

GUIDELINES FOR THE APPLICATION AND APPROVAL OF CAPS ON THE RECOVERABLE RATE OF DISTRIBUTION SYSTEM LOSSES

ERC, September 29, 2004

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Pursuant to Section 43 (f) of Republic Act No. 9136, Rule 15 Section 5 of its Implementing Rules and Regulations, and Article 3.4 of the Philippine Distribution Code (PDC), the Energy Regulatory Commission (ERC) hereby adopts and promulgates the following Guidelines for the Application and Approval of Caps on the Recoverable Rate of Distribution System Losses.

ARTICLE I

General Provisions

SECTION 1. This Guidelines shall have the following objectives:

- (a) To promote transparency and accountability in all phases involving the services provided by Distribution Utilities;
- (b) To promote a policy of full disclosure of all transactions involving public interest;
- (c) To protect the public interest as it is affected by the rates and services of Distribution Utilities and other providers of electric Energy; and
- (d) To establish a methodology for the segregation and calculation of Distribution System Losses.

SECTION 2. Guiding Principles. Section 43 (f) of Republic Act No. 9136 and Rule 15 Section 5 of its Implementing Rules and Regulations provide that "the cap on the recoverable rate of system losses prescribed in Section 10 of Republic Act No. 7832, is hereby amended and shall be replaced by caps which shall be determined by the ERC based on load density, sales mix, cost of service, delivery voltage and other technical considerations it may promulgate."

Article 3.4 of the Philippine Distribution Code (PDC) classifies Distribution System Losses into three (3) categories, namely Technical Loss, Non-Technical Loss and Administrative Loss. This article also provides that "the Distributor shall identify and report separately to the ERC the technical and non-technical losses in its Distribution System. The ERC shall, after due notice and hearing, prescribe the caps for the technical and non-technical losses that the Distributor can pass on to its End-Users."

Article 3.4 of the PDC provides further that "the Distributor shall submit to the ERC an application for the approval of its Administrative Loss. The allowance for Administrative Loss shall be approved by ERC, after due notice and hearing, based on connected essential Load."

SECTION 3. Scope. This Guidelines shall apply to all electric power Distribution Utilities, including but not limited to the following:

- (a) Privately-owned Distribution Utilities;
- (b) Electric Cooperatives;

- (c) Local government unit owned-and-operated Distribution Utilities;
- (d) Entities duly authorized to own, operate and maintain distribution facilities within the economic zones; and
- (e) Other duly authorized entities engaged in the Distribution of Electricity.

SECTION 4. Definition of Terms. The following words and phrases shall have the meanings set forth below in this Guidelines:

- (a) **Administrative Loss.** The component of Distribution System Losses that accounts for the electric Energy used by the Distribution Utility in the proper operation of the Distribution System
- (b) **Burden.** The electrical load of metering equipment including the instrument transformers and associated wirings
- (c) **Customer.** Any person or entity supplied with electric service under a contract with a Distributor.
- (d) **Distribution Development Plan (DDP).** The plan prepared and submitted by the Distribution Utility to the Department of Energy that contain Distribution System expansion, Reinforcement and improvement projects based on historical and forecasted planning data.
- (e) **Distribution of Electricity.** The conveyance of electric power by a Distribution Utility through its Distribution System pursuant to the provision of Republic Act No. 9136.
- (f) **Distribution System.** The system of wires and associated facilities belonging to a franchised Distribution Utility, extending between the delivery points on the transmission or Subtransmission System or generator connection and the point of connection to the premises of the End-User.
- (g) **Distribution System Losses.** The electric Energy input including those delivered to the Distribution System by the Transmission System, Embedded Generating Plants, other Distribution Systems, and User Systems with generating facilities minus the electric Energy output (i.e., electric Energy delivered to the Users of the Distribution System) for a specified billing period.
- (h) **Distribution Utility.** Any Electric Cooperative, private corporation, government-owned utility, or existing local government unit, which has an exclusive franchise to operate a Distribution System in accordance with its franchise and Republic Act No. 9136.
- (i) **Distributor.** Has the same meaning as Distribution Utility.
- (j) **Electric Cooperative.** A Distribution Utility organized pursuant to Presidential Decree No. 269, as amended, or otherwise provided in Republic Act No. 9136.
- (k) **Embedded Generating Plant.** A Generating Plant that is connected to a Distribution System or the System of any User and has no direct connection to the Transmission System.
- (l) **End-User.** Any person or entity requiring the supply and delivery of electricity for its own use.
- (m) **Energy.** The integral of power with respect to time, measured in Watt-hour (Wh) or multiples thereof.
- (n) **Energy Regulatory Commission (ERC).** The regulatory agency created by Section 38 of Republic Act No. 9136.
- (o) **Energy Input.** Energy delivered to the Distribution System by the Transmission System, Embedded Generating Plants, other Distribution Systems, and User Systems with generating facilities.
- (p) **Energy Output.** Energy delivered to the Users of the Distribution System.
- (q) **Instrument Transformer.** A potential and/or current transformer for metering and control that reproduces in its secondary circuit, in a definite and known proportion, the voltage or current of its primary circuit, with the

phase relation substantially preserved.

(r) Load. An entity or electrical equipment that consumes electric Energy.

(s) Load Loss. The electrical loss due to the resistance of conductors that varies with the square of the electric current.

(t) Load Model. The representation of electrical load in Load Flow simulations for the purpose of calculating Technical Losses.

(u) Metering Equipment. The electrical measurement devices including instrument transformers, wiring, communications, and other auxiliary devices associated with metering.

(v) Network Model. The equivalent electrical circuit that mathematically represent an electrical system (e.g., Distribution System) for purposes of calculating electrical parameters or simulating its behavior or performance. It consists of resistances and reactances of the electrical equipment, devices and conductors.

(w) No-Load Loss. The fixed loss incurred in electrical equipment regardless of the loading level. This includes the fixed loss dissipated in transformers, voltage regulators, capacitors, inductors and other electrical equipment.

(x) Non-Technical Loss. The component of Distribution System Losses that is not related to the physical characteristics and functions of the electrical System, and is caused primarily by human error, whether intentional or not. Non-Technical Loss includes the electric Energy lost due to pilferage, tampering of meters, and erroneous meter reading and/or billing.

(y) Philippine Distribution Code (PDC). A compilation of rules and regulations governing the electric utilities in the operation and maintenance of their Distribution Systems which includes, among others, the standards for service and performance, and defines and establishes the relationship of the Distribution Systems with the facilities or installations of the parties connected thereto.

(z) Rate of Distribution System Losses. The Distribution System Losses expressed as a percentage of the total electric Energy input to the Distribution System.

(aa) Republic Act No. 9136. The "Electric Power Industry Reform Act of 2001."

(bb) Responsible Person. The person authorized by virtue of his official designation, Board Resolution, or any other basis of authorization to certify and be held responsible for the accuracy and validity of the submitted data.

(cc) System. A group of components connected or associated in a fixed configuration to perform a specified function.

(dd) Technical Loss. The component of Distribution System Losses that is inherent in the physical delivery of electric Energy. It includes conductor loss, transformer core loss, and potential current coils in metering equipment.

(ee) Three-Phase Load Flow. The analytical tool that simulates the power flows in an unbalanced three-phase Distribution System.

(ff) Transmission System. The high voltage backbone System of interconnected transmission lines, substations, and related facilities for the conveyance of bulk power. The Transmission system is also known as the Grid.

(gg) User. A person or entity that uses the Distribution System and related Distribution facilities.

(hh) User System. A System owned or operated by a User of the Distribution System.

ARTICLE II

Segregation of Distribution System Losses

SECTION 1. Components of Distribution System Losses. Distribution System Losses shall be segregated into the following components as specified in Article 3.4 of the Philippine Distribution Code:

- (a) Technical Loss;
- (b) Non-Technical Loss; and
- (c) Administrative Loss.

The Technical Loss includes the Load and No-Load (or Fixed) Losses in the following:

- (a) Sub-transmission Lines;
- (b) Substation Power Transformers;
- (c) Primary Distribution Lines;
- (d) Distribution Transformers;
- (e) Secondary Distribution Lines;
- (f) Service Drops;
- (g) Voltage Regulators;
- (h) Capacitors;
- (i) Reactors; and
- (j) All other electrical equipment necessary for the operation of the Distribution System.

Losses in Metering Equipment, including the electrical Burdens of Instrument Transformers, shall be considered part of the Technical Loss.

For purposes of this Guidelines, the Load Loss due to electric Energy pilferage shall be considered part of the Non-Technical Loss.

Administrative Loss includes the electric Energy consumption of connected essential electrical Loads in the following facilities, subject to the approval of the ERC:

- (a) Distribution Substations;
- (b) Offices of the Distribution Utility;
- (c) Warehouses and Workshops of the Distribution Utility;
- (d) Other essential electrical Loads of the Distribution Utility.

SECTION 2. Calculation of the Total Distribution System Losses. The Total Distribution System Losses shall be computed as the net of all electric Energy Input and all electric Energy Output for a specified billing period.

Distribution System Losses shall be calculated monthly and shall coincide with the billing cycle adopted by the Distribution Utility. The Distribution Utility shall report the total number of days, number of hours and the inclusive dates covered by the billing cycle, which was used as the period for the calculation of the Distribution System Losses.

SECTION 3. Calculation of the Administrative Loss. The Administrative Loss shall be the sum of the actual (i.e., metered) electric Energy consumption of the essential Loads used by the facilities of the Distribution Utility during the billing period.

SECTION 4. Calculation of the Technical Loss. The Technical Loss shall be the sum of the hourly Load Loss and No-Load (or Fixed) Loss in all distribution equipment, devices and conductors for a specified billing period. It shall be calculated through Three-Phase Load Flow simulations of the Distribution System using the appropriate Network and Load Models.

The Load Flow simulations must capture all Technical Losses from the incoming and outgoing delivery points of the unbalanced three-phase Distribution System (i.e., from Sub-transmission lines to the service drops of the Distribution System Customers). For the purpose of calculating the Technical Loss, the delivery points of the Distribution System shall be the Metering Points (i.e., the location of the metering devices).

The Technical Loss associated with Metering Equipment shall be the electric energy dissipated in the burdens of the Metering Equipment.

The prescribed methodology for segregating and calculating the components of Distribution System Losses is appended in Annex A[*] and is hereby made an integral part of this Guidelines.

SECTION 5. Calculation of the Non-Technical Loss. The Non-technical loss shall be the residual after subtracting the Administrative Loss and Technical Loss from the Total Distribution System Losses. Any electric Energy loss in the Distribution system that is recovered through anti-pilferage activities or any other form of recovery subject to ERC approval shall be subtracted from the Non-Technical Loss.

ARTICLE III

Recoverable Rate of Distribution System Losses

SECTION 1. System Loss Caps. The ERC shall prescribe the system loss caps that the Distributor can recover from the Users of its Distribution System. Consistent with the PDC, the ERC shall specify three (3) system loss caps, namely:

- (a) A cap on the Technical Loss;
- (b) A cap on the Non-Technical Loss; and
- (c) A cap on the Administrative Loss.

SECTION 2. Cap for the Technical Loss. The cap for the Technical Loss shall be expressed as a percentage of the electric Energy Input to the Distribution System and shall consider both the historical and forecasted Technical Losses of the Distribution Utility, computed using the methodology described in Annex A[*]. In setting the cap for the Technical Loss, the ERC may choose to adopt a grouping of the Distribution Utilities, taking into account their technical characteristics.

SECTION 3. Cap for the Non-Technical Loss. The cap for the Non-Technical Loss shall be expressed as a percentage of the electric Energy Input to the Distribution System. A Distribution Utility with a large Non-Technical Loss shall submit to the ERC a proposed program for the reduction of its Non-Technical Loss. The proposed program shall specify the costs and timeframe to achieve a targeted level of Non-Technical Loss. The ERC may approve a declining value of the cap for the Non-Technical Loss to achieve the target level over the duration of the program.

SECTION 4. Cap for the Administrative Loss. The cap on the Administrative Loss shall be expressed in kilowatt-hour and shall be based on the existing essential loads of the Distribution Utility.

SECTION 5. Technical Loss Reduction Program and Incentives. Expenses associated with any technical loss reduction program approved by the ERC shall be considered part of the Distribution Utilities capital and/or operating costs. The ERC may decide to implement a mechanism to reward Distribution Utilities that have actual technical losses that are below their approved caps.

ARTICLE IV

Filing Requirements and Procedures

SECTION 1. Petition for Distribution System Loss Caps. Every Distribution Utility shall file a petition for the

approval of caps on the recoverable rate of Distribution System Losses. The petition shall include the Distribution Utility's proposed caps for its Technical, Non-Technical and Administrative Losses. The petition shall also include the segregated system losses for the year immediately preceding the year for which new system loss caps are being sought. The Distribution Utility shall also submit estimates of its segregated system losses for the succeeding five (5) years using the information specified in its Distribution Development Plan (DDP).

SECTION 2. Data Requirements. The petition for the approval of caps on the recoverable rate of Distribution System Losses shall contain the following informations using the templates shown in Annex B:

(a) ERC-DSL-01

Administrative Load Data;

(b) ERC-DSL-02 Customer Data;

(c) ERC-DSL-03 Billing Cycle Data

(d) ERC-DSL-04 Customer Energy Consumption Data;

(e) ERC-DSL-05 Load Curve Data;

(f) ERC-DSL-06 Bus Data;

(g) ERC-DSL-07 Sub-transmission Line Data - Overhead;

(h) ERC-DSL-08 Sub-transmission Line Data - Underground/Submarine Cable;

(i) ERC-DSL-09 Substation Power Transformer Data - Two Winding;

(j) ERC-DSL-10 Substation Power Transformer Data - Three Winding;

(k) ERC-DSL-11 Primary Distribution Line Data - Overhead;

(l) ERC-DSL-12 Primary Distribution Line Data - Underground Cable;

(m) ERC-DSL-13 Primary Customer Service Drop Data - Overhead;

(n) ERC-DSL-14 Primary Customer Service Drop Data - Underground Cable;

(o) ERC-DSL-15 Distribution Transformer Data;

(p) ERC-DSL-16 Secondary Distribution Line Data;

(q) ERC-DSL-17 Secondary Customer Service Drop Data;

(r) ERC-DSL-18 Voltage Regulator Data;

(s) ERC-DSL-19 Shunt Capacitor Data;

(t) ERC-DSL-20 Shunt Inductor Data;

(u) ERC-DSL-21 Series Inductor Data;

(v) ERC-DSL-22 Energy Sales Data; and

(w) ERC-DSL-23

Other Technical Data.

In addition, the Distribution Utility shall submit to the ERC their Distribution System maps and diagrams showing

the unique Identification (ID) of all connection points, electrical equipments and line segments. The Distribution System maps and diagrams must be consistent with the data submitted using the above templates.

The ERC may require additional information to evaluate the petition of the Distribution Utility.

Petitions shall be submitted with technical, financial and economic analysis including other relevant information in hard copies of legal format (one (1) original copy and three (3) conformed copies duly signed and verified by the Responsible Person of the Distribution Utility). In addition, all supporting data requirements including templates specified in Section 2 of Article IV and shown in Annex B shall be submitted in four (4) electronic copies in CD-ROM. Two (2) electronic copies shall be submitted in Portable Document Format (PDF) or any other format that cannot be altered and two (2) electronic copies shall be submitted either as Text File or Microsoft Excel File for review and simulation purposes.

SECTION 3. Procedures for Filing and Approval. The provisions of the "Rules Governing Hearings Before the Energy Regulatory Commission" shall be applied to all petitions for approval of caps on the recoverable rate of Distribution System Losses.

ARTICLE V

Reportorial Requirements and Monitoring

The ERC, upon its approval of the caps on the recoverable rate of Distribution System Losses, shall require the Distribution Utility to submit quarterly, the monthly system loss reports on actual i.e. metered and/or calculated values of Technical Loss, Non-Technical Loss and Administrative Loss in its Distribution System. Said reports shall be submitted before the end of the month immediately following the quarter.

The ERC shall monitor and verify, on an annual basis, the compliance of the Distribution Utility with the approved caps for the recoverable Rate of Distribution System Losses.

ARTICLE VI

Administrative Sanctions

A penalty shall be imposed upon any person who has been found to have committed a violation of any of the provisions of this Guidelines pursuant to 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".

ARTICLE VII

Repeal and Separability

SECTION 1. Repeal. All existing Guidelines or any part thereof which are inconsistent with this Guidelines are hereby repealed, amended or modified accordingly.

SECTION 2. Separability. If for any reason, any provision of this Guidelines is declared unconstitutional or invalid by final judgment of a competent court, the other parts or provisions hereof which were not affected thereby shall continue to be in full force and effect.

ARTICLE VIII

Effectivity

This Guidelines shall take effect immediately upon publication in two (2) newspaper of general circulation in the country.

Adopted: 29 Sept. 2004.

(SGD.) RODOLFO B. ALBANO, JR.

Chairman

(SGD.) OLIVER B. BUTALID

(SGD.) JESUS N. ALCORDO

Commissioner

Commissioner

(SGD.) RAUF A. TAN

(SGD.) ALEJANDRO Z. BARIN

Commissioner

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[*] Not Filed with ONAR.

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