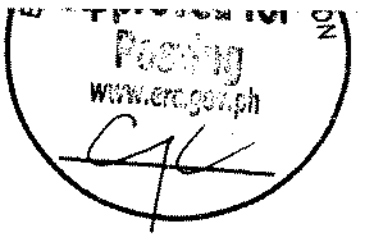
Republic of the Philippines
**ENERGY REGULATORY COMMISSION**
San Miguel Avenue, Pasig City




**RESOLUTION NO. 12, Series of 2006**

**A RESOLUTION ADOPTING THE GUIDELINES FOR THE MONITORING OF RELIABILITY STANDARDS FOR DISTRIBUTION UTILITIES**

**WHEREAS,** Section 43 (b) of Republic Act No. 9136 (The Electric Power Industry Reform Act of 2001 or the EPIRA) and Rule 3, Section 4 (g) of its Implementing Rules and Regulations (IRR), provide that in order to facilitate the provision of an efficient, reliable and quality service to End-Users, the Commission shall promulgate a Grid Code and a Distribution Code that shall include performance standards;

**WHEREAS,** Article 3.3 of the Philippine Distribution Code sets the reliability standards for Distribution Utilities;

**WHEREAS,** on November 16, 2004 the Commission conducted a public consultation for the adoption and promulgation of a set of guidelines for the monitoring of reliability standards for Distribution Utilities;

**WHEREAS**, on November 21, 2005 the Commission received and considered the comments and recommendations of the Distribution Management Committee on the set of guidelines for the monitoring of reliability standards for Distribution Utilities;

**WHEREAS,** the guidelines seek to: (1) ensure the continuous provision of electric service to End-Users; (2) adopt rules and regulations for assessing the reliability of the distribution system; (3) adopt requirements for maintenance of Interruption data, retention of records, and report filing; (4) provide well-defined data to allow trend analysis over time for a given utility or among distribution utilities; (5) establish a way of tracking and identifying system reliability problems; and (6) establish reporting requirements to provide consumers, the ERC, and distribution utilities with methodology for monitoring reliability within a distribution utility's franchise area.

**NOW THEREFORE,** the Commission, after thorough and due deliberation, hereby **RESOLVED,** as it hereby **RESOLVES** to **APPROVE** and **ADOPT** the set of Guidelines for the Monitoring of Reliability Standards for Distribution Utilities herein attached as "ANNEX A" 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 in the country.

**Pasig City, March 8, 2006**

**RODOLFO B. ALBANO, JR.**
Chairman

(On Official Leave)
**OLIVER B. BUTALID**
Commissioner

**JESUS N. ALCORDO**
Commissioner

(On Official Leave)
**RAUF A. TAN**
Commissioner

**ALEJANDRO Z. BARIN**
Commissioner

Republic of the Philippines
**ENERGY REGULATORY COMMISSION**
San Miguel Avenue, Pasig

# GUIDELINES FOR THE MONITORING OF RELIABILITY STANDARDS FOR DISTRIBUTION UTILITIES

Pursuant to Section 43 (b) of Republic Act No. 9136, Rule 3 Section 4 (g) of its Implementing Rules and Regulations, and Article 3.3 of the Philippine Distribution Code (PDC), the Energy Regulatory Commission (ERC) hereby adopts and promulgates the following Guidelines for the Enforcement of Reliability Standards.

## ARTICLE I

## GENERAL PROVISIONS

### 1.1 Objectives

1.1.1 To ensure the continuous provision of electric service to End-Users.

1.1.2 To adopt rules and regulations for assessing the Reliability of the Distribution System.

1.1.3 To adopt requirements for maintenance of Interruption data, retention of records, and report filing..

1.1.4 To provide well-defined data to allow trend analysis over time for a given utility or among Distribution Utilities.

1.1.5 To establish a way of tracking and identifying System Reliability problems.

1.1.6 To establish reporting requirements to provide consumers, the ERC, and Distribution Utilities with methodology for monitoring Reliability within a Distribution Utilities' franchise area.

## 1.2 General Obligations of a Distribution Utility

1.2.1 Each Distribution Utility shall make reasonable efforts to avoid and prevent Interruptions of service. However, when Interruptions occur, service shall be reestablished within the shortest time practicable.

1.2.2 The Distribution System shall be designed and operated with sufficient protection to ensure safety and to limit the frequency and Duration of Interruptions to End-Users.

1.2.3 Each Distribution Utility shall always maintain the most recent five year records and reports of interruptions of service on its Distribution System and shall make an analysis of the records for the purpose of determining steps to be taken to minimize the frequency and duration of occurrences of such interruptions.

## 1.3 Scope

1.3.1 Privately-owned Distribution Utilities;

1.3.2 Electric Cooperatives;

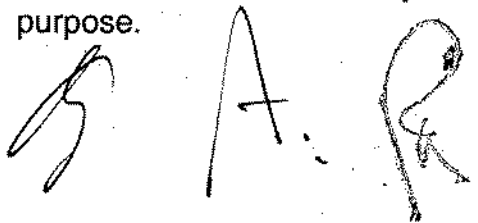
1.3.3 Local government unit owned-and-operated Distribution Utilities;

1.3.4 Entities duly authorized to own, operate and maintain Distribution facilities within the economic zones; and

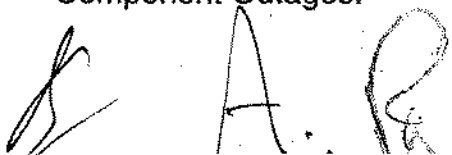
1.3.5 Other duly authorized entities engaged in the Distribution of Electricity.

## 1.4 Definition of Terms

| | |
|---|---|
| **Act** | Republic Act No. 9136, otherwise known as the "Electric Power Industry Reform Act of 2001". |
| **Adverse Weather** | A weather condition that result in abnormally high rate of Forced Outages for exposed Components while such condition persists, but does not qualify as a Major Storm Disaster. An Adverse Weather condition can be defined for a particular System by selecting the proper values and combinations of the weather conditions reported by the Weather Bureau including thunderstorm, wind velocity, precipitation, and temperature. |
| **Component** | A piece of Equipment, a line or circuit, a section of line or circuit, or a group of items, which is viewed as an entity for a specific purpose. |



| | |
|---|---|
| **Customer** | Any person or entity supplied with electric service under a contract with a Distributor or Supplier. |
| **Distribution of Electricity** | The conveyance of electric power by a Distributor through its Distribution System. |
| **Distribution System** | The system of wires and associated facilities belonging to a franchised Distribution Utility extending between the delivery points on the transmission, sub-transmission System, or generating plant connection and the point of connection to the premises of the End-User. |
| **Distribution Utility/ Distributor** | 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 the Act. |
| **End-User** | Any person or entity requiring the supply and delivery of electricity for its own use. |
| **Energy Regulatory Commission or ERC** | The regulatory agency created under Republic Act No. 9136. |
| **Equipment** | All apparatus, machines, conductors, etc. used as part of, or in connection with, an electrical installation. |
| **Force Majeure** | Any act of God, act of the public enemy, terrorist acts, insurrection, riot, fire, earthquake, labor strike or work stoppage, storm or flood, breakage or accident to machinery or equipment, any order or regulation or restriction imposed by the court, governmental, military or lawfully established civilian authority, or any other cause beyond the Electric Utilities' control. |
| **Forced Outage** | An Outage that results from emergency conditions directly associated with a Component requiring that it be taken out of service immediately, either automatically or as soon as switching operations can be performed. Also, an Outage caused by human error or the improper operation of Equipment. |
| **Interruption** | The loss of service to a Customer or a group of Customers or other facilities. An interruption is the result of one or more Component Outages. |



| | |
|---|---|
| **Interruption Duration** | The period from the initiation of an Interruption up to the time when electric service is restored. |
| **Major Storm Disaster** | A weather condition wherein the design limits of Equipment or Components are exceeded, and which results in extensive mechanical fatigue to or failure of Equipment, widespread Customer Interruption, and unusually long service restoration time. |
| **Momentary Interruption** | A state of zero voltage of a Component that lasts not more than five (5) minutes. |
| **Outage** | A 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. |
| **Power Quality** | The quality of the voltage, including its frequency and resulting current that are measured in the Grid, Distribution System, or any User System. |
| **Reliability** | 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. |
| **Scheduled Interruption** | An Interruption of electric power that result when a Distribution Component is deliberately taken out of service at a selected time, usually for the purposes of construction, preventive maintenance, or repair. |
| **Supplier** | Any person or entity authorized by the ERC to sell, broker, market, or aggregate electricity to the End-Users. |
| **Sustained Interruption** | A state of zero voltage of a Component that lasts greater than five (5) minutes. |
| **System** | The Distribution System or any User System. Also, a group of Components connected or associated in a fixed configuration to perform a specified function. |

2.3.4 Outages that are initiated by the System Operator/Market Operator during the occurrence of Significant Incidents or the failure of their facilities;

2.3.5 Outages caused by Force Majeure, Adverse Weather, or Major Storm Disasters which result in the declaration by the government of a state of calamity in the franchise area of the Distributor; and

2.3.6 Outages due to other events that the ERC shall approve after due notice and hearing.

## ARTICLE III

## RECORDING REQUIREMENTS

### 3.1 Outage Management System (OMS)

Each Distribution Utility shall maintain an automated outage management system (OMS) or electronic data base sufficient to determine a history of sustained electric service Interruptions experienced by each Customer. The OMS shall have the ability to access data for each customer in order to determine a history of electric service Interruptions. Data shall also be sortable by each of the following factors:

3.1.1 Town/s or City/Cities affected,

3.1.2 Barangay or Subdivision affected,

3.1.3 Substation affected,

3.1.4 Circuit Number.

3.1.5 Service Account Number

And in combination with the following factors:

3.1.6 Number of Interruptions in reporting period, and

3.1.7 Number of hours of Interruptions in reporting period.

### 3.2 Required Records

Records on interruptions shall be sufficient to determine the following:

3.2.1 Starting date and time of the Interruption;

3.2.2 Location of the outage (town or city and Barangay or Subdivision);

3.2.3 Circuit number(s) of the distribution circuit(s) affected;

3.2.4 Number of Customers affected;

3.2.5 Service account number or other unique identifier of each Customer affected;

3.2.6 Description of the cause of the Interruption;

3.2.7 Weather conditions at time of Interruption;

3.2.8 System Component(s) involved (e.g., distribution substation, primary lines, distribution transformer, etc.);

3.2.9 Date and time service was restored;

3.2.10 Duration of the Interruption;

3.2.11 Whether the Interruption was scheduled or unscheduled.

### 3.3 Cause Codes

Each Distribution Utility shall keep information on interruption cause codes, interruption weather codes, interruption isolating device codes, and interruption equipment failed codes. The Distribution Utilities may augment the following code sets to enhance tracking:

3.3.1 The minimum Interruption cause code set should include: (001) human being, (002) lightning, (003) major storm disaster, (004) scheduled, (005) trees, (006) overload, (007) error, (008) supply, (009) equipment, (010) other, (011) unknown, and (012) earthquake.

3.3.2 The minimum Interruption weather code set should include: (101) wind, (102) lightning, (103) rain, (104) clear day, and (105) typhoon.

3.3.3 The minimum Interruption isolating device code set should include: (201) breaker, (202) recloser, (203) fuse, (204) sectionalizer, (205) switch and (206) network protectors.

3.3.4 The minimum Interruption equipment failed code set should include: (301) primary line, (302) secondary line, (303) distribution transformer, (304) distribution sub-station, (305) splice, (306) lightning arrester, (307) switches, (308) cross arm, (309) pole, (310) insulator, (311) connector, (312) others, and (313) unknown.

## ARTICLE IV

## PERFORMANCE TARGETS

### 4.1 Setting of Performance Targets

The performance targets for each Distribution Utility for the initial year shall be set using the mean of the complete four year historical data.

For the subsequent years, each Distribution Utility has to set its own yearly performance targets. The targets for a subsequent year shall be an improvement of the established performance target of the preceding year.

### 4.2 Separate Performance Targets for each Distribution District, Zone, or Work Center

Distribution Utilities who have divided their Distribution Systems to several distribution districts, zones, or work centers may opt to have separate performance targets for each distribution district, zone, or work center.

## ARTICLE V

## RELIABILITY REPORTS

### 5.1 Quarterly Reports

Each Distribution Utility shall submit quarterly Interruption reports (presenting monthly data) for its Distribution System, on or before the end of the month following the quarter starting year 2006, using the standard format prescribed in Annex-A sufficient to compute the annual indices for SAIFI, SAIDI and MAIFI. The data shall be submitted in electronic copy using a Portable Document Format (PDF) or any other format that cannot be altered.

The quarterly report should also include calculation of the average minutes of interruption per customer due to causes in each of the following categories: Power Supplier, Major Storm Disaster, Scheduled, and All Others.

The Interruptions resulting from either scheduled or unscheduled outages on lines or substations owned by Transco are to be accounted for in the "power supplier" category.

The category "major storm disaster" represents service interruptions from conditions that cause many concurrent outages because of typhoon that exceed design assumptions for the lines.

The category "scheduled" refers to interruptions resulting when a distribution transformer, line or Distributor owned substation is deliberately taken out of service at a selected time for maintenance or other reasons.

The "all other" category includes outages primarily resulting from emergency conditions due to Equipment breakdown, malfunction or human error.

### 5.2 Summary of Performance

The ERC shall publish in its website the summary of the service performance of all Distribution Utilities before the end of the first semester of each year, starting year 2007, for the purpose of comparing the Reliability performance over time for a given Distribution Utility and among Distribution Utilities.

## ARTICLE VI

## REPEAL AND SEPARABILITY

All existing rules, regulations or orders or any part thereof inconsistent with this Rules are hereby repealed, amended or modified accordingly. If any part or provision of these Rules is declared unconstitutional or illegal, the other parts or provisions shall remain valid.

## ARTICLE VII

## EFFECTIVITY

These Guidelines shall take effect fifteen (15) days after publication in two newspapers of general circulation in the country.

Pasig City, March 8, 2006.

**RODOLFO B. ALBANO, JR.**
Chairman

(On Official Leave)
**OLIVER B. BUTALID**
Commissioner

**JESUS N. ALCORDO**
Commissioner

(On Official Leave)
**RAUF A. TAN**
Commissioner

**ALEJANDRO Z. BARIN**
Commissioner

Table -1R.

## INTERRUPTION REPORTS

**For the month of _____, Year _____**

**Distribution Utility:** _____
**District/Zone/or Load Center:** _____
**Number of Customers Served during the month:** _____

| Date | Town/City/ Barangay/or Subdivision Affected | Ckt. No. | Start Time | Restored | | Duration (min.) | No. of Cust. Affected | Interruption | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Date | Time | | | Cause | Weather | Isolation Device | Equipment Failed |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | Total | | | | | | |

**SAIFI =** _____

**SAIDI =** _____

**MAIFI =** _____

_____
Signature over Printed Name of Person Reporting

Date _____

**Formulas for Annual Reliability Indices:**

**System Average Interruption Frequency Index (SAIFI)**

$$SAIFI = \frac{\text{Total Number of Sustained Customer Power Interruptions during the period}}{\text{Average Number of Customers Served during the period}}$$

$$SAIFI = \frac{\Sigma N_s}{N_t}$$

**System Average Interruption Duration Index (SAIDI)**

$$SAIDI = \frac{\Sigma \text{ Customer Interruption Durations}}{\text{Average Number of Customer Served during the period}}$$

$$SAIDI = \frac{\Sigma N_s r_s}{N_t}$$

**Momentary Average Interruption Frequency Index (MAIFI)**

$$MAIFI = \frac{\text{Total Number of Momentary Customer Power Interruptions}}{\text{Average Number of Customer Served during the period}}$$

$$MAIFI = \frac{\Sigma N_m}{N_t}$$

ere:

$N_s$ = total number of customers experiencing sustained interruption per event during the period

$N_t$ = average number of customers served during the period

$r_s$ = duration of sustained interruption per event during the period

$N_m$ = total number of customers experiencing momentary interruption per event during the period