



Final v.1

Plant and Equipment Outage Procedure

(Annexure A1 of the System Operator Guidelines)

[Date]

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1. Glossary of Terms

1.1 Definitions

- 1.1.1. Unless the context otherwise requires, relevant definitions stated specifically in this Procedure are as set out in the Governing Documents. In the event that any definition in the Governing Documents is amended, such amended definition shall, from the effective date of the amendment, be deemed to apply to this Procedure, until this Procedure is expressly amended to reflect such change.
- 1.1.2. References in this Procedure to any document (including this Procedure) are references to that document as amended, consolidated, supplemented, novated or replaced from time to time, and to all annexes, schedules, attachments and supplements which form part of such document;
- 1.1.3. A term in this Procedure that uses the singular includes the plural and vice versa, and a term that imports gender includes both the masculine and feminine.
- 1.4. In this Procedure, headings are for reference purposes only and shall not affect the construction or interpretation of this Procedure.

Affected Participant	shall have the meaning set out in clause 6 of this procedure;
Annual Outage Plan	means a consolidated plan prepared by a TNSP, DNSP or Generator of all Planned Outages of Equipment on that TNSP's, DNSP's or Generator's Power System in the coming calendar year;
Business Day	means a day other than a Saturday, Sunday or public holiday in Zambia;
Contestable Consumer	means a Market Participant who is eligible to purchase electricity from any Eligible Seller and includes an Embedded Consumer, Mining Consumer, Industrial Consumer, End-use Consumer, Commercial Retailer, Exporter, Battery Energy Storage, System Operator and Intermediary Power Trader;
Day	has the meaning assigned to this term in the Grid Code being a period of 24 consecutive hours commencing at 00:00 hours;
Distribution Network Service Provider (DNSP)	has the same meaning assigned to this term in the Electricity Act being a licensee responsible for operating, maintaining and developing a distribution system in an area and, where applicable, the distribution system's interconnection with other systems;
Electricity Act	means the Electricity Act No. 11 of 2019;
Eligible Seller	has the meaning assigned to this term in the Market Guidelines being, a Supplier or licensee that holds a Licence to trade in electricity as defined in the Electricity Act, including but not limited to an independent power producer, importer, embedded power producer, battery energy storage system operator and intermediary power Trader

Emergency	has the meaning assigned to the word in the Electricity Act being, an occurrence where an unplanned loss of generation or transmission facilities, or an occurrence beyond a licensee's control that impairs or affects the licensee's ability to supply that licensee's system demand.
Energy Regulation Act	means the Energy Regulation Act No. 12 of 2019;
Energy Regulation Board (ERB)	means the Energy Regulation Board established under the Energy Regulation Act ;
Equipment	has the meaning assigned to this term in the Electricity Act being, machinery, appliances, meters, fittings, apparatus and other equipment owned by, or under the control of, a licensee and used for conducting the licensed activity;
Forced Outage	means an Unplanned Outage of Equipment which must be effected immediately and for which notification in accordance with the timelines specified in this Procedure cannot be met;
Generator	has the meaning assigned to this term in the Grid Code being, an entity operating a generating unit or power station;
Governing Documents	means, collectively, the Electricity Act, the Energy Regulation Act, the Open Access Regulations, the Market Guidelines, the Grid Code, the System Operator Guidelines, and any other rules, procedures, or codes issued by the ERB.
Grid Code	means the Electricity (Grid Code) Regulations, Statutory Instrument No. 79 of 2013;
Information	has the meaning assigned to this term in the Grid Code being, a type of knowledge represented by some data, which can be exchanged, stored or processed electronically or otherwise;
Interconnected Power System	has the meaning assigned to this term in the Electricity Act being, means a number of transmission and distribution lines, and includes associated power generation systems that are linked together for the purpose of transmitting or distributing electricity;
LIAC	means the Lusaka International Arbitration Centre;
Market Guidelines	means the Open Access Market Guidelines for the Electricity Sub-Sector 2025;
Market Participant	has the meaning assigned to this term in the Market Guidelines, being an Open Access User who has met the conditions of regulation 16 of the Open Access Regulations and includes a Contestable Consumer or Public Service Trader (PST) that is registered or admitted in accordance with the Market Guidelines to participate into the Market;
Non-compliant Participant	shall have the meaning set out in clause 6 of this Procedure;

Open Access Management System	has the meaning assigned to this term in the System Operator Guidelines, being the System Operator's electronic communication system for the publication of Information by the System Operator and the submission of Information to the System Operator by Participants.
Open Access Regulations	means the Electricity (Open Access) Regulations, Statutory Instrument No. 40 of 2024;
Outage Confirmation	means a notice to a Participant from the SO confirming the details of a Planned Outage by the Participant ;
Outage Notification	means a notification of a Planned Outage by a Participant submitted to the SO in the approved form;
Participant	means; an Eligible Seller or Contestable Consumer ; · a Generator; · a Trader; · the Public Service Trader (PST); · a Distributor; · a Supplier; · an Energy Storage Operator; - an Importer; and/or · an Exporter;
Planned Outage	means the scheduled removal from service of Equipment for inspection, maintenance, repair or replacement;
Power Systems	has the meaning assigned to the term in the Electricity Act being, a network of electrical components and allied infrastructure used to generate, transmit, distribute or supply electric power;
SAPP Operating Guidelines	means the Operating Guidelines published by the Southern African Power Pool;
Senior Authorised Person	means a competent person possessing the requisite technical knowledge and experience who is duly appointed in writing by a Participant to issue, receive, clear and cancel outage communications between that Participant and the System Operator in accordance with the terms of their appointment;
System Operator (SO)	has the meaning assigned to the word in the Electricity Act being, an entity responsible for the short term reliability of an interconnected power system, which is in charge of controlling and operating the transmission system and dispatching generation or balancing the supply and demand in real time in a non-discriminatory manner;
System Operator Guidelines	means the System Operator Guidelines for Open Access to Transmission and Distribution Systems, of which this document is an annexure;
Trader	means the holder of a licence to trade in electricity issued by the ERB under the Energy Regulation Act;

Transmission Network Service Provider (TNSP)	means an entity that is licensed to own and maintain transmission equipment;
Unplanned Outage	means the unscheduled removal from service of an item of Equipment caused by immediate and unforeseen failure of the Equipment or a forced outage for operational reasons; and
Yearly Maintenance Schedule	means the schedule of Equipment outages for a calendar year prepared and updated monthly by the SO in accordance with the Grid Code .

1.2 Abbreviations

AMI	Advanced Metering Infrastructure
COSEM	Companion Specification for Energy Metering
DLMS	Device Language Message Specification
DNBP	Distribution Network Service Provider
ERB	Energy Regulation Board
OAMS	Open Access Management System
OAREG	Open Access Regulations
SAPP	Southern African Power Pool
SO	System Operator
TNSP	Transmission Network Service Provider
GC	Grid Code
GC Ch4	Grid Code , Chapter 4, System Operation
GC Ch5	Grid Code , Chapter 5, Information Exchange

2. Hierarchy and Interpretation

This Procedure is subject to and shall be interpreted consistently with the Governing Documents

In the event of any conflict or inconsistency between the Governing Documents, any other Laws of Zambia, Licence conditions and this Procedure, such conflict shall be resolved in the following order of priority:

- a. Legal Requirements (including the Electricity Act and the Energy Regulation Act and Open Access Regulations);
- b. Licence conditions issued by ERB;
- c. Market Guidelines;
- d. System Operator Guidelines
- e. Other procedures and guidelines issued by the ERB or the System Operator pursuant to the Governing Documents.

If a provision of a document higher in the order of precedence is inconsistent with a provision of a document lower in the order of precedence, then the higher provision prevails, but only to the extent of the inconsistency.

3. Introduction

The **System Operator Guidelines** provide an overview of Zambia's open access regime, with annexures including this Plant and Equipment Outage Procedure, which sets out detailed procedures by which the **System Operator** carries out its functions.

3.1 Purpose

To establish a process for the coordinated and optimal scheduling of **Equipment** outages for **Generators**, **TNSPs**, **DNSPs** and other **Participants**, having regard to the need:

- to maintain a balance between demand and generation and system security in accordance with the **Grid Code** [*GC Ch. 4, §16*]; and
- to ensure fairness and transparency for all **Participants** in the scheduling of **Planned Outages**.

3.2 Scope

This Procedure applies to any **Equipment** of a **Participant** where an outage of such **Equipment** may affect the operation of the **Interconnected Power System** or the business interests of other **Participants**.

3.3 Referenced Documents

This Procedure references the following documents:

- the **Grid Code**;
- the **Open Access Regulations**; and
- the **SAPP Operating Guidelines**.

4. Appointment of Senior Authorised Persons

Each Participant shall submit to the **System Operator** a letter of appointment of at least two **Senior Authorised Persons** responsible for approving all communications with the **System Operator** under this Procedure.

The letter of appointment shall specify the section of the **Participant's** electrical and mechanical apparatus and civil structures to which the appointment applies, and any limitations to the person's authority.

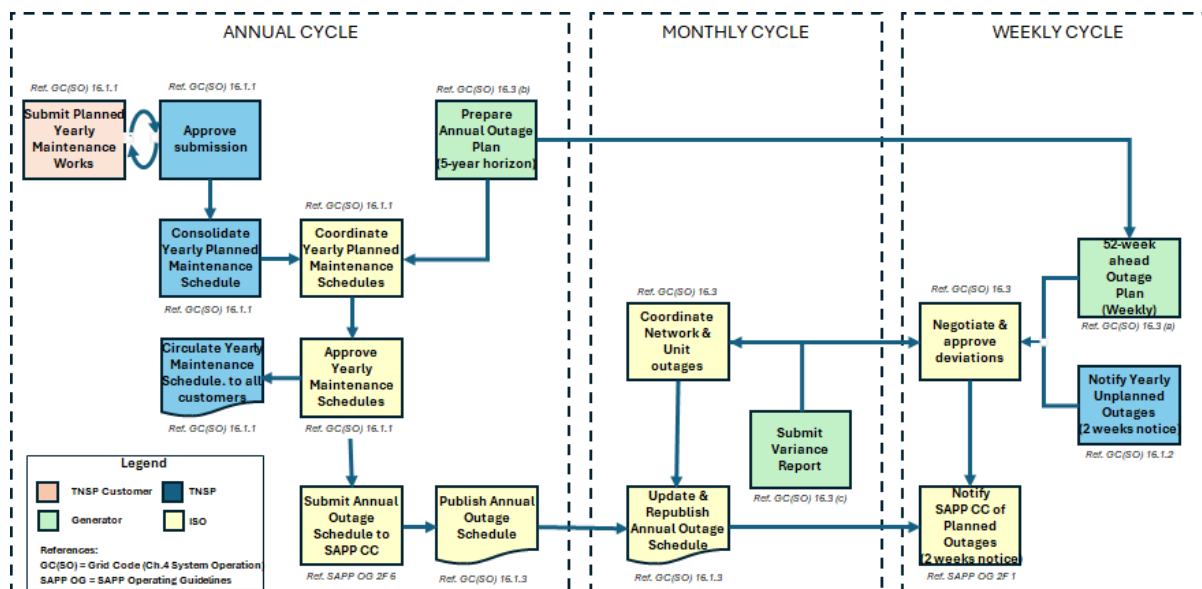
Participants shall notify the **System Operator** of any change in the appointed **Senior Authorised Persons**.

Senior Authorised Persons shall meet the competency requirements set out in the System Operator Guidelines and Appointment shall be appointed in writing by the relevant Participant with clearly defined scope and authority limits.

5. Maintenance Coordination

5.1 Overview

The **Grid Code** [*GC Ch. 4, §16*] establishes a maintenance coordination process as illustrated in the diagram below:



Annual Outage Plans by TNSPs, DNSPs and **Generators** shall be consolidated and submitted in advance, for the following calendar year [*GC Ch4 §16.1.3*] to the **SO** for coordination and approval [*GC Ch4 §16.1.1*], and reviewed quarterly.

The **SO** shall prepare the coordinated draft **Yearly Maintenance Schedule** to optimise the utilisation of available system resources.

The **SO** shall hold planning review meetings with **Participants** and **Traders** to canvass any concerns over the draft **Yearly Maintenance Schedule**.

All **Equipment** outage planning, and review meetings shall be chaired by the **SO** and shall be documented.

In reviewing Planned Outages, the **SO** shall consider recommendations from the review meetings and, where the **SO** decides not to adopt any such recommendations, shall publish its reasons when publishing the updated **Yearly Maintenance Schedule**.

Following reviews of **Unplanned Outages**, the **SO** shall amend the **Yearly Maintenance Schedule** to reflect the changes resulting from **such Unplanned Outages**. Where, following a review in accordance with clause 5.6, the **SO** determines that a **Forced Outage** was not justified by an **Emergency**, the **SO** shall report the responsible Participant to the **ERB**.

All **Outage Notifications** shall be submitted to the **SO** using the OAMS.

All **Outage Notifications** shall be accompanied by an up-to-date single line diagram of the station showing the Equipment and bays or hydraulic waterways affected.

5.2 Equipment Outage Planning Process

5.2.1 Annual Outage Planning

The following process shall be followed for annual Equipment outage planning for the upcoming calendar year.

The **SO** shall send out to **TNSPs**, **Generators**, **DNSPs** and where applicable other **Participants** a request for Equipment outage planning information for the upcoming calendar year by 1st September of each year.

Participants receiving a request from the **SO** shall submit the required **Information** for each outage of **Equipment** planned for the following calendar year to the **SO** by 15 September of each year. The **Information** provided shall include the proposed dates and impact of the outage on the **Participant's Power System**.

TNSPs, **DNSPs** and **Generators** shall submit their projected monthly Equipment availability indices based on maintenance schedules, and **Generators** shall also submit their interim projected generated energy.

The **SO** shall publish on the OAMS:

- the draft **Yearly Maintenance Schedule** in both summary and detailed formats by 15 October; and
- a provisional power balance for the next calendar year.

The **SO** shall arrange one or more meetings with **Participants** and **Traders** by 30th October of each year to review the draft **Yearly Maintenance Schedule**.

The **SO** shall submit the final **Yearly Maintenance Schedule** adopted by the **SO**, complete with projected energy balance and generating plant and transmission Equipment availability, to the **ERB** for information **within five Business Days of adoption**.

The **SO** shall submit the required outage Information from the **Yearly Maintenance Schedule** to the SAPP Coordination Centre in accordance with the **SAPP Operating Guidelines**.

5.2.2 Monthly and Quarterly Outage Planning

The **Yearly Maintenance Schedule** formulated in accordance with clause 5.2.1 shall be reviewed on a quarterly basis as follows.

TNSPs shall provide the **SO** with an **updated Annual Outage Plan** on or before the first **Business Day** of April, July and October of each year.

TNSPs shall copy the **SO** on the monthly rolling maintenance schedules provided to **Generators** in accordance with the **Zambian Grid Code [GC Ch5 §5.4]**.

The **SO** shall update the **Yearly Maintenance Schedule** with the information provided by **TNSPs** in their updated **Annual Outage Plans** and by **Generators** in their weekly outage plans [**GC Ch4, §16.3**], and shall publish the updated **Yearly Maintenance Schedule** for all **Participants** on or before the tenth (10th)

Business Day of April, July and October of each year.

The **SO** shall report any significant changes to the **Yearly Maintenance Schedule** to the ERB for information.

5.2.3 Weekly Outage Planning

In accordance with the **Grid Code [GC Ch4, §16.3]** each **Generator** will submit using the OAMS its 52-week ahead outage plan per station by 15:00 each Thursday. This plan will be summarised in the format set out in the **Grid Code [GC Ch5 Appendix 16]**, copied below, with details of any modifications proposed.

Unit No.	Activity	MW Lost	Week							
			1	2	3	4	5			n + 51
1	Annual Maintenance	100								
2	Annual Maintenance	100								
2	Governor modernisation	100								
3	Transformer oil	150								
etc										

TNSPs shall submit **Outage Notifications** for all **Planned Outages** in the coming two (2) weeks by Thursday at 12:00 hours, with details of the commencement hour and ending hour of each **Planned Outage**.

Outage Notifications for rescheduling of any **Planned Outage** shall be submitted not less than two (2) weeks prior to the date of that **Planned Outage** in the latest **Yearly Maintenance Schedule**. Where a **Participant's rescheduled Planned Outage** affects other **Participants**, the rescheduled date shall be at least five (5) **Business Days** after the outage date in the latest **Yearly Maintenance Schedule**.

The **SO** shall issue an **Outage Confirmation** to confirm the details of each **Outage Notification**.

The **SO** shall review the **Yearly Maintenance Schedule** on a daily basis and, in case of any contingency, may defer any **Planned Outages** as required to maintain a balance between demand and supply. The revised dates in such cases shall be finalised in consultation with the concerned **Participants** and communicated by the **SO** in an **Outage Confirmation**.

No **Planned Outage** may be carried out except in accordance with an **Outage Confirmation**.

5.3 Requesting Outages

5.3.1 Outage Notification Requirements

When a **Planned Outage** is due, the **Participant** shall submit an **Outage Notification** to the **SO** in advance of the due date as follows:

- ten (10) Business Days for Transmission Equipment; and
- fourteen (14) Business Days for Generating units.

All preparatory works for maintenance must be completed well in advance

before submitting an **Outage Notification** so as to keep the outage time to a minimum. All **Planned Outages** that are the subject of an **Outage Notification** not submitted within the stipulated time shall be deferred.

Where an outage affects power flows at **Southern African Power Pool** interface points between Utilities or at points where trading on **SAPP** markets occurs, **Participants** shall notify the SO giving twenty-one (21) **Business Days'** notification, or such other period as specified in the **SAPP Operating Guidelines**.

5.3.2 *Supporting Documentation*

All **Outage Notifications** shall be accompanied by a switching schedule and single line diagram, both duly signed by a **Senior Authorised Person**.

5.3.3 *Approvals of Documentation Submitted to the System Operator*

The **Participant** originating an **Outage Notification** shall ensure that all documentation submitted to the **SO** is prepared, checked, and approved by a **Senior Authorised Person** with appropriate authorisation for the subject matter of that documentation.

The **Outage Notification**, together with all attached documents, shall be submitted to the **SO** for review and approval.

5.3.4 *Commissioning and Safety Requirements*

The persons in charge of switching operations at the site shall be responsible for ensuring that all safety precautions are implemented during isolations and de-isolations of **Equipment** to prevent danger to operating personnel and Equipment.

During any Equipment shutdown, all reasonable efforts shall be made to ensure timely return of **Equipment** to service. Any delays shall be immediately reported to the **SO**, including the reasons for delay and the anticipated time for return to service of the affected **Equipment**.

All **Outage Notifications** relating to commissioning works shall be accompanied by the following:

- a cover letter from the Project Manager detailing the scope and nature of the works;
- a signed pre-commissioning report outlining the test report, protection settings and Equipment nameplate details;
- a method statement;
- a request for modification (where applicable);
- a signed commissioning/switching schedule;
- an approved single line diagram/modified diagram; and
- a copy of the approval to connect issued by the relevant **TNSP**.

5.4 **Modifications to Equipment and Installations**

All **Outage Notifications** relating to modification works to any **Participant's** Equipment shall

be accompanied by:

- a pre-commissioning report,
- a method statement;
- a duly signed commissioning and switching schedule; and
- a single line diagram.

5.5 Unforeseen Equipment Outages and Rescheduling of Outage Programs

Where a Participant requires to reschedule a **Planned Outage**, the Participant shall submit a new **Outage Notification** to the **SO** stating the reasons for rescheduling. The **SO shall consider system requirements and conditions when issuing an Outage Confirmation** for such rescheduling.

Where a Participant requires a **Forced Outage** due to an **Emergency**, the **SO** shall grant the request based on the **Information** communicated by the **Participant**. The necessary documentation shall be formalised after the **Forced Outage** has been implemented.

Where a **Planned Outage** is rescheduled to a date more than fourteen (14) calendar days after the date specified for that **Planned Outage** in the **Yearly Maintenance Schedule**, the **Outage Notification** shall include reasons for the deviation from the **Yearly Maintenance Schedule**.

5.6 Confirmation by System Operator

A **Participant** may carry out an outage only in accordance with an **Outage Confirmation** issued by the **SO** in response to a properly submitted **Outage Notification**.

The **SO** shall provide an **Outage Confirmation** within two (2) Business Days of receipt of an Outage Notification, either confirming the outage details as set out in the **Outage Notification** or with such modifications as the **SO** deems necessary.

Where a **Participant** has carried out a **Forced Outage**, they shall notify the **SO** as soon as practicable and provide information as to the nature of the **Forced Outage**.

5.7 Equipment Outage Communication Process

As **Information** must be exchanged in a time-bound manner, all transfer of Information between the **SO** and **Participants** shall be carried out through the OAMS.

The **Yearly Maintenance Schedule**, inclusive of any revisions, shall be continuously available to **Participants and Traders** on the OAMS. The **SO** shall issue notifications on the OAMS when any **Outage Notification** seeking a revision to the details of a **Planned Outage** in the **Yearly Maintenance Schedule** has been received.

The **SO** shall develop standard forms for **Outage Notifications** and **Outage Confirmations** as part of the OAMS.

In case of **Emergencies** and contingencies such as internet failure, the transfer of Information shall be through alternative modes including telephone or email.

The **SO** shall make the Yearly Maintenance Schedule available to all **Participants and Traders** through the OAMS.

The Participants, in performing their respective rights and obligations, shall comply with the Data Protection Act, No.3 of 2021.

6. Non-Compliance with Outage Confirmations

Where the **SO** publishes on the OAMS a notice of a proposed change to a **Planned Outage**, **Participants** and **Traders** shall notify the **SO** if the consequences of that proposed change would have a material consequence to **their Power System** or business interests. The **SO** shall consider in its **Outage Confirmation** the consequences of a change to a **Planned Outage** as notified by affected Participants.

Where a **Participant** carries out a **Planned Outage** in a manner or time not stipulated in the relevant **Outage Confirmation** (the “**Non-compliant Participant**”) and another **Participant or Trader** suffers a material adverse consequence to its business interests as a result (the “**Affected Participant**”), the **SO** shall compile a report. The report shall set out the reasons given by the **Non-compliant Participant** for its non-compliance with the **Outage Confirmation**, the quantified financial impact on business interests submitted by the **Affected Participant**, and a recommendation for restitution by the **Non-compliant Participant**. The **SO** shall submit this report to the **ERB** for determination.

7. Records

In accordance with the requirements of the Grid Code [*GC Ch5, §6.4.2*] copies of all **Outage Notifications** submitted to the **SO** and all associated **Outage Confirmations** shall be kept for five (5) years, after which hard copies may be disposed of.

Electronic records shall be retained for five (5) years and then archived in accordance with applicable data retention policies.

Participants, in performing their respective rights and obligations, shall comply with the Data Protection Act, No.3 of 2021.