

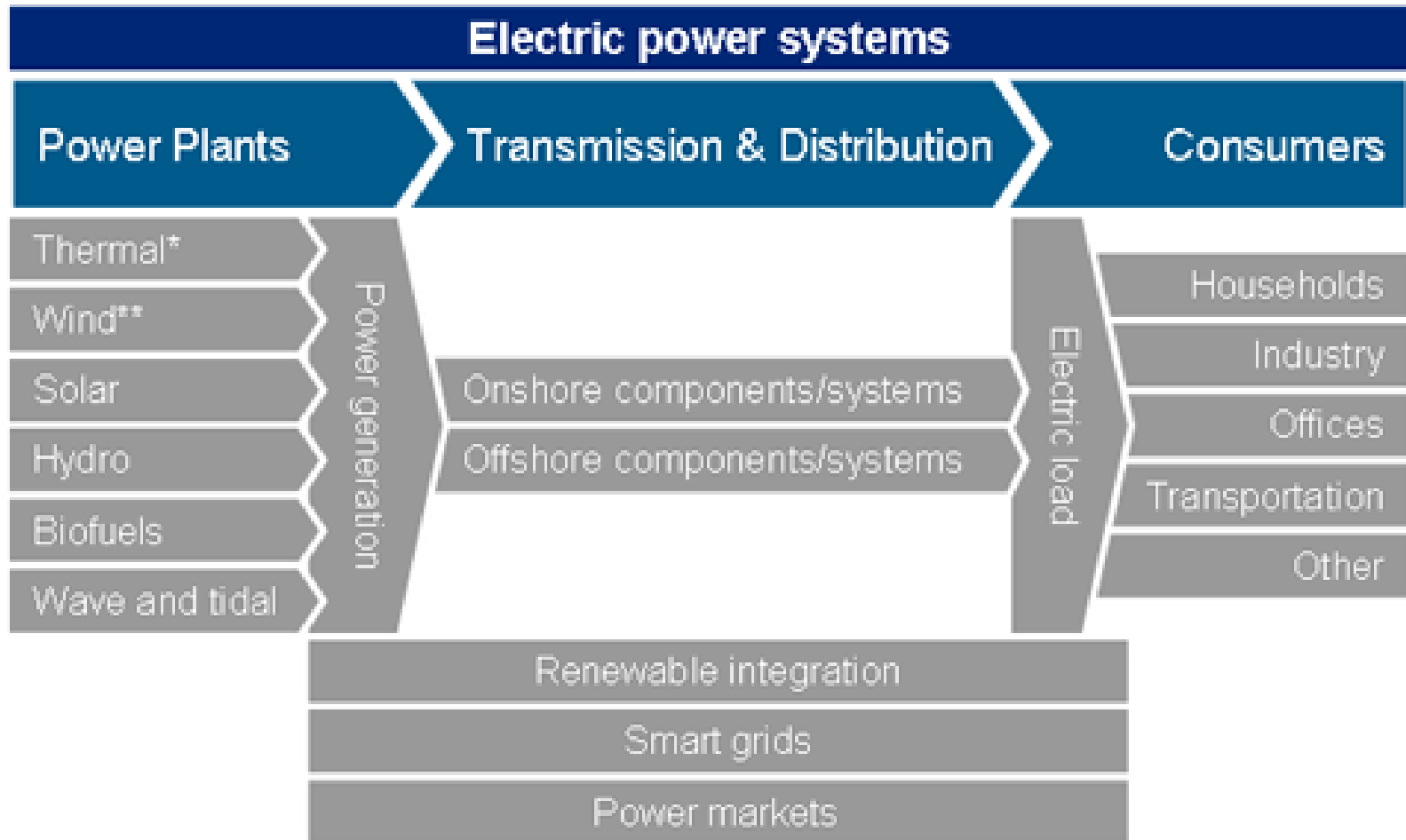
**CHAPTER 1**

# **BEE3143:POWER SYSTEM ANALYSIS- Introduction**

**Expected Outcomes**

Able to have basic understanding about power system engineering  
Able to identify main components of power system engineering

# Power system



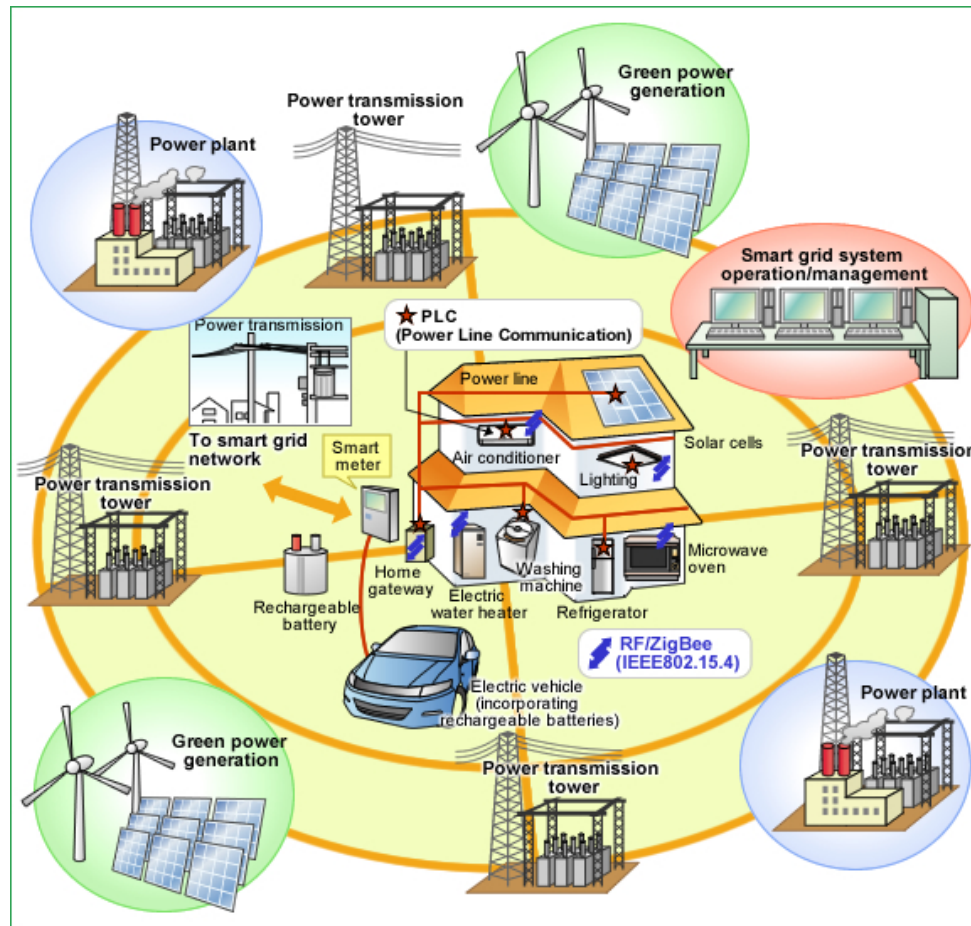
# History of Malaysian Electric Industry

- 1949:Central Electricity Board (CEB)
- 1965:National Electricity Board (NEB)
- 1979:National Energy Policy
- 1991:Privatization Master Plan
- 1990:Corporatisation of NEB to Tenaga Nasional Berhad (TNB).
- 1993:Independent Power Producers (IPPs)

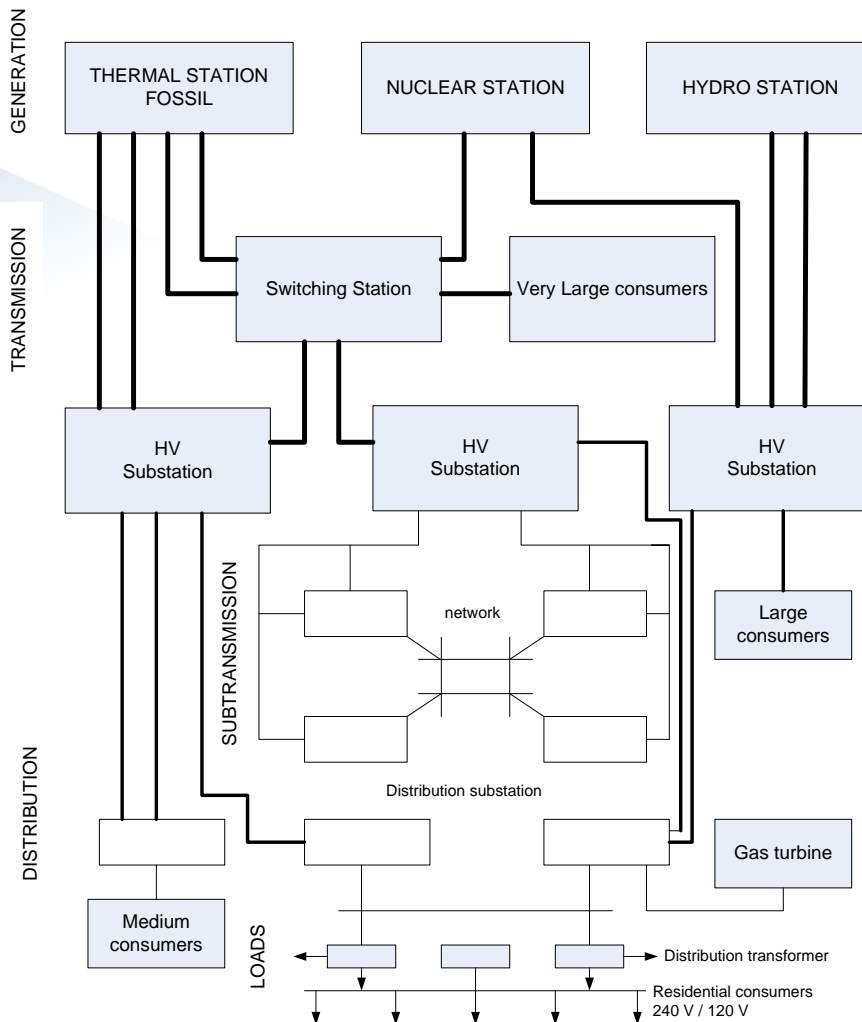
# Current structure

- TNB – Peninsular
- Sabah Electricity Sdn Bhd (SESB) – took over from Sabah Electricity Board in 1998. TNB now holds shares in SESB
- Sarawak Electricity Corp (SESCo)

# Recent issue in power system -smart grid



# Basic components of power system



**MALAYSIA:**

Power Generation : MW

Transmission : 500 kV, 275 kV,  
132 kV, 66 kV

Distribution sub station: 33 kV,  
11 kV

Residential: 3 phase 415 V, 1  
phase 240 V

[1] H. Saadat, *Power System Analysis*, 2<sup>nd</sup> Edition, McGraw-Hill, 2004

# Computer analysis

- Practical power systems
  - Must be safe
  - Reliable
  - Economical
- System analysis
  - For system planning
  - For system operations
  - Requires component modeling
  - Types of analysis
    - Transmission line performance
    - **Power flow analysis**
    - Economic generation scheduling
    - **Fault** and stability **studies**



