An Overview on the Sabah & Labuan Grid Code

for

Users of Sabah and Labuan

16-17June 2014

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Sabah dan Labuan Grid Code Awareness Programme Funded by Akaun Amanah Industri Bekalan Elektrik (AAIBE)

Objectives of the Presentation

1) To inform Users on the Grid Code;

2) To highlight critical elements and contents of Grid Codes and their major implications to the electricity supply industry;

3) To create awareness of the Codes; and

4) To seek cooperation and invite suggestion in order to operationalise the Codes

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Contents of the Presentation

1) Background to the Industry Governance, the Grid Code, Distribution Code and Licence Standards
2) The Grid Code
3) Summary of Grid Code

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Part 1
Background to the Industry Governance, the Grid Code, Distribution Code and Licence Standards

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Hierarchy of Governance

Act of Parliament

1. Electricity Supply Act, 1990 (Act 447)
2. Energy Commission Act, 2001 (Act 610)

Regulations – Power of the Minister

3) Electricity Regulations, 1994
4) Licensee Supply Regulations, 1990

Licences – Issued by the Energy Commission

5) Licences issued to SESB, Generators, Distributors and Others

Licence Standards – Licence Conditions

6) Generation, Transmission and Distribution Standards

Other Contracts/Agreements – Between Parties

7) Power Purchase Agreements (PPAs)
8) Supply Agreements

Grid Code and Distribution Code

Document Maintenance Jurisdiction

1. Electricity Supply Act, 1990 (Act 447)
2. Energy Commission Act, 2001 (Act 610)
3. Electricity Supply Regulations, 1994
4. Licences issued by EC

The Government and the EC

5. Power Purchase Agreements (PPAs)

The Single Buyer & Generators

6. Transmission System Reliability Standards
   a. Generation Security Standard
   b. Transmission Security Standard
7. Transmission System Power Quality Standards
8. The Grid Code

The Grid Owner & GSO

9. The Distribution Code
10. Distribution System Supply Security and Power Quality Standards

SESB Distribution and Other Distributors

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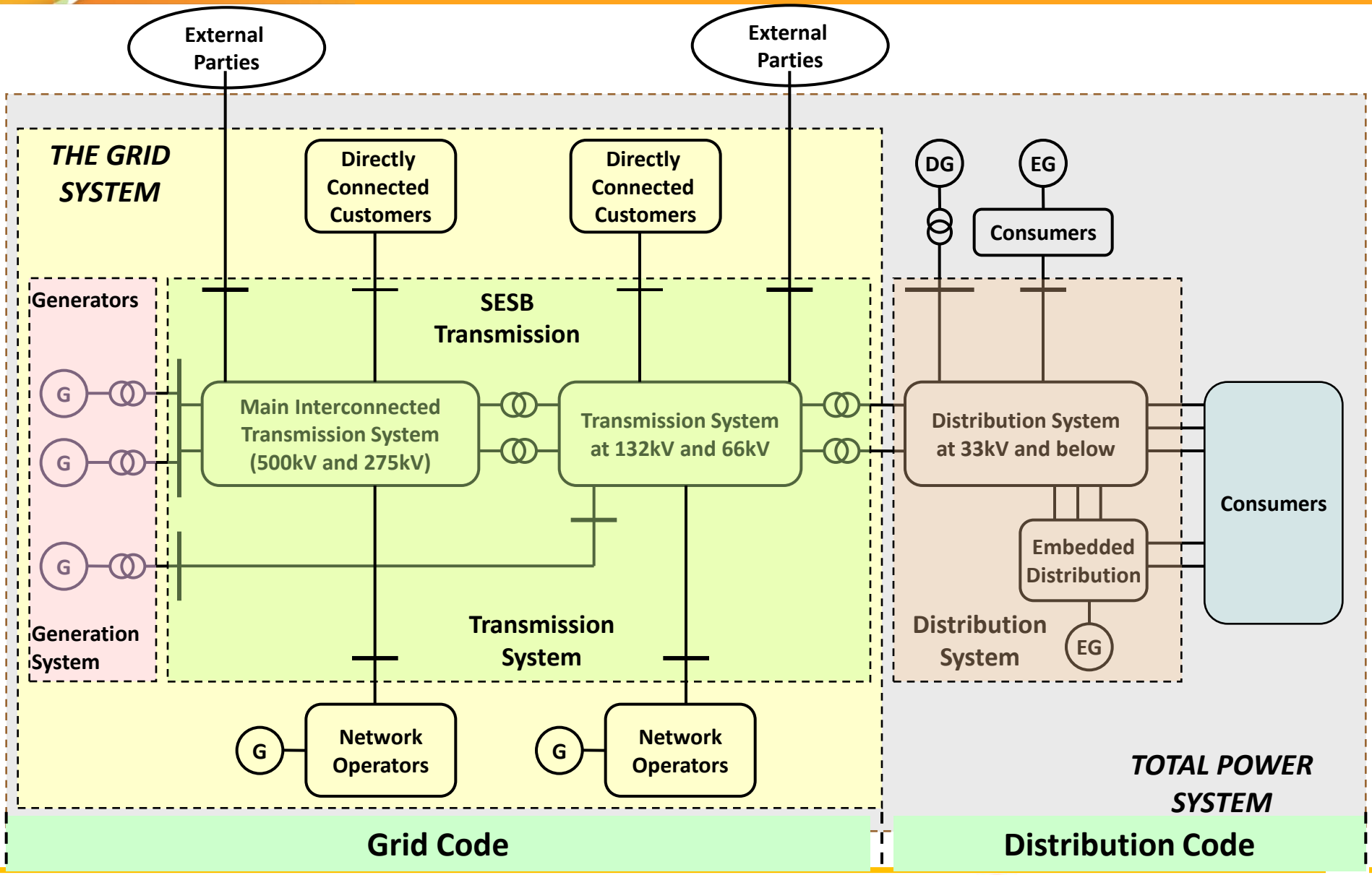
Power System, Parties & Codes



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What is the Grid Code?

1) Code in general means policies, regulations, set of rules etc. examples; code of ethics, code of conduct, code of practice

2) The Grid Code is a document which sets out the principles that govern the relationship between the Players and contain obligations that facilitate:
   a) coordinated planning;
   b) coordinated design;
   c) coordinated development;
   d) coordinated, efficient and least-cost operation

of the Grid System.

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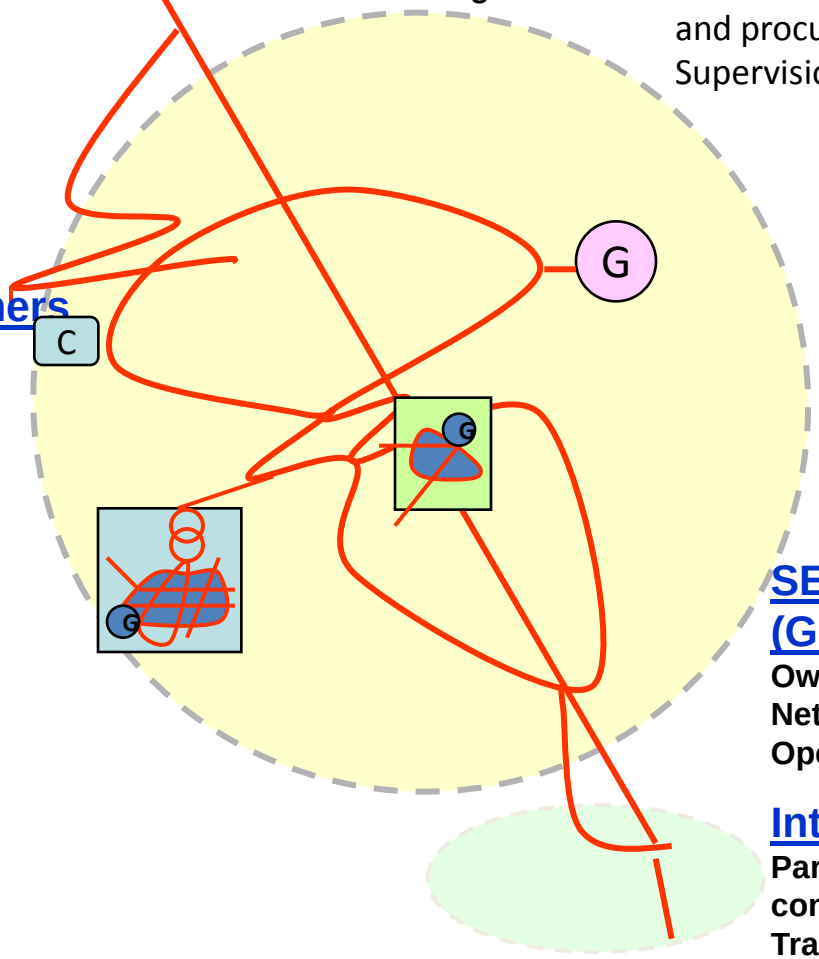
Parties in the Grid Code

The Energy Commission

Interconnected Party
Party outside the country connected at Transmission voltage

Grid System Operator
Operates Sabah and Labuan Grid System

Single Buyer
Plan Generation capacity, negotiate and procure PPA
Supervision & Settlement of PPA



Generators
SESB Generation & IPPs Develop & operate power plants

Directly Connected Customers
Connected and metered at transmission voltage

Network Operator (GO)
Operates network at any voltage & and may import/export To the Grid

Distributors
Connected to Grid and operate Only at Distribution Voltage and import Power from the Grid

SESB Transmission (Grid Owner)
Owner of the Transmission Network, plan, develop asset, Operates and maintains

Interconnected Party
Party outside the country connected at Transmission voltage

Why the need for Coordination (G Code)?

1) ***<u>Before 1999</u>***:

a) All Grid System development and operation were within SESB, i.e., coordinated among departments of SESB;

b) Roles of departments within SESB were defined in Technical Instructions, Engineering Circulars, Internal Procedures etc.;

c) Data exchange by inter-departmental request and meetings; and

d) No restriction on data flow – no confidentiality issue

2) ***<u>After 1999</u>***:

a) IPPs were connected to the Grid;

b) The Grid must continue to be developed efficiently and operated economically in secure manner;

c) Liberal data exchange not possible anymore;

d) IPPs have affects on the Grid through their own operation which is not within the control of SESB (System Operator)

3) ***<u>In 2013, the Grid Code was established</u>***:

a) SESB as the Grid System Operator (GSO) was given the task to coordinate all parties;

b) Obligations for parties to provide information and follow technical rules;

c) Hence a "security standards" to formalise the design and operation;

d) Existing Grid Code is to define clearly identify parties and their obligations.

e) Grid Code is a live document which required continuous improvement.

What is the Distribution Code?

1) The Distribution Code is a Set of Technical Rules and Requirements that facilitate:
   a) coordinated planning;
   b) coordinated design;
   c) coordinated development;
   d) coordinated operation;

   of the Distribution System;

2) To enable Distributor/SESB to comply with the Distribution Code & fulfilling its obligations in delivering power to its customers as required by license conditions.

3) Not available currently

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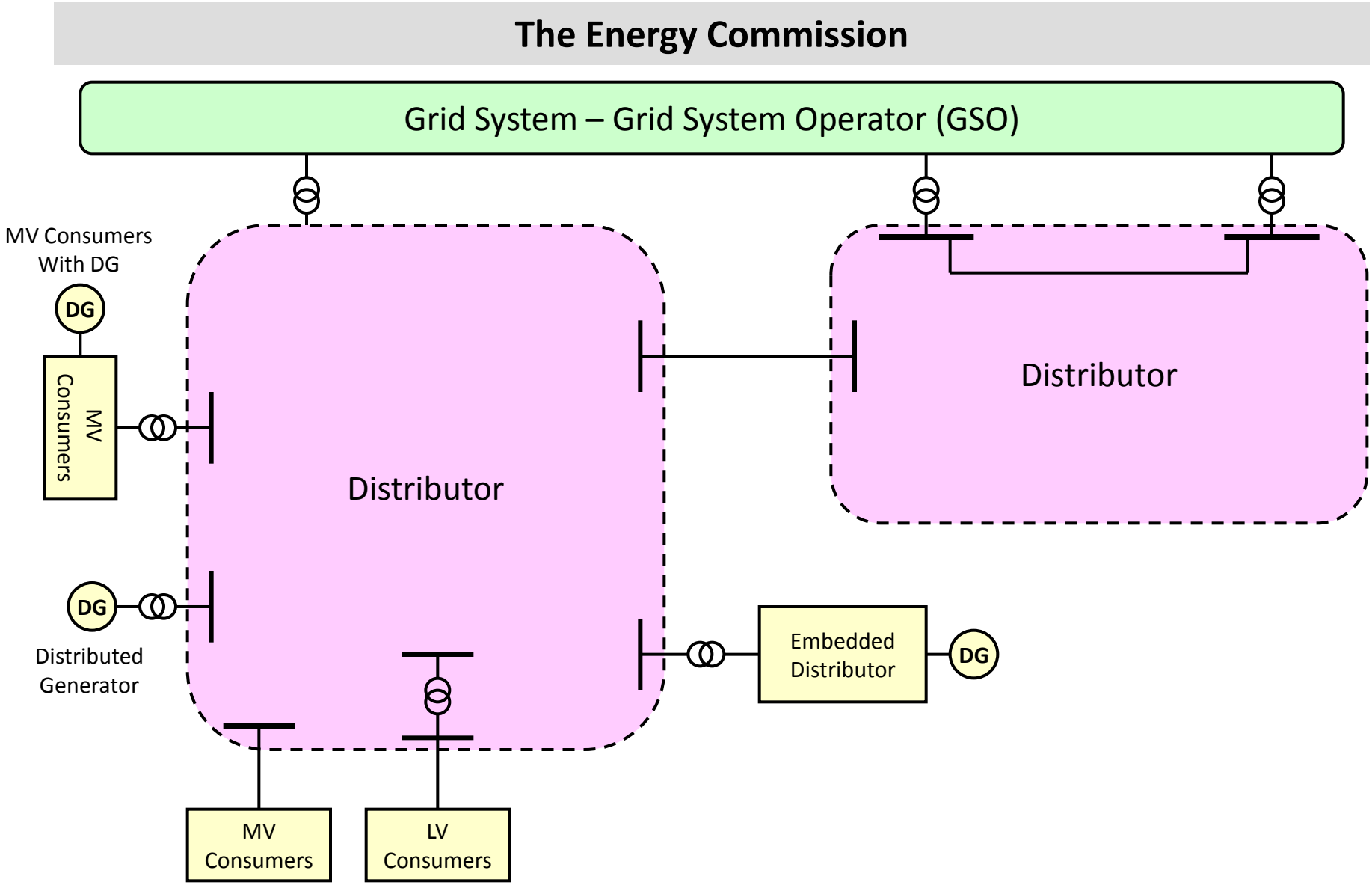
Parties in the Distribution Code



Why the need for Coordination (D. Code)?

1) Distributor has obligations to customers as in their Licence Standards;
2) There are other parties connected to the distribution system that could affect the Distributor's Customers;
3) Therefore, the planning, operation, connection of the system will have to be coordinated to enable the Distributor to comply with the Licence Standards

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Coordination in the Distribution System

1) There is no existing Distribution Code
2) Sabah and Labuan Grid Code only cover a little bit of the Distribution Code
3) Currently, coordination is very little and mainly done through agreements
4) The Distribution Code is necessary to be established in anticipation of growing number of players and thus providing a set of technical rules
5) Distribution Code is also essential to ensure non-discrimination between Users connected to Distribution Systems that are owned and operated by different entities and transparency of the entities

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What is Licence Standard?

1) Standard in general here means criterion, principle, measure (level, degree), model, yardstick, benchmark etc.

2) Standards are used by Licencees (e.g. SESB/TNB) and they must be applied with the concurrence of the EC. These Standards refer to MS and International Standards.

3) The standards are used to plan, design, (and operate) the Transmission and Distribution Systems of SESB/TNB as required by License Conditions 7, 12, 13 and 14

4) The Malaysian System of today is the result of the application of standards over the years (since 1953) in planning, installed equipment, implementation and operation of the system

5) Standards also determine the principles to balance investment and performance

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SESB License Condition 7?

Provision of Information on Capital Expenditure Programme and Future Plan

Before the end of each financial year, The Licensee shall furnish to the Director General, the updated plans and capital expenditure programme, covering generation, transmission and distribution for the next 10 (or 5?) years. Each such programme shall include an itemisation of major projects, details of all assumptions and reconciliation between planned and actual expenditure in the preceding financial year, together with explanation of significant variations.

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SESB License Condition 12?

Generation Security Standard

1. Generation security standard:
   - To ensure sufficient generation after taking into account outages, maintenance, etc.
   - Frequency to be maintained 50±0.5Hz
   - Time deviation per day ±10 sec
2. Submit statements to comply with 3 and 4 below
3. Meeting generation security standards for next 5 years including additional generation required
4. Submission on data use references, arrangements with IPPs, external interconnections etc..

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SESB License Condition 13 -1?

Transmission System Design Standard and Quality of Performance

1. The Licensee shall plan and design its transmission system capacity in accordance with the regulations for transmission system expansion, or such other Standards as the Licensee may, with the concurrence of the Director General, adopt from time to time.

2. ….

3. ….

Standards formalised in 1998 from various TNB documents used in the period (1953-1998) and approved by EC in 1998

SESB License Condition 14 – 1?

Distribution System Design Standard and Quality of Performance

1. The Licensee shall plan and design its distribution system to a standard not less than that set out in regulations for distribution design or such other standards as the Licensee may, with the concurrence of the Director General, adopt from time to time.
2. ….
3. …..

Other licensees are required to establish their own Standards, e.g., NUR, Wirazone etc.

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Licence Standards by TNB

1) **Transmission System Standards**:
   a) 1998: First submitted based on practices of TNB
   b) 2005: Revised together with the review of the Grid Code

2) **Distribution System Standards**:
   a) No previous submission
   b) 2005: Established together with the Distribution Code

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Licence Standards Established

1) **Transmission System Reliability Standards:**
   a) Generation Reliability Standard (including generation connection adequacy)
   b) Transmission Reliability Standard (including demand connection adequacy)
   c) Requirements and Limits
2) **Transmission System Power Quality Standards**
3) **Distribution Supply Security and Power Quality Standards**
   a) Criteria
   b) Requirements and Limits
   c) Distribution System Power Quality Standards

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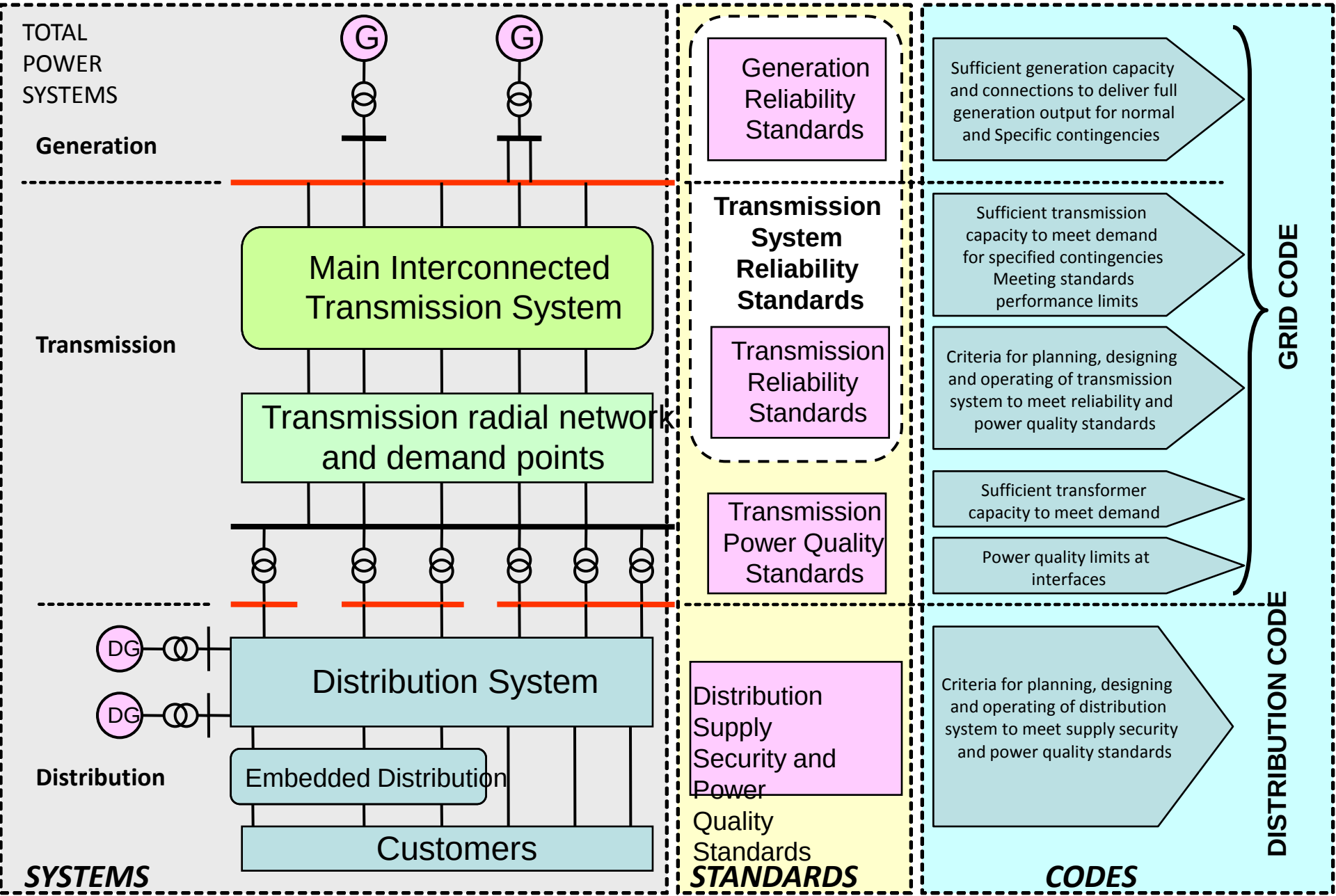
Systems, Standards, and Codes



Part 2
The Grid Code

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Requirements of the Grid Code

1) Ensure system security by the GSO
2) Independence of the GSO
3) Transparency of the GSO
4) Roles of the GSO to be well-defined
5) Functions and roles of Users to be well-defined
6) Interfaces and safety coordination at interfaces to be well-defined
7) Common technical issues to be included in the Grid Code
8) To be inline with the current industry structure
9) Based on existing Grid Code, EC should study comments and inputs from the IPPs and Users

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Required Perspective from the Grid System Operator

1) Review of Reliability Standards and Power Quality Standards;
2) Review of current processes and procedures to further improve security of the Grid;
3) Clearly define the GSO's functions and its interface with other parts of SESB; and
4) Clearly define roles of the Single Buyer

Focus of the Review of the Grid Code

Based on Requirements and Inputs, the focus of the review are:

a) Adequacy and Security of the Grid System;

b) Independence and Transparency and non-discriminative behaviour of the GSO; and

c) Well defined roles and responsibilities of all parties

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Independence of the GSO

Fundamental Approaches to Achieve independence, Transparency and Non-discriminative behaviour :

1) Basic requirement – must be “Inline with the current structure”
2) Clear functions of the GSO and Single Buyer under SESB Transmission Division
3) Well defined roles, functions and responsibilities of the EC, GSO,SB,GO and other parties
4) Clear planning, design and operation procedures, well defined processes and no commercial interest

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Current Structure

ENERGY COMMISSION
Regulator

Generation

- A
- B
- Diesel Portfolio
- Kimanis Portfolio
- Labuan
- MH
- Biomass
- C PORTFOLIO
- Rugadin PORTFOLIO
- SPB PORTFOLIO
- SESB GENERATION PORTFOLIO
- SESB HIDRO PORTFOLIO

Transmission

SESB Transmission Division

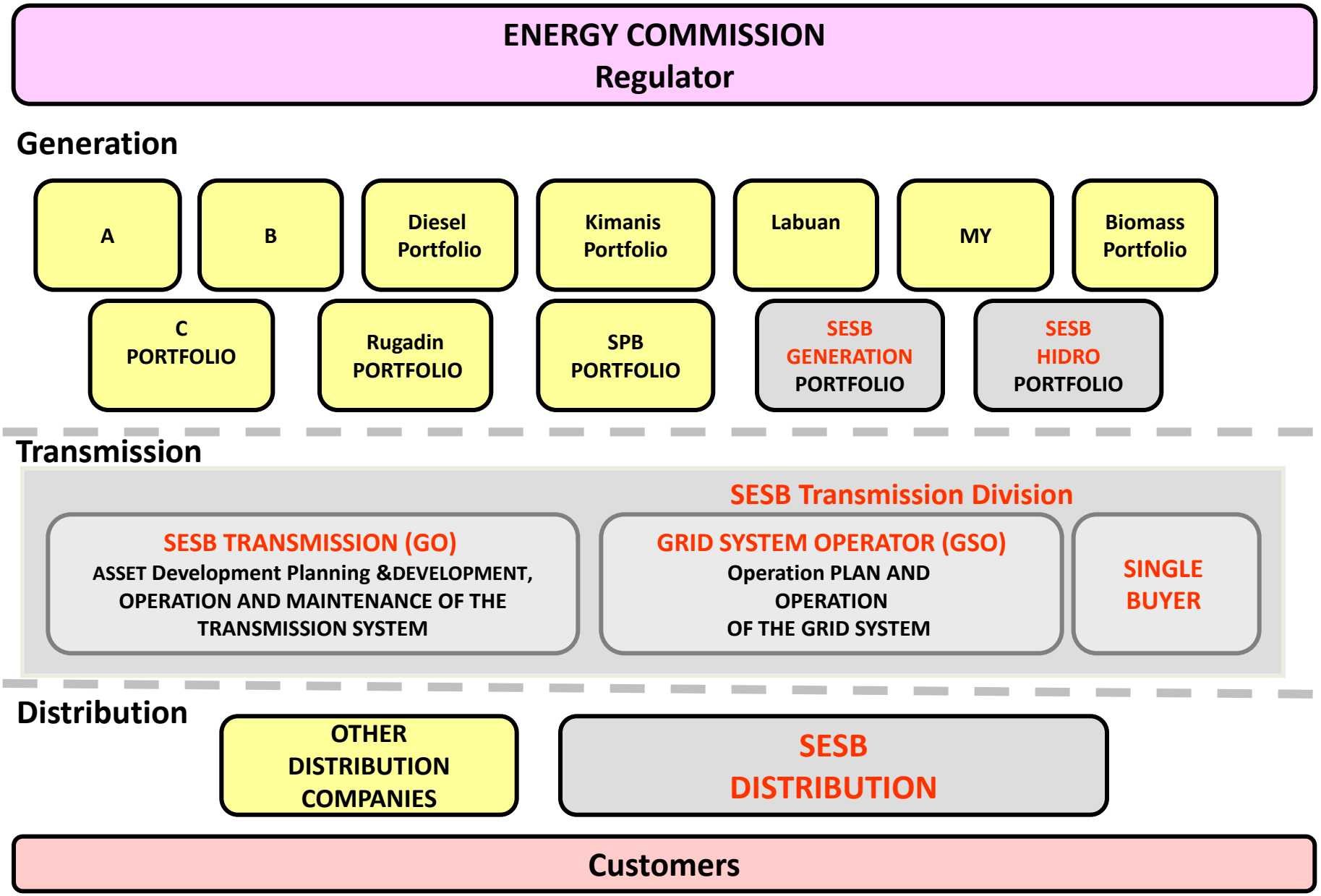
- Asset Development, Operation & Maintenance, Engineering
- System Planning & Development Operation & Production Planning, Control Operation
- Energy Procurement Unit

Distribution

- OTHER DISTRIBUTION COMPANIES
- SESB DISTRIBUTION

Customers

Structure in the Revised Grid Code



The Grid Code – Major Attributes/Requirements

1) Roles and Responsibility of all players are clearly defined;
2) GSO and all Users are required to comply with the Grid Code;
3) Non-compliance by any single party may lead to serious consequences that jeopardises the safety, security and integrity of the Grid System;

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Grid Code – Major Responsibilities of the GO/SB/GSO

To plan(GO/SB) and operate (GSO) for a reliable, safe and economic Grid System

a) Forecast demand;

b) Calculate generation capacity requirements to ensure future generation adequacy;(SB)

c) Plan Grid System development to ensure adequacy of the whole supply chain from generation to distribution;(GO)

d) Coordinate and Operate the Grid System;(GSO)

e) Annually submit Demand Forecast, Generation Development Plan(SB), Transmission Development Plan and System Development Statement to the EC;(GO)

f) Coordinate data exchange; and

g) Report Compliance of the Grid System with the Grid Code (GSO)

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Grid Code – Major Responsibilities of the EC (1)

To regulate the industry to achieve a reliable and efficient Grid System

1. Implement the Energy Policy and ensure economic and adequate supply with a margin within laws and regulations
2. Issue Licences (Generation, Transmission, Distribution, and Network Operator);
3. Ensure implementation of the Grid and Distribution Codes;
4. Ensure coordinated, efficient, economic, independent, non-discriminatory behaviour of all parties in the operation of the system;
5. Monitor and audit performance and compliance of all parties with laws, regulations, Grid and Distribution Codes;
6. Monitor system reliability and power quality performance as reported by the parties;

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Grid Code – Major Responsibilities of the EC (2)

7) Receive System Development Statements from the GO and advise the GOM with the help of the SB/GSO;

8) Oversee establishment of Grid Code and Distribution Code Committees and attend their meetings (as chairman);

9) Issue derogations and exemptions to Users after full consultation with the SB/GSO of the impacts on system security;

10) Annually review the status of derogations issued with the GSO/SB;

11) Oversee the Grid and Distribution Code dispute resolution process;

12) Ensure compliance of all parties with the provisions of the Grid Code and the Distribution Code;

13) Ensure independence of the GSO and SB at all times;

14) Effect legislative and/or Grid and Distribution Code changes.

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Grid Code – Major Responsibilities of the Users (1)

To develop and provide a reliable and competitive supply and services

1) Submit all data required by the GO/SB/GSO accurately and on time to ensure safe, secure and economic operation of the system;

2) Comply with the provisions of the laws, regulations, Grid Code

3) Report compliance and performance to EC as required by Licences and the Grid Code;

4) Plan, design, develop, maintain and operate User Systems compliant with the Grid Code and Distribution Code; (GO)

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Grid Code – Major Responsibilities of the Users (2)

5) Assist GSO in normal and abnormal operational conditions to ensure system security and safety;

6) Coordinate planned outages of plant and equipment with the GSO/SB;

7) Vary plant output in accordance with GSO dispatch instructions;

8) Ensure plant and automatic control systems are well maintained and not switched to manual without express clearance from the GSO;

9) Ensure that automatic control systems are operated as designed and do not have adverse effects on the Grid System

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Grid Code – Major Responsibilities of the Single Buyer

To procure reliable supply and services at least-cost

a) Contracts for generation capacity and energy;

b) Provide relevant data to the GSO for least-cost operation of the system;

c) Receive real time dispatch and event data from the GSO for settlement process;

d) Ensure contracts are delivered;

e) Ensure accurate settlement of contracts;

f) Manage the settlement process;

g) Receive performance reports from the GSO

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Contents of the Grid Code

1. Part I: Glossary and Definitions;
2. Part II: General Conditions;
3. Part III: Planning Code (& Data Registration);
4. Part IV: Connection Conditions ;
5. Part V: Operation Code;
6. Part VI Scheduling and Dispatch Code;
7. Part VII: Metering Code

Detailed Summary of the Contents of the Grid Code is given in Appendix A of this presentation

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Part 3
Summary of the Grid Code

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Summary of the Grid Code (1)

1) Sets out the principles that govern the relationship between all Parties including the EC;
2) Align to the current organisation and industry structure;
3) Based on international practices as applied to SESB, Malaysia;
4) Clearer functions and responsibilities of the GSO & SB;
5) Additional procedures and processes for the GSO to follow:
   a) to enhance security
   b) to have independence and transparency and non-discrimination
6) Clearer functions and responsibilities of the EC with respect to Grid System;

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Summary of the Grid Code (2)

8) Metering Codes are provided; Data Registration is included in Planning Code

9) Technical rules only;

10) Commercial rules completely not included;

11) Full Grid Code compliance by all parties;

12) Derogations and exemptions provided to allow “grandfathering” of existing plants;

13) All parties responsible for security, economic operation and safety of the system;

14) Clear reporting by all parties to EC; and

15) (Do not make reference to Transmission System Reliability and Power Quality Standards. Implied in Connection Conditions)

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Major Implications of the Grid Code

1) The Grid Code will further enhance the security of the Grid System;
2) It provides effectiveness in the planning and operation towards a more reliable and efficient electricity supply;
3) EC,SB and GSO are provided with well-defined authority to truly coordinate and direct parties to comply with MGC; and
4) GSO/SB also has additional responsibilities

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Appendix A

Detailed Summary of the Contents of the Grid Code

Sabah dan Labuan Grid Code Awareness Programme Funded by Akaun Amanah Industri Bekalan Elektrik (AAIBE)

Structure of the Grid Code

1. Part I: Glossary and Definitions;
2. Part II: General Conditions;
3. Part III: Planning Code (and Data Registration Code);
4. Part IV: Connection Conditions;
5. Part V: Operation Code;
6. Part VI Scheduling and Dispatch Code;
7. Part VII: Metering Code

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Part I: Glossary and Definitions

- All appropriate technical terms are defined

Part I: Introduction and Purpose
General

1) Not intended to alter the parties rights and obligations under the existing PPAs;
2) Differences between existing PPAs and the Grid Code are resolved by derogations;
3) New PPAs to be consistent with the Grid Code;
4) Owned by the EC and administered by the GSO and changes agreed by the Malaysian Grid Code Committee;
5) The GSO and all Users to facilitate compliance and implementation;
6) GSO is not responsible for the accuracy of the information Users provide

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Part I: Introduction and Purpose

General Requirements

1) Maintaining the Grid System;
2) User compliance with Licences, Grid Code and PPA Technical obligations;
3) Avoidance of part or whole system breakdown, separation, islanding, collapse or blackout;
4) Safety under all circumstances;
5) Prevention of damage to plant and environment;
6) Equitable distribution of temporary restrictions;
7) Prudent Utility Practice

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Part I: General Conditions

Purpose

1) Ensure various parts of the Grid Code work together;
2) Provide set of principles governing the status and development of the Grid Code;
3) Permit the GSO to take action in unforeseen circumstances

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Part I: General Conditions

Grid Code Committee

1. Ensure relevancy of the Grid Code to safe, secure and efficient operation of the Grid System;
2. Review all proposals for amendments submitted;
3. Consider changes where necessary;
4. Recommend changes for EC approval;
5. Follow procedure for changes and amendments;
6. The GSO is responsible for version control

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Part I: General Conditions

Membership of the Grid Code Committee

1. Chairman appointed by the EC
2. EC: 1 member from Office; 1 appointed
3. GSO : 1 member; RSO:1member
4. SESB transmission TNO: 1 members
5. SESB distribution DNO : 1 members;
6. Distributors: 1 member from RNO;
7. IPP generators: 3 members;
8. Single Buyer : 1 member
9. SESB generators: 1 member;
10. Interconnected parties: 1 member
11. Rural Network Operator: 1 member

(*Secretary to be provided by the SESB)

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Part I: General Conditions

Derogations and Exemptions

1. In case of non-compliance of GSO or any User;
2. User to discuss remedy with GSO;
3. Agreed solution and timescale;
4. EC approval to take GSO views fully into account;
5. Derogation only for specific item of non-compliance;
6. User required to comply with all other obligations;
7. Clear process for application and approval;
8. Register kept by EC and the GSO;
9. Annual review by EC and the GSO;
10. For existing contracts review by EC and the GSO

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Part I: General Conditions

Dispute Resolution

1) Disputes between Users or a User and the SB/GSO in relation to Grid Code;

2) Options for resolution:

   a) parties resolve without referral

   b) refer to EC for determination

3) Commercial, contractual and legal dispute to be resolved as provided in the relevant Agreement or Malaysian Law

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Part I: General Conditions

Confidentiality

1) Applies to data supplied by Users and the GSO;
2) Confidentiality specified in individual Codes;
3) GSO obliged to share defined data with the EC and the Single Buyer

Part II: Planning Code

Purpose and Objectives

1) Technical and Design Criteria and Procedures to be applied by the SB,GO and the Users in planning the Grid and User Systems and Modifications;
2) Procedures to be applied by the SB in calculating generation adequacy and capacity requirements;
3) Annual and project data submission requirements by the Users;
4) Specify Licence Standards to be used in planning;
5) Define SB/GO reporting and briefing to EC;
6) GO to prepare annual System Development Statement and submit to EC

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Part II: Planning Code

Contents

1. Application for a new connection or modification to existing connection;
2. Demand forecasting;
3. Generation adequacy planning;
4. Transmission adequacy planning;
5. Connection planning;
6. Data requirements
7. Annual Statement submitted by the GSO to the EC

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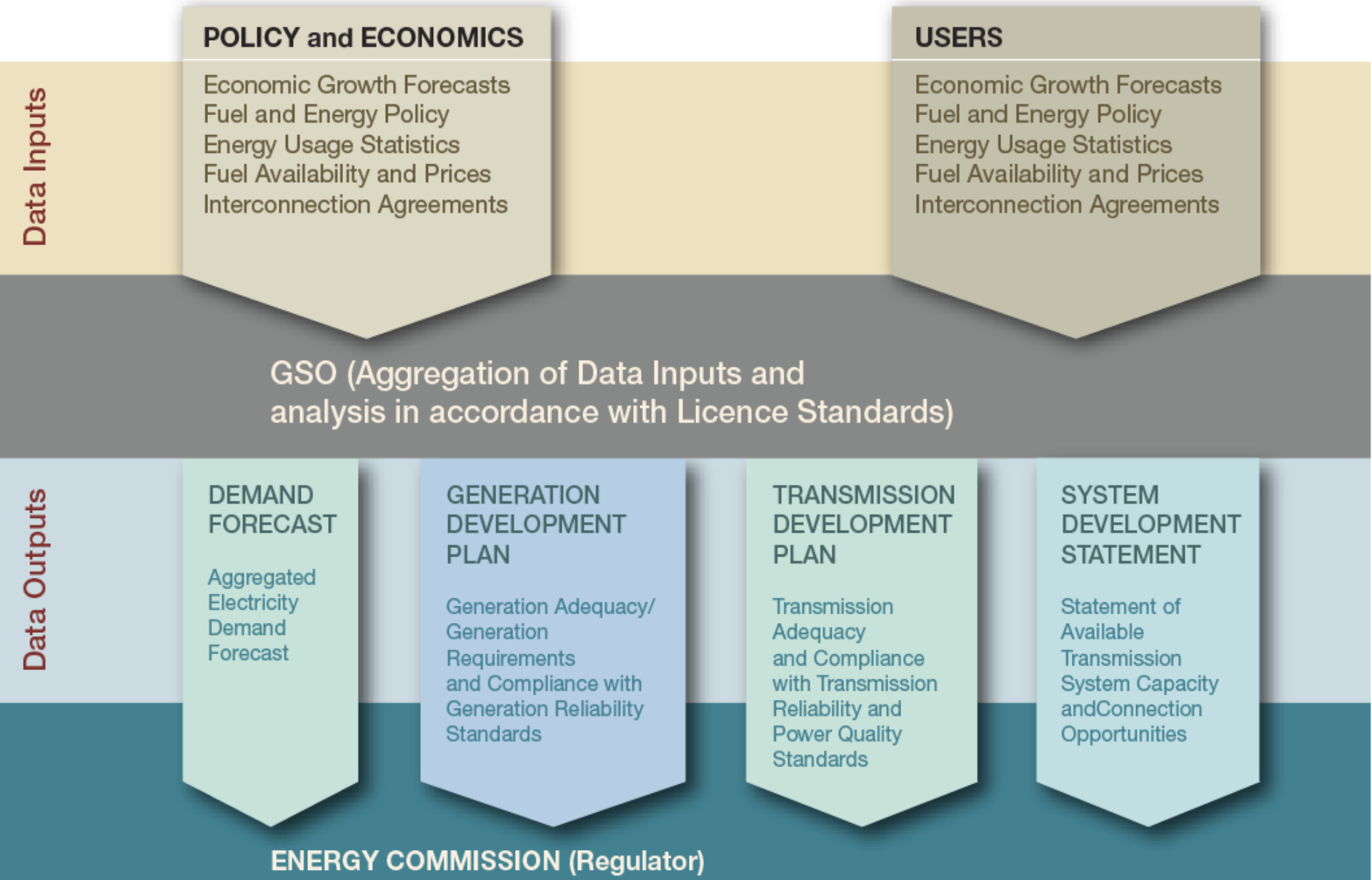
Inputs and Outputs of the Planning Process by the SB/GO



Part III: Connection Conditions

Objectives and Principles

1) Specifies minimum technical, design and operational criteria – basic rules for connection to Grid and/or User System;
2) No connection to impose unacceptable effects on the system;
3) Unacceptable effects are all effects which cause non-compliance with the Grid Code;
4) All connections in accordance with Licence Standards and the Grid Code;
5) SB/GO chooses optimal connection point and connection voltage

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Part IV: Operating Codes

Various Codes

1. Demand Forecasting;
2. Outage and Other Related Planning;
3. Operating Reserves and Response;
4. Demand Control;
5. Operational Liaison and Safety Co-ordination;
6. Significant Incident Reporting;
7. Emergency Operations;
8. Safety Coordination;
9. Numbering and Nomenclature;
10. Testing and Monitoring;
11. System Tests

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Part V: Scheduling and Dispatch Codes

Principles

1. Generation Scheduling – information flows, timing and requirements;
2. Least-Cost generation scheduling- Preparation of Indicative Running Notification for SD1-SD7 of week 1 on weekly basis; and Amendment of IRN on daily basis.
3. Control and Dispatch – instructions and reporting;
4. System Frequency and Interconnector Transfer Control – statutory limits

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Part VI: Metering Code

Objectives

1. Technical requirements relating to Revenue and Operational Metering;
2. Define installation and accuracy requirements;
3. No Metering Installation to impose unacceptable effects on the system;
4. Establishment of Metering Register by the Single Buyer

Part VI: Metering Code

Contents

1. General Requirements and Key Principles;
2. Ownership;
3. Metering Accuracy and Data Collection Exchange;
4. Commissioning, Inspection, Calibration and Testing;
5. Security of Installations and Data;
6. Processing of Data;
7. Installation performance;
8. Operational Metering;
9. Dispute resolution;
10. Metering Register

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Sabah dan Labuan Grid Code Awareness Programme Funded by Akaun Amanah Industri Bekalan Elektrik (AAIBE)

Part 3: Brief Introduction on Distribution Code

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Part 3: Introduction - Purpose

1) Purpose of the DCode
   a) To specify technical requirements for planning and operation;
   b) To specify technical requirement for connection;
   c) To enable Distributors to comply with the Grid Code
   d) To specify data exchange to do the above
   e) To give transparency to Distributors Licence Standards
   f) Protects consumer interests
2) The DCode excludes commercial issues

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Part 3: Introduction & Purpose

Other Contents

1) Establishment of the Distribution Code
2) Legacy arrangements and derogations
3) Disputes

Part 4: General Conditions - Objectives

1) To ensure, that various sections of the Distribution Code work together for the benefit of the Users; and

2) To provide a set of principles for governing the development of the Distribution Code.

Part 4: General Conditions

Other Contents

1) Interpretation
2) Distribution Code Committee
3) Unforeseen Circumstances
4) Emergency Situations
5) Non Discrimination
6) Confidentiality
7) Notices and Communications

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Part 5: Planning Code

Objectives

1) To enable Distributors to plan development to meet requirements – statutory, Distribution Code and License Standards;
2) To specify the supply security requirements and performance limits of the Distribution System;
3) To specify planning criteria;
4) To specify requirements for Demand Forecasting;
5) To establish requirements for provision of planning information;

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Part 6: Operation Code

Objectives

1) To ensure that Distribution System is operated to meet supply performance requirements;
2) To specify requirements for submission of operational Demand forecasts;
3) To specify operating criteria and supply performance requirements;
4) To establish requirements for coordination of inspection and maintenance, Distribution System control, switching operations and monitoring of performance;
5) To give guidelines for exchange of operating information

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Part 7: Connection Code

Objectives

1) To enable the Distributor to provide Users with a connection to the Distribution System;
2) To specify the technical requirements for connection;
3) To establish requirements for exchange of data and information to enable the Distributor to make an offer of connection.

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Part 7: Data Registration Code

Objective

1) To collate and list in a readily identifiable form all the data to be provided by:
   a) Each category of User to the Distributor
   b) The Distributor to each category of User

Part 8: Metering Code

Objectives

1) To establish technical requirements relating to Revenue Metering;

2) To specify the following:

   a) the technical requirements for metering equipment;

   b) the parameters to be measured and accuracy requirements;

   c) the technical requirements relating to installation, testing, operation and maintenance.

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Requirements from Perspective of EC

1) To contain well-defined supply security and power quality requirements;
2) To clearly define interface between:
   - Distributors and Users;
   - Distributors and EC;
3) To Include Metering Code;
4) To have clear emergency response plan;
5) To have clear operating standards;
6) To have clear safety management and coordination at the interfaces and coordination at the interfaces

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Perspective Requirement from Stakeholders

1) Clear ownership and governance of the Distribution Code
   - Distributor's the Custodian –> Committee Proposes –> EC Approves
2) Scope of Distribution Code
   - Technical Interface with Users - excludes commercial
3) D Code and Licence Standards - Relationship
   - D Code sets norm - Licence Standards detail and enhancement
4) Power Quality Issues
   - PQ limits/standards based on IEC & MS
   - Balanced Obligations on Users and Distributors

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Principles in Establishing the Distribution Code (1)

1) Transparency;
   - Technical rules transparent and influenced by the Users
2) Independence;
   - EC approves and oversees the Distribution Code
3) Deals with technical Issues at the Interface With Users;
   - To ensure that all Distributors can meet legal obligations
   - To enable Distributors to comply with Grid Code

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Principles in Establishing the Distribution Code (2)

4. To be based on the existing practices;
   - Limits the level of detail to be appropriate for all Distributors and Users

5) To allow for enhanced services;

6) To refer to Licence Standards;

6) To clearly specify obligations on all Distributors and Users; and

7) Recognises Existing Agreements

Contents of A Typical Distribution Code

Part 1: Preface , Glossary and Definitions

Part 2: Introduction, General Conditions

Part 3: Planning Code

Part 4: Operation Code

Part 5: Connection Code

Part 6: Data Registration Code

Part 7: Metering Code

Annex and Schedules

Detailed Summary of the Contents of the Distribution Code are provided in Appendix B of this presentation

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Conclusions on the Distribution Code(1)

1) The Distribution Code is vital for coordinated planning, operation & maintenance of distribution systems;
2) Compliance of Users to the Distribution Code makes it possible for Distributor to meet its obligation under Grid Code and license conditions in delivering electricity to customers;
3) The Distribution Code recognizes contribution, roles and responsibilities of many parties and Users in influencing system performance e.g power quality of Distribution system

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Conclusions on the Distribution Code(2)

4) Should meet requirements of the EC and Users and the Distributors;

5) The Distribution Code sets out the norms or basic performance standards. Distributor's own standard may offer differentiated service standards with attached conditions

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Major Implications of the Distribution Code (1)

- Distributors to establish operational planning practices;
- Distributors to diligently conduct annual system studies and record fault level limits;
- Distributors to diligently implement and monitor supply security and power quality standards as declared along with Distribution Code;
- Distributors to ensure changes to procedures in supply application as well as technical processing and subsequent connection agreement with customers or Users so as to ensure obligations are highlighted and complied with.

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Major Implications of the Distribution Code (2)

- Distribution Code provides the EC with additional mechanism for overseeing the coordinated development, O & M of electricity distribution system;
- Completes governance of electricity distribution industry.
- Established with minimum supply security and performance requirements;
- Users will be more informed of utility's performance limits and standards

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