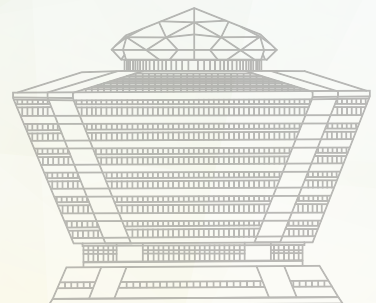


# **GUIDELINES FOR SYSTEM OPERATOR SABAH & THE FEDERAL TERRITORY OF LABUAN 2023**



# GUIDELINES FOR SYSTEM OPERATOR (SABAH AND THE FEDERAL TERRITORY OF LABUAN) 2023

[ 1 MARCH 2023 ]





## **ELECTRICITY SUPPLY ACT 1990**

**[Act 447]**

## **GUIDELINES FOR SYSTEM OPERATOR (SABAH AND THE FEDERAL TERRITORY OF LABUAN) 2023**

### **Guideline/ST/ No. 33/2023**

IN exercise of the power conferred by Section 50C of the Electricity Supply Act 1990 [Act 447], the Commission issues the following guidelines:

#### **Purposes**

1. These guidelines set the principles, rules and mechanism for the implementation of ring-fencing arrangement of the System Operator for the purposes of performing its functions and duties in a fair and non-discriminatory manner.

#### **Citation and commencement**

2. These Guidelines may be cited as the Guidelines for System Operator (Sabah and The Federal Territory of Labuan) 2023.

3. These Guidelines come into operation on **1 March 2023**.

#### **Application**

4. These Guidelines shall apply to any person or a unit, department or division which has been authorised to be the System Operator by the Order published in the Gazette.

Dated:

**DATO' IR. TS. ABDUL RAZIB BIN DAWOOD**  
Chief Executive Officer  
for Energy Commission

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### Terms and Definitions

<b>Term</b>	<b>Definition</b>
<b>Commencement Date</b>	The date upon which these Guidelines comes into operation.
<b>Day Ahead Dispatch Schedule</b>	means the finalised schedule for the dispatch of each Generating Unit by the Day Ahead Dispatch Interval for the Day Ahead Dispatch Period to meet the Day Ahead Load Forecast. Also define as an instruction to load a generating unit to a certain quantum of energy by a specified time.
<b>Dispatch Schedules</b>	means the Day Ahead Dispatch Schedule, the Week Ahead Dispatch Schedule and the Three Month Ahead Dispatch Schedule.
<b>Dispatch Scheduling Model</b>	means a computerised model that is capable of calculating the least cost of Real-time Security Constrained Economic Dispatch, owned and operated by the System Operation.
<b>Act 447</b>	means the Electricity Supply Act 1990 and any subsidiary legislation made thereunder.
<b>Energy Commission</b>	means the Energy Commission established under the Energy Commission Act 2001.
<b>Generation Schedule</b>	means the generation output for each calendar quarter for the Generators prepared and finalized by the Single Buyer before the start of a calendar quarter pursuant to the Generator Contracts between the Grid Owner and the Generators.
<b>Generator</b>	means an entity licensed by the Energy Commission to generate electricity in Sabah and The Federal Territory of Labuan
<b>SLGC Committee</b>	means the committee responsible for keeping the SLGC under review in accordance with the rules and procedures defined under SLGC.
<b>Grid System</b>	means the SESB transmission grid that covers the whole of Sabah and The Federal Territory of Labuan at voltage levels of 66Kv and above that the GSO has authority to direct operation.
<b>Grid Owner</b>	means a unit within SESB responsible for the operation and maintenance of a Transmission Network and its associated plant and apparatus for the purpose of providing transmission services, including access to the Transmission Network to Generators, Distributors and users of the Grid System in accordance with the provisions of the SLGC and terms and conditions of the licence.

<b>GSB</b>	means the Guidelines for Single Buyer (Sabah and The Federal Territory of Labuan) 2023.
<b>GSO</b>	means the System Operator authorised under section 22A of the Act 447
<b>ICT</b>	means information and communication technologies including the internet, wireless networks, computers, software, video-conferencing and other media applications and services enabling users to access, retrieve, store, transmit, and manipulate information in a digital form.
<b>Least Cost Dispatch Scheduling Methodology</b>	means a methodology for developing the Dispatch Schedules such that the lowest cost marginal Generating Unit is forecast to be dispatched first to meet demand followed by the next lowest cost marginal Generating Unit until all demand is met.
<b>Operating Reserve</b>	means the additional output from Generating Plant or the reduction in demand, which must be realizable in real time operation to respond in order to contribute to containing and correcting any System Frequency fall to an acceptable level in the event of a loss of generation or imports or mismatch between generation and demand.
<b>Participant</b>	means an entity registered by Energy Commission as a Participant under Chapter 3 with consequent obligations under GSB
<b>PPA</b>	means a power purchase agreement between Independent Power Producer and SESB.
<b>RIG</b>	means the electricity tariff regulatory implementation guidelines issued by the Energy Commission.
<b>SLGC</b>	means Grid Code for Sabah and Labuan (Amendments) 2017 [KOD/ST/NO.3/2016(Pin. 2017)]
<b>SESB</b>	means Sabah Electricity Sdn. Bhd. (Company No. 199801006745 (462872-W)), a company incorporated under the Companies Act 1965, and having its registered place of business at Wisma SESB, Jalan Tunku Abdul Rahman, 88673 Kota Kinabalu, Sabah, Malaysia.
<b>SESB Distribution</b>	means the distribution division of SESB.
<b>SESB Generation</b>	means the generation division of SESB.
<b>Single Buyer</b>	means any person authorized to be the Single Buyer in pursuant to Section 22B of the Act 447.



<b>Oversight Panel</b>	means the panel convened and chaired by the Energy Commission to oversee the compliance of these Guidelines.
<b>GSO Website</b>	means the website which will be developed and maintained by the GSO
<b>SCADA/EMS</b>	means Supervisory Control and Data Acquisition / Energy Management System
<b>SLA</b>	means a Service Level Agreement is a documented agreement of commitment between a service provider and GSO that identifies both the services required and the expected level of service.
<b>Department of GSO</b>	means the department responsible for operational planning, real time rescheduling, dispatch and control of the Grid System in compliance with the provisions of the SLGC.
<b>System Upgrade Plan</b>	means an investment plan to upgrade the Dispatch Scheduling Model.
<b>Electricity Transmission Network</b>	has the same meaning as assigned to it under the Act 447.
<b>Unit Commitment</b>	means turning on or turning off of a generating unit.

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## **SECTION 1: RING FENCING OF GSO WITHIN SESB**

### **1.1 Purpose**

This chapter sets out the requirements for GSO to be able to perform its functions and duties in a non-discriminatory manner and outlines the measures to be adopted by the GSO, in order to allow the GSO to demonstrate that it is properly ring fenced as it undertakes its daily activities.

### **1.2 Non – Discriminatory Conduct**

1.2.1 In performing its functions and duties, the GSO shall ensure that it operates in accordance with the SLGC and does not act in a manner that unreasonably discriminates against any other participant. To provide transparency to the operation of the GSO, the GSO shall develop a set of non-discriminatory processes, which shall be published in its website together with enough information to allow the related party to determine whether it is likely that a discrimination may have taken place.

1.2.2 Any discriminatory action which specifically requires GSO to act under the GSB, SLGC, PPA, SLA or any other agreement in existence more than twelve months prior to the date of these Guidelines shall not be deemed to be discriminatory.

1.2.3 Subject to clause 3.2.2, the Commission may determine, on a case-by-case basis, whether the behavior of the SO is discriminatory. In doing so, the Commission shall have regard to:

- (a) the laws of Malaysia;
- (b) the SESB License under which the GSO is required to operate;
- (c) the SLGC;
- (d) the GSB;
- (e) the dispatch schedule provided to the GSO by the Single Buyer;  
and
- (f) any other matters that the Commission may consider relevant.

### **1.3 Ring Fencing of GSO Activities**

1.3.1 Where the GSO is forming part of SESB, the GSO shall identify any situation or circumstances that may give rise to a conflict of interest or have an impact on competition within the electricity industry and implement appropriate operational ring-fencing procedures to address the potential conflict of interest or impact on competition.

1.3.2 These ring-fencing procedures shall include, but are not limited to:

- (a) Establishing separate work areas for GSO from the work areas of other SESB divisions, where the GSO operating from clearly separate areas to which only GSO staff and others under the direct supervision of GSO staff have access;
- (b) Restricting the access of the GSO staff to the work areas of other parts of SESB, where they have access to the work areas only permitted by SESB;
- (c) Establishing access controls for information systems used by the GSO such that:
  - (i) only GSO staff can access systems that are only used by the GSO;
  - (ii) shared systems are partitioned in such that staff of all divisions have access only to the information that is permitted and the staff of other divisions do not have access to GSO information that may result in a competitive advantage to SESB;
  - (iii) a record is maintained of the date and time that each information item is accessed and/or changed by each individual user of the information systems used by the GSO;
  - (iv) Ensuring that any person responsible for the management of the Department of GSO shall not participate in internal SESB meetings or discussions regarding the operation of any of the competitive businesses of SESB, except to the extent that they would normally attend such meetings with external parties;
  - (v) Restructuring staff meetings and internal communications mechanisms of SESB so that members of staff from the GSO do not attend the same staff meeting or internal communications of the businesses of SESB that are open to competition;
  - (vi) Upon permitted by the Commission, all staff of SESB may be summoned to a single meeting where it is considered essential that all SESB staff receive exactly the same information at exactly the same time.

- (vii) Establishing a mechanism for quarantining staff intending to leave the GSO for any organisation involved in the competitive sectors of the electricity industry including competitive businesses in SESB and any part of SESB. The quarantine period shall be determined by the Commission.

1.3.3 Where corporate or other services are provided to the GSO from elsewhere in the SESB organisation, these services shall be provided under a SLA negotiated between the GSO and the appropriate other parts of SESB. Each SLA shall include cost transfer arrangements that comply with the RIG for the allocation of such costs and arrangements for the protection of information that are similar to those established for the protection and handling of information by the GSO's own staff. These services include, but are not necessarily limited to the list of activities identified in Appendix A.

#### **1.4 Confidentiality**

The GSO shall not disclose any information that is confidential to SESB or to any other party, or any information, the disclosure of which may provide a competitive advantage to any party except:

- (a) to the extent required in the license under which the GSO operates or for the performance of functions of the GSO under the license and SLGC;
- (b) where the information can be proven to already be in the public domain;
- (c) as directed by the Commission or any court having appropriate jurisdiction.

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## **SECTION 2: RING FENCING OF OPERATIONS**

### **2.1 Purpose**

Notwithstanding the GSO is ring fenced, the current operational tasks will, from a technical standpoint, remain the same. The procedures established to address these tasks are subject to certification under ISO 9001 and will continue as it is. However, some changes may be required in some of the procedures to ensure that the ring-fencing principles are met. This chapter establishes operational requirements for the GSO in a ring-fenced environment and provides examples of procedures that would provide the basis for future ring fenced GSO operations.

### **2.2 Principles of Operational Ring Fencing of the GSO**

2.2.1 Section 2 establishes the requirements for the ring fencing of the GSO organization, the principle established being that, on a day-to-day basis, the ring fenced SO shall operate as a separate organization from all other parts of SESB, treating SESB in exactly the same manner as it treats those market participants that compete with SESB in the competitive industry sectors.

2.2.2 Within three months of the establishment of the ring fenced GSO, GSO shall review all of its operational practices and procedures to ensure that they reflect the principles stated in section 2.2.1.

2.2.3 Within six months of the establishment of the ring fenced GSO, GSO shall establish new operational practices and procedures to ensure that it takes the primary management responsibility for all aspects of the customer interface for transmission activities in a manner that reflects the principles stated in section 2.2.1.

### **2.3 Detailed Operational Procedures**

2.3.1 GSO shall have in place documented operational procedures to comply with the requirements of the SLGC, mostly in the form required by its ISO 9001 certification. Many of these procedures are of a technical nature and are unaffected ring fencing.

2.3.2 The key documented procedures include:

#### **(a) Processes Involved in the Operation Planning Phase**

##### **(i) Operation Plan (SOOP-750-13-WI-01)**

This procedure details out the processes involved with the

preparation of the Five Year System Operation Plan.

- (ii) **Daily Docket Meeting** (SOOP-750-01-WI-04)  
This procedure states that the Daily Docket Meeting has to be carried out at 8.30 am on every business day to audit the post operation, compare what has been planned and the reasons for the differences. In this meeting the day ahead operation planning is carried out to ensure the safe and secure operations of the Grid System.
- (iii) **Weekly Coordination Meeting** (SOOP-750-01-WI-04)  
This meeting coordinates the ten days ahead generator outages, transmission outages and generation schedules by Single Buyer.
- (iv) **Daily Security Assessment Report** (SOOP-750-01-WI-04)  
This document describes the process of preparation of Daily Security Assessment Report which looks into the stability of the Grid System under all  $n - 1$  contingencies and selected of the  $n - 2$  contingencies.
- (v) **Five Year Generator Outage Plan** (SOOP-750-07)  
This document sets out the procedure for planning five years ahead of generator outages according to SLGC. This document enables the GSO to coordinate generation outages to achieve safe, reliable and economic operation and minimize constraints
- (vi) **Generation Management** (ISMS-SOOP-431-06)  
GSO follows this procedure to plan the month ahead, week ahead, day ahead and actual granting of generator outages by using the Outage Management System. This procedure is a guide to manage all generation outages in order to ensure the grid system remains safe and secure at all times.
- (vii) **Preparation of Single Line Diagram** (SOOP-750-04)  
This document is to define and standardize the process and requirements of preparation of a single line diagram for a substation.
- (viii) **Transmission Numbering and Nomenclature** (SOOP-750-05)  
This document details out the processes required to prepare the numbering and nomenclature to ensure, as far as possible the safe and effective operation of the Grid System and to reduce the

risk of human error by clear and unambiguous numbering and or nomenclature that has been mutually agreed and notified between the User, the GSO and the relevant Network Operator that at any Connection Point, every item of Plant and or Apparatus.

(ix) **Switching Program Procedure (ISMS-SOOP-431-04)**

This document elaborates the steps required in preparation of switching program. The objective is to have a detailed guideline of switching procedure for shift personnel to prevent incorrect switching operation that could lead to supply disruptions or electrical accidents during the actual switching at site.

(x) **Transmission Outage Management (SOOP-750-01-WI-10)**

As the name suggests, this document details out the processes required to manage the outages of transmission lines and equipment in the Grid System. The outages have to be planned and coordinated in conjunction with the generator outage plan so that the rest of the Grid System remains safe and secure. This document details out the processes required to manage the outages of transmission lines and equipment in the Grid System in order to ensure the grid system remains safe and secure at all times. SESB uses Online Outage Management System (OMS) to coordinate the transmission outage request so that it can be reviewed, updated and monitored continuously.

**b) Processes Involved in the Real-time Control Phase**

(i) **Control Operation Dispatching Process (SOCO-750-01)**

This procedure guides the shift personnel to economically dispatch generating units following the Unit Commitment Plan and dispatch schedule prepared by Single Buyer to meet the system demand while ensuring the safe and secure operations of the Grid System.

(ii) **Spinning Reserve (SOCO-750-05)**

This procedure guides the shift personnel to ensure that the spinning reserve in the system is sufficient at all times to provide enough response during generation loss, system disturbance and forecast errors.

(iii) **Switching Execution (SOCO-750-16)**

This procedure guides the shift personnel to perform safe switching process during planned shutdown of Transmission equipment.

(iv) **Procedure on Issuance of Non-Compliance**

Penalties are imposed on generators if they do not comply with dispatch instructions. When shift personnel issue a dispatch instruction, the instruction given must strictly follow the guidelines given in this procedure. When a generator fails to comply with the dispatch instruction, the shift personnel has to follow strictly the guidance given in issuing the notice to the generator concerned and also informing the Single Buyer of such failure.

(v) **Spinning Reserve Guideline**

This procedure guides the shift personnel in keeping sufficient spinning reserve to cater for load regulation, forecast errors and that the loss of the largest generating unit does not result in automatic under-frequency load shedding.

**c) Processes Involved in the Post Operation Phase**

(i) **Grid System Performance Report (Quality Supply)**

This procedure is to outline the process of producing the Grid System Performance Report (Quality Supply). This report monitors the frequency and voltage violation performance.

(ii) **Dispatch Adjustment (SOOP-750-10)**

This procedure is to outline the guidelines for GSO to simulate dispatch adjustment using PLEXOS software and obtain the Least Cost Constrained Generation Scheduling compared to the actual daily dispatch and constraints of the previous day operation.

2.3.3 Following a complete review, which should take account of GSO ring fencing, Single Buyer ring fencing and the requirements of ISO 9001, all routine operational procedures shall place the ring fenced GSO in overall managerial control of the transmission system, responsible for the customer interface and undertaking system operation based on the dispatch instructions of the Single Buyer while recognizing the ring fenced GSO's responsibility for real time system management.



## **SECTION 3: RING FENCING OF INFRASTRUCTURE AND ICT**

### **3.1 Purpose**

- 3.1.1 To ensure that the ring fenced GSO is able to continue in operation, arrangements must be established for it to have continued access to ICT infrastructure and services and to be able to develop its ICT infrastructure to ensure compliance with the requirements of the SLGC. This chapter outlines appropriate arrangements that should be put in place to ensure that both the ring fenced GSO and the other SESB businesses are capable of operating successfully.
- 3.1.2 In identifying appropriate arrangements, it is recognised that the ICT infrastructure currently supporting the GSO operations is highly integrated with that of other SESB departments and that the legal entity owning this infrastructure before and after ring fencing of the GSO will be SESB. The management and Board of SESB retain an obligation to ensure the cost-effective operation of the SESB in compliance with all the SESB's obligations.

### **3.2 Existing Operational Systems**

- 3.2.1 To avoid unnecessary changes to supplier relationships, the continuing ownership of the SCADA/EMS, load forecasting software, power flow software, Unit Commitment, dispatch schedule software and supporting architecture should remain within the current SESB arrangements.
- 3.2.2 Appropriate SLAs shall be developed between the GSO and other SESB departments to ensure that operational systems are developed and maintained, with the opportunity for them to be renewed when necessary, as required by the ring-fenced GSO. At the time of system replacement, the ownership decision can be revisited.
- 3.2.3 Where software is used by both the Single Buyer and the GSO, procedures shall be established to ensure changes to, or any upgrades to the existing systems, or the adoption of new software are coordinated between both parties such that the same version and parameters used are kept in step. In the event it is determined that new software should be acquired to replace such shared operational systems, this shall be evaluated by a cross functional team consisting of representatives of GSO and Single Buyer to ensure that the replacement software is appropriate for use by both parties.

3.2.4 The SLAs established to support existing operational systems shall include provision for the GSO accounts to bear the cost of software licensing and support and a realistic hardware and firmware lease charge. A realistic proportion of the corporate LAN and WAN costs shall also be charged to the GSO accounts under the SLA, taking due account of the data volumes transmitted and the high security requirements of the GSO operational systems.

### **3.3 Administrative Systems**

GSO shall requires access to administrative systems which are, and will continue to be delivered by shared systems providing service to all of SESB. Provision of these services shall be subject to the terms of SLA negotiated between the GSO and SESB's ICT departments. Costs for these services shall be established in accordance with the provisions of RIG7 relating to shared service provision.

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## **SECTION 4: RING FENCING OF INFORMATION AND DATA FLOW**

### **4.1 Purpose**

4.1.1 As GSO uses shared ICT systems to support its operations, it is necessary to establish arrangements for the management and protection of data used by GSO. For the successful operation of the wider electricity market, certain high level rules are required to govern the transfer of data between those parties that have a legitimate interest in that data. This chapter outlines appropriate arrangements that should be put in place to ensure that GSO, the other SESB businesses and the wider electricity market are all capable of operating successfully.

4.1.2 The ICT infrastructure currently supporting the GSO operations is highly integrated with that of other SESB departments and the legal entity owning this infrastructure will always be SESB. The management and Board of SESB retain an obligation to ensure the cost-effective operation of the company in compliance with all the company's obligations. However, within this framework, the data held by SESB is used to support the operation of different businesses and the effective business ownership of data elements is considered in this section.

### **4.2 Data Ownership**

4.2.1 The ownership of all data in the principal operational systems used by GSO shall be established to rest with GSO.

4.2.2 The ownership of all data in the operational systems used jointly by the GSO and the Single Buyer shall rest with the Single Buyer where their principal use is to support the development of the Day Ahead Schedule and/or the operation of market settlement. The ownership of all other data in operational systems used jointly by the GSO and the Single Buyer shall rest with the GSO.

4.2.3 The data held in corporate or shared administrative systems relating to the operation of the GSO or to staff employed by the GSO shall rest with the GSO.

### **4.3 Access to GSO Data**

- 4.3.1 Access to all GSO owned data shall be subject to controls that ensure that it is only accessible by those individuals who have a legitimate interest in that data.
- 4.3.2 Access to GSO data shall be controlled, at minimum, by only permitting access to it after the entry of an individual username and password pair that meets the requirements of good industry practice. Where screens may be left open while the individual is not using them, data access shall close after a reasonable inactivity period.
- 4.3.3 Systems shall record access to data by individuals together with a date and time stamp. Similarly, the change of any data element shall be monitored by the storage of username, date and time of the change action.
- 4.3.4 All individuals having access to GSO owned data shall be subject to the compliance code of conduct. This requirement shall be included in all SLAs concluded by the SGO with other parts of the SESB organisation.
- 4.3.5 No individual shall be provided with access to any data that is not essential for the completion of tasks normally allocated to them.

### **4.4 Transfer of Market Data**

- 4.4.1 The Commission may establish general rules for the transfer on market related data that shall apply to all market participants.
- 4.4.2 Where any party active or previously active in the electricity market holds data or other information and another party has a legitimate need of that data or other information related to the operation of the electricity market or for system operation reason, the party holding the data or other information is required to provide it to the other party.
- 4.4.3 Where data is transferred as part of the routine processes necessary for purposes in connection with the operation of the electricity market or for system operation purposes, then the data will be transferred free of all charges to the recipient.
- 4.4.4 Where any party requests a non-routine transfer of data (for example a resend of properly receipted data as a result of a failure in the

recipient's IT systems) then the party holding that data shall be permitted to charge the recipient such reasonable costs as are incurred in preparing the data for transfer and for effecting the transfer of data.

- 4.4.5 All parties shall be free to agree on the mechanism to be used for data transfer.
- 4.4.6 Where data is transferred electronically using a public communications system or a private system to which other parties have access, it shall, at minimum, be transferred with a check digit to allow the receiving party to confirm the authenticity of the data received.
- 4.4.7 The choice of data transfer mechanism shall facilitate smooth operation of the electricity market while ensuring that there are no barriers to entry by small players. In this context, it is expected that persons or entities sending or receiving a small number of data messages may use a transfer in written form, while persons or entities sending or receiving a large number of data messages will agree to the use of electronic data transfer systems.
- 4.4.8 Where parties, who do not have a contractual relationship, are unable to agree on the mechanism of data transfer for market related data, they will refer the issue to the Commission for resolution.
- 4.4.9 On each occasion that data is sent and received, a receipt shall be returned and retained by the party sending the data. Only once the receipt has been obtained, the sender of the data shall discharge its obligations to provide data.
- 4.4.10 If the parties by whom data or other information is shared use automated systems for the transfer of the data or other information, then the obligations of the parties in respect of section 4.4.9 shall be discharged when the recipient sends an acknowledgement generated by its automated systems or (as appropriate) the sender receives an acknowledgement generated by the recipient's automated systems.

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## **SECTION 5: GOVERNANCE AND OVERSIGHT**

### **5.1 Purpose**

- 5.1.1 To ensure that the GSO complies with the requirements of a ring fenced organization, it is necessary to put in place the necessary governance arrangements, such as ensuring sufficient independence of the GSO in terms of management decisions, finance and accounting, and the confidentiality of information within the SESB organization.
- 5.1.2 This chapter outlines the governance arrangements for the ring fenced GSO including its independence from the competitive businesses of SESB, the independent oversight of the GSO and requirements for compliance with the SLGC.

### **5.2 Appointment of the Head of the GSO**

- 5.2.1 The appointment of the Head of GSO, who shall report directly to the Managing Director of SESB, shall be undertaken in accordance with SESB's documented employment policies. The appointment or dismissal of the Head of GSO shall require the endorsement of ST.
- 5.2.2 In the event that the position of the Head of GSO is left vacant due to the departure of the incumbent at short notice, or the processes for the appointment of the Head of GSO have not been completed for any reason, the Managing Director of SESB, with the endorsement of ST, shall appoint a person to act in the position of Head of GSO until the appointment process is completed. The acting Head of GSO shall be accorded the same level of independence and be subject to the same operational regime as would the Head of GSO.
- 5.2.3 SESB shall establish appropriate reporting arrangements for the Head of GSO which ensures that:
- (a) the Head of GSO is responsible to the Managing Director of SESB for the operation of the GSO in accordance with SESB's Corporate Governance arrangements;
  - (b) the Head of GSO has sole responsibility for the day to day operation of the GSO;
  - (c) unless they have responsibility for approving all business plans and all financial plans which impact on the overall corporate operation of SESB, no person shall have any control over any part of the operation of the GSO if such person also have control

of any part of the generation or retail supply businesses of SESB;

- (d) for any person who has control of any part of the generation or retail supply businesses of SESB, the extent of the control over any part of the operation of the GSO that is permitted under paragraph (c) above shall be limited to the approval of business plans and overall financial plans;
- (e) the Head of GSO shall not have any control over, or receive any direct benefit from, the operation of any part of the generation or retail supply businesses of SESB.

5.2.4 The terms of employment for the Head of GSO and the staff of the GSO shall be consistent with SESB's employment policy and shall include requirements to comply with the requirements of the Code of Conduct outlined in section 7.3.3. No part of the benefits package enjoyed by any member of the GSO staff shall be dependent on any identifiable aspect of the performance of any part of SESB operation in a competitive sector of the Sabah electricity industry.

### **5.3 Compliance with Ring Fencing Obligations**

5.3.1 The GSO shall ensure that it has appropriate policies, systems and procedures in place to ensure that it is capable of complying with its legal requirements.

5.3.2 In the event that the GSO becomes aware that there is a non-compliance of the SLGC, it shall immediately inform the SLGC Committee and the Commission and put in place procedures to address the non-compliance.

5.3.3 Where the GSO establishes that it is impossible to comply with the requirements of any provision of the SLGC, it shall propose an amendment to the SLGC that allows compliance with the spirit of the SLGC as a whole and of the section it proposes to be amended.

5.3.4 Within six months of the establishment of the ring fenced GSO, the GSO shall prepare a statement detailing how it will comply with the ring fencing obligations. This statement shall include, but need not be limited to:

- (a) arrangements to ensure the independence of the senior staff of the GSO;
- (b) arrangements for the protection of confidential and

commercially sensitive information;

- (c) a Code of Conduct, enforceable in employment contracts, dealing with the handling of confidential information and the transparent and equal handling of all work on behalf of all network users;
- (d) training of current staff and inclusion in induction training arrangements;
- (e) arrangements for the quarantine of staff leaving the GSO; and
- (f) routine audit of different compliance areas selected on a rolling basis.

5.3.4 The obligations placed on the staff of the ring fenced GSO shall also be placed on other staff in SESB providing corporate business services to the ring-fenced GSO.

5.3.5 The GSO shall identify a 'compliance officer', who shall be responsible for ensuring compliance arrangements are established and maintained, and for ensuring that any complaints of discrimination are appropriately investigated. The compliance officer shall prepare a periodic report, at least annually, and arrange that it is submitted to the Commission following approval by the Head of GSO and the managerial board of SESB. This report shall detail how compliance is achieved, the number of complaints of discrimination that have been received and the results of all complaint investigations undertaken.

5.3.6 In addition to any audit undertaken by the SLGC Committee, the Commission may undertake any actions that it considers necessary to monitor compliance by the GSO of its ring fencing obligations.

#### **5.4 Oversight by the SLGC Committee**

5.4.1 Section GC7 of the SLGC establishes the mechanism for overseeing the operations of the GSO in accordance with the requirements of the SLGC. This oversight is the responsibility of the SLGC Committee, chaired by the Commission.

5.4.2 The SLGC provides the SLGC Committee with the right to appoint an external auditor to undertake an audit of all GSO operations and imposes on the SLGC Committee the obligation to determine the rules



and procedures for the external auditor subject to approval by the Commission.

- 5.4.3 Oversight by the SLGC Committee shall be limited to technical matters relating to the operation of the SLGC.

## **5.5 Oversight of Ring Fencing Compliance**

5.5.1 The Commission shall establish an oversight committee which shall be chaired by the Commission and may include representatives from other relevant parties to oversee compliance by the ring fenced GSO of its ring fencing obligations.

5.5.2 Where the oversight committee determines that a review of the GSO operations is necessary, the oversight committee shall determine the areas to be reviewed and the rules and procedures to be followed by an external auditor appointed by the oversight committee to perform the review.

5.5.3 Except for the representatives of the Commission, no members of such an oversight committee shall have the right to enter any place or inspect any activity undertaken by ring fenced GSO staff.

## **5.6 Audits for Governance**

5.6.1 There is a requirement to undertake audits of some information about or used by the GSO. This includes the requirement for regulatory financial reports for the GSO to be audited by a licensed independent auditor as if they are statutory financial statements.

5.6.2 The accounting systems should be capable of accounting for system operation activities separately to ensure that all expenditure is correctly accounted for in the books of account and that it can be reported to auditors and regulators on demand quickly and transparently.

5.6.3 Financially and commercially sensitive information should be kept confidential and not disclosed to other business units of the vertically integrated company. This should be proved by selective routine audit.

## **5.7 GSO Website and Publications**

5.7.1 The GSO Website shall be owned, operated and maintained by the GSO and developed in such a manner as to promote transparency in the performance of the functions of GSO.

- 5.7.2 The GSO shall ensure that the GSO website:
- (a) is accessible by the general public and the security from cyber threats and/or attacks is consistent with good industry practice;
  - (b) presents data and information clearly;
  - (c) is updated regularly for new reports, market information and data;
  - (d) includes a market participant login area providing access to more sensitive data which should be available to authorised representatives of market participants.
- 5.7.3 The GSO shall publish the following key reports, data sets and forecasts on the GSO Website:
- (a) public safety information;
  - (b) general information regarding the structure of the electricity industry in Sabah and The Federal Territory of Labuan;
  - (c) the organisational structure of the GSO;
  - (d) contact details for customers and others wishing to contact the GSO;
  - (e) the current version of the SLGC, and details of proposed changes;
  - (f) the terms of reference for the SLGC Committee and membership of any GSO or SLGC Committee working groups;
  - (g) financial accounts for the GSO as presented annually to the Commission;
  - (h) statements of compliance with ring fencing obligations and routine compliance reports submitted to the Commission;
  - (i) any report following audit instigated by the SLGC Committee assessing the compliance of the GSO with the requirements of the SLGC;

- (j) the GSO complaints procedure detailing how customers can make a complaint, how it will be handled, target periods for response, complaint escalation process and arbitration arrangements;
  - (k) half hourly and real time system demand;
  - (l) the grid system performance report;
  - (m) except where issues of national security are involved, any other report required by the Commission.
- 5.7.4 Where appropriate, and by agreement with the Commission and the Single Buyer, the GSO may copy from or insert links to that part of the Single Buyer website where any of the required information is provided.
- 5.7.5 The GSO may provide paper based versions of any information provided on the GSO website. Where paper based versions are provided, the GSO may make a reasonable administration charge as approved by the Commission.

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## **SECTION 6: REAL-TIME SECURITY-CONSTRAINED ECONOMIC DISPATCH SYSTEM**

### **6.1 Purpose**

6.1.1 This Chapter defines the Least Cost Dispatch Scheduling Methodology which the GSO shall follow for Real-time Security-Constrained Economic Dispatch System and the requirements of the Dispatch Scheduling Model.

### **6.2 Least Cost Dispatch Scheduling Methodology**

6.2.1 The GSO shall develop the Real-time Security-Constrained Economic Dispatch System based on a Least Cost Dispatch Scheduling Methodology such that the lowest marginal cost Generating Unit is forecast to be dispatched first to meet demand followed by the next lowest marginal cost Generating Unit until all demand is met. The marginal cost of generation shall comprise all payments that vary with the amount of electricity procured, that are made by the Single Buyer to the Generators, pursuant to Generator Contracts.

6.2.2 At all times the GSO shall ensure that the Real-time Dispatch System caters adequately for system security, Operating Reserve requirements, transmission constraints, generation constraints, fuel availability and any other factors which could influence the security and reliability of electricity supply as specified by the SLGC.

6.2.3 The GSO shall ensure that it has the required data and information to accurately calculate its marginal cost for the procurement of generation from each Generating Unit.

6.2.4 GSO shall ensure that it promotes transparency by publishing key results on the GSO Website.

### **6.3 Dispatch Scheduling Model**

6.3.1 The GSO shall ensure that the Dispatch Scheduling Model used to implement the Real-time Dispatch System minimises the cost of electricity procurement given all transmission and system constraints and the key input data. Specifically, the GSO shall ensure that the Dispatch Scheduling Model is based on the Least Cost Dispatch Scheduling Methodology and is capable of adequately taking the following parameters into consideration in optimising the Real-time Dispatch:

- (a) transmission losses and System Constraints;
  - (b) Operating Reserve requirements as set out in the SLGC;
  - (c) key input data for the Day Ahead Dispatch Schedule as specified by Single Buyer; and
  - (d) any other system security measures as deemed appropriate by the GSO in compliance with the SLGC.
- 6.3.2 If the Dispatch Scheduling Model does not satisfy the conditions as specified in clause 6.3.1, then the GSO shall prepare a System Upgrade Plan which must specify the timeframe and the cost required to upgrade the current Dispatch Scheduling Model such that it is compliant with the requirements as specified in clause 6.3.1.
- 6.3.3 The GSO shall submit the System Upgrade Plan to the Energy Commission for approval. Once the System Upgrade Plan has been approved by the Energy Commission, the GSO shall implement the System Upgrade Plan as per the timeline specified in the System Upgrade Plan.
- 6.3.4 The GSO shall review the Dispatch Scheduling Model in the event of any revision to the Least Cost Dispatch Scheduling Methodology or every 12 months, whichever is earlier, to ensure that the Dispatch Scheduling Model is compliant with the provisions of clause 6.3.1. In conducting the review the GSO shall ensure that:
- (a) the review is finalised not later than two months from the date of the decision to revise to the Least Cost Dispatch Scheduling Methodology, or not later than two months from the expiration of the 12 months period;
  - (b) the outcomes of the review are submitted to the Energy Commission within 15 days after the completion of the review; and
  - (c) if the Dispatch Scheduling Model does not comply with the requirements under clause 6.3.1, a System Upgrade Plan to upgrade the model shall be submitted to the Energy Commission.

- 6.3.5 The first review and any System Upgrade Plan, if necessary must be prepared not later than three months after the Commencement Date of these Guidelines.
  
- 6.3.6 If at any time the GSO proposes to enhance or upgrade the Dispatch Scheduling Model then it shall seek prior approval from the Energy Commission before implementing its proposal.

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## **SECTION 7: RING FENCING OF ACCOUNTS**

### **7.1 Purpose**

- 7.1.1 The GSO shall produce a chart of accounts for financial statutory purposes and for regulatory purposes.

### **7.2 Ring Fencing of Financial Statutory Accounts**

- 7.2.1 As part of the unbundling process the ring fenced, GSO shall explicitly identify all direct and indirect costs incurred in the performance of the ring fenced GSO function, establishing and maintaining a separate set of accounts relating to its functions as the GSO only.
- 7.2.2 The GSO shall prepare a chart of statutory accounts to be signed off by the Head of GSO and submitted to the SESB management for approval, which shall not be unreasonably withheld.
- 7.2.3 The financial accounts shall be based on the underlying accounting systems, specifically focused on the GSO and the Generally Accepted Accounting Principles (GAAP) for Malaysia.
- 7.2.4 In regards to the assets of the GSO, the statement of assets shall include all GSO assets, and accurately account for the historic value, age and remaining useful life of the assets required for the performance of the GSO functions.
- 7.2.5 An asset register or statement of assets for the GSO shall be separated within the corporate enterprise financial systems of SESB.
- 7.2.6 The ring fenced GSO accounts shall be subject to a financial audit at least annually.
- 7.2.7 The financial accounts of the GSO shall be published on the GSO website.

### **7.3 Ring Fencing of Regulatory Financial Accounts**

- 7.3.1 The regulatory framework for GSO is regulated by the Commission. As part of the electricity tariff that customers pay, system operations is one component that makes up this tariff – known as the system operation tariff. In order to determine the system operations tariff, the Commission published RIGs setting out the Incentive Based

Regulation (IBR).

- 7.3.2 In accordance with the requirements of the RIGs, the GSO shall submit regulatory accounts to the Commission.
- 7.3.3 The information for the regulatory accounts shall be accompanied by a submission setting out the process by which the regulatory accounts were drawn from the audited financial accounts.
- 7.3.4 The Commission may set out guidelines for the GSO on the type of information it requires for regulatory purposes.
- 7.3.6 GSO shall adhere to the format of the data templates provided by ST as set out in the RIGs.
- 7.3.7 GSO accounts shall be consistent with the requirements from ST as set out in the RIG framework.
- 7.3.8 The regulatory accounts must comprise of the data requirements as requested by The Commission. These include:
- (a) Revenue based on the system operations tariff
  - (b) Operating expenditure incurred by the system operation in performing its functions
  - (c) Allocation of shared services / joint costs based on the cost allocation methodology by ST.
  - (d) Asset register/statement of assets required for system operation and useful life of these assets
  - (e) Depreciation of assets.

#### **7.4 Cost Allocation**

- 7.4.1 GSO shall ensure that the joint costs / shared services between SESB corporate or any other business unit within SESB are allocated between these parties and the GSO in accordance with the RIG 7 cost allocation methodology guidelines that have been approved by the Commission.
- 7.4.2 The translation of data from the audited financial accounts to the regulatory accounts (including compliance with the cost allocation methodology) shall be audited by a certified accounting firm.



## **7.5 Framework for Calculation of Cost of Service for GSO**

- 7.5.1 The RIGs by the Commission sets out the framework for the calculation of the cost of service for system operations.
- 7.5.2 GSO shall follow and abide by the guidelines for the calculation of the cost of service for system operation as defined by the Commission.
- 7.5.3 GSO shall accurately and clearly identify the costs of their services, including assets and activities related to the system operation function.
- 7.5.4 The RIG 3 states that the Commission will provide a Revenue Requirement Model for the calculation of revenue requirements for SESB business entities, in this case system operation. This model describes the data requirements for system operation and the calculation of revenue requirements. GSO shall provide and submit to the Commission the data required for the calculation of the revenue requirements.
- 7.5.5 In accordance with the principles established in RIG1, charges for system operation services will be levied initially against SESB Customer Services. In the event that the electricity market is opened to competition, these charges shall be levied on all Retailers (SESB Customer Services is deemed to be a Retailer), customers able to buy at the wholesale market and exporting traders in proportion to their shares of total energy traded.
- 7.5.6 Where the applied GSO tariff results in an over-recovery or under-recovery in any financial year, such sum shall be deducted from or added to the sum to be recovered during the following review period in accordance with the provisions of section 3.4 of RIG 2.

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## **SECTION 8: REPORTING AND AUDITS**

### **8.1 Operational Reporting**

- 8.1.1 Operational reporting is related to reports that are produced providing details of the grid system performance.
- 8.1.2 The information to be included at the minimum consists of:
- (a) Transmission system performance statistics
  - (b) Generation availability & outages
  - (c) Grid maintenance
  - (d) Network availability & outages
  - (e) General system performance e.g. minutes lost, system frequency and frequency deviation
  - (f) Incident investigation and analysis
- 8.1.3 Standardised reporting templates shall be developed by GSO so that the same format for the reports can be used each time.
- 8.1.4 The above listed reports shall be published on the GSO's website to enhance transparency.

### **8.2 Regulatory Reporting**

- 8.2.1 GSO shall provide information to the Commission as part of the RIG.
- 8.2.2 GSO shall establish and maintain accounting and financial accounts relating to its operations and functions as GSO.
- 8.2.3 For regulatory accounting, the GSO shall present and submit the necessary information in the required format as requested by the Commission.
- 8.2.4 The regulatory financial accounts shall be subject to an audit on an annual basis and submitted to the Commission.

### **8.3 Financial Audits**

- 8.3.1 GSO shall arrange that its accounts, ring fenced as established in section 6 are subject to the same minimum level of audit by a licensed independent auditor and the statutory accounts filed in Malaysia.

- 8.3.2 In undertaking the audit, the independent auditor shall comment on the arrangements for the separation of the GSO accounts from those of other parts of SESB in any shared accounting systems and shall comment on the appropriateness of the accounting systems used for an organisation having the number of staff and turnover of the GSO.

#### **8.4 Compliance Programme of Ring Fencing Obligations**

- 8.4.1 SESB Internal Audit or GSO's own quality assurance (QA) personnel shall monitor, assess, and enforce compliance with processes using a number of monitoring processes to collect information in order to make assessments of compliance.
- 8.4.2 GSO's audit and reporting programme should support the GSO compliance programme to reassure stakeholders that processes are being adhered to and that where problems are identified mitigation procedures are in place.
- 8.4.3 The compliance programme approved by the Commission may set out the overall process steps for the compliance program and shall include:
- (a) Evidence of the independence of the senior management of GSO from SESB;
  - (b) A Code of Conduct enforceable by employment contracts is in place and applicable to all GSO staff and those staff of SESB providing services to the GSO.
  - (c) Access controls in place relating to premises occupied by GSO and IT systems used by the GSO.
  - (d) Training for existing GSO staff regarding their obligations under the Code of Conduct and inclusion of such training in the GSO's induction program for new staff;
  - (e) Arrangements for the quarantining of staff leaving the GSO who have had access to information of a commercially confidential information relating to a competitor of their new employer; and
  - (f) The provision of an [annual] report to the Commission, most of which shall also be made publicly available, recording evidence of compliance with the requirements of the

compliance programme. This report shall be prepared following an audit of the GSO's arrangements for meeting the compliance provisions.

- 8.4.4 The Code of Conduct shall address confidentiality, non-discrimination and transparency.
- 8.4.5 IT system access controls shall be designed to prevent access to data by unauthorised persons and record the identity of system users inputting or changing data items.
- 8.4.6 The compliance report to the Commission shall include details of each incidence of non-compliance detected by the GSO or reported by stakeholders.
- 8.4.7 The public version of the compliance report shall contain details of the number of non-compliances of each type separately; by those detected by the GSO, and those reported by stakeholders.
- 8.4.8 The compliance report shall not be prepared by a person with managerial responsibility for the matters being report.
- 8.4.9 Where the Oversight Panel determines that a review of the GSO operation is necessary:
  - (a) The Commission shall appoint a suitably qualified auditor to assess the compliance of the GSO with the requirements of the guidelines; and
  - (b) The cost of the audit shall be borne by the GSO and treated as recoverable operating expenditure for the purposes of calculating the GSO Operations Tariff.

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## **Appendix A – Identified Shared and Corporate Services**

During the analysis undertaken and as part of the performance of this process, Shared and Corporate Services to which the GSO should continue to have access to include shared buildings, shared ICT infrastructure and services and corporate services. All should be made the subject of SLAs and, for those services which require the involvement of non-GSO staff in their provision, the SLAs should include obligations under the GSO's Code of Conduct.

### ***Shared Buildings***

Currently the GSO occupies parts of SESB buildings. Access control arrangements should be initiated such that only members of the GSO staff and visitors under the direct supervision of members of the GSO staff have access to these areas. These areas include:

- i. Block A, Block B and Block C SLDC Building
- ii. Backup Control Centre

In considering the arrangements for the continued use of shared buildings, appropriate consideration must be given to facilities management services associated with these buildings including:

- i. Main power supply and backup power supply (standby diesel generators);
- ii. Reception and security guard services;
- iii. Office cleaning services;
- iv. Landline telephone services (TM and PABX);

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**Shared Items**

Currently the GSO is using SESB ICT equipment. Arrangements should be initiated such that only members of the GSO staff have access to these areas. These areas include:

Items	Description	Ownership	Location	Remarks
All Hardware	Workstation/ Laptop/Tablet/ Multipurpose Printer	GSO	GSO Premises	
Applications	Active directory, Email, Storage Sharing	GSO	GSO Premises	
	Web application developed specifically for GSO.	Admin right will be given to GSO.	ICT	
	Web application develop for SESB used by GSO	This is sharing to GSO until fully independent.	ICT	
Connectivity Support	DMZ to Front End	Scope of support from GSO to SESB.	GSO	
Audit	ISO/ISMS Policy	GSO	GSO	Authority from ST and GSO.
Procurement	Hardware & Application	GSO	GSO	
Shared service from GSO	Sanctioned Data and services for SESB/Public Consumption	GSO	GSO	Charges will apply based on complexity and effort.

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### **Shared Services**

Two categories of shared services required by the GSO are procured by SESB or provided by other parts of SESB to the GSO to enable its operation. The first category includes services procured or directly provided by SESB for the exclusive use of the GSO. These include:

1. Software licenses and Hardware;
2. Lightning locator service;
3. Special Protection Scheme HMI;
4. Fault/disturbance recorder & lightning detection;
5. ICT – telecommunication services - Fibre optic links: main control centre, backup control centre and backup control room.

In addition, GSO makes use of other services which, while clearly identifiable as a GSO required service, are connected to communications networks or systems also used by others.

### **GSO Shared Application Service**

<b>Application</b>	<b>Function</b>
Outage Management System	Online Outage management for Generation & Transmission.
Docket Online System	Online platform used to record daily operational data and used for Daily Docket Meeting.
Grid system switching constraint	Online Database for major interruptions involving Transmission Network.
Genset Faulty	Online Database for Generators tripping record. Linked with Docket Online System.
Power System Operational Data	Online Database to record individual Generating Units power output.
8AM Declaration System	Online system for Power Plants to submit 0800hr power declaration to GSO.
Irregularity Report System	Online Database to monitor and record malfunction Network Equipment involving SCADA control and monitoring and linked to Transmission Division.

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### **Corporate Services**

The GSO obtains corporate services from SESB and will require their continued provision. These include:

1. Human resources related and other administrative services such as salary payment, medical services for staff and families, staff training etc;
2. Finance services including management and regulatory accounts;
3. Legal services;
4. Procurement and Logistics;
5. Insurance;

GSO, should conclude SLAs with the relevant service provider departments of SESB for the continued provision of these services. These SLAs should include obligations under the GSO's Code of Conduct.

### **Service Level Agreement**

<b>SLA with other's Division</b>	<b>SCOPE</b>
TRANSMISSION	This Agreement sets out the demarcation of assets, scope of services, standard of performance, responsibilities, roles and functions of GSO and Transmission Division.
INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)	This Agreement establishes the service relationship between ICT Division and GSO for ICT Division to provide certain information and communication technology services. This Agreement sets out the scope of works, standard of performance and the basis for allocation of costs for the Services to GSO.
HUMAN RESOURCE	<p>This Agreement establishes the service relationship between Human Resource Division and Grid System Operator ascertaining the scope of service and standard of performance provided by Human Resource Division to Grid System Operator.</p> <p>This Agreement demonstrates Human Resource Division commitments to Grid System Operator and both parties' responsibility in gaining the level of services as stipulated under the terms and conditions of the SLA.</p>



FINANCE	This Agreement sets out the scope of services, standard of performance, responsibilities, roles and functions of GSO and Finance.
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