

Overview of Distribution Network

SHANKER RAHMAN

UNDERSTANDING WHAT IS A DISTRIBUTION SYSTEM

WHAT IS A DISTRIBUTION SYSTEM?

- DEFINITION**
- LOCATION**
- FUNCTION**
- COMPONENTS**
- BUSINESS MODEL**

CHAPTER 1

Distribution Network By Definition

WHAT IS A DISTRIBUTION SYSTEM? - DEFINITION

Definition

Distribution system composed of all electrical parts that are required to distribute power from bulk power sources to customers.

Generally Distribution System is referred to the portion of the utility power system between Transmission network and Customer's service entrance.

Location Within the Power System

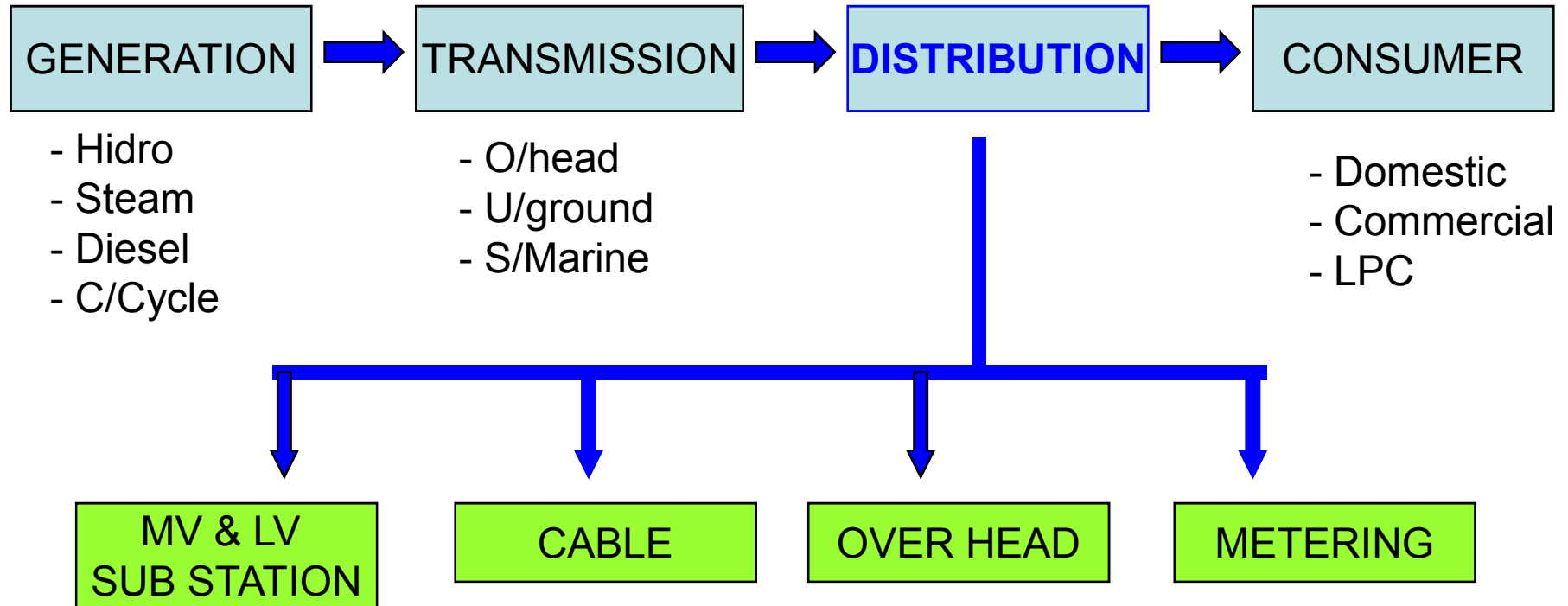
Transmission:

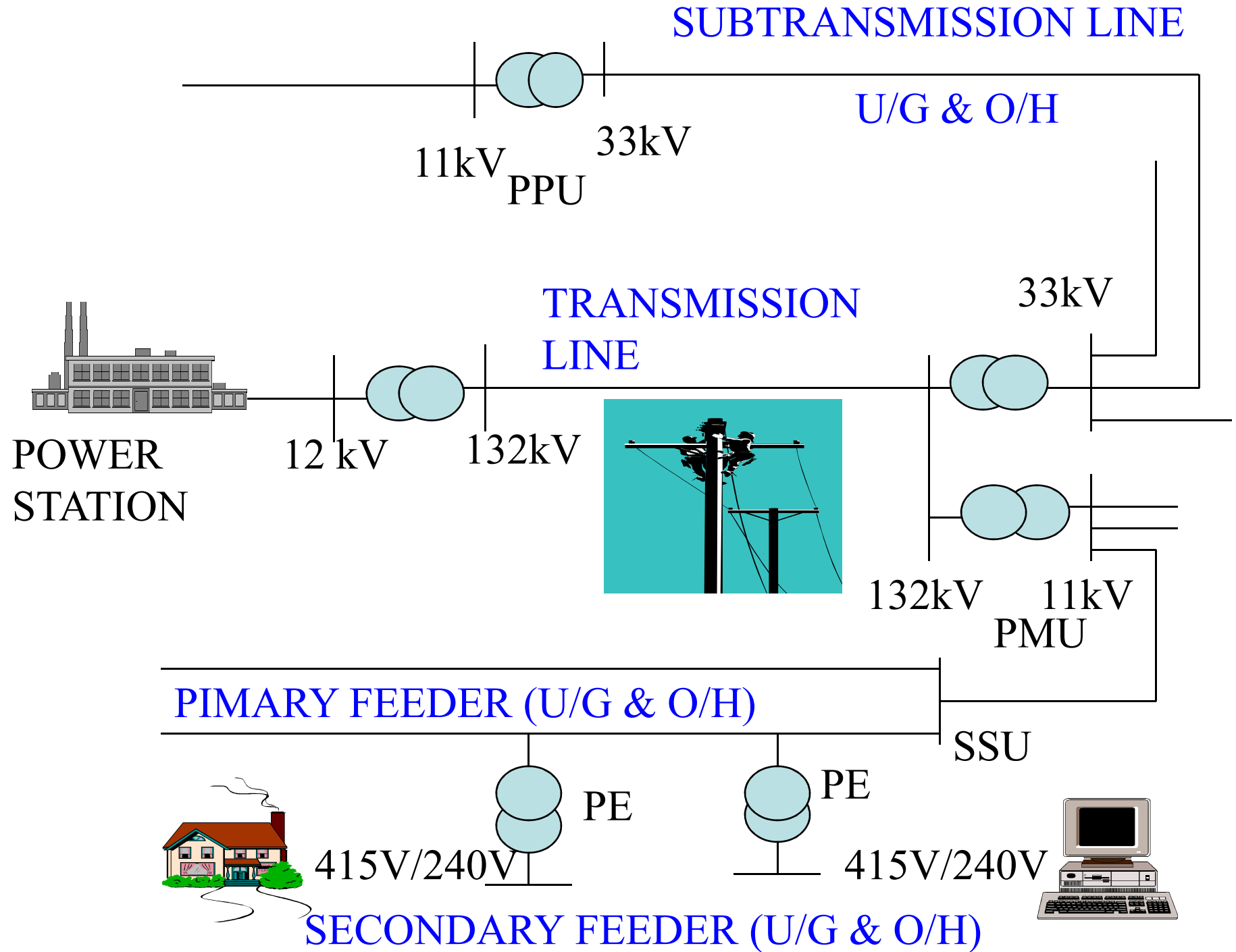
Transmission line up to & inclusive of bulk power substation (main intake or PMU) that consist of transmission power transformer

Distribution:

Substations with distribution power transformer (PPU), primary feeders, distribution switching station (SSU), Substation with distribution transformer (PE), secondary feeders and services

POWER FLOW DIAGRAM





CHAPTER 2

Distribution Network By Function

Function of Distribution System

To deliver electrical energy from the transmission or small generating station (embedded generation) to customers while transforming to a suitable applications.

MAIN ACTIVITIES IN DISTRIBUTION

- **DISTRIBUTION PLANNING**

- Reinforcement of MV system (MSVT)
- New Supply

- **DISTRIBUTION PROJECT**

Focus on new-supply projects

- Cable (MV & LV) construction
- Overhead (MV & LV) construction
- Substation (MV & LV) construction

- **DISTRIBUTION PROTECTION**

- Protection coordination within TNB network
- Protection coordination between TNB and Customer
- Protection relay testing & calibration

MAIN ACTIVITIES IN DISTRIBUTION

- **DISTRIBUTION OPERATION & MAINTENANCE**
 - Maintenance of Cable (MV & LV)
 - Maintenance of Overhead (MV & LV)
 - Maintenance of Substation (MV & LV)
 - MSVR & MSVT projects

- **METERING**
 - Installation of new meter (whole current meter, CT-meter)
 - Schedule replacement of meter (whole current)
 - Meter maintenance
 - Meter testing and calibration

- **DISTRIBUTION SERVICE**
 - LV Single phase (Overhead line, Five-foot-way)
 - LV Three phase (Overhead line, Five-foot-way, Underground cable))

MAIN ACTIVITIES IN DISTRIBUTION

- **STREET LIGHTING**

- Installation
- Maintenance

- **CUSTOMER SERVICE**

- New supply application (individual, group)
- Meter reading & Billing
- Collection & banking
- Change of tenancy
- Change of tariff
- Individual street light
- Credit control & disconnection
- Bank guarantee management
- Revenue assurance & Back-billing

CHAPTER 3

Distribution Network By Components

Distribution System Components

Distribution System can be divided into three major components:

Bulk power substations

It receives power from the transmission system and transform it to a subtransmission voltage by means of Transmission Power Transformer

Distribution System Components

Primary Feeder

It is the system between subtransmission line and secondary feeder. **Distribution Power Transformer (33/11 kV)** separates the primary feeder from subtransmission line and; **Distribution Transformer (11/0.415 kV)** separates the primary feeder from secondary feeder.

Secondary Feeder

The secondary components of a distribution system ends at the customer's meter.

DISTRIBUTION VOLTAGES

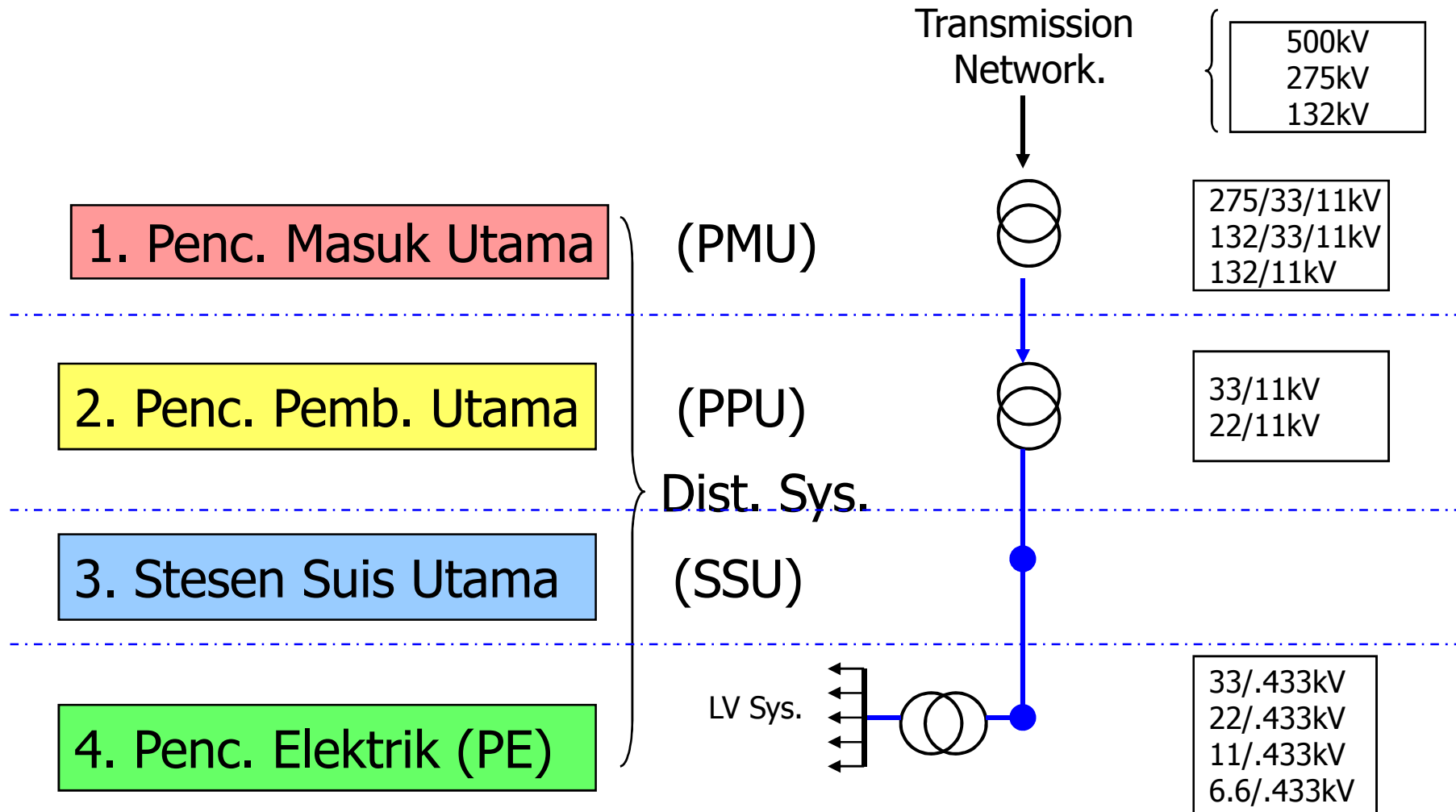
THE DISTRIBUTION VOLTAGES ARE

- 33kV, 22kV, 11kV,
- 400V -3 phases
- 230V- single phase

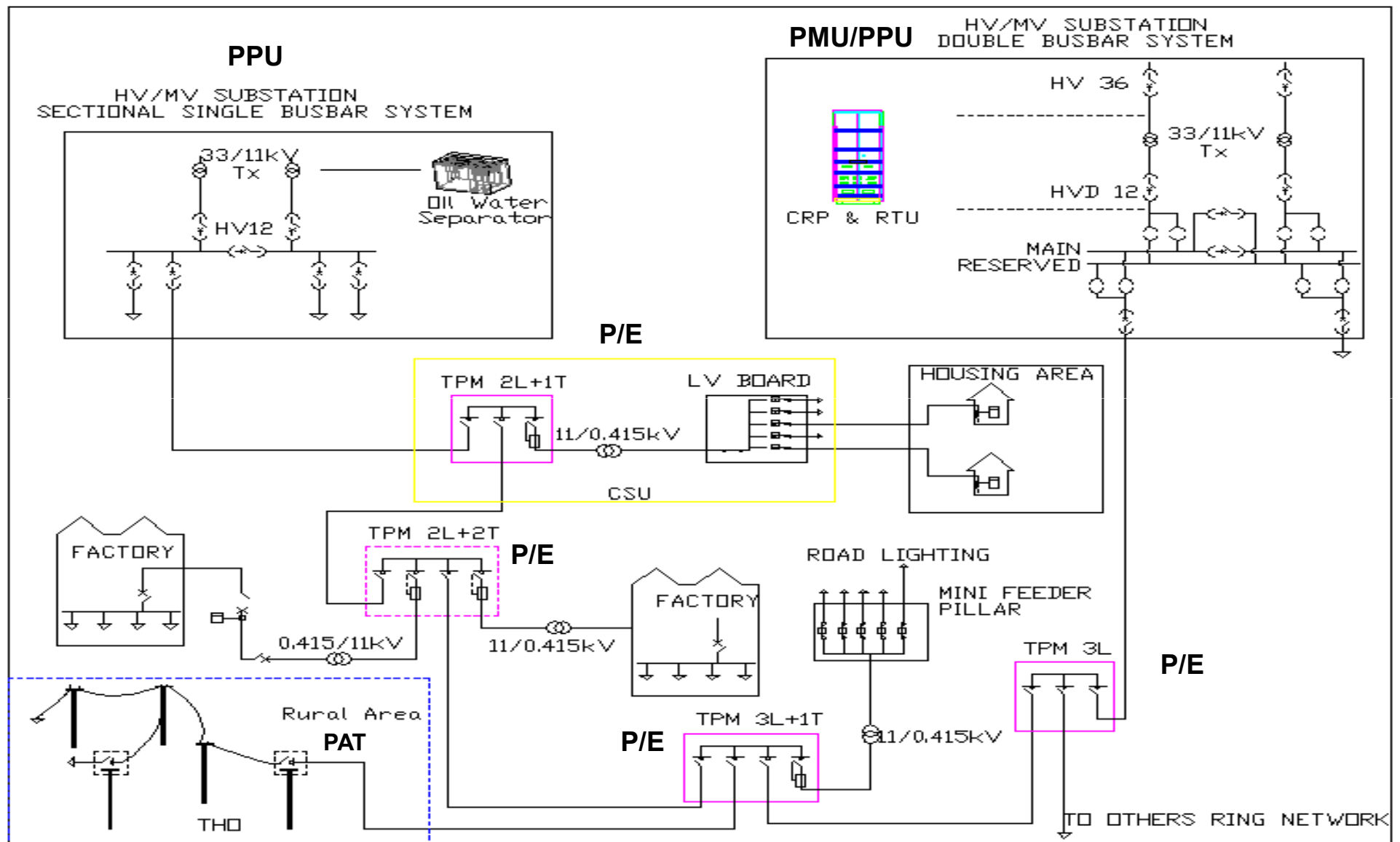
DISTRIBUTION SUBSTATION

- Distribution Bulk Substations – PMU (132/33kV, 132/11kV)
 - Transformer capacity : 90MVA, 45MVA, 30MVA, 15MVA
 - GIS substation
 - AIS substation
- Distribution Primary Substations - PPU(33/11 kV, 33/22kV) & SSU
 - Transformer capacity :7.5MVA, 15MVA, 30MVA,
 - GIS substation
 - AIS substation
- Distribution Secondary Substations - PE(11/0.415 kV, 22/0.415kV)
 - Transformer capacity :100kVA, 300kVA, 500kVA, 750kVA, 1MVA,
 - Indoor substation
 - Outdoor substation
 - Pole mounted substation
 - Compact substation
 - Underground substation

DISTRIBUTION SUPPLY CATEGORY



EXAMPLE OF DISTRIBUTION NETWORK



TNB DISTRIBUTION SUBSTATION CATEGORY

1. Main Intake Substation – PMU

- a. Distribution Bulk Power Substation that provide interfacing between Transmission network and Distribution network where the Transmission voltage is step down to Distribution voltage. PMU serves as main supply source to:
 - i. First level of Distribution primary network (33kV, 11kV)
 - ii. Customer taking power supply at tariff-E3

- b. **Land size requirement** - AIS 130.0 meter x 130.0 meter
 - GIS 70meter x 80meter (2TX)

- c. **Building size requirement** - Depending on requirements

- d. **Transformer size** - 15 MVA, 30 MVA, 45MVA, 90 MVA

- e. **Average cost range** - More than RM30 million depending on Transformer

TNB DISTRIBUTION SUBSTATION CATEGORY

2. Main Distribution Substation – PPU

- a. Distribution Primary Substation that distributes power by stepping down 33kV voltage to 11kV or 22kV voltage as a second level of Distribution primary-network.
 - i. 33kV/11kV
 - ii. 33kV/22kV
- b. **Land size requirement** - 50.0 meter x 50.0 meter
- c. **Building size requirement** -
- d. **Transformer size** - 7.5 MVA, 15 MVA, 30MVA
- e. **Average cost range** - RM7 Million – RM 10 Million depending on Transformer size

TNB DISTRIBUTION SUBSTATION CATEGORY

3. Main Switching Station – SSU

- a. Distribution Substation that further distributes power without voltage transformation within the Distribution primary network (33kV, 22kV, 11kV). It provides interfacing between various PMU and/or various PPU within the Distribution primary network. PPU is established to facilitate:
 - i. Power supply to Customer buying electricity at tariff C1, C2, E1, or E2
 - ii. Reinforcement of Distribution supply network to ensure higher security level
 - iii. Maintaining the scale of economic for power distribution at primary level through a larger area
- b. **Land size requirement** - 31.0 meter x 31.0 meter
- c. **Building size requirement** - Depending on requirements
- d. **Transformer size** - No transformer
- e. **Average cost range** - RM 500 K to RM1 Million depending on number of switchgear & voltage level

TNB DISTRIBUTION SUBSTATION CATEGORY

4. Low Voltage Substation – PE

- a. Low Voltage Substation provides interfacing between primary network and secondary network in Distribution system where the 11kV or 22kV voltage is step down to 415V. It is the main source of power supply to Customer buying electricity tariff A, B or D as well as for street lighting through LV network that comprises of:
 - i. LV Board
 - ii. LV Feeder pillar
 - iii. LV Underground cable system
 - iv. LV Overhead line system

- b. **Land size requirement**
 - single chamber
 - double chamber

- c. **Building size requirement** - Depending on requirements

- d. **Transformer size** - 100kVA, 300kVA, 500kVA, 750kVA, 1MVA

- e. **Average cost range** - RM 100K to RM 250K depending on Transformer size and size of building

Pencawang Masuk Utama – PMU (Main Intake)



DISTRIBUTION INTAKE



INDOOR SUBSTATION – DOUBLE CHAMBER



INDOOR SUBSTATION – DOUBLE CHAMBER



INDOOR SUBSTATION – SINGLE CHAMBER



OUTDOOR SUBSTATION



POLE MOUNTED SUBSTATION



POLE MOUNTED SUBSTATION



UNDERGROUND SUBSTATION



POLE MOUNTED SUBSTATION



COMPACT SUBSTATION



COMPACT SUBSTATION - Switchgear

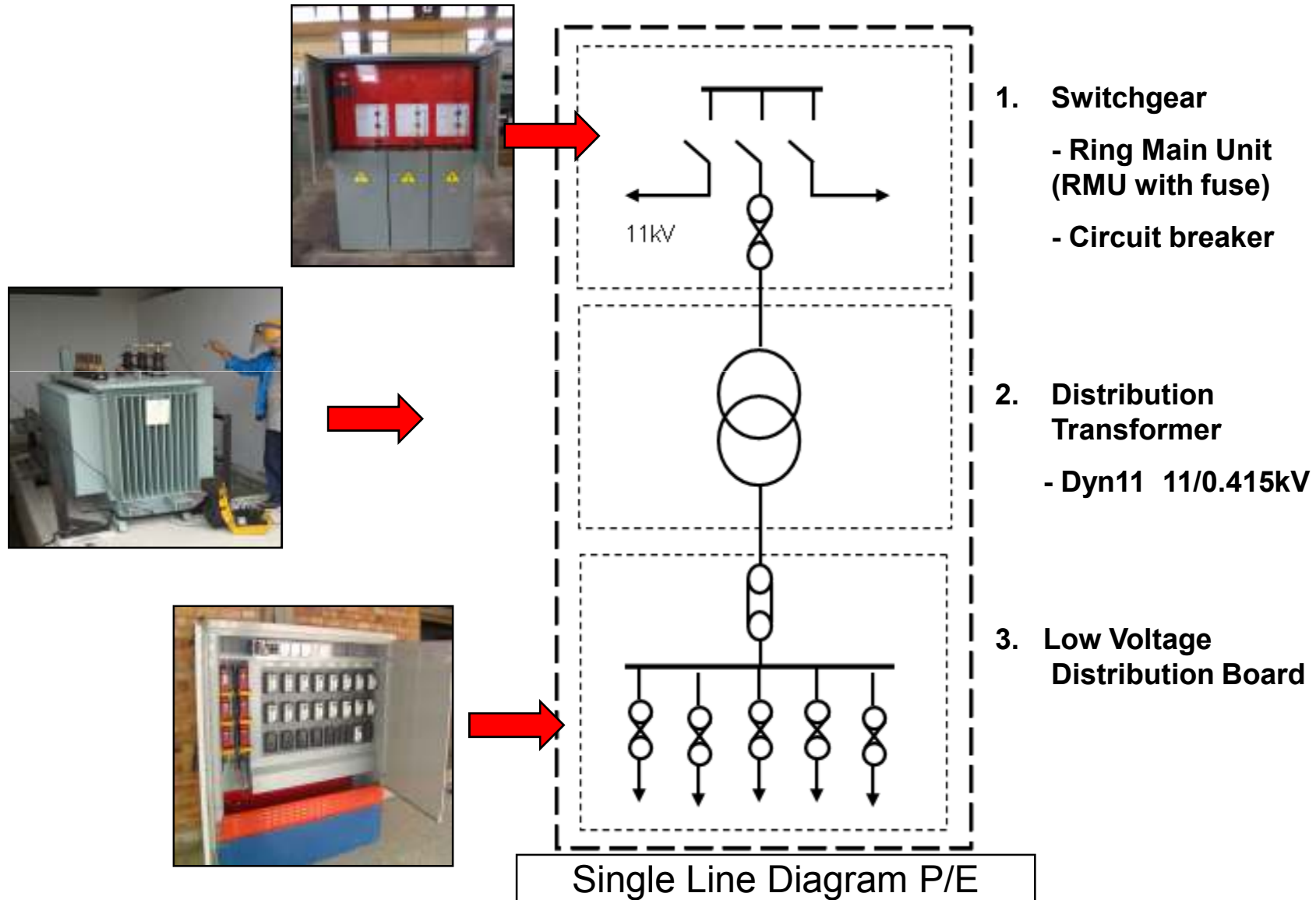


COMPACT SUBSTATION – Low Voltage Board



11KV SUBSTATION CONSTRUCTION

Three main sections of electrical substation



SUBSTATION COMPONENT

BASIC COMPONENTS:-

SUBSTATION ENCLOSURE

- Substation building (for indoor substation)
- Fencing (for ground substation)
- Metal enclosed kiosk (for compact substation)
- Pole (for pole mounted substation)

HIGH VOLTAGE SWITCHGEAR

- Circuit breaker
- Main ring unit (c/w high voltage fuse)
- Isolator

LOW VOLTAGE SWITCHGEAR

- Low voltage distribution board
- Low voltage high current fuse

DISTRIBUTION TRANSFORMER

- 3 Phase oil-filled transformer

CABLE

- High voltage cable
- Low voltage cable

EARTHING SYSTEM

- Earthing rod
- Lightning arrester

DIRECT CURRENT (DC) SYSTEM

- DC 110v
- DC 30v



DISTRIBUTION TRANSFORMER



DISTRIBUTION SWITCHGEARS

Vacuum circuit breaker (VCB)



Air circuit breaker (ACB)

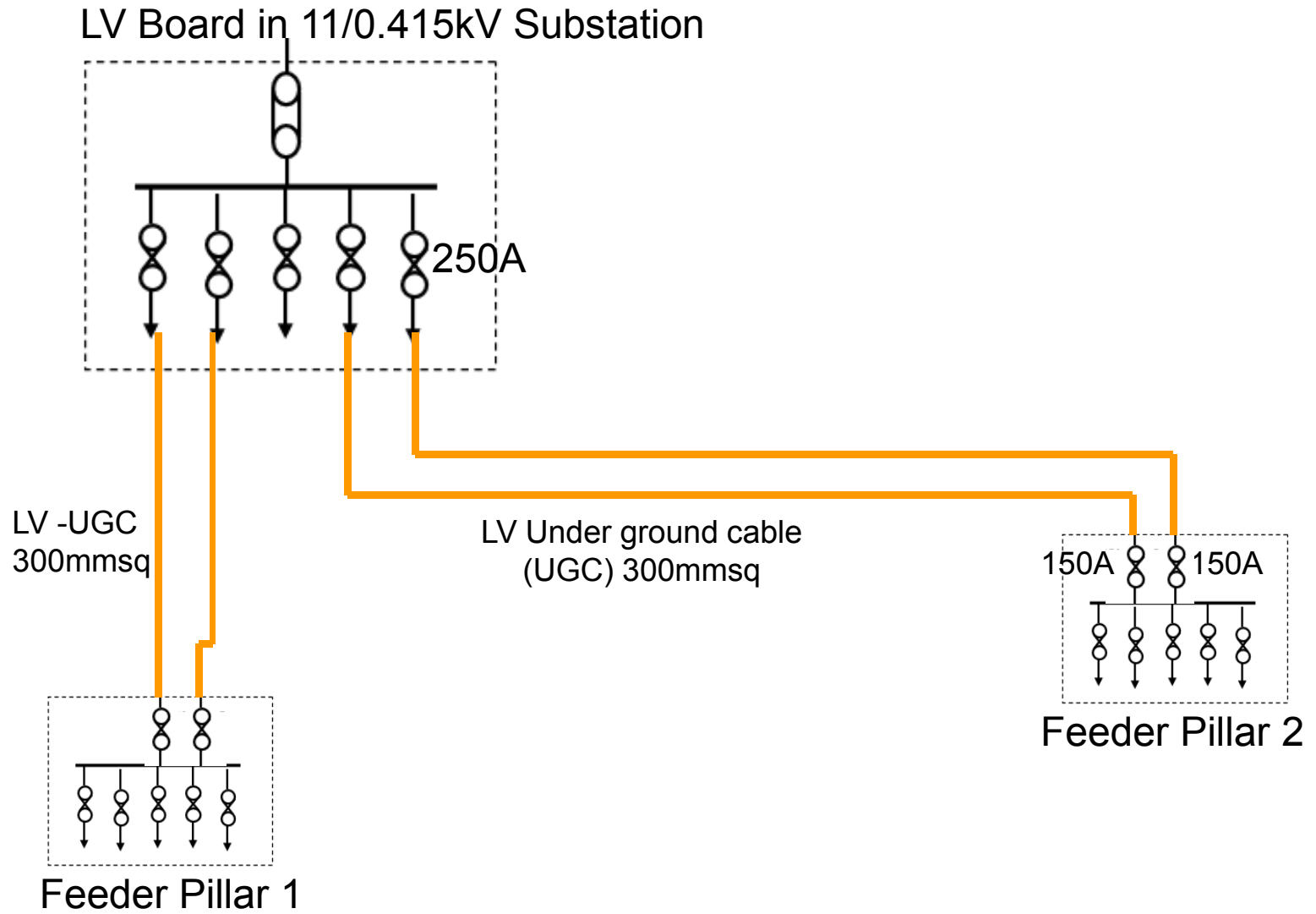


Ring Main Unit (RMU)

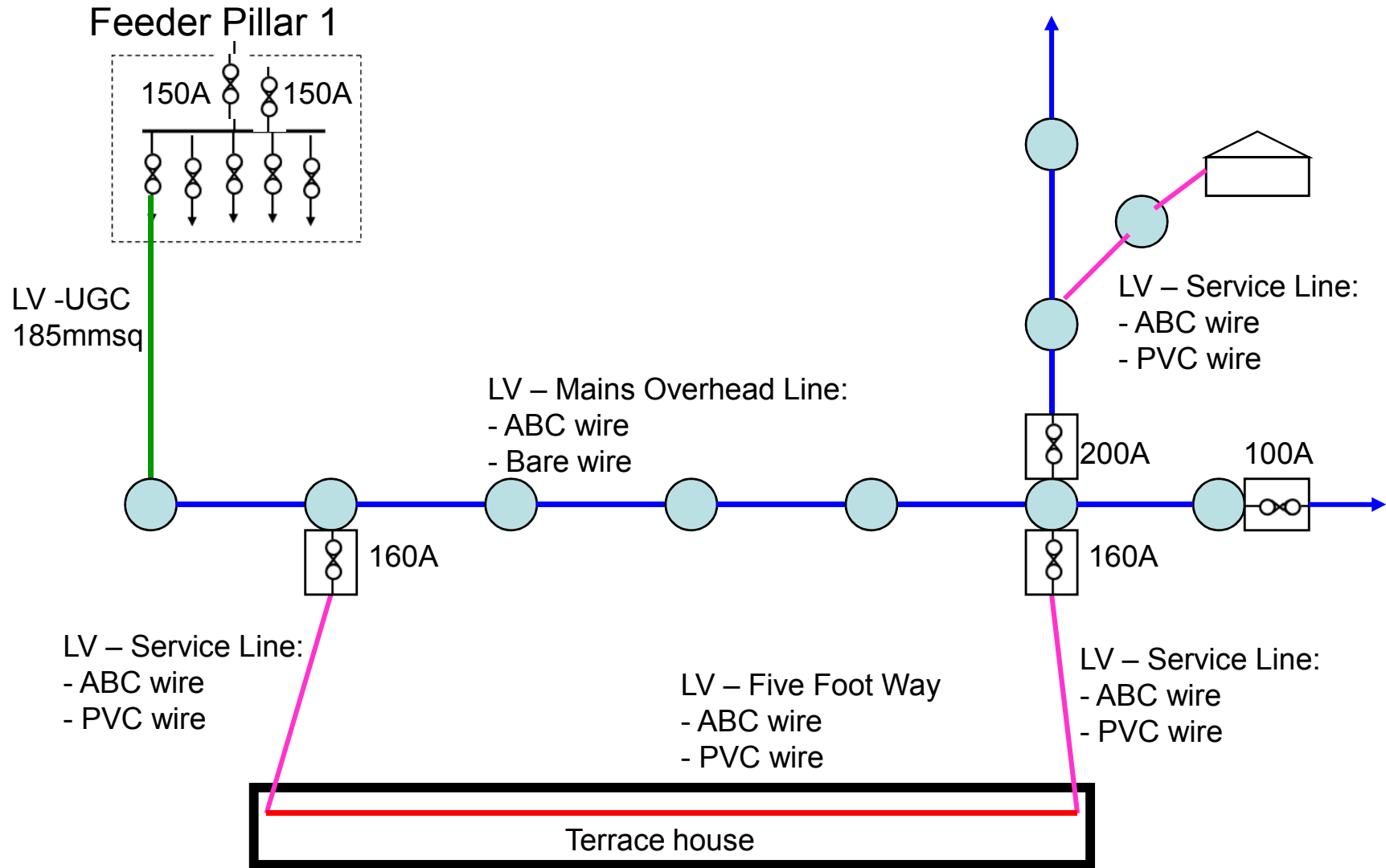
MEDIUM VOLTAGE CABLES

- Underground
 - Paper insulated cables (PILCDSTA)
 - Cross linked polyethylene (XLPE)
 - Oil filled
- Aerial Bundled Cable
 - Cross linked polyethylene (XLPE)

LOW VOLTAGE NETWORK



LOW VOLTAGE NETWORK



MEDIUM VOLTAGE PAPER INSULATED CABLE (PILDSTA)



MEDIUM VOLTAGE XLPE UNDERGROUND CABLES



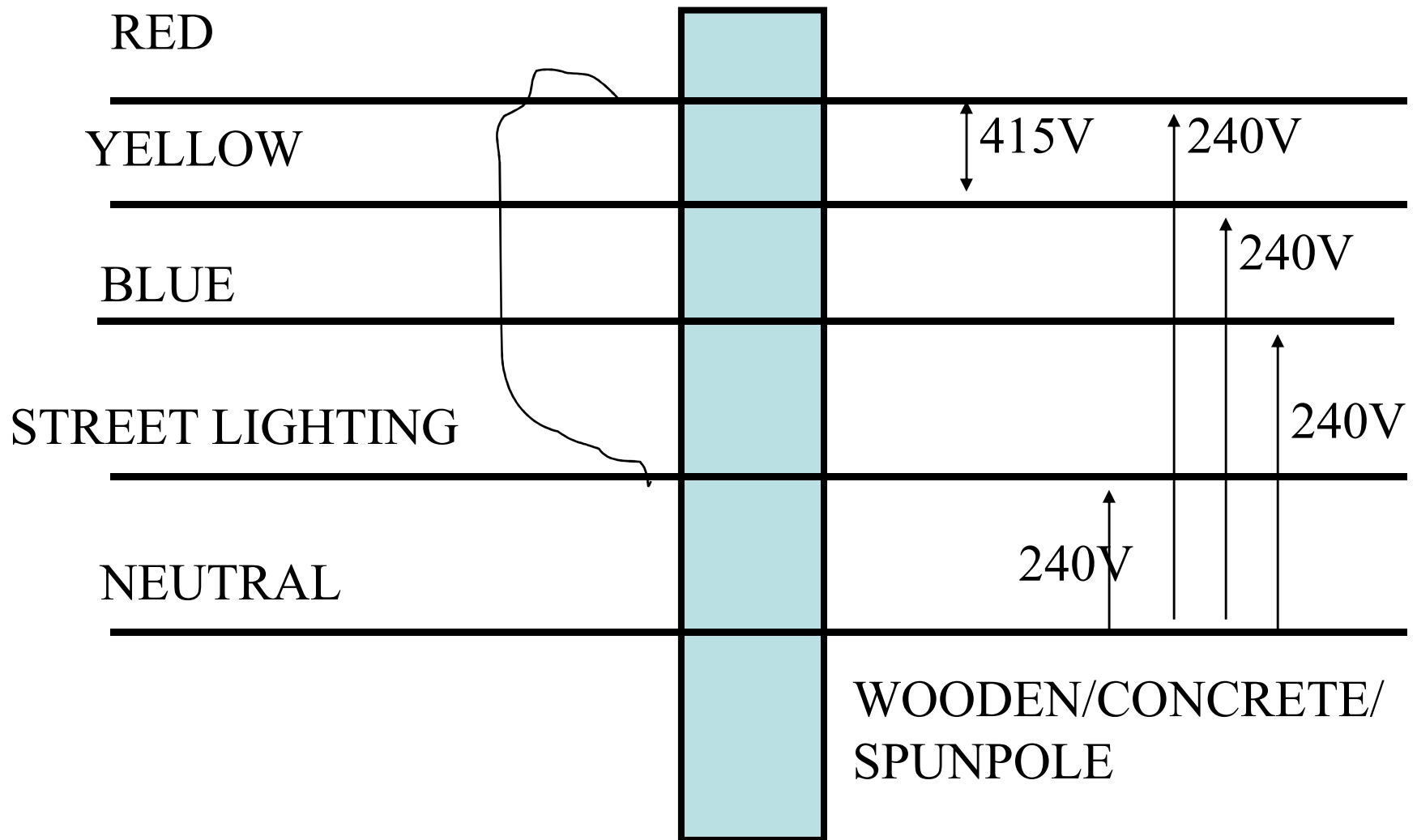
AERIAL XLPE



LV OVERHEAD LINES

- Bare aluminium conductors
- Aerial bundle cable
- PVC insulated conductors

OVERHEAD CONDUCTORS INSULATED / BARE



LOW VOLTAGE LIVE LINE



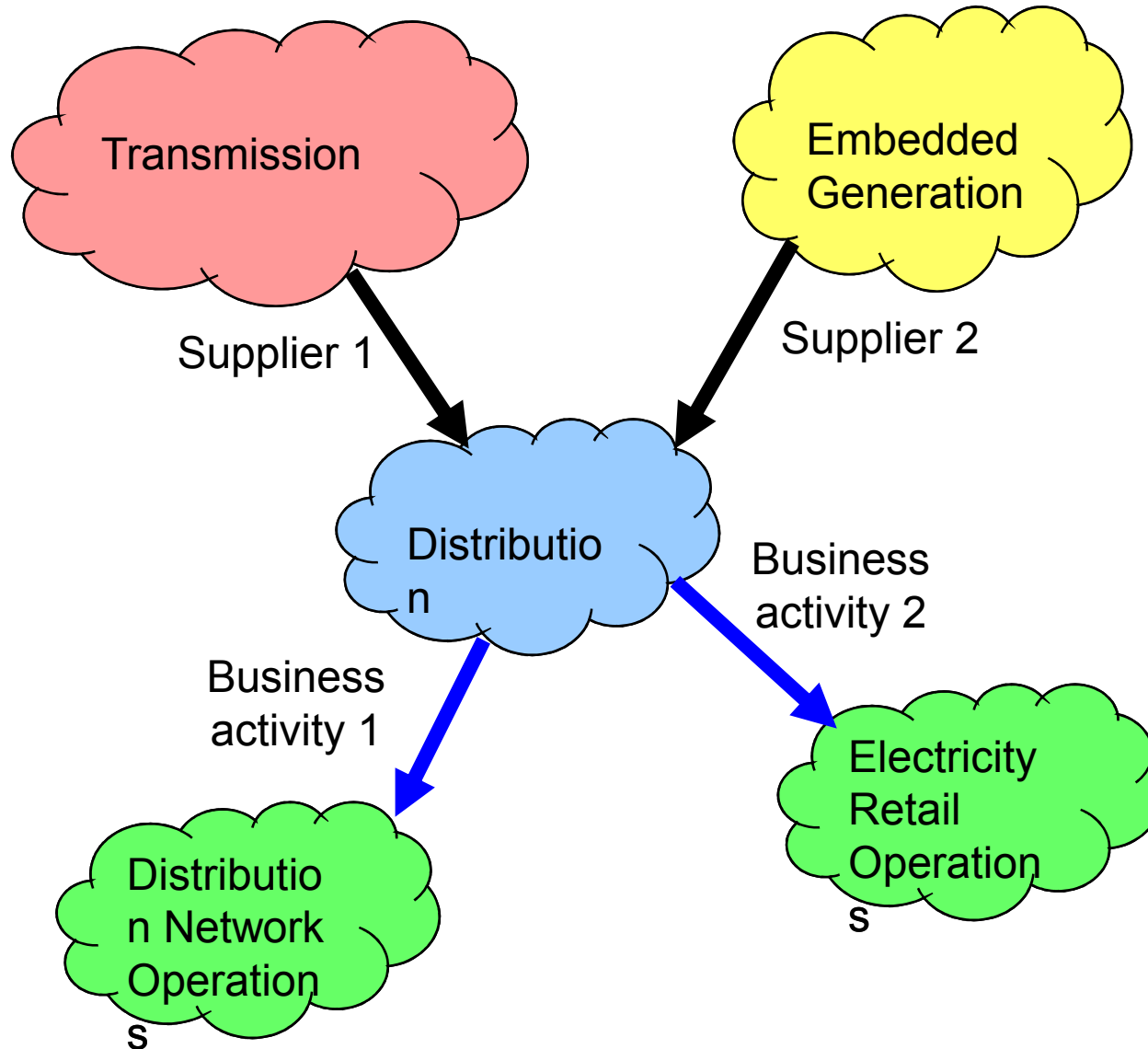
Electrical Shock progression...

- Slight sensation (1mA)
- Feel a “shock” but not painful (5mA)
- Painful, may invoke reflexes (10mA)
- Muscle contraction, breathing difficulty – possible asphyxiation (50mA)
- Cardiac interference – possible fibrillation (100mA)
- Almost certain fibrillation, possible nerve damage (1A)
- Cardiac arrest, severe burns (internal/external) (5A)
 - (Note: 6A is operating parameters for Defibrillator)

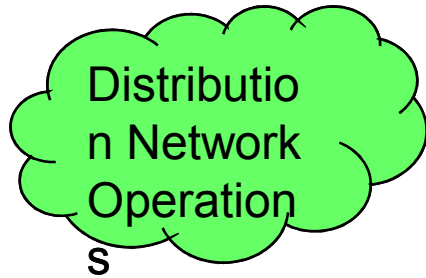
CHAPTER 5

Distribution Network By Business Model

DISTRIBUTION BUSINESS MODEL

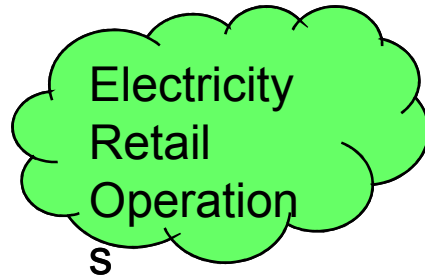


BUSINESS ACTIVITY 1



TNB Distribution plans, construct, operates, performs repair & maintenance as well as manage the assets of the 33kV, 22kV 11kV and 415/240 Volts in Peninsula Malaysia's distribution network

BUSINESS ACTIVITY 2

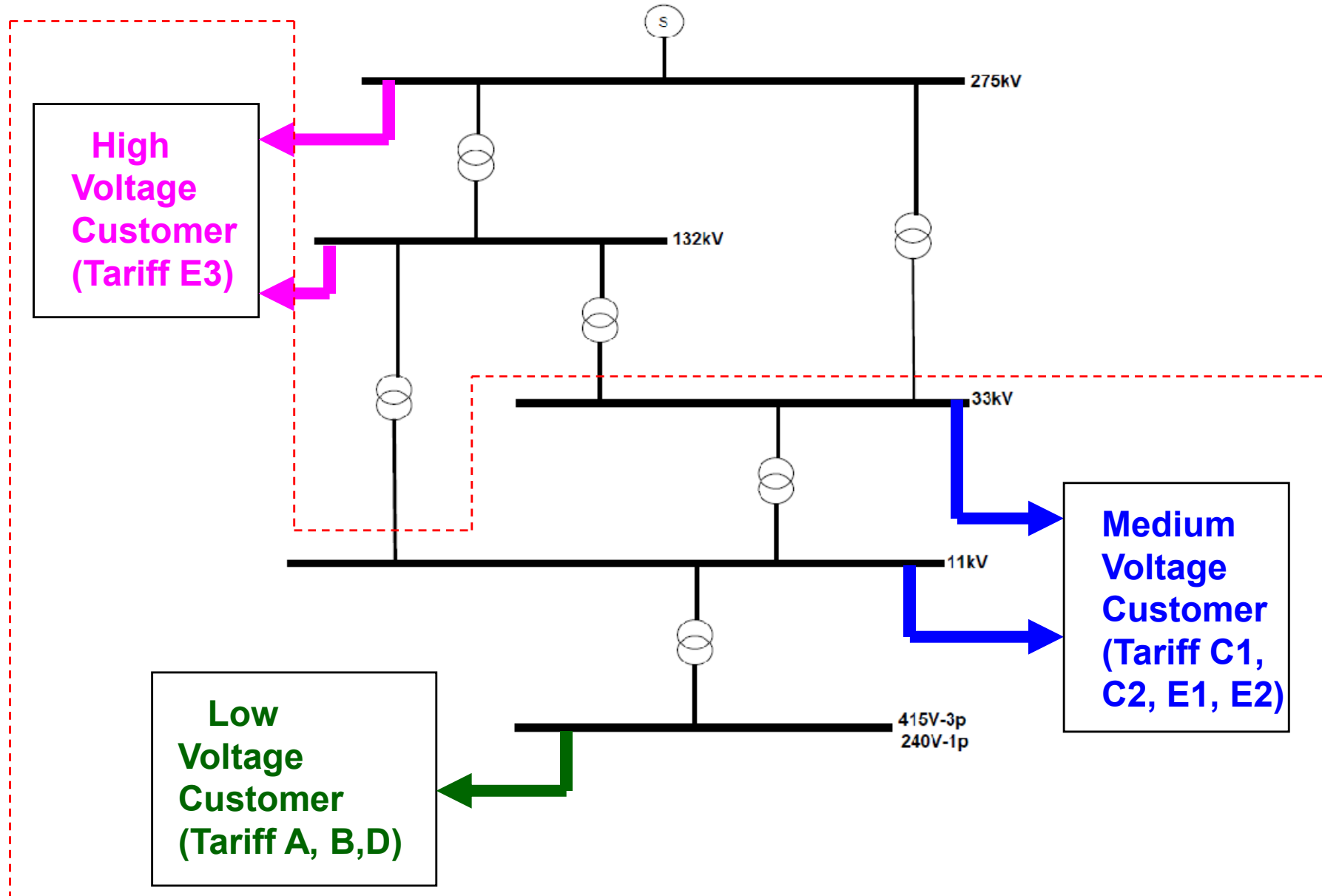


TNB Distribution operates a network to purchase electricity from Transmission network and from embedded generators;

It markets and sell electricity by carrying out:

- connection of new supply
- providing customer services
- collection of revenue
- operating the call management centers
- providing supply restoration services
- cultivating strong customer and government relationships

DISTRIBUTION BUSINESS TERRITORY



Customer Segmentation - based on meter category

Large Power Consumer (LPC):

All customers that take supply through CT-meter (normally tariff B, C, D, E)

Ordinary Power Consumer (OPC):

All customers that take supply through whole-current-meter (Tariff A & B)

Customer Segmentation - based on activity

Domestic customer:

Residential (Tariff A)

Commercial customer:

All business premises, Govt. offices, NGOs (Tariff B, C)

Industrial customer:

All industrial premise premises (Tariff D, E)

Mining:

All mining activity (Tariff F)

Street lighting:

All street lighting, Flood lighting, Neon Lighting

Agriculture:

Specific agricultural activity (Tariff H)

SERVICES PROVIDED FOR CUSTOMER

System voltage		Fault Level		Maximum Demand	Tariff
High Voltage	275kV	40kA	19,030MVA		E3
	132kV	31.5kA	7,193.3MVA	25.0MVA<	
Medium Voltage	33kV	25kA	1,427.3MVA	25.0MVA	E1, E2, C1, C2, F1, H1, H2
	22kV	20kA	761.2MVA	10.0MVA	
	11kV	20kA	380.6MVA	5.0MVA	
Low Voltage	415V	31.5kA	22.6MVA	1.0MVA	A, B, D, F, G, G1, H
	240V	31.5kA	13.1MVA	12kVA	

GUARANTEE TO CUSTOMER - RELIABILITY OF SERVICE

Voltage Under Normal Condition

Voltage Level	% Variation
415V & 240V	-10% to +5%
6.6kV, 11kV, 22kV, 33kV	±6%
132kV & 275 kV	-5% to +10%

Voltage Under Contingency Condition

Voltage Level	% Variation
415V & 240V	±10%
6.6kV, 11kV, 22kV, 33kV	±10%
132kV & 275 kV	±10%

GUARANTEE TO CUSTOMER -RESPONSE TIME TO SERVICE INTERRUPTION

Security Level for TNB Network

Security Level	Average Restoration Period
Level 1	Less than 5 seconds
Level 2	Less than 15 minutes
Level 3	Less than 4 hours
Level 4	Less than 24 hours

- ~ 132kV, 275kV and 500kV generally are designed to facilitate an average supply restoration of less than 5 sec
- ~ 6.6kV, 11kV, 22kV, and 33kV generally are designed to facilitate an average supply restoration of less than 4 hours
- ~ 240V and 415V the restoration period may vary beyond 4 hours depending on the type of faults and/or traffic congestion level

BUSINESS CHALLENGES

Losses:

Non-technical losses

Revenue collection:

Average collection period

Bad debts collection

Revenue assurance & back-billing

Customer focus:

Customer complaints

Customer satisfaction

Retaining customer's loyalty

Keeping the light on:

Reduce breakdown

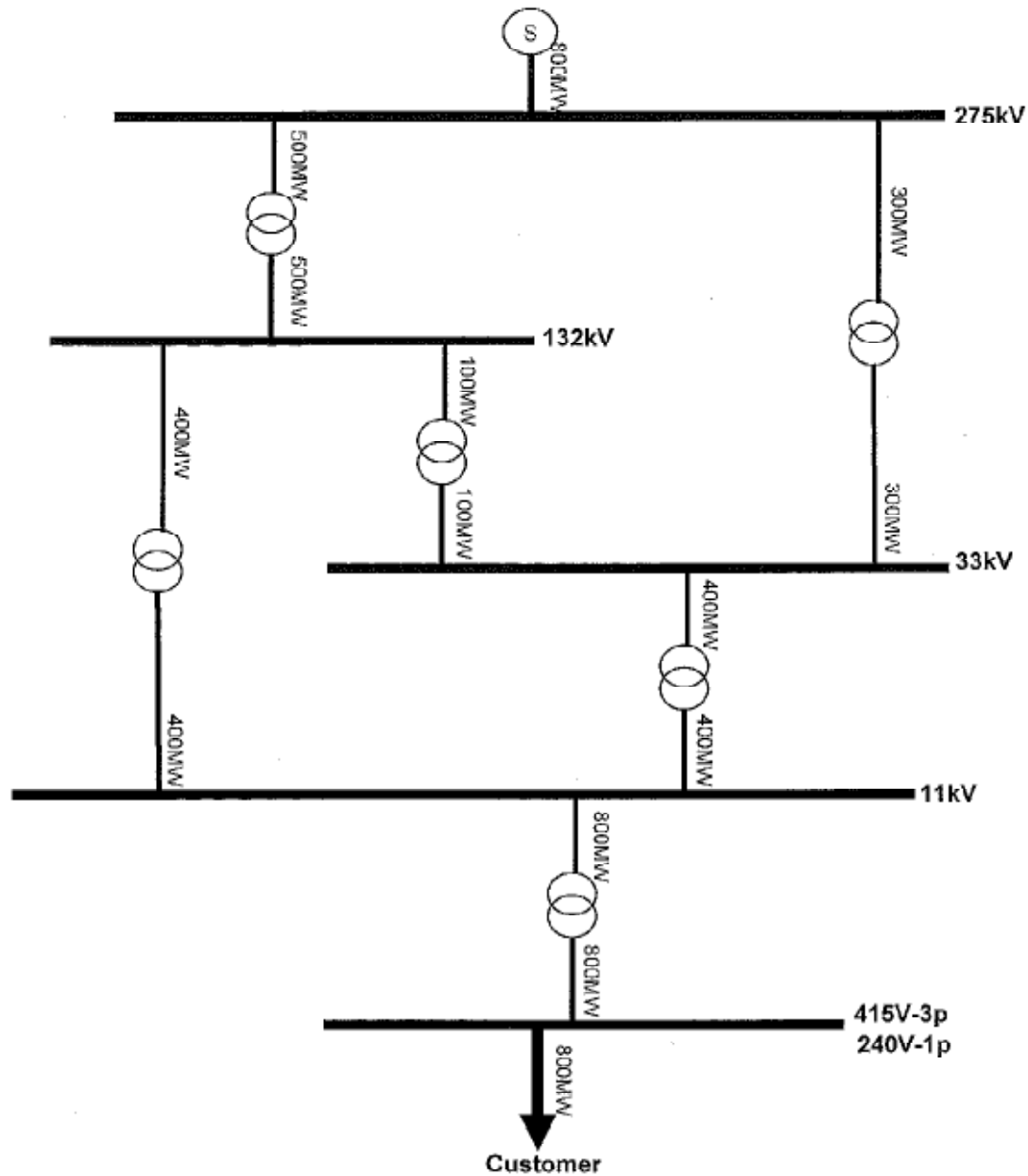
Faster response to interruption

Cost per unit:

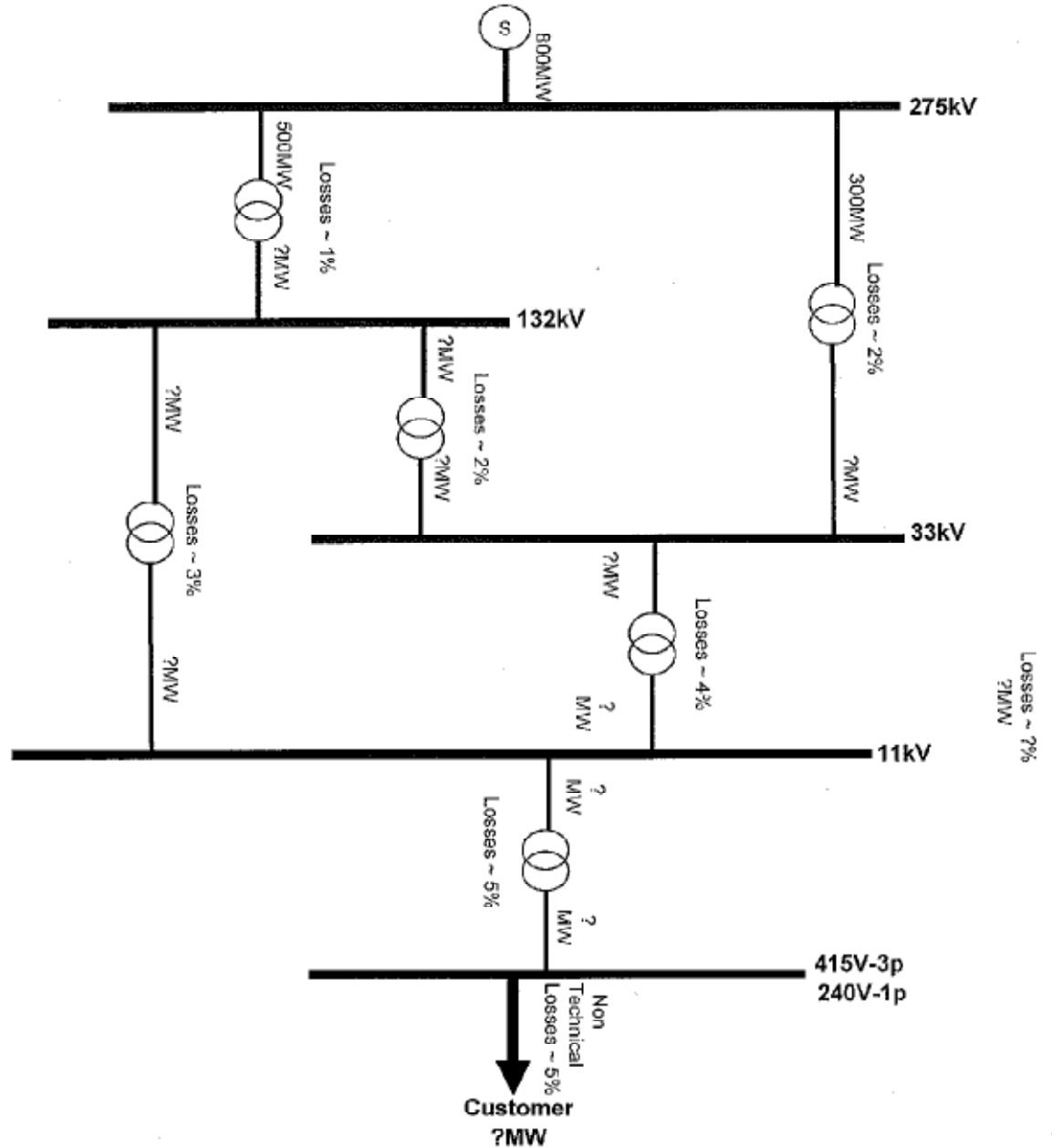
Managing CPU rise (2% - 3% annually)

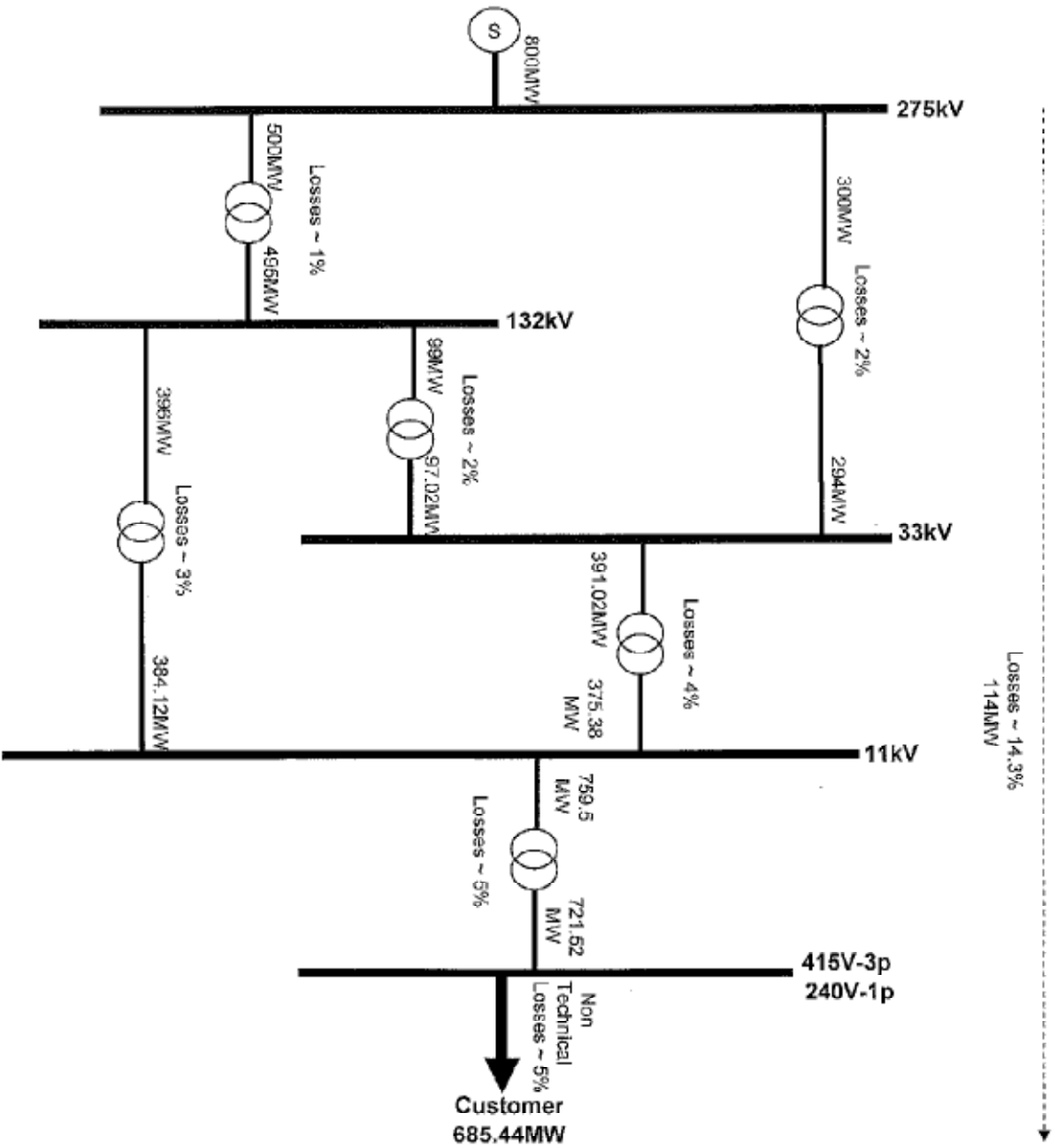
Keeping CAPEX & OPEX reasonably low

POWER FLOW – IDEAL CONDITION



POWER FLOW – WITH LOSSES



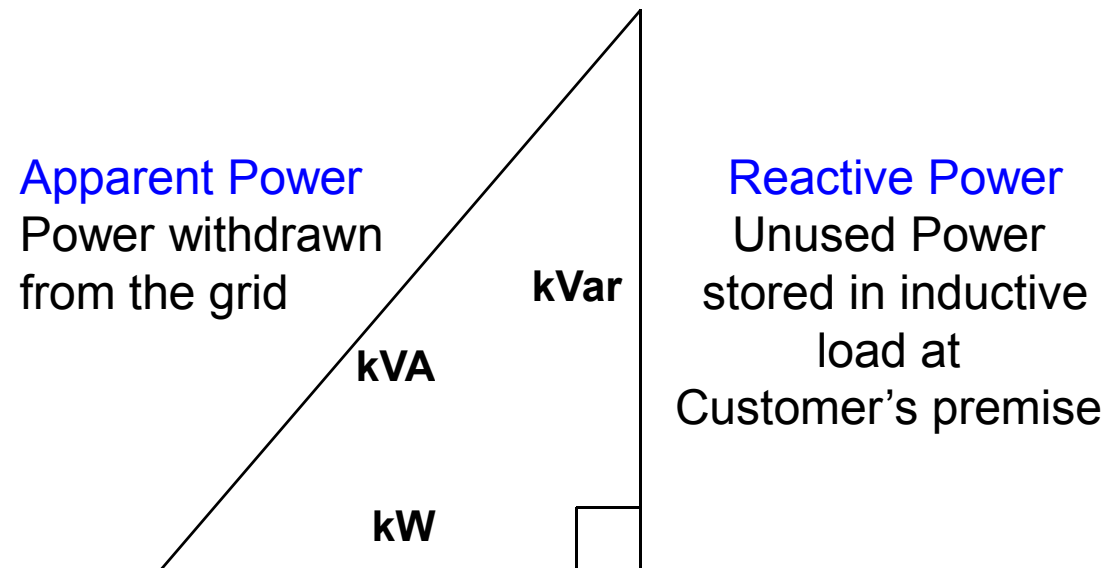


CHAPTER 6

Electricity Billing

FUNDAMENTAL OF ELECTRICITY

Power Triangle



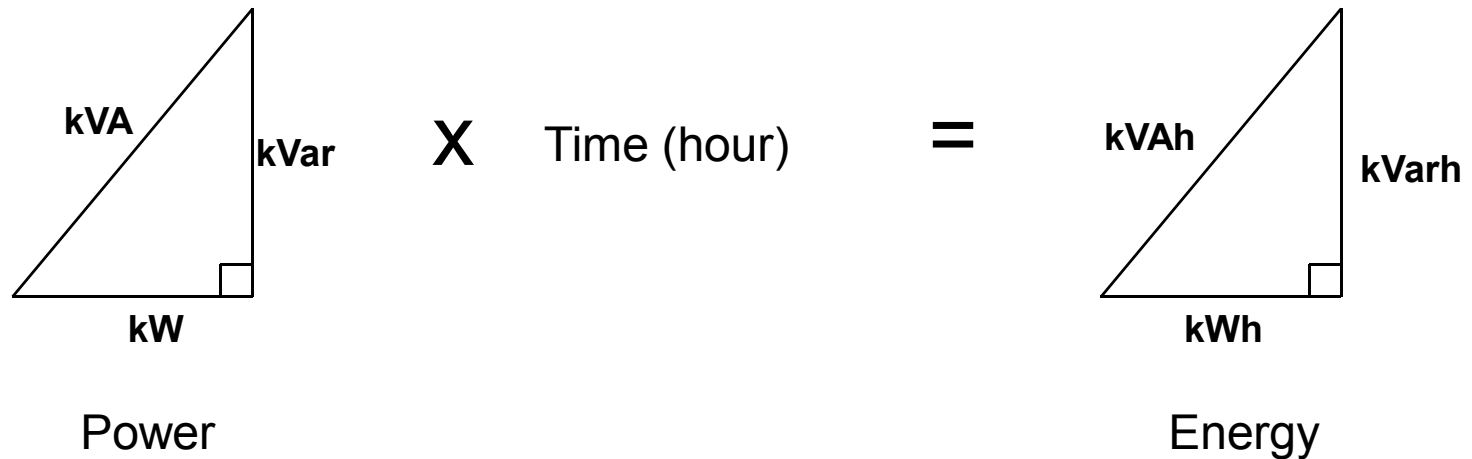
Apparent Power
Power withdrawn
from the grid

Reactive Power
Unused Power
stored in inductive
load at
Customer's premise

Active Power
Actual power
consumed to
perform work
at Customer's
premise

$$\mathbf{kVA^2 = kW^2 + kVar^2}$$

FUNDAMENTAL OF ELECTRICITY



$$\mathbf{kVA^2 = kW^2 + kVar^2}$$

$$\mathbf{kVAh^2 = kWh^2 + kVarh^2}$$

$$\mathbf{Power\ factor = kW / kVA = kWh / kVAh}$$

ELECTRICITY BILLING COMPONENT

	Bill element	Tariff A	Tariff B	Tariff C	Tariff D	Tariff E	Tariff G	
a	Energy consumed	✓	✓	✓	✓	✓	✓	Sales of energy usage
b	Power (Max Demand)			✓		✓		Charge for capacity
c	Power factor		✓	✓	✓	✓		Penalty for poor efficiency level of electricity usage
d	Welding charge		✓					Charge for capacity for customer who does not pay for Max demand
e	Temporary supply		✓					Charge for supply required for less than 6 months

ELECTRICITY BILLING COMPONENT

	Bill element	Tariff A	Tariff B	Tariff C	Tariff f D	Tariff E	Tariff G	
f	Minimum monthly charge (RM)	3.00	7.20	600.00	7.20	600.00	7.20	Minimum rental of infra if no significant consumption
g	Connected load charge (From second year onwards until 5 th year)			✓		✓		Charge for not meeting declared max-demand 1 st Free, 2 nd 50%, 3 rd 50%, 4 th 75%, 5 th 75%
h	1% Renewable energy charge	✓	✓	✓	✓	✓	✓	Charge for not meeting declared max-demand Free,50%,50%,75%,75%

SAMPLE DOMESTIC CONSUMPTION

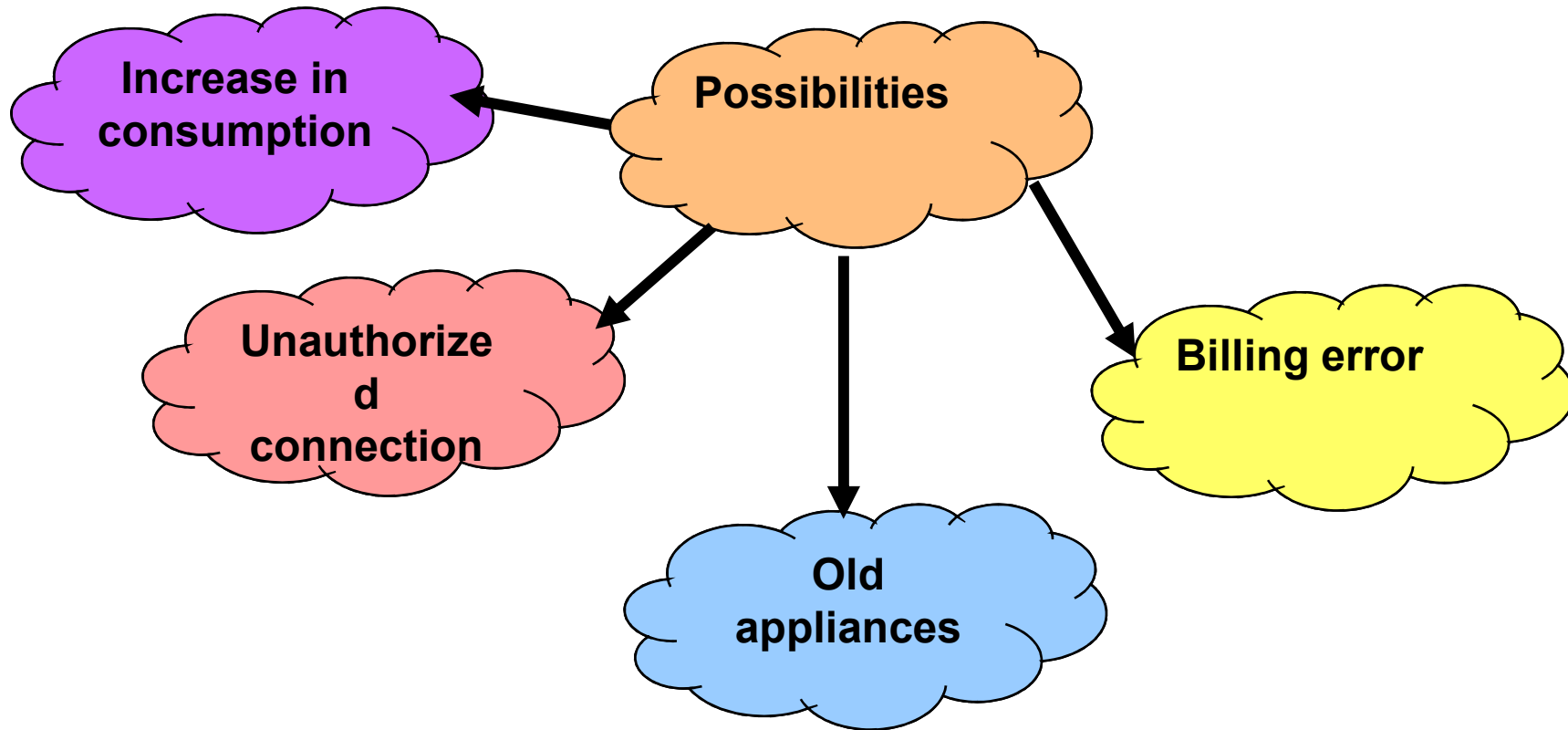
	Qty	Power (Watt)	Daily usage rate (hour)	Daily Energy Consumed (kWh)
Refrigerator	1	1200	24	28.8
Television	1	150	5	0.75
Air Conditioner	2	750	7	10.5
Iron	1	1000	0.5	0.5
Rice Cooker	1	730	0.75	0.5475
Kettle	1	850	0.5	0.425
Washing machine	1	850	0.75	0.6375
Standing fan	2	75	7	1.05
Lighting	12	36	5	2.16
Total daily kWh				45.37
Total monthly kWh (30days)				1361.1

SAMPLE DOMESTIC BILL

	kWh	Unit Rate (RM)	Energy Cost
Block 1	200	0.2180	43.60
Block 2	100	0.3340	.33.40
Block 3	100	0.4000	40.00
Block 4	100	0.4020	40.20
Block 5	100	0.4160	41.60
Block 6	100	0.4260	42.60
Block 7	100	0.4370	43.70
Block 8	100	0.4530	45.30
Block 9	461.10	0.4540	209.34
Total bill (RM)			539.74

SAMPLE DOMESTIC BILL

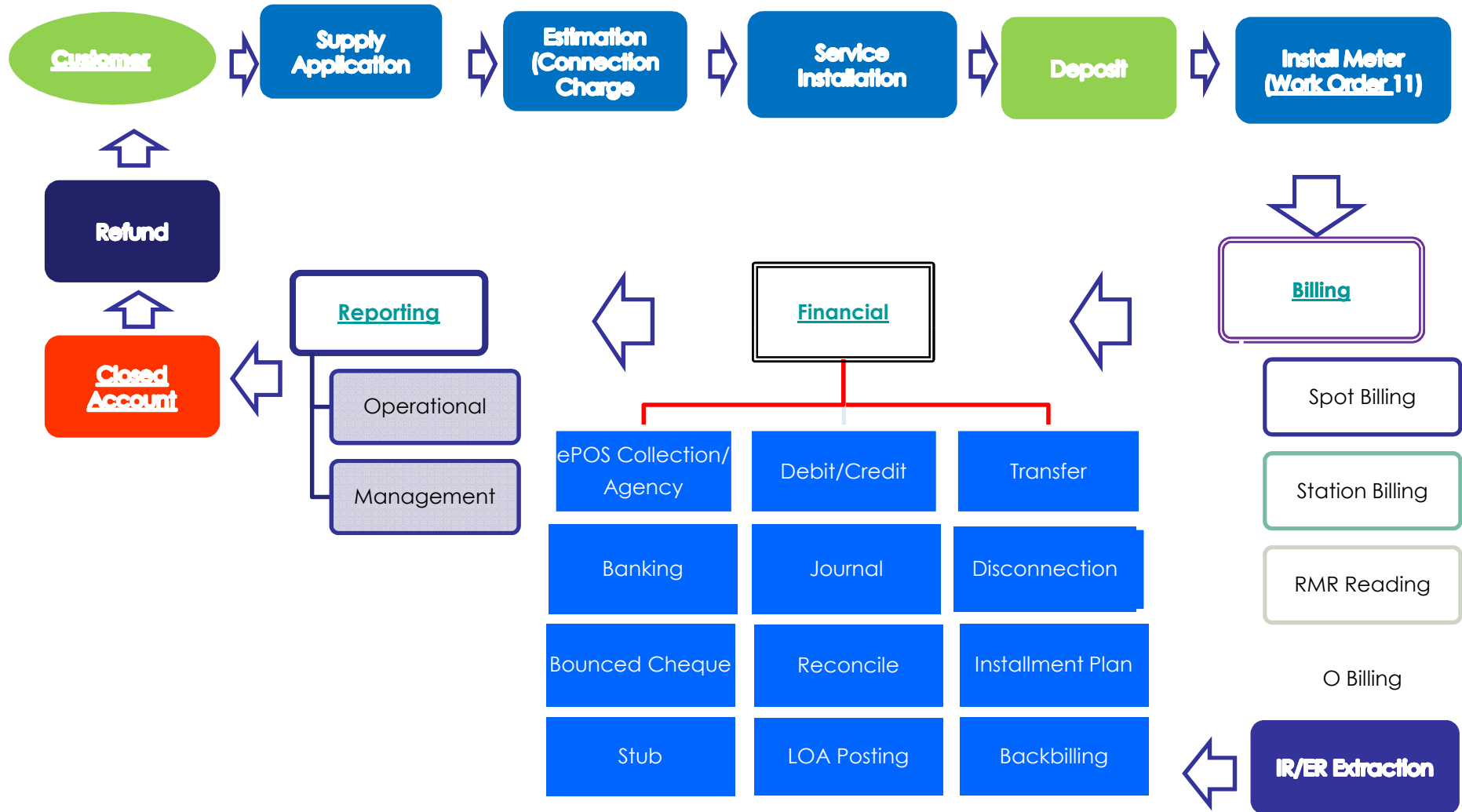
What happen if the total bill exceed RM 600.00?



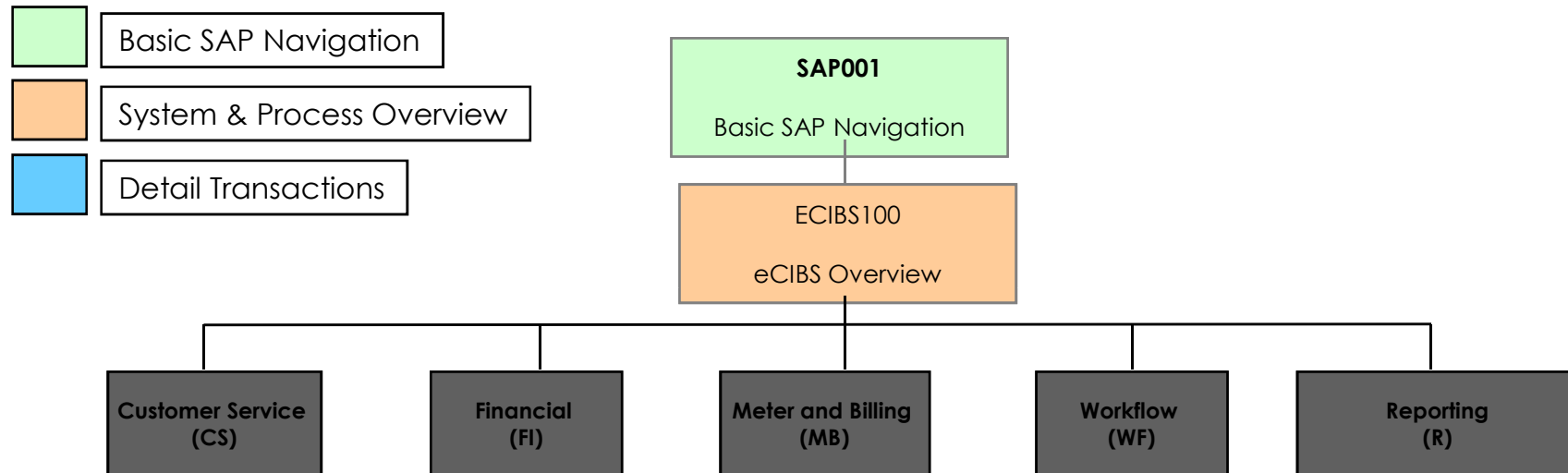
CHAPTER 7

e - CUSTOMER INFORMATION BUSINESS SYSTEM (e-CIBS)

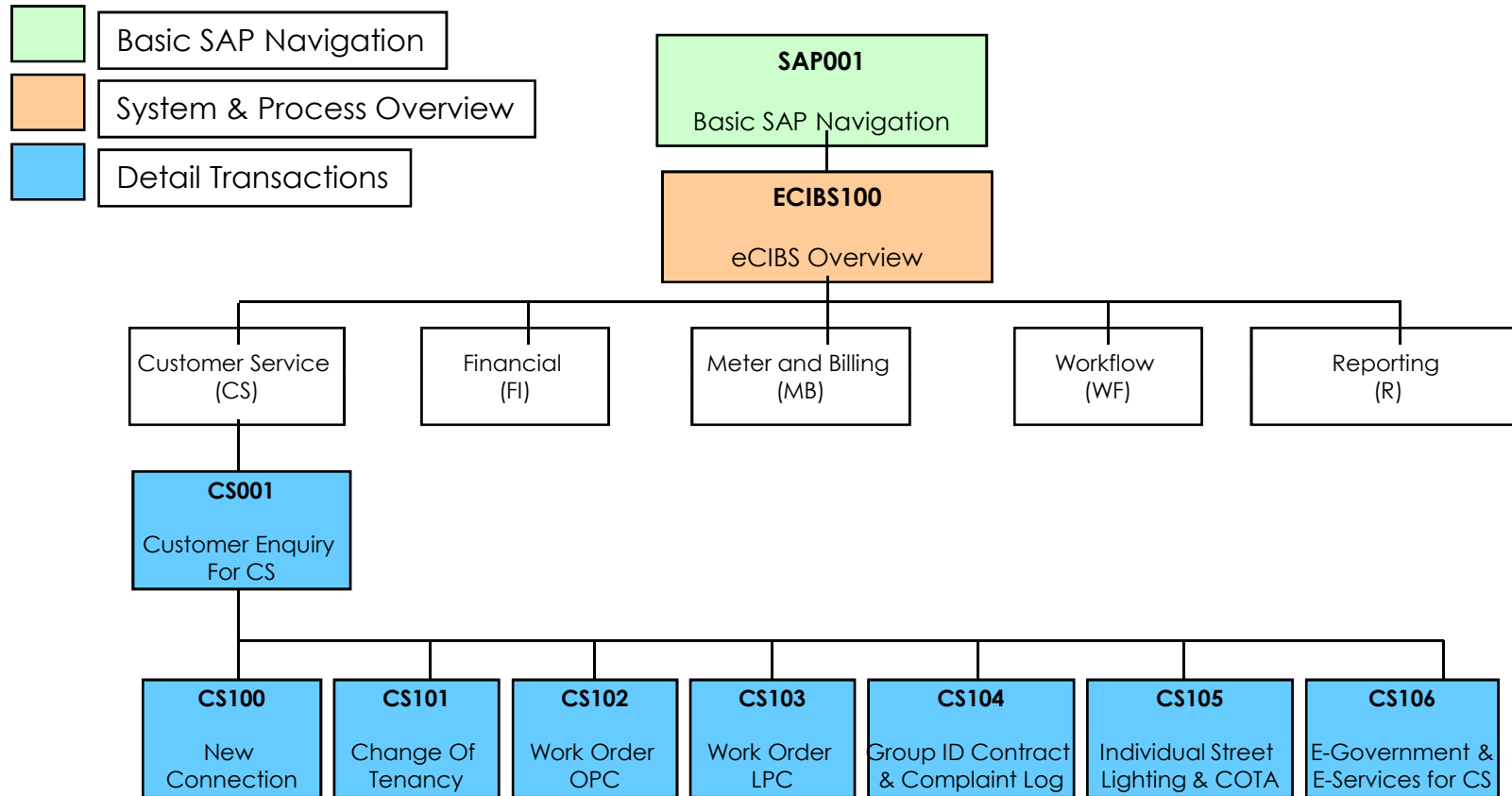
e-CIBS BUSINESS PROCESS



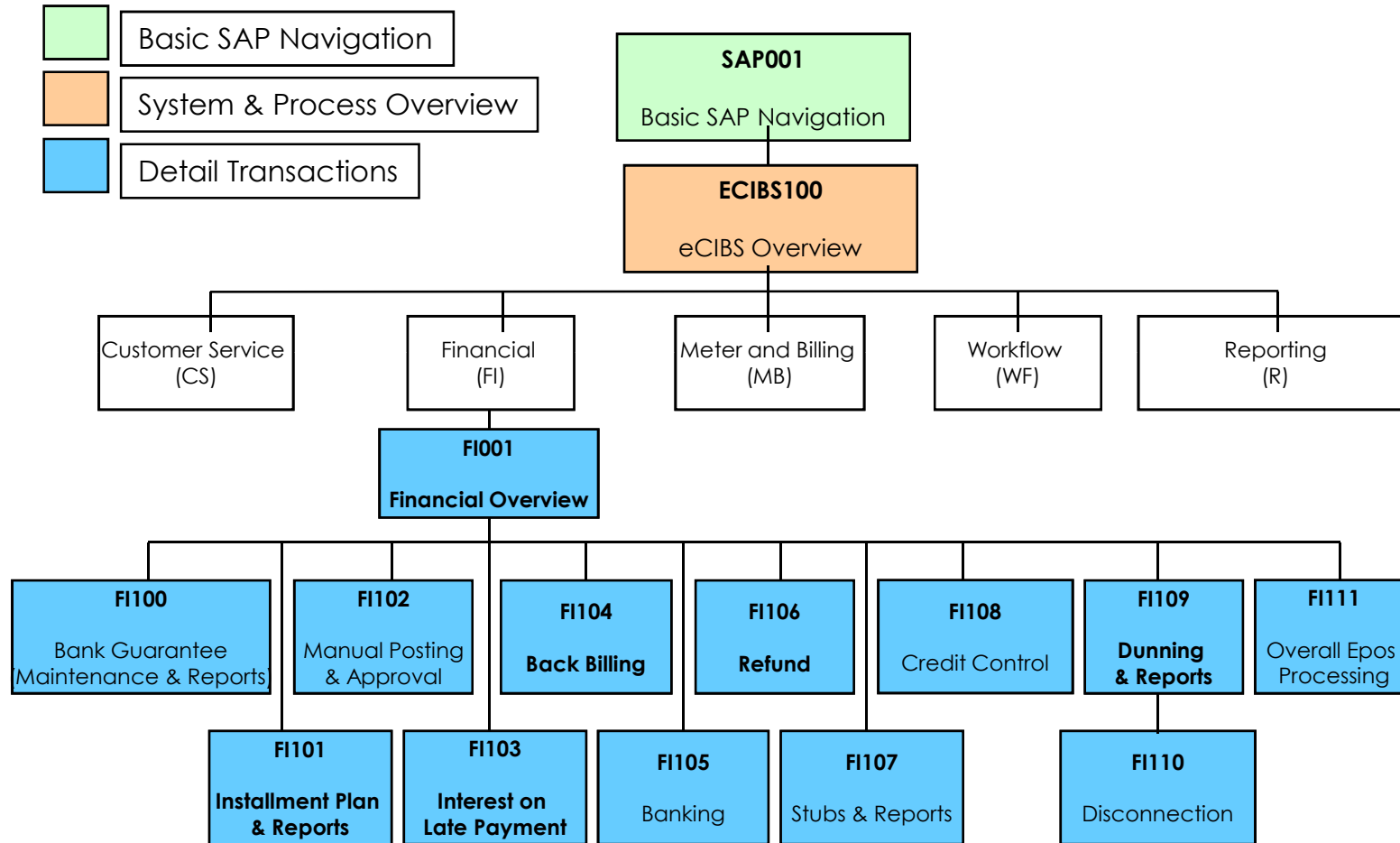
e-CIBS SYSTEM & PROCESS OVERVIEW



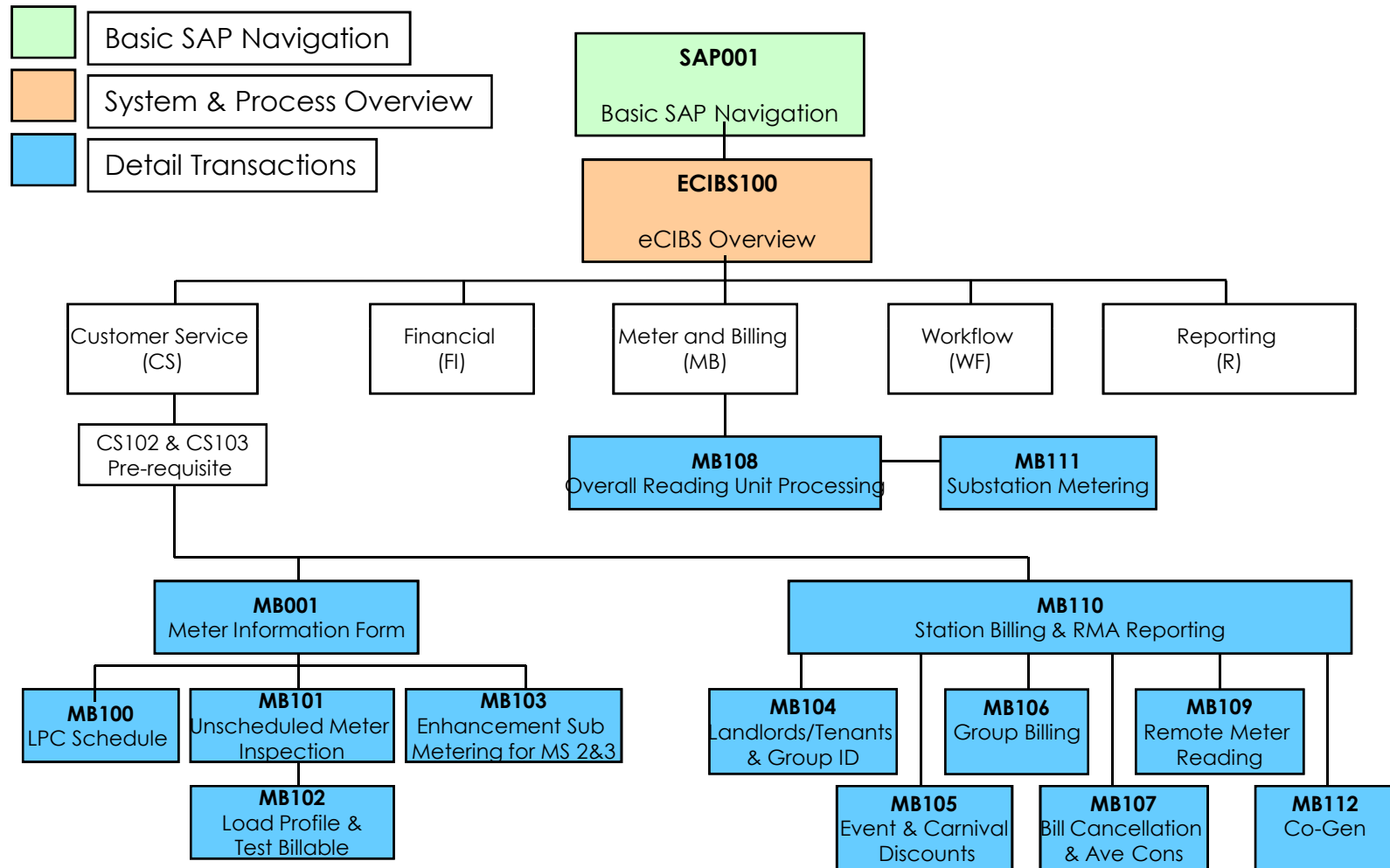
DETAILS OF CUSTOMER SERVICE



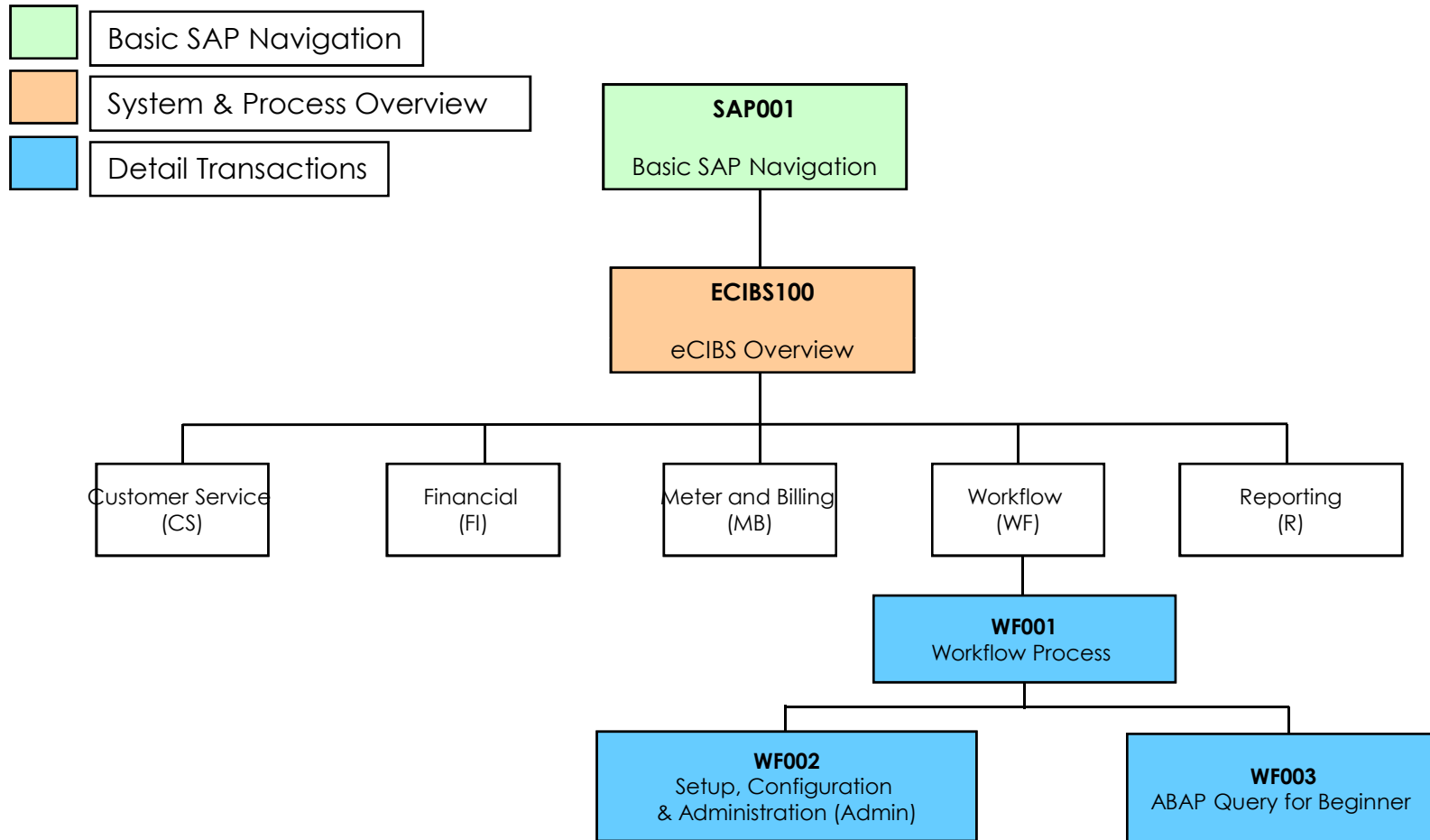
DETAILS OF FINANCIAL



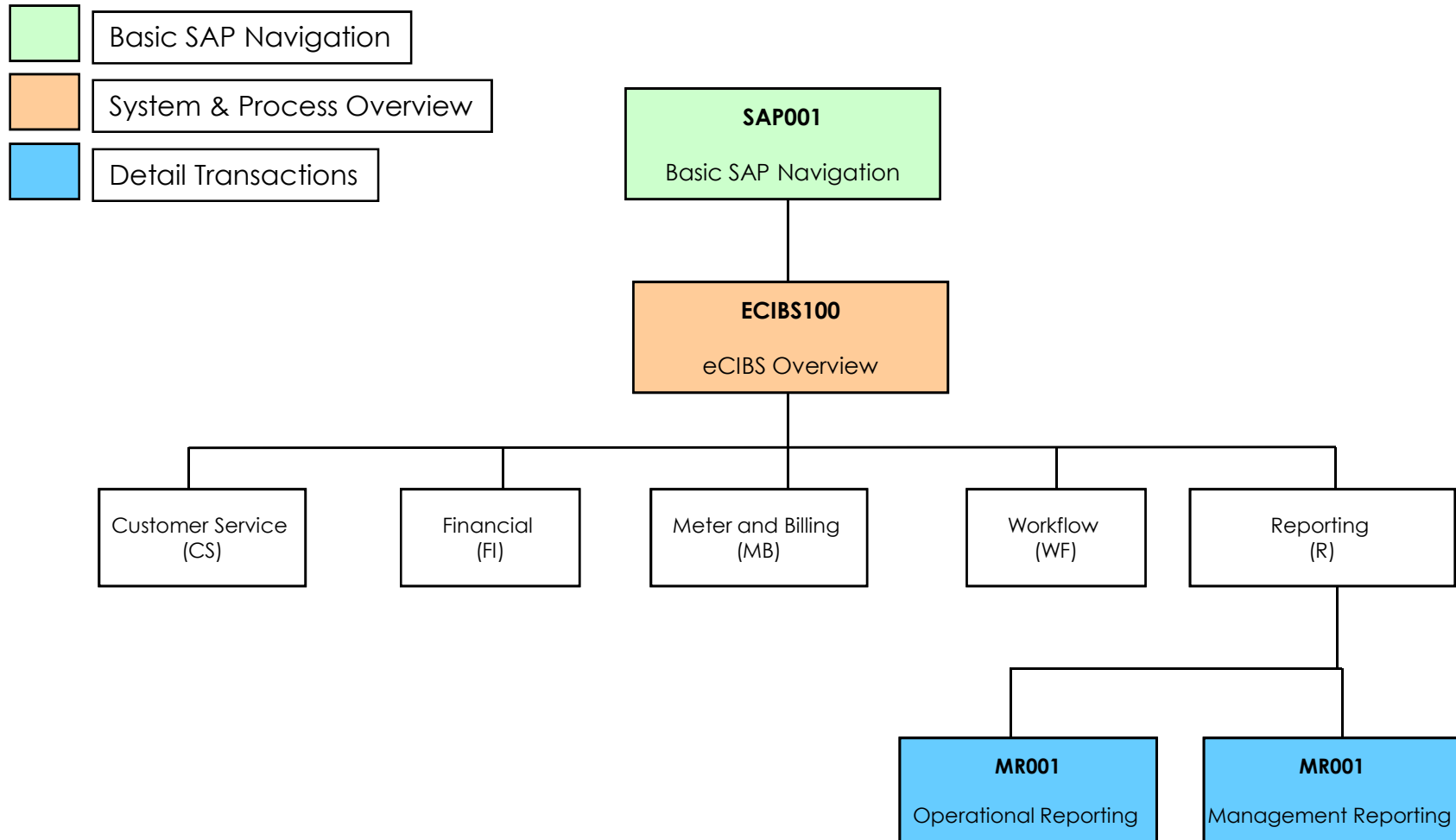
DETAILS OF METER & BILLING



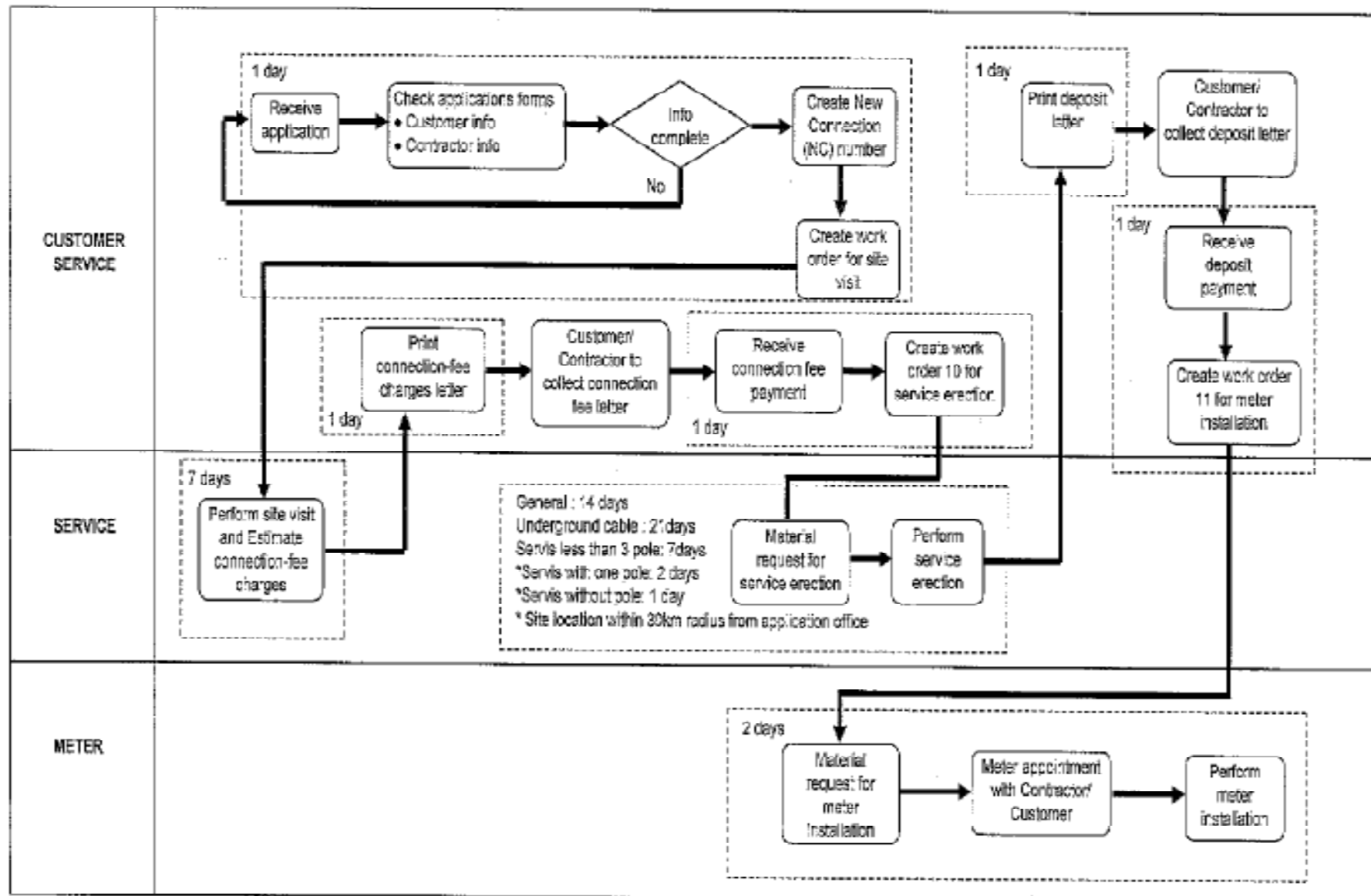
DETAILS OF METER & BILLING



DETAILS OF REPORTING



Supply Application



Supply Application

Types of supply application

A. Supply applications – by load category

- Low Voltage Supply application for load up to 100 kVA without substation (maximum processing period = 3 weeks provided way leave is acquired)
- Low Voltage Supply application for load exceeding 100 kVA requiring substation (maximum processing period = 3 month, provided way leave is acquired)
- Medium Voltage Supply (11kV & 33kV) application for load 1MVA – 25MVA (maximum processing period = 3 years, provided way leave is acquired)
- High Voltage Supply (132kV) application for load exceeding 25MVA (processing period = 3 - 5years, provided way leave is acquired)

Supply Application

Types of supply application

B Mode of supply application – by nature of supply

- New supply
 - i. Customers that require new service line from the existing supply mains.
 - ii. Developers that require new supply mains and services in a development area.
- Additional supply
Customer that require additional load from the existing supply mains to cater for any extension.
- Change of tenancy
Termination of old supply contract and registration of new supply contract at a particular premise with existing supply mains available.

Supply Application

Types of supply application

B Mode of supply application – by nature of supply

- Temporary supply
Customer that require electricity supply for a period less than 6 months only and intended for purposes of electricity supply for temporary work site, festival and celebrations.
- Standby supply
Customer that generate electricity supply by themselves and require synchronization with TNB for additional supply security.
- Co-Generation
Industrial consumers whose processes require electricity and heat or steam, may plan cogeneration of such energies from suitable plant, and request synchronization with TNB supply system.

Supply Application

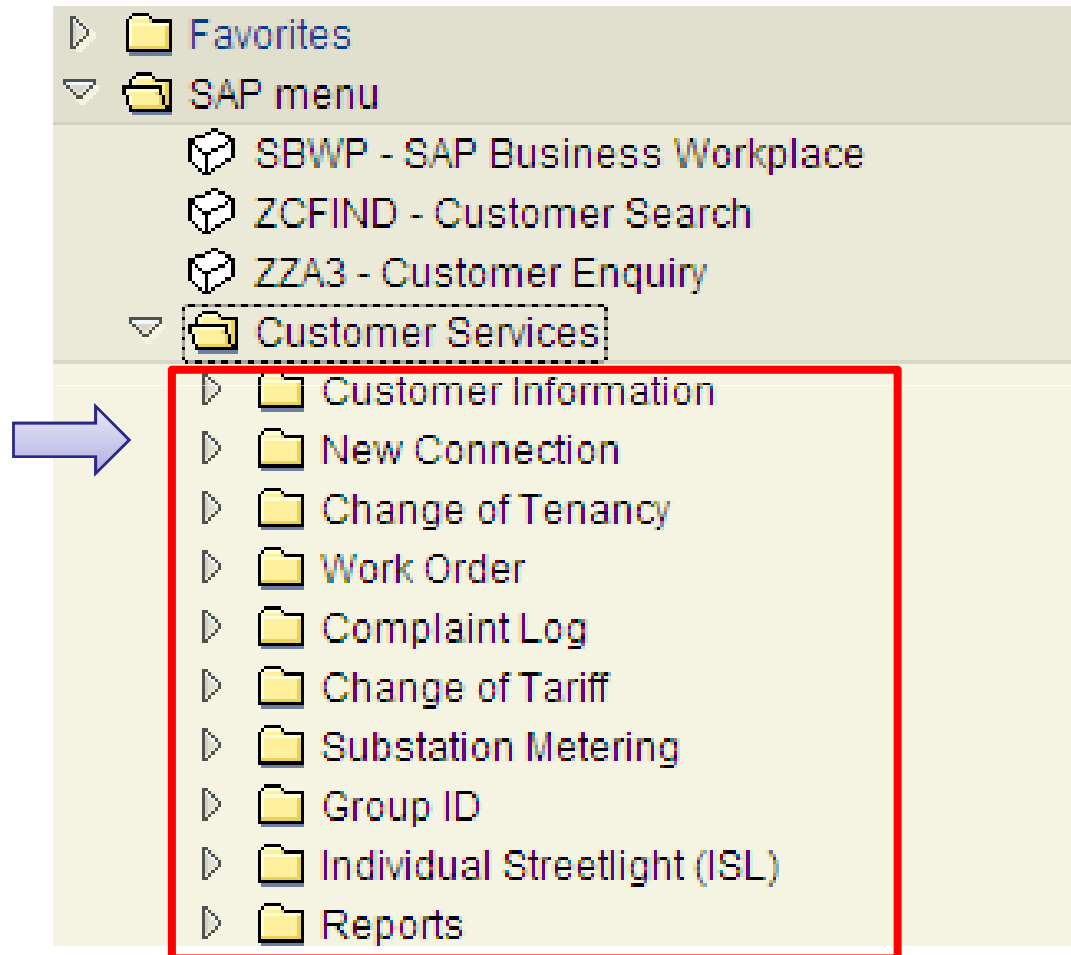
Special features of new supply project

- Alternative source of supply
Customer that require an alternative source of supply for added security.
- Additional feeder
Customer that require additional service feeder for added security.
- HDD technique to lay underground cable
- Installation of compact substation
- Underground service cable design for housing project

Customer Services

Screen Overview

Customer Service
Module



New Connection

- Can be done thru **TNB Kedai Tenaga** or **internet**

Register



eCIBS



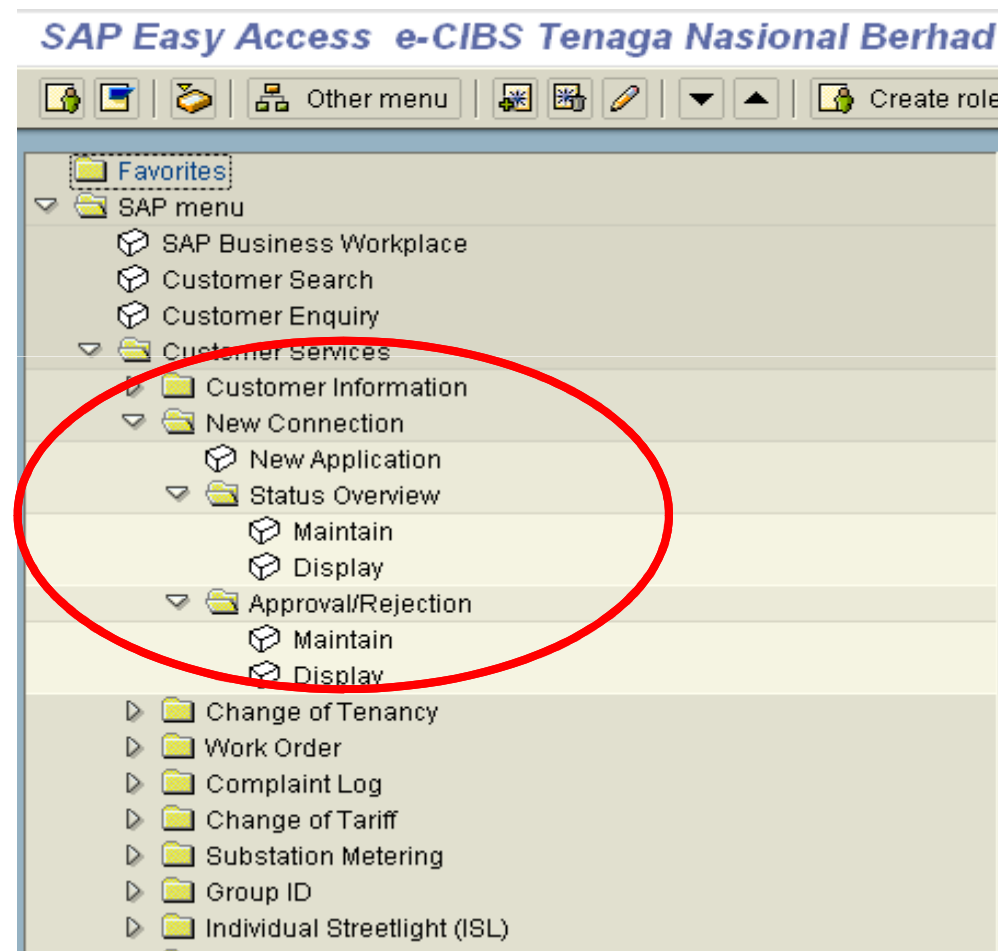
or

Internet Application



New Connection Process

Menu Path



New Connection Process

Individual Application Stages

Station Code	2810
New Connection	66722
Application Type	1 Individual
Customer Name	939703 FATIMAH BINTI ISMAIL

Application Stage

	Compl.Date	User Id
<input type="radio"/> Process Application Form	05.07.2009	10025677
<input type="radio"/> Site Visit/Connection Charge	10.08.2009	10025677
<input type="radio"/> Prepare Installation	16.08.2009	10081790
<input type="radio"/> Process Initial Deposit	18.08.2009	10071822
<input type="radio"/> Data Confirmation	18.08.2009	10071822
<input type="radio"/> Install/Test Meter	19.08.2009	10081022
<input checked="" type="radio"/> Finalise Application	20.08.2009	10036639

Group Application Stages

Station Code	2810
New Connection	62114
Application Type	2 Group
Customer Name	933918 KELADI KULIM SDN BHD

Application Stage

	Compl.Date	User Id
<input type="radio"/> Process Application Form	20.05.2008	10032263
<input type="radio"/> Site Visit/Connection Charge	20.05.2008	10032263
<input type="radio"/> Prepare Installation	20.05.2008	10071822
<input checked="" type="radio"/> Data Confirmation	25.05.2008	10071822

New Connection Process

Process Application Form – Stage 1

Application Type

Choose the correct type of NC :

Individual Application :

Application Type :

01 – Individual

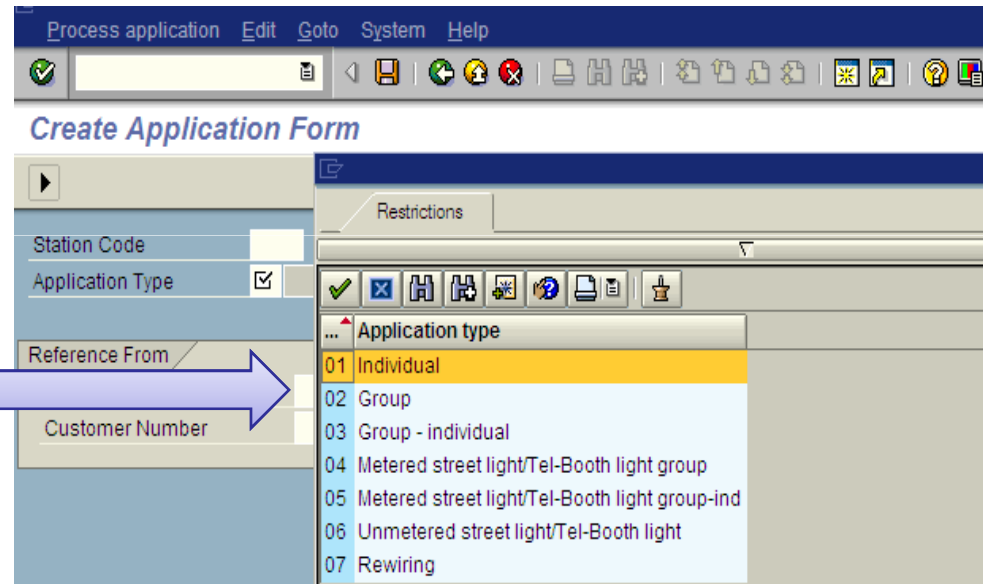
07 – Rewiring

(for upgrading ie. 1Ø to 3Ø)

Project :

02 – Group

04 – Metered Street Light/ Tel Booth
light Group



Project Individual :

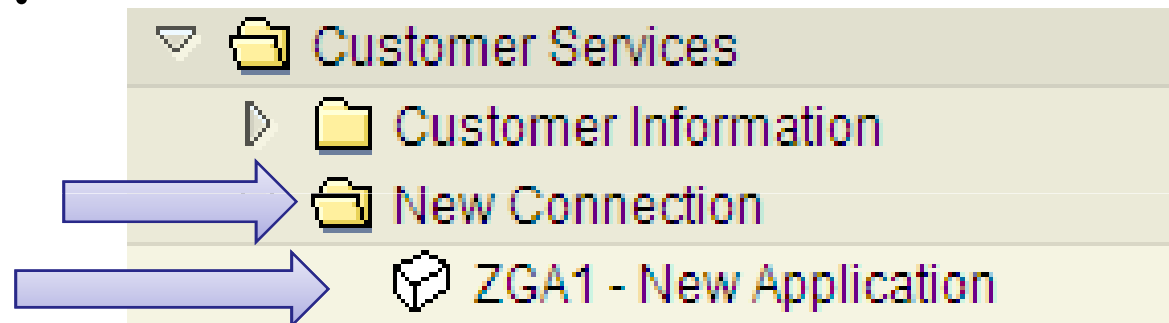
03 – Group Individual

05 - Metered Street Light/ Tel Booth
light Group Individual

New Connection Process

How to create NC ?

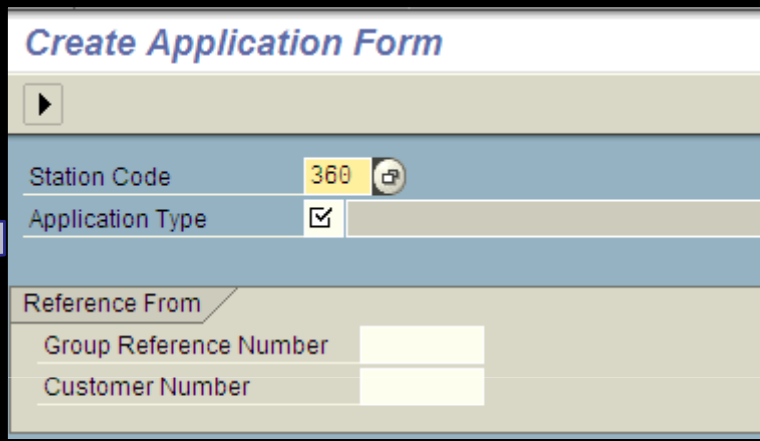
- Goto this Area Menu.
- Double click



New Connection Process

Step 1

- Enter <Station Code>
- Choose the correct <Application Type>



Create Application Form

▶

Station Code 360

Application Type

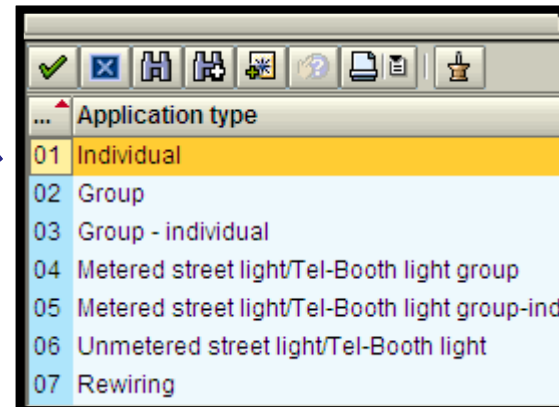
Reference From

Group Reference Number

Customer Number

Note :

1. Group Reference Number is referring to NC type 2 or NC Type 4.
2. Customer number is referring to customer number created thru NC Type 2 or NC Type 4.




New Connection Process

Create Application Form

Navigation: ⏪ ⏩

Station Code: 2810 Creation Date: 23.04.2010 Entry: 2 / 4

Application Type: 1 Individual

Account Type: 

Supply

Customer Request Date: 25.05.2010 Actual Supply Date:

Temporary Supply

Contr. End Date:

Technical Schematics

Submit Date:

- Step 2
- Choose the correct Account Type.

Acct Ty...	Acct Type
01	Individual
02	Individual-others
03	Company
04	Government
05	Free Unit

Note :

- 01 – Customer with New IC.
- 02 – Customer with Old IC/Police ID/Army ID/Passport

New Connection Process

Create Application Form

Station Code: 2810 Creation Date: 23.04.2010 Entry: 2 / 4

Application Type: 1 Individual

Account Type: [icon]

Supply

Customer Request Date: 25.05.2010 Actual Supply Date: []

Temporary Supply

Contr. End Date: []

Technical Schematics

Submit Date: Meter Type Info

- Step 2
- Customer Request Date
 - Defaulted to 23 working days. Why ?
 - Estimation – 7 days
 - Service Installation after connection charge paid – 14 days
 - Meter Installation after deposit paid – 2 days

New Connection Process

Step 2

Create Application Form

Station Code 2810 Creation Date 23.04.2010 Entry 2 / 4

Application Type 1 Individual

Account Type [Yellow Icon]

Supply

Customer Request Date 25.05.2010 Actual Supply Date [Empty]

Temporary Supply

Contr. End Date [Empty]

Technical Schematics

Submit Date Meter Type Info

– For temporary supply :

1. Tick temporary supply check box.

2. Enter Contract End Date

• Submit Date

– Date customer submitted supply application form.

New Connection Process

Choose a valid
contractor number.

Note :
Only active
contractors
appears on the
selection list.

Create Application Form


Navigation icons: ⏪ ⏩ ⏴ ⏵

Station Code Creation Date Entry /

Application Type Individual

Customer Name

Contractor

Contractor Number 

Valid From Valid To

Telephone Number

New Connection Process

 symbol is a mandatory field.

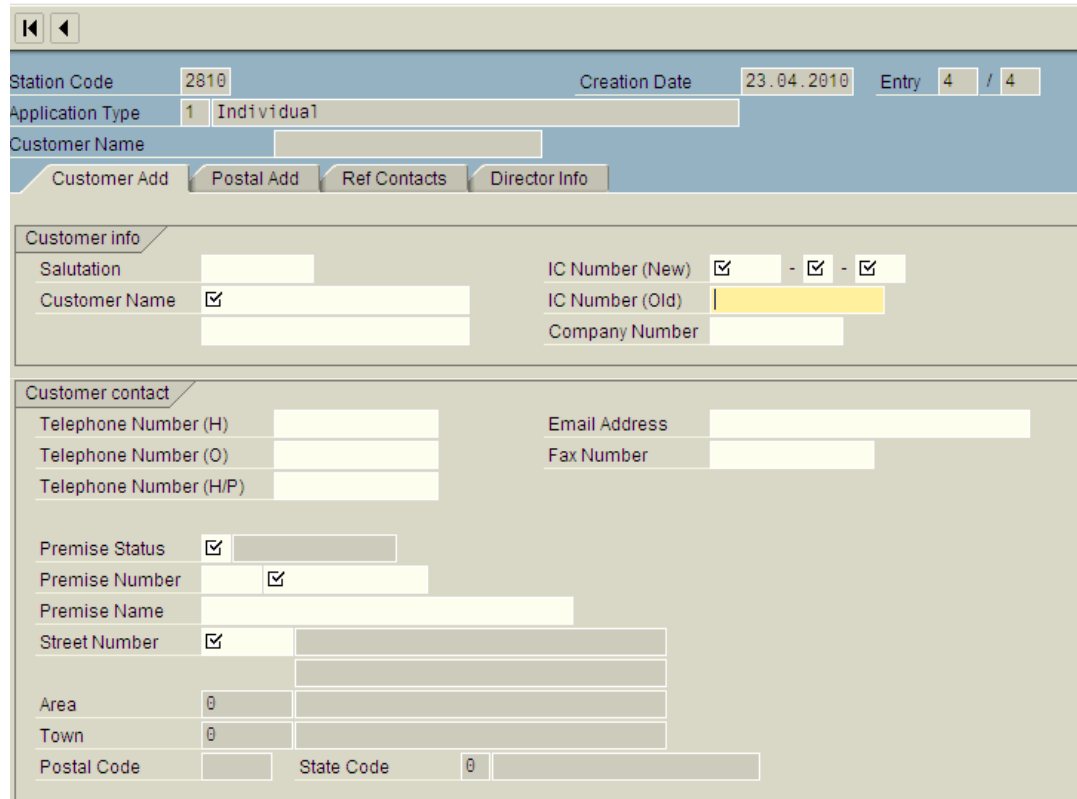
Enter :

- 1.< Customer Name>
- 2.<IC Number New>
- 3.<Premis Status>
- 4.<Premis Number>
- 5.<Street Number>

Note :

Please enter other information for reference.

Create Application Form



Station Code 2810 Creation Date 23.04.2010 Entry 4 / 4

Application Type 1 Individual

Customer Name

Customer Add Postal Add Ref Contacts Director Info

Customer info

Salutation

Customer Name

IC Number (New) - -

IC Number (Old)

Company Number

Customer contact

Telephone Number (H)

Telephone Number (O)

Telephone Number (H/P)

Email Address

Fax Number

Premise Status

Premise Number

Premise Name

Street Number

Area

Town

Postal Code

State Code

New Connection Process

▪ Tab Concept

Station Code 2810 Creation Date 28.04.2010
Application Type 1 Individual
Customer Name
Customer Add Postal Add Ref Contacts Director Info

▪ Bill can be sent by Post. To send check Bill By Post.

Station Code 2810 Creation Date 28.04.2010
Application Type 1 Individual
Customer Name 231231
Customer Add Postal Add Ref Contacts Director Info
Postal Address
 Bill By Post?
Premise Number
Premise Name
Street Name
Area Name
Town Name
Postal Code State Code
Telephone Number

▪ Enter postal address

New Connection Process

- Tab Concept

Station Code 2810 Creation Date 28.04.2010
Application Type 1 Individual
Customer Name
Customer Add Postal Add Ref Contacts Director Info

- Bill can be sent by Post.

- Enter postal address

Station Code 2810 Creation Date 28.04.2010
Application Type 1 Individual
Customer Name 231231
Customer Add Postal Add Ref Contacts Director Info

Postal Address
 Bill By Post?

Premise Number
Premise Name
Street Name
Area Name
Town Name
Postal Code State Code
Telephone Number

- Enter info in Ref Contacts tab Director Info tab.

Note : At least 1 director info must be keyed in.

New Connection Process

Site Visit/Connection Charge— Stage 2

- Site Visit is the stage where all physical estimation is captured.
- Estimation value must be entered correctly either thru LKKK or BKKM.
- Connection charge must be printed and served upon completion of data entry for customer to make payment.

Maintain Site Visit/Connection Charge

LKKK Charge	BKKM Charge	Express Connection	
Station Code	2810	Creation Date	29.04.2010
New Connection	70160		
Application Type	1 Individual		
Customer Number	943581	ABDUL GHAFAR BIN OTHMAN	
Site Visit Details			
Site Visit Date	<input type="text"/>	<input type="checkbox"/> Rural	
Type Of Work	<input checked="" type="checkbox"/>	Conn Chrg Appr Status	<input type="checkbox"/>
Type Of Form	<input type="radio"/> LKKK	<input type="radio"/> BKKM	<input checked="" type="radio"/> None
Technical Information			
Customer Category	<input type="text"/>	<input type="checkbox"/> Sub Meter Indicator	
Business Code	<input checked="" type="checkbox"/>	Main Meter Customer	<input type="text"/>
Free Unit Cust Type	<input type="text"/>		
<input type="checkbox"/> LPC Co-generation			
Customer Type	<input checked="" type="radio"/> OPC Customer	<input type="radio"/> LPC Customer	
Reading Mode	<input checked="" type="radio"/> HHT Billing	<input type="radio"/> RMR	<input type="radio"/> Prepaid
Voltage	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High
Tariff Code	<input checked="" type="checkbox"/>		
Supply Voltage Code	<input checked="" type="checkbox"/>		
Welding Equip Load	<input type="text"/> kVa	Welding Charges	<input type="text"/> 0.00
Declared Load (MD)	<input type="text"/> kW	Load Factor (LF)	<input type="text"/> 0.00
Avg. Consumption	<input checked="" type="checkbox"/> kWh	Diversity Factor (DF)	<input type="text"/> 0.00
Expected kWh	<input type="text"/>		

New Connection Process

Site Visit/Connection Charge– Stage 2

■ At this stage the correct info must be entered:

- Type of work
- Customer category
- Business Code
- Tariff Code
- Supply Voltage Code
- Average Consumption

Maintain Site Visit/Connection Charge

LKKK Charge		BKKM Charge		Express Connection	
Station Code	2810	Creation Date	29.04.2010		
New Connection	70160				
Application Type	1 Individual				
Customer Number	943581	ABDUL GHAFAR BIN OTHMAN			
Site Visit Details					
Site Visit Date		<input type="checkbox"/> Rural			
Type Of Work	<input checked="" type="checkbox"/>	Conn Chrg Appr Status	<input type="checkbox"/>		
Type Of Form	<input type="radio"/> LKKK	<input type="radio"/> BKKM	<input checked="" type="radio"/> None		
Technical Information					
Customer Category		<input type="checkbox"/> Sub Meter Indicator			
Business Code	<input checked="" type="checkbox"/>	Main Meter Customer	<input type="checkbox"/>		
Free Unit Cust Type					
<input type="checkbox"/> LPC Co-generation					
Customer Type	<input checked="" type="radio"/> OPC Customer	<input type="radio"/> LPC Customer			
Reading Mode	<input checked="" type="radio"/> HHT Billing	<input type="radio"/> RMR	<input type="radio"/> Prepaid		
Voltage	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High		
Tariff Code	<input checked="" type="checkbox"/>				
Supply Voltage Code	<input checked="" type="checkbox"/>				
Welding Equip Load		kVa	Welding Charges	0.00	
Declared Load (MD)	0.00	kw	Load Factor (LF)	0.00	
Avg. Consumption	<input checked="" type="checkbox"/>	kwh	Diversity Factor (DF)	0.00	
Expected kWh	0.00				

New Connection Process

Prepare Installation – Stage 3

Display Installation Data

Station Code	2810	Creation Date	01.04.2010
New Connection	69812		
Application Type	1	Individual	
Customer Number	943160	AHMAD BIN HAMID	
Electrical Address			
DNI Code	-		
X Coordinate			
Y Coordinate			
Z Coordinate			
Work Order Details			
Requested Date	11.04.2010		
Initiated By	10025677	SUHAIMI BIN YAACOB	
Work Order	308977		
Work Order Status	6	WO Printed	

- After connection charge paid by customer, service installation must be made.
- Work Order 10 for service installation must be created and updated.
- Allow user to maintain Work Order without exiting NC.
- Double click Work Order number in blue color to maintain Work Order

New Connection Process

Process Initial Deposit – Stage 4

Station Code	2810	Creation Date	31.03.2010	
New Connection	69836			
Application Type	1 Individual			
Customer Number	943184	KU AHMAD ROSIDI BIN KU		
General Classification				
Deposit	<input checked="" type="radio"/> Cash	<input type="radio"/> Bank Guarantee	<input type="radio"/> Cash & Bank Guarantee	<input type="radio"/> Exempted
Deposit Exempted Category	0			
Staff Number	00000000			
Corporate Cust. Class				
Sub Class				
<input type="checkbox"/> Gov. Acct. Ind.		Consent Letter Approval Status		
<input type="checkbox"/> Disconnection Exempted		Deposit Approval Status		
		Discon. Approval Status		
Deposit Details				
Average Bill Amount	0.00	Cash Amount	0.00	
Required Deposit	0.00	BG Amount	0.00	
		Total	0.00	
Cash Deposit Value	0.00	BG Deposit Value	0.00	
Unpaid Cash Deposit	0.00	Unsettled BG	0.00	
Outstanding Info		Credit Worthiness		
<input type="checkbox"/> Outstanding Acct. Ind.		Rating	0.000	
		Evaluation Date	29.04.2010	

■ Deposit type divided into 4:

- i. Cash
- ii. Bank Guarantee
- iii. Cash & Bank Guarantee
- iv. Exempted

Exempted Category	Exempted Description
01	TNB Staff
02	Government Agency
03	Free Unit
04	Others

• Ex

New Connection Process

Process Initial Deposit – Stage 4

Maintain Process Initial Deposit

Complete Discon Exempted | Complete Deposit

Station Code: 2810 | Creation Date: 31.03.2010
 New Connection: 69836
 Application Type: 1 Individual
 Customer Number: 943184 | KU AHMAD ROSIDI BIN KU

General Classification

Deposit: Cash | Bank Guarantee | Cash & Bank Guarantee | Exempted

Deposit Exempted Category: []
 Staff Number: []
 Corporate Cust. Class: 99* []
 Sub Class: []

Gov. Acct. Ind. | Consent Letter Approval Status: []
 Disconnection Exempted | Deposit Approval Status: []
 Discon. Approval Status: []

Deposit Details

Average Bill Amount	[]	Cash Amount	[]
Required Deposit	0.00	BG Amount	[]
		Total	0.00
Cash Deposit Value	0.00	BG Deposit Value	0.00
Unpaid Cash Deposit	0.00	Unsettled BG	0.00

Outstanding Info | **Credit Worthiness**

Outstanding Acct. Ind. | Rating: 0.000 | Evaluation Date: 29.04.2010

- Exempted Category

Exempted Category	Exempted Description
01	TNB Staff
02	Government Agency
03	Free Unit
04	Others

- Corporate Cust Class

Class	Corporate customer class de...
9991	AKAUN KAKITANGAN TNB
9992	Unit percuma
9995	INDAH WATER KONSORTIUM
9999	Temporary class for conversion

- Exempted Category

- Staff – 8 digit Staff Number and Corporate Cust Class 9991 must be entered.
- Free Unit – Corporate Cust Class 9992 must be entered.

New Connection Process

Install Test Meter – Stage 6

Maintain Install/Test Meter

Station Code	2810	Creation Date	25.05.2009
New Connection	66087		
Application Type	1 Individual		
Customer Number	938990	RAZALI BIN ABU HASAN	

Wiring Test

Wire Test Received	14.07.2009	Wiring Man	
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Electrical Address

DNI Code	-
X Coordinate	
Y Coordinate	
Z Coordinate	

Meter Order Details

Requested Date	16.07.2009
Pln. read time	10:00
Initiated By	10025677
Work Order	0
Work Order Status	0

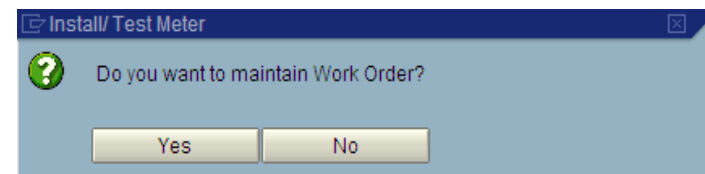
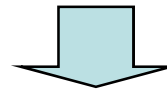
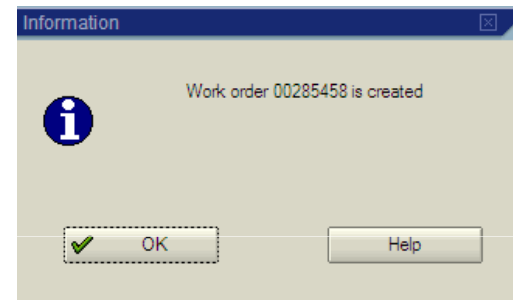
Prepaid Info

Card Number	
-------------	--

Remote Metering Info

Effective Date	
----------------	--

Klik Save – Work Order 11 diwujudkan



Klik Yes untuk kemaskini pesanan kerja

NC Report

