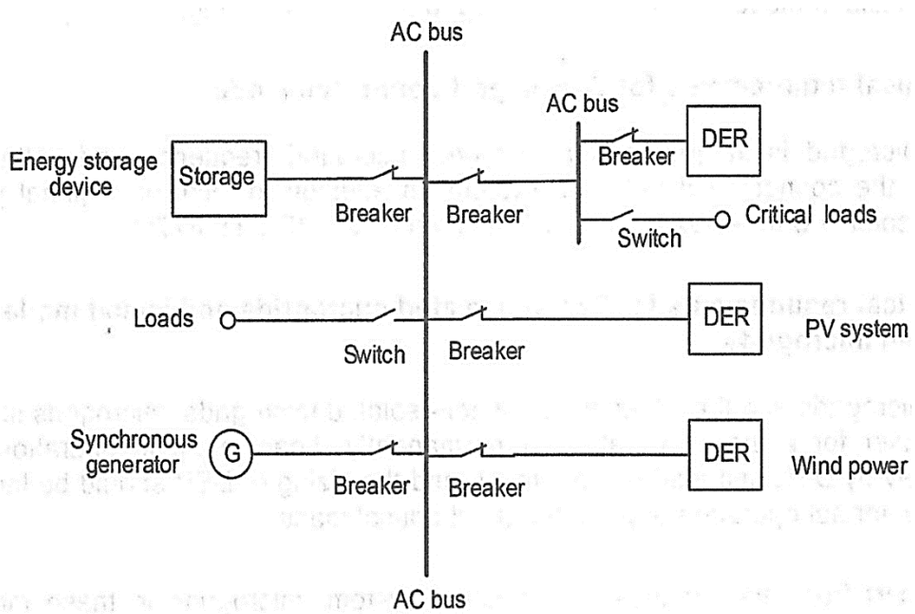


Figure 1: Typical Topology for an Isolated Microgrid System

2.2. Grid-tied Microgrid System Operating in Island Mode

This microgrid system serves underserved areas that are already connected to the distribution system either in medium or low voltage through the point of connection (POC). It is a standalone system where the distribution utility agreed that a portion of its distribution system shall be maintained, supplying, and delivering electric power to connected end-users by MGSP. Similar to that of an isolated microgrid but with POC.

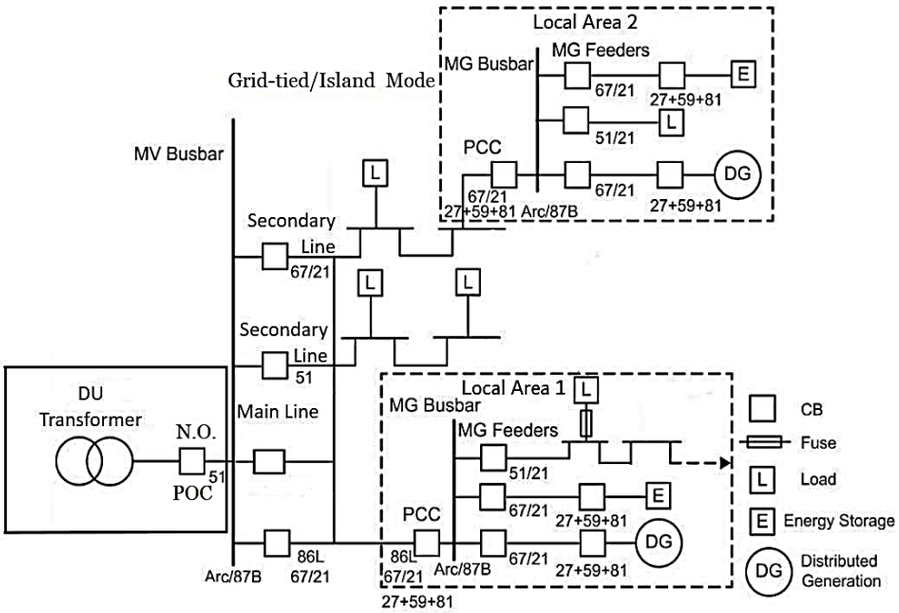


Figure 2: Grid-tied Microgrid Operating in Island Mode

3. Forecasting

3.1. Generation Forecast

3.1.1. General

Forecasting of the DPG generation is the basis of microgrid planning and operation. With historical meteorological data and numerical weather prediction as input, generation forecast models can yield generation forecasts in different timescale.

Information to be collected shall include, but not limited to the following:

(a) Scope of the generator installation region, installed capacity, generator type, inverter type;

(b) Size and number of generators;

(c) Characteristics curve of generators, and among others; and

(d) Longitude, latitude, altitude and installation location of the meteorological station.

Historical monitoring information to be collected shall include, but not limited to the following:

(a) Horizontal radiation, direct radiation, diffused radiation, ambient temperature, relative humidity, barometric pressure, wind speed and direction; and

(b) Output power of generators, working conditions of the inverters, and the record of generator faults.

Weather prediction data to be collected include the following:

(a) Direct horizontal solar radiation, diffuse horizontal solar radiation, direct solar radiation perpendicular to the incident light; and

(b) Wind velocity, wind direction, temperature, relative humidity, air pressure, cloud thickness, and precipitation.

3.1.2. Technical Requirements

More than one generation forecasting schemes shall be put forward. The scheme with the best fit shall be selected to forecast power generation.

In data processing, elimination of inconsistent data shall be allowed. Forecasting error of the forecast curve shall be estimated, and an error range for a given confidence level shall be provided.

The MGSP shall ensure RE generation maintains a minimum share in accordance with the applicable DOE policy or advisory throughout the project term in each covered area.

(1) **Data Processing**

(a) **Data Feasibility Test**

Data feasibility test shall include the following:

(i) Test of power generation forecast and measurement systems with respective confidence level – the confidence level may be manually set;

(ii) Test of change rate of power generation, the limit of which may be reset;

(iii) Test of mean and standard deviation of power; and

(iv) Correlation test between previous forecasted data and real power output.

(b) **Missing or Bad Data**

Consideration shall be given to missing or bad data. For example, missing or bad data shall be processed in the following ways:

(i) Replaced by the latest power measurement data;

(ii) Replaced by the installed capacity of the generating unit;

(iii) Data less than zero replaced by zero; and

(iv) Missing or bad data can be reset manually; after correction, these data shall be marked.

3.2. Load Forecast

3.2.1. General

Load forecast, including energy demand forecast and power demand forecast, lays the foundation for microgrid planning and energy scheduling activities, such as generation scheduling, fuel purchasing scheduling, maintenance scheduling, and investment scheduling.

Load forecast is based on the assessment of the local load data, history of infrastructure construction and industry development, etc. In addition, social, environmental, and economic factors related with load variation shall be investigated.

The required data for load forecast are the following:

a) Demographical and geographical data;

b) Economic, social and meteorological data;

c) Information on electric power and energy balancing;

d) Peak load, typical daily load profile;

e) Historical energy consumption, load, capacity of

contract by large customers;

f) Development projects underway in the area;

g) Potential load shedding capacity; and

h) Analysis of changes in load characteristics and the influence of DPG integration on load forecast.

The expected load growth shall be considered and evaluated in the system planning annually.

3.2.2. Load Analysis

For a non-isolated microgrid in grid-connected mode, if the generation within the microgrid is lower than demand, electricity can be purchased from the distribution system and transmitted through the POC; for a non-isolated microgrid in island mode, and for an isolated microgrid, the demand-supply balance shall be achieved by DPG output, load priority, controllable load as well as demand response.

It will be critical to understand the priority of various loads and to distinguish critical load and load that can be curtailed or shed. One common response in times of constrained supply is to shed low-priority loads to maintain supply to the critical load. Low-priority load can also participate in demand response where a facility owner is paid to shed loads at times of peak system demand. Demand side management can participate in the balance of energy and act as spinning reserve. Such service shall be designed to be fully responsive and non-disruptive. Plug-in electric vehicles and thermostatically controlled loads, such as refrigerators, air conditioners, and electric water heaters, are examples of controllable loads where energy balancing does not interfere much with their end-use functions.

3.2.3. Classification of Load Forecast

Load forecast is divided into long term, medium term and short term forecast.

Note: Long term forecast starts from 1 year and above. Medium term forecast is from months to 1 year. Short term forecast covers hourly, daily, weekly forecast. The exact definition of different timescale is up to the forecast service providers, microgrid planners and operators to decide.

Long/medium term forecast is primarily intended for capacity expansion, capital investment, revenue analysis and corporate budgeting. Long-term energy sales, total energy

and peak load demand forecast are several of the critical items for microgrid planners to make effective resource planning decisions.

The basic quantity of interest in short term load forecast (STLF) is, typically, the hourly total system load. The primary application of the STLF is to assist the scheduling functions to determine the most economical commitment of DPG consistently with reliability requirements, operational constraints and physical, environmental, and equipment limitations. In addition to the forecast of the hourly values of the system load, STLF is also concerned with the forecasting of the following:

a) Daily peak system load;
b) Values of system load at certain time of the day;
c) Hourly or half-hourly values of system load; and
d) Daily and weekly system energy.

If historical measurement data are not available, load forecast can be used instead.

3.2.4. Technical Requirements

In order to improve forecasting precision, the forecasting results can be cross checked with the results in areas domestic and abroad with similar size and features. Besides, the planning of a microgrid shall leave enough margin for future expansion.

It is recommended that load forecast shall be put forward using two or more methods and cross checked with each other. After forecasts for high, medium and low load schemes are carried out, a recommended forecast result shall be given for microgrid planning.

Inconsistent data in historical load power and energy records shall be discarded or replaced in a logical manner.

For load forecast, the energy demand shall be evaluated first and then power demand. Usually, the energy demand forecast for one year is studied. After that, the expected maximum power demand is calculated based on the utilization hours per year. It is also possible to estimate loads of different times according to typical load profiles.

4. Microgrid Primary System Design

4.1. Microgrid Structure

The following principles design the microgrid structure:

4.1.1 The microgrid structure and electrical connection scheme of the microgrid shall be based on the power generation resources, load areas, and shall provide convenience to the resources and user connection; for users or users with high reliability requirements, it is appropriate to design according to the loop structure.

4.1.2 The main wiring of the microgrid shall select the suitable form of main wiring after comprehensively considering the need for reliable power supply, flexible operation, convenient control and maintenance, economic investment, and expedient transition or extension.

4.1.3 Within a microgrid, it is appropriate to connect the distributed power sources, energy storage facilities, and loads to a centralized AC busbar. The main electric connections shall be determined according to their planned capacities, line characteristics, total number of transformer connection units, device characteristics, short-circuit levels, and operational requirements. Appropriate configurations such as unit connection, single-bus connection, sectionalized single-bus connection, double-bus connection, or ring-bus connection may be adopted as required by reliability and operational considerations. Sufficient spare bays and adequate physical space shall be reserved to accommodate future expansion, additional feeders, and upgrading of protection and control equipment.

4.2. Grounding

Microgrid grounding is composed of functional grounding, protective grounding, and lightning protection grounding. The general requirements for grounding are as follows:

Microgrid grounding design shall comply with the relevant requirements in standards such as Philippine Electrical Code (PEC).

4.2.1. Lightning Protection Grounding

Requirements and recommended practices regarding lighting protection grounding are provided in the following list:

a) The grounding of buildings of distributed energy resources, energy storage, switching, and distribution substations shall meet the grounding requirements in PEC based on the load characteristics;

b) Lightning rods, lightning strips, and lightning protection networks can be respectively used according to the spots to prevent direct lightning strikes. In addition, an evenly distributed downed conductor shall be adopted to lead lightning currents to the ground. Grounding resistance is recommended to be less than 10Ω;

c) All metals, including devices, cabinet enclosures, and metal pipelines, must be an equipotential connection with the combined grounding electrodes to avoid lightning strikes. All of them shall be separately connected to the ground; and

d) Lightning protection devices shall be added to the system at each level for effective protection. DC and AC lightning arresters shall be adopted correspondingly.

4.2.2. Equipment Safety Grounding

The major objective of equipment safety grounding is to prevent hazardous potential from developing between adjacent grounded equipment in order to protect personnel and equipment against hazards posed by electrical power transients and faults. A desired objective of the equipment safety ground is to provide a low-impedance path for ac system fault currents.

4.2.3. Functional Grounding

If the microgrid is a neutral grounded system, ground resistance is recommended to be less than 4Ω and is grounded at both ends of the network and regularly every 200 meters.

4.2.4. Supplementary Description of Grounding

If one set of grounding devices is shared for working grounding, lightning protection grounding, and protective grounding, the ground resistance is determined as the minimum value required.

4.3. Power Flow Calculation

The power flow calculation of the microgrid shall consider the following:

a) The power flow calculation of the microgrid for the planning/design target year needs to take different operating conditions into consideration. Calculations shall be undertaken for the microgrid's typical maximum and minimum loading conditions, for the microgrid under maintenance or fault, and for the periods when DPGs provide maximum and minimum generation; and

b) The boundary for the power flow calculation can be taken by combining different typical generation and loading conditions. This includes the maximum generation and minimum loading. The minimum generation condition shall consider the extreme condition when all the intermittent generation resources are shut down, and the energy storage is fully discharged. For the microgrid at 400V level, the power flow can be simplified by only undertaking calculations for typical operating conditions. The over-limit of branch power flow or nodal voltage shall be avoided.

4.4. Voltage Level Selection

Voltage levels of microgrids shall be comprehensively determined according to the internal energy resource, load size, planned area, and cost of the microgrid.

Table 1 shows the highest voltage levels within the microgrid, which is recommended according to the installed capacity of distributed energy resources.

Table 1. Recommended Voltage Levels and Installed Capacity of Distributed Energy Resources for Isolated or Grid-Tied Microgrid System Operating in Island Mode

Voltage levels in an isolated microgrid (kV)	Installed capacity of aggregated renewable energy resources (MW)
6.9/10/11/13.2/13.8	≤ 10
0.4/0.48/0.69	≤ 2

4.5. Short-Circuit Calculation

Short-circuit calculations shall be conducted as part of the design and planning of a microgrid system to ensure system reliability, equipment integrity, and protection coordination under both present and forecast operating conditions.

a) For Grid-tied Microgrid operating in island mode, short-circuit calculation of the microgrid shall aim at point of connection, adjacent node, and internal node under different operation in current and prospective plan years. The fault types include three-phase fault and two-phase fault, single-phase grounding fault and high-impedance grounding fault, which all shall be calculated.

b) For isolated microgrids, short-circuit calculation of the microgrid shall take into consideration the external fault characteristics of different power sources, energy storage devices, ac devices, and short-circuit capacity of microgrid system.

c) The selection of electrical devices shall meet the requirements of short-circuit current calculation results.

4.6. Selection of Electrical Equipment

The electrical equipment in the microgrid system shall be selected by the following principles:

a) The performance of electrical equipment in the microgrid shall meet the requirements of various operation modes of distributed energy resources, switch stations, and distribution substations. The selection of distribution electrical equipment shall comply with the relevant current international standards. Main devices shall have product certification from certification authorities. Maintenance-free equipment with high reliability shall be adopted according to the practical situation;

b) For microgrids with harsh environments in coastal, pollution, heavy wind, or dust areas, dust / corrosion-prevented devices shall be adopted;

c) Transformers can be selected by ways of usage, dielectric, winding mode, phase number, voltage control method, and cooling method according to the installation position. For transformers with significant daily load change, it is appropriate to give full play to the permissive overload ability of the transformers. The transformer with an on-load tap changer and adjustable capacity may be selected based on its loading level to reduce operating losses and enhance energy efficiency;

d) For circuit breakers of 35 kV or below, it is advisable to adopt metal-enclosed switchgear; and

e) According to the specific requirements of the microgrid, power or energy type or combined storage is applicable.

5. Microgrid Protection Configuration

The protection of the microgrid shall be reliable, selective, sensitive, and rapid to clear a system fault. The protection scheme depends on the microgrid's size, voltage level, grounding mode, and fault current level. Figure 3 illustrates the requirements and recommended practices of a typical design.

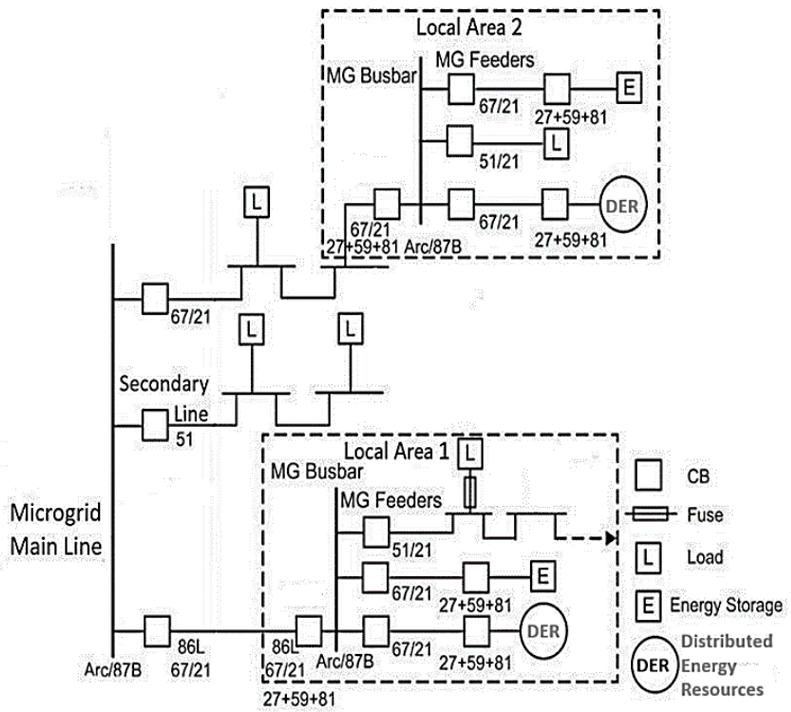


Figure 3: Schematic Diagram of the Microgrid System Protection

The following are ANSI Standard Device Numbers:

- 21: Distance protection
- 27: Under voltage protection
- 51: Non-directional overcurrent protection
- 59: Over voltage protection
- 67: Directional overcurrent protection
- 81: Frequency protection
- 86L Lockout protection
- 87L Line current differential protection
- 87b Busbar current differential protection
- Arc: Arc flash protection

Note: The DPG shown in Figure 3 is a diesel generator connected to the microgrid without a step-up transformer.

5.1. MV Busbar Protection in the Microgrid

The overcurrent protection at the transformer LV side can be applied as simplified busbar protection with the reverse interlocking from the start signals of the protection for the outgoing feeders. When fast tripping for busbar faults is required, specific busbar protection,

such as arc protection or even busbar current differential protection, can be deployed.

5.2. MV Feeder Protection in the Microgrid

The level of available fault current in isolated and grid-tied microgrid operating in island mode is critical to the selection of the protection scheme. If the fault current in the isolated and island mode can ensure the selectivity of the overcurrent protection, the MV feeders without the power source (DPG, ES) connection in the microgrid can be protected by conventional overcurrent protection, and the MV feeders connected with the power source can be protected by directional overcurrent protection with the direction from the busbar to the power source. If the fault current in the isolated and island mode is too small to ensure the sensitivity of the overcurrent protection, distance protection or voltage (under-voltage or negative sequence over voltage) restrained overcurrent protection can be applied for the MV feeders in the microgrid.

5.3. Power Source Protection in the Microgrid

Voltage protection and frequency protection can be applied. According to the type of power source in the microgrid, other protection can be applied if necessary. For example, current differential protection is recommended for a rotating machine-coupled DPG unit.

5.4. Distribution Transformer Protection in the Microgrid

For the distribution transformer in the microgrid, the fuse protector can be applied for the protection of the distribution transformer when the fault current in the isolated and grid-tied microgrid operating in island mode is sufficient to rupture the fuse. When the circuit breaker is installed on the HV side of the transformer, the overcurrent protection or the voltage-restrained overcurrent protection can be applied as protection for the distribution transformer.

6. Monitoring, Control, and Energy Management

Microgrid systems shall have a monitoring, control system, and energy management to ensure the stability and security of microgrids, collect and monitor the information about the distributed generators, storage units, and the grid, display them in the graphic interface, and store and update the related data in a timely manner. Energy management ensures the economic operation of power generation, distribution, and consumer equipment in the microgrid.

6.1. Microgrid Monitoring and Control

A microgrid monitoring system can consist of a master station of the microgrid, a remote terminal unit of the microgrid, and a communication system. It determines the monitoring functions and configurations according to the DPGs, storages, load capacities, the corresponding locations, and the voltage level that accesses the grid.

6.2. Dynamic Stability Analysis

The MGSP shall ensure that the microgrid system is designed and operated to maintain stability under both grid-tied and island modes. A dynamic stability analysis, consistent with best practices such as those recommended by the National Renewable Energy Laboratory (NREL), shall be conducted. This shall include, but not limited to, frequency and voltage ride-through capabilities and the ability of DPGs to support black start and system restoration.

6.3. Energy Management System (EMS)

The main functions of EMS in microgrid are:

a) Forecast of the power generation;
b) Distributed energy resources management;
c) Load management;
d) Electricity generation plan;
e) Voltage and reactive power management;
f) Statistical analysis and evaluation; and
g) Web function.

7. Safety Standards

7.1. The safety standards for the isolated and grid-tied microgrid operating in island mode, unless otherwise specified and mutually agreed upon by all parties, shall be consistent with the provisions specified in the Philippine Distribution Code (PDC), or any amendments thereto.

7.2. The MGSP shall submit to the ERC copies of records and reports required by OSHS as amended.

8. Power Quality Requirements

8.1. Power quality shall be defined as the quality of the voltage, including its Frequency and the resulting current that are measured in the Distribution System during normal conditions.

8.2. A Power Quality problem exists when at least one of the following conditions is present and significantly affects the normal operation of the System:

a) The system Frequency has deviated from the nominal value of 60 Hz;

b) Voltage magnitudes are outside their allowable range of variation;

c) Harmonic frequencies are present in the System;

d) There is imbalance in the magnitude of the phase Voltages;

e) The phase displacement between the Voltages is not equal to 120 degrees;

f) Voltage fluctuations cause Flicker that is outside the allowable Flicker Severity limits; or

g) High-frequency Over-voltages is present in the Distribution System.

Table 2. Power Quality Variations

Base Voltage	Under Voltage Threshold	Over Voltage Threshold	Base Frequency	Under Frequency Threshold	Over Frequency Threshold
230 V	-10%	+10%	60 Hz	-0.8 Hz	+0.8 Hz

8.3. The nominal fundamental frequency shall be 60 Hz and shall be maintained within the limits of 59.2 Hz and 60.8 Hz during normal conditions.

8.4. A Short Duration Voltage Variation shall be defined as a variation of the RMS value of the voltage from nominal voltage for a time greater than one-half cycle of the power frequency but not exceeding one minute. A Short Duration Voltage Variation is a Voltage Swell if the RMS value of the voltage increases to between 110 percent and 180 percent of the nominal value. A Short Duration Voltage Variation is a Voltage Sag (or Voltage Dip) if the RMS value of the voltage decreases to between 10 percent and 90 percent of the nominal value.

8.5. A Long Duration Voltage Variation shall be defined as a variation of the RMS value of the voltage from nominal voltage for a time greater than one minute. A Long Duration Voltage Variation is an Undervoltage if the RMS value of the voltage is less than or equal to 90 percent of the nominal voltage. A Long Duration

Voltage Variation is an Overvoltage if the RMS value of the voltage is greater than or equal to 110 percent of the nominal value.

8.6. The Total Harmonic Distortion (THD) of the supply voltage measured at the Point of Common Coupling (PCC) shall not exceed 5%, in accordance with IEC 61000 or its equivalent standard. Where necessary, the MGSP shall implement appropriate harmonic mitigation measures, including but not limited to filtering, inverter control strategies, and network optimization, to maintain compliance. THD shall be periodically monitored and reported as part of the MGSP's operational performance obligations.

8.7. The MGSP shall ensure that no Undervoltage or Overvoltage is present at the Connection Point of any End-User during normal operating conditions. The ERC may require the MGSP to comply with a more stringent Voltage Variation limits, which shall be determined from technical and economic studies.

8.8. The maximum Voltage Unbalance at the Connection Point of any MGSP shall not exceed 2.5 percent during normal operation conditions.

8.9. The MGSP shall design and operate its System in maintaining the fundamental Frequency within the limits as provided in Table 2.

8.10. The DPG shall be able to inject and absorb reactive power as a function of the active power output levels. These active power levels vary from 0.85 leading to 0.85 lagging.

8.11. Generating plants shall not inject direct current to the network.

8.12. The MGSP shall assess the RMS voltage variation in the Distribution System at two measuring points, namely those electrically nearest and farthest from the source (substation secondary voltage bus) and shall also conduct voltage tests at all measuring points in each feeder of the Distribution System. The results shall be submitted to the ERC on or before the end of every year. For subsequent years, the MGSP shall achieve performance targets that represent continuous improvement over the preceding year until such time that no under-voltage or over-voltage is present at any measuring point of the Distribution System.

9. Reliability Requirements

9.1. Each MGSPs shall comply with the following interim standards below with respect to its System Reliability Standards and

System Efficiency Standards for Distribution Utilities provided in Section 3.3 and Section 3.4, respectively of the PDC and any amendments thereto, calculated over the period of one (1) year.

Table 3. Minimum Reliability Requirement

Category	Standards	Threshold Levels
System Reliability	System Average Interruption Frequency Index (SAIFI)	20 occurrences/customer
	System Average Interruption Duration Index (SAIDI)	2700 minutes/ year

9.2. During the initial phase of the implementation of these rules, the compliance to the standards above by the MGSPs shall be relaxed for their first three (3) months of operation as an MGSP. The MGSPs' compliance shall be monitored thereafter, and corresponding rewards/sanctions shall be imposed to the concerned MGSP.

9.3. The Forced Outage Rate (FOR) and Probability of Failure (POF) of generating units must have similar performance values to best practices in the industry (such as 5% to 10% but shall be specified by the project).

9.4. Annual report of FOR and POF shall be provided to the ERC.

9.5. For specific users such as local hospitals, there shall be a higher reliability of supply.

9.6. An annual report shall be submitted to ERC to illustrate the performance of the equipment in the microgrid network. Such as but not limited to, transformers, breakers, and cables.

9.7. The microgrid network shall be designed to ensure high level of reliability to its end users for the purpose of example: the microgrid may be designed through two or more areas of supply that ensures redundancy and higher continuity of supply.

9.8. A technical and economic analysis shall determine equipment redundancy and support the overall level of reliability.

10. Power Energy Metering

10.1. Metering Requirements

10.1.1. Metering Equipment

The metering equipment at the Connection Point shall consist of:

a) Revenue Meters;

b) Instrument Transformers;

c) All interconnecting cables, wires, associated devices, and protection, i.e., test block or switch, loading resistors, meter cubicle, security seals, etc.;

d) Mounting structures, metering cabinet and/or ground wires, as may be applicable; and

e) Optional: Integrating pulse recorder, time source, and backup battery.

10.1.2. Metering Point Location

a) The Metering Point shall be located at the Connection Point, unless the installation of the Metering Requirement is physically difficult, uneconomical or not practical.

b) If the Metering Point cannot be in the Connection Point for justifiable reasons, Meters may be located in other locations in accordance with relevant ERC issuances and guidelines.

10.1.3. Metering Responsibility

The Metering Service Provider shall:

a) Be responsible for the design, installation, operation and maintenance of the metering System and the Component parts to ensure the integrity and accuracy of the metering System;

b) Ensure that the Metering Equipment is provided, installed, operated, maintained and tested in accordance with this Section;

c) Be responsible for providing and installing all Metering Equipment at a location specified by the Metering Service Provider;

d) Ensure that the Metering Equipment operates within the acceptable standard at all times and meets all technical requirements and standards set forth in this Section;

e) Read, retrieve, validate and deliver the Meter Data for billing and/or settlement, as may be required;

f) Maintain records of tests and readings of the Metering Equipment; and

g) Make arrangements to seal or secure all Metering

Equipment, data collection Equipment and associated communication Equipment.

The Metering Service Provider and End-User shall also ensure that the requirements of this Chapter regarding access to Metering Equipment by other authorized parties are complied with.

10.1.4. Requirements for Revenue Meters

Technical requirements for distribution revenue Meters shall conform to the standards provided under Table 4.

Table 4. Minimum Technical Requirements for Revenue Meters

Service Type	Self-Contained Meter	Transformer Rated Meter
1-phase 2-wire	Form 1S and 1A	Form 3S/4S and 3A/4A
1-phase 3-wire	Form 2S and 2A	Form 4S and 4A
2-phase 3-wire	Form 12S/25S and 12A/25A	Form 5S/6S/9S/36S and 5A/6A/9A/36A
3-phase 3-wire	Form 12S/13S/25S and 12A/13A/25A	Form 5S/6S/9S/36S and 5A/6A/9A/36A
3-phase 4-wire, Wye	Form 14S/16S and 14A/16A	Form 6S/9S and 6A/9A
3-phase 4-wire, Delta	Form 15S/17S and 15A/17A	Form 8S and 8A

10.2. Meter Calibration and Testing

10.2.1. No Meter shall be installed or placed in service unless it has been tested, certified and sealed by the ERC.

10.2.2. Test and calibration of Meters shall be conducted by the ERC (or its authorized representative) in the presence of the authorized representatives of the Microgrid Service Provider in accordance with the ERC Rules on the Testing and Maintenance of Meters and Instrument Transformers and the Conduct of In-Service Meter Testing by Distribution Utilities and Microgrid System Providers.

10.2.3. If both parties cannot agree on the accuracy of the Meter, only the ERC shall act as arbiter.

10.3. Meter Reading and Metering Data

Meter reading and recording shall be done by the authorized representative of the Microgrid Service Provider and authorized representative of National Power Corporation.

10.4. Meter Data Collection and Delivery

Recorder meter data consisting of billing parameters shall be collected/retrieved by the Meter Service Provider from each meter by processes that assure the integrity and security of the retrieved Meter data. The retrieved meter data shall be delivered by the Meter Service Provider to:

a) Meter Service Provider's billing system;

b) Load customers; and

c) Other authorized Meter data users in accordance with applicable rules and agreements.

10.5. Storage and Availability of Metering Data

10.5.1. The Microgrid Service Provider shall maintain both the "as metered" and the "as corrected" meter data in separate, controlled data storage systems for a minimum duration of 5 years, to be made available to authorized parties for the purpose of serving as reference in settling disputes and other authorized purposes. No alteration to the Metering Data stored in the database shall be permitted.

10.5.2. Records that document meter data corrections shall likewise be maintained by the Microgrid Service Provider and entities that are End-Users or are affected by the meter data corrections.

10.5.3. MGSP shall include in its Annual Report the monthly data of the following:

a) Total number of new connections per month;

b) Total number of meter replacements;

c) Total number of new meters acquired per month; and

d) Total number of meters repaired per month. To be indicated is the name of the Meter Shop where the meters were repaired.

10.6. Persons or Entities Authorized to Receive Metering Data

Metering data shall be treated as confidential information and can only be made available to authorized parties, as follows:

a) The Microgrid Service Provider, in accordance with its billing and settlement requirements;

b) The End-User of the Microgrid Service Provider, for Metering Points of its Connection Points to the Microgrid System;

c) The ERC, in accordance with its mandates; and

d) Other parties upon request and approval of the Microgrid Service Provider.

10.7. Security of Metering Facilities, Equipment and Data

10.7.1. The metering facility shall be secured from unauthorized physical access and activities that can lead to inaccurate registration or recording of the metered electricity.

10.7.2. The metering facility shall be provided with metal security enclosure, or other applicable material, as well as locks (when applicable) to the Meter security enclosures, seals at all access points to the Metering Equipment terminals and interconnecting electrical cables. The Meter Service Provider shall provide the security locks (when applicable) and/or seals and periodically inspect the integrity of the same.

10.7.3. The End-User of the Microgrid Service Provider shall properly secure the metering facilities that are located within its premises.

10.7.4. Any observed breach of security of the metering facility, such as unauthorized opening of the padlocks and seals shall be immediately reported to the Microgrid Service Provider, and the End-User of the Meter Service Provider by the party that discovers the security breach.

10.7.5. The Microgrid Service Provider shall investigate any reported breach of the security to determine its effect on the Metering Equipment and the metered quantities of energy and demand; and report its findings to its Management and the Microgrid Service Provider, the concerned End-User of Microgrid Service Provider, and if required, the ERC.

10.7.6. The Microgrid Service Provider shall calculate and submit a recommended correction or adjustment to the metered quantities that are found to be in error due to the breach of security. In cases of disagreement, the ERC shall resolve the same in accordance with existing laws, rules and regulations.

10.7.7. The Microgrid Service Provider and all other Parties that are provided with revenue Metering Data are required to maintain the confidentiality of such Metering Data.

11. System Efficiency Standards

System efficiency shall be evaluated based on the level of system loss. Each Microgrid System shall comply with the allowable Distribution System Loss (DSL) threshold or cap as prescribed under ERC Resolution No. 10, Series of 2018 or any amendments thereto. Furthermore, the DSL incurred by the MGSP within its service area shall not exceed the corresponding threshold or cap applicable to the DU that owns the franchise area.

12. Customer Service Standards for MGSP

The Customer Service Standards of the MGSP shall be aligned with and shall strictly comply with the Customer Service Standards prescribed under the ~~Philippine Distribution Code (~~PDC or any amendments thereto. Such compliance shall cover, among others, service connection and disconnection procedures, billing and collection practices, complaint handling and resolution, service reliability and restoration timelines, and other consumer-related obligations to ensure that end-users within the microgrid service area are afforded the same level of protection and quality of service as those served by Distribution Utilities.

13. Microgrid System Operation

13.1. Grid-tied Microgrid Operating in Island Mode

13.1.1. Voltage Response Characteristics

The DPG shall respond accordingly when the voltage of the microgrid violated the operating limits defined by local requirements.

The following important issues shall be considered in grid-tied operating in island mode:

a) Proper operation of auxiliary equipment, including capacitor banks, voltage regulators, reactors, protection equipment, capacity, and configuration of transformers;

b) The characteristics of loads in steady state;

c) The abnormal voltage withstanding capability;

d) The characteristics of the distribution networks and microgrids, such as the earthing scheme, the short-circuit impedance of the equivalent source, the voltage regulators, configuration of the protection system, and automation scheme;

e) The measurement, information exchange, voltage control systems, and their requirements; and

f) The permissible dynamic voltage stability limit and the reactive power capacity reserved for the future.

13.1.2. Frequency Response Characteristics

The sizing of DPG shall be large enough to ensure the normal operation of predetermined critical load.

There shall be at least one (or one group of) controllable DPG to provide frequency reference.

The grid-tied operating in island mode needs to meet the following objectives:

a) Active power balance between der output and load;

b) Frequency measurement and regulation; and

c) The ability to maintain transient stability when severe load swing, der outage or other internal faults occur.

13.2. Isolated Microgrid

13.2.1. Structure of the Isolated Microgrids

The isolated microgrid only contains DPG, loads, and other control and monitoring devices. It has no connection with a larger utility grid. The structure of the isolated microgrid shall meet the following objectives:

a) Ensure the safe, secure and steady operation of the system;

b) Provide stable power supply to critical loads, if any; and

c) Improve the economy of the system, if possible.

13.2.2. Voltage Response Characteristics

When the voltage of the isolated microgrid is outside the normal range, the DPG shall respond timely to ensure the reliability of the power supply. The DPG shall be designed to withstand abnormal voltage for certain durations. In this situation, the protecting devices shall not disconnect the DPG from the microgrid, unless the voltage deviation exceeds the given range. The Energy Storage System (ESS) may also provide sufficient reactive power timely to reduce the voltage deviation.

13.2.3. Frequency Response Characteristics

The frequency response characteristics of DPG are especially significant for the isolated microgrid. There shall be at least one controllable DPG to provide frequency support. When the frequency is outside the normal range, the DPG shall respond accordingly to ensure the power quality and reliability of power supply. The ESS may also provide sufficient active power timely to reduce the frequency deviation.

14. Maintenance and Test of Microgrids

14.1. General

Microgrid operation and maintenance staff shall make maintenance and test plans both for isolated and grid-tied microgrid operating in island mode.

14.2. Maintenance

The requirements for maintenance are as follows:

a) Microgrid operation and management department shall make the maintenance plan;

b) The personnel of operation and maintenance in the microgrid shall be professional staff; and

c) The operators of the microgrid shall regularly supply the operation information for the maintenance plan: the status of the protection devices, grounding equipment, other security equipment and all the DPG equipment. The microgrid shall have a specific maintenance cycle, and all the information shall be recorded.

14.3. Test Requirements

All equipment in the microgrid shall meet the test requirements specified below:

a) Implementation of test procedures shall be conducted in accordance with appropriate safety procedures, sequences and precautions; and

b) The test environment shall be within the qualified manufacturer's specified environmental operating conditions.

15. Energy Storage System (ESS)

15.1. Requirements for ESS in Isolated Microgrid or Grid-tied Operating in Island Mode

a) The black start may or may not be necessary, but the ESS plays a major role for the black start. Among the energy storage converters, the one with the largest capacity shall adopt the control mode of voltage-frequency, to establish and maintain the system voltage and frequency, if there is no other major stable DPG such as microturbines or diesel generators.

b) When the output power of the DPG in the system cannot meet the load demand, the ESS shall start the power compensation working as generation. When the output power of the DPG in the system exceeds the load demand, the redundant power shall be absorbed by the ESS working as load.

15.2. ESS Management

The ESS management shall:

a) Detect the working state of each element of the ESS dynamically, and the working state of the overall ESS;

b) Estimate the output capacity of each element among the ESS and balance energy among ESS; the state of charge for each element of ESS shall be given, and the overall state of charge shall be given as well;

c) Prevent the ESS from overcharging and over discharging;

d) Increase the security and reliability of the ESS;

e) Extend the service life of the ESS; and

f) Raise the utilization efficiency of the ESS.

16. Fixed Asset Boundary Document Requirements

16.1. Fixed Asset Boundary Document

16.1.1. The Fixed Asset Boundary Documents for any Connection Point shall provide the information and specify the operational responsibilities of the MGSP and the end-user for the following:

a) High Voltage (HV) equipment;

b) Medium Voltage (MV) equipment; and

c) Communications and Metering Equipment.

16.1.2. For the Fixed Asset Boundary Document referred to in item (a) above, the management unit responsible shall be shown, in addition to the MGSP or the end-user. In the case of Fixed Asset Boundary Documents referred to in items (b) and (c) above, except for protection equipment and inter-trip equipment operation, it is sufficient to indicate the responsible end-user or the MGSP.

16.1.3. The Fixed Asset Boundary Document shall show precisely the Connection Point and shall specify the following:

a) Equipment and their ownership;

b) Accountable Persons;

c) Safety Rules and Procedures, including Local Safety Instructions and the Safety Coordinator(s) or any other persons responsible for safety;

d) Operational procedures and the party responsible for operation and control;

e) Maintenance requirements and the party responsible for undertaking maintenance; and

f) Any agreement pertaining to emergency conditions.

16.1.4. The Fixed Asset Boundary Documents shall be available at all times for the use of the operations personnel of the MGSP and the end-user.

16.2. Accountable Persons

16.2.1. Prior to the Completion Date specified in the Connection Agreement or Amended Connection Agreement, the end-

user shall submit to the MGSP a list of Accountable Persons who are duly authorized to sign the Fixed Asset Boundary Documents on behalf of the Small Grid User.

16.2.2. Prior to the Completion Date specified in the Connection Agreement or Amended Connection Agreement, the MGSP shall provide the end-user the name of the Accountable Person who shall sign the Fixed Asset Boundary Documents on behalf of the MGSP.

16.2.3. Any change to the list of Accountable Persons shall be communicated to the other party at least six (6) weeks before the change becomes effective. If the change was not anticipated, it must be communicated as soon as possible to the other party, with an explanation why the change had to be made.

16.2.4. Unless specified otherwise in the Connection Agreement or the Amended Connection Agreement, the construction, Test and Commissioning, control, operation and maintenance of equipment, accountability, and responsibility shall follow ownership.

16.3. Preparation of Fixed Asset Boundary Document

16.3.1. The MGSP shall establish the procedure and forms required for the preparation of the Fixed Asset Boundary Documents.

16.3.2. The end-user shall provide the information that will enable the MGSP to prepare the Fixed Asset Boundary Document in accordance with the schedule specified in the Connection Agreement or Amended Connection Agreement.

16.3.3. The MGSP shall prepare the Fixed Asset Boundary Documents for the Connection Point at least two (2) weeks prior to the Completion Date.

16.3.4. The Fixed Asset Boundary Document for the equipment at the Connection Point shall include the details of the lines or cables emanating from the MGSP's and the end-user's sides of the Connection Point.

16.3.5. The date of issue and the issue number shall be included in every page of the Fixed Asset Boundary Document.

16.4. Signing and Distribution of Fixed Asset Boundary Document

16.4.1. Prior to the signing of the Fixed Asset Boundary Document, the MGSP shall send a copy of the completed Fixed Asset Boundary Document to the end-user for any revision or for confirmation of its accuracy.

16.4.2. The Accountable Persons designated by the MGSP and the end-user shall sign the Fixed Asset Boundary Document after confirming its accuracy.

16.4.3. Once signed but not less than two (2) weeks before the implementation date, the MGSP shall provide two (2) copies of the Fixed Asset Boundary Document to the end-user, with a notice indicating the date of issue, the issue number and the implementation date of the Fixed Asset Boundary Document.

16.5. Modifications of an Existing Fixed Asset Boundary Document

16.5.1. When an end-user has determined that a Fixed Asset Boundary Document requires modification, it shall inform the MGSP at least eight (8) weeks before implementing the modification. The MGSP shall then prepare revised Fixed Asset Boundary Document at least six (6) weeks before the implementation date of the modification.

16.5.2. When the MGSP has determined that a Fixed Asset Boundary Document requires modification, it shall prepare a revised Fixed Asset Boundary Document at least six (6) weeks prior to the implementation date of the modification.

16.5.3. When the MGSP or an End-user has determined that a Fixed Asset Boundary Document requires modification to reflect an emergency condition, the MGSP or an End-user, as the case may be, shall immediately notify the other party. The MGSP and the End-user shall meet to discuss the required modification of the Fixed Asset Boundary Document and shall decide whether the change is temporary or permanent in nature. Within seven (7) days after the conclusion of the meeting between the MGSP and the End-user, the MGSP shall provide the End-user with a revised Fixed Asset Boundary Document.

16.5.4. The procedure specified in Section 16.4 herein (Signing and Distribution of Fixed Asset Boundary Document) for signing and distribution shall be applied to the revised Fixed Asset Boundary Document. The MGSP's notice shall indicate the revision(s), the new number and the new date of issue.

17. Operational Responsibilities

17.1. Operational Responsibilities of the MGSP

17.1.1. The MGSP is responsible for operating and maintaining the microgrid system during normal conditions, in accordance with PSGG, and in proposing solutions to problems.

17.1.2. MGSP is responsible for ensuring that load-generation balance is maintained during emergency conditions and for directing microgrid system recovery efforts following these emergency conditions.

17.1.3. MGSP is responsible for controlling microgrid system voltage variations during emergency conditions through a combination of direct control and timely instructions to other End-users.

17.1.4. MGSP is responsible for preparing the microgrid system Operating and Maintenance Program.

17.1.5. MGSP is responsible for performing all necessary studies to determine the safe operating limits that will protect the microgrid system against any instability problems, including those due to Multiple Outage Contingencies.

17.1.6. MGSP is responsible for providing and maintaining all microgrid system equipment and facilities.

17.1.7. MGSP is responsible for designing, installing, and maintaining the microgrid system's protection system that will ensure the timely disconnection of faulty facilities and equipment.

17.1.8. MGSP is responsible for ensuring that safe and economic microgrid system operating procedures are always followed.

17.1.9. MGSP is responsible for preparing the Microgrid System Operating Maintenance Program.

17.1.10. MGSP is responsible for implementing the necessary operational actions during emergency conditions.

17.1.11. MGSP is responsible for maintaining its generating units to fully deliver the capabilities declared in its Connection Agreement or Amended Connection Agreement.

17.1.12. MGSP is responsible for providing accurate and timely planning and operations data.

17.1.13. MGSP is responsible for ensuring that its generating units will not disconnect from the microgrid system during disturbances except when the frequency and voltage variation may damage generator's equipment.

17.2. Cybersecurity Requirements of the MGSP

The MGSP shall implement cybersecurity measures consistent with the DOE's Energy Sector Cybersecurity Framework under Department Circular DC2025-01-0001 or any amendments thereto, and globally recognized Cybersecurity Framework standards, ensuring risk management, incident response, monitoring, access control, and resilience of critical IT and OT systems. These shall include:

a) Role-based access control and secure authentication;
b) Network segmentation and protection of operational systems;
c) Regular system updates, patching, and data encryption;
d) Real-time monitoring and incident response procedures; and
e) Regular cybersecurity assessments and personnel training.

17.3. Operational Responsibilities of the End-Users

17.3.1. The End-user's equipment shall be connected to the microgrid system at a voltage level agreed by the MGSP.

17.3.2. For a connection at low voltage, the Connection Point shall, in general, be at the End-user's load side terminal of the metering equipment.

17.3.3. The Connection Point shall be controlled by a circuit breaker that is capable of interrupting the maximum short circuit current at the point of connection.

17.3.4. The MGSP and End-user shall be solely responsible for the protection system of electrical equipment and

facilities at their respective sides of the Connection Point. The MGSP, upon request of the End-user, shall provide the technical data at the Connection Point necessary for the End-user to design its protection system.

17.3.5. The MGSP may require specific End-users to provide other protection schemes, designed and developed to minimize the risk and/or impact of disturbances on the microgrid system, especially those with solar rooftops and other similar technology.

18. Planning and Design Requirements

18.1. Conceptual Design Site Assessment

a) Site characterization and load identification including critical loads and infrastructure interdependencies;

b) Resource and infrastructure assessment covering existing assets, renewable potential, and interconnection points;

c) Resilience and risk evaluation considering natural, technical, and security threats;

d) Regulatory and permitting review to ensure compliance with applicable DOE, ERC, and LGU requirements;

e) Technology, control, and power quality requirements including islanding and black start capabilities;

f) Cybersecurity and communication readiness; and

g) Economic and social considerations including cost recovery and community benefits.

19. Evaluation of Microgrid Projects

Evaluation of microgrids shall consider the technical requirements, economic evaluations, and environmental impact, detailed hereunder as follows:

19.1. Technical Evaluation

19.1.1. Load analysis

- Load forecasting (*using the maximum asset life of the equipment installed*)
- Load classification

19.1.2. Power generation forecasting and actual reporting

- Resource analysis

- Generation forecast and actual performance indicators (FOR, POF)

19.1.3. System configuration

- DPG and energy configuration
- Electrical parameter calculations, such as the following:
  - Power flow
  - Short-circuit current calculation

19.1.4. Safety

- For general public
- For power system

19.2. Economic Evaluation

- Life cycle cost
  - Initial investment
  - Future investment
  - Operation and maintenance costs
  - Fuel cost

19.3. Environmental Evaluation

- Renewable energy generation proportion

$$R_{ren} = \frac{E_{ren}}{E_{total}} \times 100\%$$

AP / RTB / GDB

ANNEX B - MICROGRID SYSTEMS RULES

Certificate of Acceptance of Application Template

Republic of the Philippines
ENERGY REGULATORY COMMISSION

C E R T I F I C A T I O N

This is to certify that the Microgrid System Provider Service Contract (MSC) Application filed by **[MGSP]** entitled, "**[MSC Application Title]**" was docketed under **ERC Case No. [Case Number]** on **[Docketing Date]**.

Accordingly, upon perusal of the documents submitted by the Applicant to the Commission, the following are the relevant dates pertinent to the instant MSC Application:

Date of Award by the Department of Energy (DOE)/Authorized Entity of a Microgrid Service Area	
Date of Execution of the MSC	

IN VIEW THEREOF, pursuant to Section 18.1 of the Implementing Rules and Regulation (IRR) of the Republic Act No. 11646, otherwise known as the "Microgrid Systems Act," this *Certificate* shall constitute as the provisional authority of **[MGSP]** to start the collection of the rate specified in the award, the MSC, and the instant MSC Application, upon the start of the MGSP's commercial operation or the first delivery of electricity in the area.

Pasig City, [Date of Certification].

[Name of Signatory]
Chairperson and CEO/
Duly Authorized Representative

ANNEX C – MICROGRID SYSTEMS RULES

UC-ME Disbursement Guidelines for MGSPs

NATIONAL POWER CORPORATION

22 August 2022

CIRCULAR NO. 2022-020

SUBJECT: DISBURSEMENT GUIDELINES FOR MISSIONARY ELECTRIFICATION SUBSIDY TO MICROGRID SERVICE PROVIDERS (MGSPs)

1.0 PURPOSE: This Circular is issued to provide guidelines in the payment of missionary electrification subsidy from the universal charge to the Microgrid Service Provider (MGSP) as mandated by RA 11646 *"An Act Promoting the Use of Microgrid Systems to Accelerate the Total Electrification of Unserved and Underserved areas nationwide".*

2.0 COVERAGE: This Circular covers all MGSPs which entered into a Microgrid System Provider Service Contract (MSC) with the NPC.

3.0 APPROVALS: The following approvals shall be obtained prior to claiming the MGSP's Missionary Electrification Subsidy from NPC:

3.1 Microgrid System Provider Service Contract (MSC) between MGSP and NPC

3.2 Authority to Operate (ATO) and Certificate of Compliance (COC) issued by ERC

3.3 ERC's approval of Universal Charge-Missionary Electrification (UC-ME) to ensure availability and allocation of funds for payment of Subsidy Fee.

3.4 Clearance to pay from the ME MGSP Subsidy Account Administrator.

4.0 DEFINITION OF TERMS

Authority to Operate or "ATO" refers to the document issued by the ERC to the microgrid system provider, which shall constitute the latter's license to provide integrated power generation and distribution services to unserved or underserved areas.

Certificate of Compliance or "COC" refers to a license issued by the ERC in favour of a person or entity to operate a power plant or other facilities used in the generation of electricity pursuant to Section 6 of RA 9136 and Section 4 of the Implementing Rules and Regulations of RA 9136.

Department of Energy or "DOE" refers to the government agency created pursuant to Republic Act No. 7638 whose expanded functions are provided in the Act.

Corporate Affairs Group or CAG refers to one of the functional group of NPC in-charge of the Corporate Planning, Information and Communication Technology (ICT) Services, Corporate Communications and Tariff application and Universal Charge for Missionary Electrification (UCME) administration as well as overseeing the compliances to the requirements of regulatory bodies and flagship programs.

Disbursement and Audit Management Division or "DAMD" refers to the division of NPC under the Administration and Finance Group that manage and administer the functions of examination/analysis of the validity and propriety of all disbursement claims/transactions before payment.

Energy Regulatory Commission or "ERC" refers to the independent quasi-judicial regulatory agency created under Section 38 of the EPIRA.

Microgrid System refers to a group of interconnected loads and generation facility with clearly defined electrical boundaries that acts as an integrated power generation and distribution system, whether or not connected to a distribution or transmission system

Microgrid System Provider or "MGSP" refers to a natural or juridical person whose business includes the installation, operation and maintenance of microgrid systems in unserved and underserved areas nationwide.

Microgrid System Provider Service Contract or MSC" refers to contract between the MGSP and NPC whereby the MGSP performs the missionary electrification function on behalf of NPC and provides integrated power generation and distribution services in an unserved and underserved area and to receive subsidy whenever applicable.

Missionary Electrification refers to the provision of basic electricity service in Unviable Areas with the ultimate aim of bringing the operations in these areas to viability levels

Missionary Electrification Subsidy or "ME Subsidy" refers, for purposes of this Circular, to the funds duly approved by the ERC to cover the difference between the Full Cost Recovery Rate and Subsidized Approved Retail Rate of a Microgrid Service Provider sourced from the Universal Charge for Missionary Electrification;

ME Subsidy Account Administrator refers to the Senior Department Manager in the NPC Finance Department, his/her replacement/successor or assignees designated to manage and administer the UCME MGSP Fund.

National Electrification Administration or "NEA" refers to a government-owned and controlled corporation duly organized and existing under and by virtue of Presidential Decree No. 269, as amended.

National Power Corporation-Small Power Utilities Group or "NPC-SPUG" refers to the functional unit of the NPC created to pursue the Missionary Electrification function as provided in Section 70 of the EPIRA.

Underserved Area refers to an area, upon the effectivity of RA 11646, otherwise known as the "Microgrid System Act" with no electricity access, no distribution

system lines, no home power systems, no connection to any microgrid system, or for which no distribution grid extension has been developed or implemented by the DU.

Universal Charge for Missionary Electrification or "UCME" refers to the portion of the non-bypassable charge passed on and collected from all end-users on a monthly basis by the DUs pursuant to RA 9136, a portion of which is allocated for the provision of integrated power generation and distribution services in unserved and underserved areas not connected to the grid or within a franchise area where the distribution system is not connected to the grid:

Unserved Area refers to an area, upon the effectivity of RA 11646, otherwise known as the "Microgrid System Act" with no electricity access, no distribution system lines, no home power systems, no connection to any microgrid system, or for which no distribution grid extension has been developed or implemented by the DU.

5.0 CREATION OF A SPECIAL BANK ACCOUNT FOR THE UCME MGSP FUND. Maintain a separate interest bearing checking account with authorized government depository bank exclusively for UCME MGSP Fund. Withdrawal from which shall be made by NPC's authorized signatories.

6.0 PAYMENT SUBSIDY. Payment shall be made within forty-five (45) calendar days from date of receipt by NPC of the invoice from the MGSP together with complete supporting documents. Please refer to **ANNEX A** and **ANNEX B** for the Process Flow in the Payment for ME Subsidy to MGSPs and the list of Audit Requirements for the processing thereof. The rates that will be used in the calculation are the ERC approved rates.

7.0 RESPONSIBILITY OF ME SUBSIDY ACCOUNT ADMINISTRATOR

The Subsidy Account Administrator shall have the following duties and functions:

7.1 To establish, maintain, manage and administer the UCME MGSP Subsidy Account.

7.2 To administer the collection of UCME Fund from DUs, TRANSCO, NGCP in accordance with the ERC resolution on the recovery, collection, and availment of UCME by the NPC for microgrid.

7.3 To distribute such a portion of the UCME MGSP Fund as and by way of payment of Subsidy Fees to MGSPs.

8.0 COMPLIANCE WITH THE ERC RESOLUTION. Amendments and/or revisions to these guidelines may be made to conform with the resolutions that will be issued by the ERC on the recovery, collection, and availment of UCME by the NPC for microgrid.

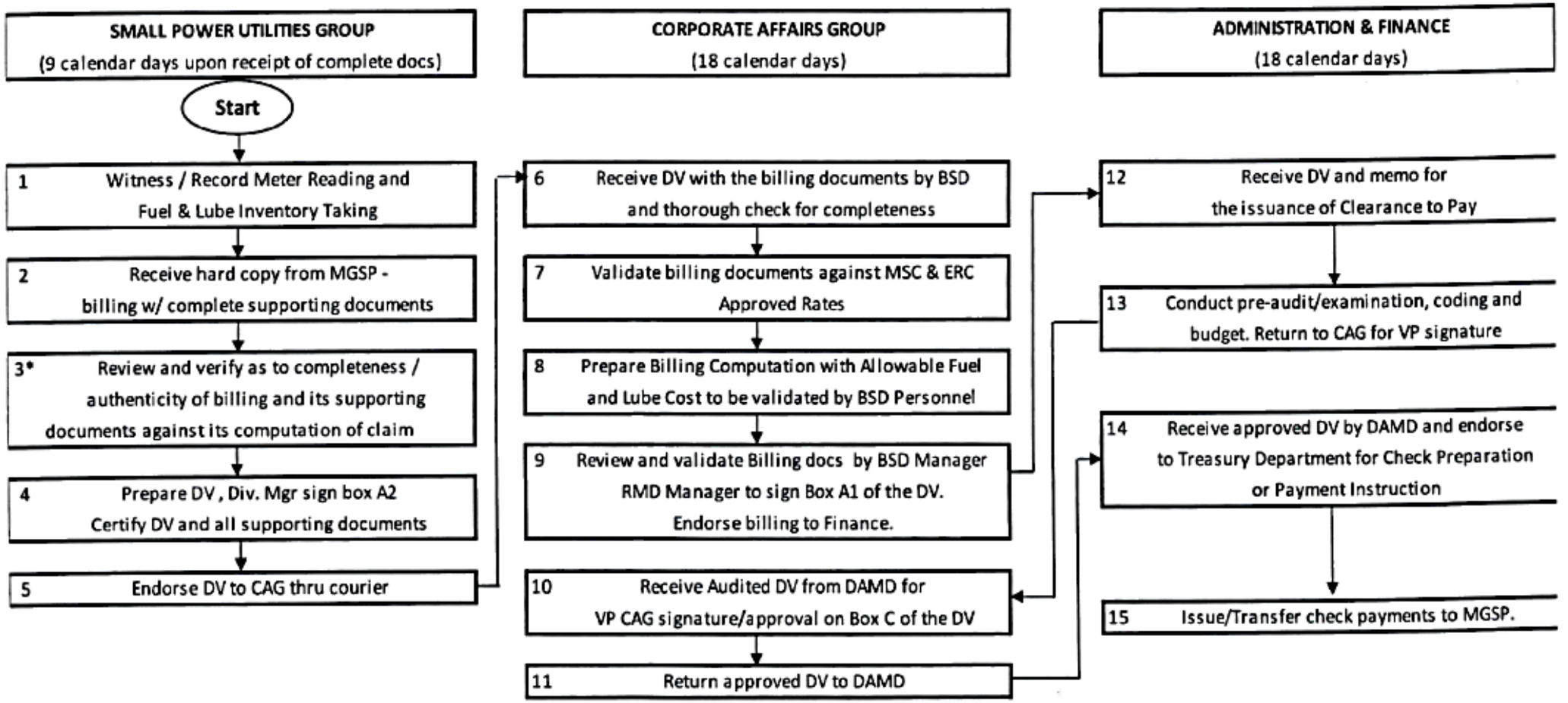
9.0 SAVING CLAUSE. Queries or concerns regarding this disbursement guideline shall be addressed to the Office of the Senior Department Manager Finance (SDM-Finance), or to the Office of the Revenue Management Department of Corporate Affairs Group, as the case may be, for appropriate action.

10.0 EFFECTIVITY. This Circular shall take effect immediately upon its issuance.

MELCHOR P. RIDULME
Officer-In-Charge

ANNEX A

PROCESS FLOW ON THE PROCESSING OF UCME SUBSIDY CLAIMS OF MICROGRID SYSTEM PROVIDER (MGSP)



ANNEX B

NATIONAL POWER CORPORATION
Revenue Management Department/Disbursement Audit & Monitoring Division

AUDIT REQUIREMENTS FOR RELEASE OF UCME SUBSIDY

MICROGRID SYSTEM PROVIDER (MGSP)

FIRST CLAIM:		**Source**
1. Microgrid System Provider Service Contract (MSC)	-	MGSP
2. Authority to Operate (ATO) issued by the ERC	-	MGSP
3. Certificate of Compliance issued by ERC (COC)	-	MGSP
4. Environmental Certificate of Compliance (ECC) issued by DENR	-	MGSP
5. Certificate of Commercial Operation	-	MGSP
6. Agreement with Fuel Supplier	-	MGSP
7. Certificate of Bank Account, if applicable	-	MGSP
8. DCE/Cost Center Number/Monitoring	-	NPC-FIN
9. Name/signatory/designation of NPC-SPUG Representative/witness	-	MGSP /NPC-SPUG
FIRST & SUCCEEDING CLAIMS:		
10. Disbursement Voucher (DV) duly signed by respective SPUG signatories as per Manual of Approvals	-	MGSP /NPC-SPUG
11. Original Billing Invoice	-	MGSP
12. Electric bill and proof of collection of consumers (OR)	-	MGSP
13. Picture of meter reading as witnessed by NPC-SPUG representative	-	MGSP
14. Original Fuel Invoices and OR	-	MGSP
15. Summary of Fuel Deliveries	-	MGSP
16. Actual Fuel Cost Calculations	-	MGSP
17. Fuel Inventory and Consumption Report	-	MGSP
18. Certificate of Energy (kWh) delivered	-	MGSP
19. Clearance to Pay	-	NPC-FIN
20. Signed MOPS	-	MGSP
21. Report on cumulative energy offtake (12mos)*	-	MGSP /NPC-SPUG
22. Certificate and computation of plant load factor*	-	MGSP /NPC-SPUG
23. Certified True Copy of Audited/paid DV *	-	MGSP /NPC-SPUG
24. Consumer Price Index of applicable billing period (reference/current)**	-	MGSP

Note: All other attachments that are not original shall be authenticated
* - as maybe applicable such as the case of reconciliation of data during resolution of issues
** - applicable only for MGSPs required to submit Consumer Price Index

ANNEX D – MICROGRID SYSTEMS RULES

Bills of Materials (BOM) Template

TEMPLATE: Bill of Materials (BOM) for the Actual Cost for Each Section of the Microgrid System

Item No.	Item Description / Specifications	Quantity (No. of Units)	Actual Unit Cost (PhP/Unit)	Total Actual Item Cost (PhP)	Reference Document for Actual Cost	Official Receipt Number
1					*Indicate the filename of the supporting document*	
2					*- do -*	
3					*- do -*	
4					*- do -*	
…					*- do -*	
n					*- do -*	
	Grand Total					

Instructions and Reminders (For Strict Compliance):

A. Submit an Excel file containing the accomplished BOM template, as provided above, reflecting the actual incurred CAPEX for each lot. The BOM must include all relevant cost components of the microgrid system, including, but not limited to, the following:

1. Generation System Components
   - 1.1. Solar PV
   - 1.2. Battery Energy Storage
   - 1.3. Diesel Generator
2. Distribution System Components
   - 2.1. Substation Facilities
   - 2.2. Primary Distribution Lines
   - 2.3. Secondary Distribution Lines
   - 2.4. Distribution Transformers
   - 2.5. Service Drop Wires and Metering Facilities
3. Shared Components (Both Generation and Distribution System)
4. Non-Network Components
   - 4.1. Administrative and Operational Facilities
   - 4.2. IT and Communication Infrastructure
   - 4.3. Monitoring and Control Equipment
   - 4.4. Transportation and Field Equipment

B. All submitted data must be complete, accurate, and consistent with supporting documentation. Specifically:

1. Ensure all fields in the prescribed BOM template are properly accomplished, including reference filenames and receipt numbers; and
2. Supporting documents (e.g., receipts, invoices) must be appropriately labeled and consistent with the entries in the BOM.