

# Performance Report of Distribution Licensees

***2014- 1<sup>st</sup> Half***

**Public Utilities Commission of Sri Lanka**

***20<sup>th</sup> January 2015***

## Nomenclature

CEB	-	Ceylon Electricity Board
DL	-	Distribution Licensee
DL1	-	Distribution Licensee CEB Region 1
DL2	-	Distribution Licensee CEB Region 2
DL3	-	Distribution Licensee CEB Region 3
DL4	-	Distribution Licensee CEB Region 4
FAC	-	Fuel Adjustment Charge
G.P.	-	General Purpose
GWh	-	Giga Watt hour
kVA	-	kilovolt ampere
kWh	-	kilowatt hour
LECO	-	Lanka Electricity Company Private Limited
LKR	-	Sri Lankan Rupee
Mil.	-	Million
MVA	-	Mega Volt Ampere
PUCSL	-	Public Utilities Commission of Sri Lanka
TL	-	Transmission Licensee

# 1 Table of Contents

1	Introduction .....	4
2	Energy /Capacity Purchased .....	5
3	Cost of Purchases .....	6
3.1	Cost of Energy Purchased .....	6
3.2	Cost of Coincident Maximum Demand .....	6
3.3	Total Costs of Energy and Capacity Purchased .....	6
4	Energy Sales .....	7
4.1	Consumer Category wise Sales .....	7
4.2	Electrical Energy Demand per Consumer Account .....	8
5	Revenue .....	8
5.1	Revenue from Electrical Energy Sales .....	9
5.2	Revenue from Maximum Demand Charge .....	10
5.3	Revenue from Fixed Charge .....	11
5.4	Fuel Adjustment Charge.....	11
5.5	Total Revenue .....	12
5.6	Revenue per Unit of Energy Sold .....	13
5.7	Sales Margin.....	13
6	Energy Loss.....	13
7	Consumer Accounts .....	14
7.1	Consumer Mix .....	14
8	Conclusion.....	15

## List of Tables

Table 2.1 : DL Wise Energy Purchased According to Time of Use (GWh) .....	5
Table 2.2 : Average Demand by DLs (MW) .....	5
Table 2.3 : Monthly Coincident Maximum Demand (MW).....	5
Table 3.1: DL Wise Cost of Energy Purchased according to Time of Use (LKR Mil.) .....	6
Table 3.2 :DL Wise Cost of Coincident Maximum Demand (LKR Mil.) .....	6
Table 3.3 : Total Costs of Energy and Capacity Purchased by each DL (LKR Mil.).....	6
Table 4.1 : Consumer Category wise Electricity Consumption (GWh).....	7
Table 4.2 : Highest and Lowest Energy Demand from each Category.....	7
Table 4.3: Average Units (kWh) Consumed per Month per Consumer Account.....	8
Table 5.1: Revenue from Energy Charge (LKR Mil.) .....	9
Table 5.2 : Revenue from Maximum Demand Charge.....	10
Table 5.3 : Revenue from Fixed Charge (LKR Mil.).....	11
Table 5.4 : Fuel Adjustment Charge (LKR Mil.) .....	11
Table 5.5 : Total Revenue (including FAC) from Distribution Business (LKR Mil.) .....	12
Table 5.6 : Category wise Revenue per Unit of Energy Sold (including FAC).....	13
Table 5.7 : Sales Margin .....	13
Table 6.1 : Energy Loss in Distribution System .....	13
Table 7.1 : Category wise Consumer Mix (Average) .....	14

Table 8.1 : Important Aspects ..... 15

## List of Figures

Figure 1.1: Category Wise Consumer Base (Average) ..... 4  
Figure 4.1 : Total Electricity Consumed by each Consumer Category ..... 7  
Figure 4.2 : Consumer Category wise Electricity Sales ..... 8  
Figure 5.1: Revenue from Energy Charge ..... 9  
Figure 5.2 : Category wise Revenue from Maximum Demand charge (LKR Mil.) ..... 10  
Figure 5.3: Revenue from Fixed Charge ..... 11  
Figure 5.4: Fuel Adjustment Charge ..... 12  
Figure 5.5 : DL wise Share of Revenue (including FAC) ..... 12  
Figure 7.1 : DL Wise Consumer Accounts Base ..... 14

# 1 Introduction

Performance of each distribution licensee for the year 2014 first half was analyzed with the aid of data submitted by each licensee. Total of **5.3 billion units** have been consumed by the **5.8 million** consumer accounts connected to distribution network.

DLs have purchased electricity from Transmission licensee spending about **72 billion Rupees\***, and distributed to consumers consist of five main categories namely Domestic, Religious, Industrial, Hotel and General Purpose. Revenue (without FAC) obtained from distribution business amounts to **87.6 billion Rupees\*\*** for the period of 2014 first half.

The consumer mix is depicted in the Figure 1.1.

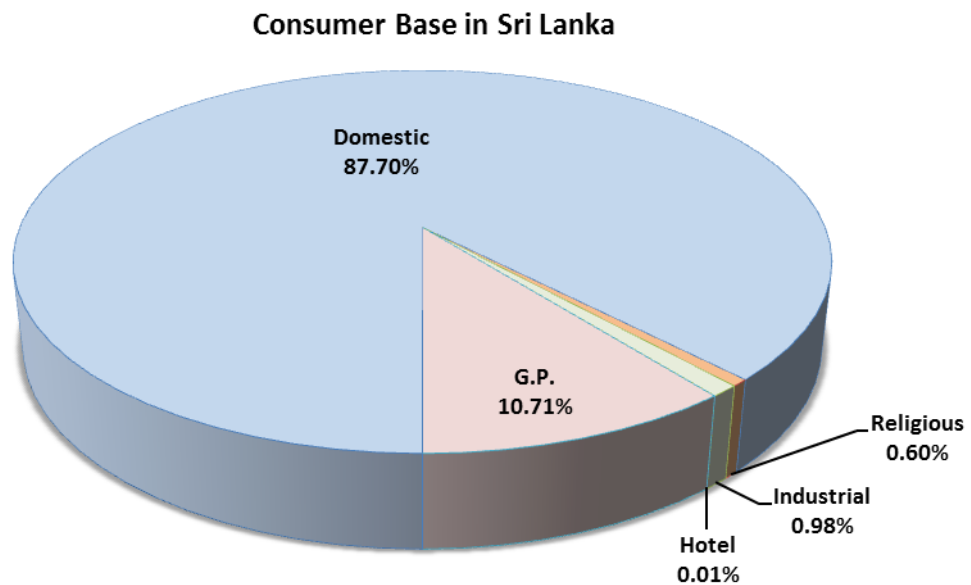


Figure 1.1: Category Wise Consumer Base (Average)

*This report produces comparative illustration of all five DLs on their purchases, sales, revenue, consumer base and energy losses for the period starting from January 2014 to end of June 2014. Facts and figure given in this report based on the data submissions by each DL through Licensee Information Submission System.*

\* Energy and Capacity cost

\*\* Considering invoiced sales and without FAC.

## 2 Energy /Capacity Purchased

Each DL purchases their electricity from the Transmission Licensee who is doing the bulk supply operation business. Table 2.1 given below provides the energy purchased according to the time of use. “Day”, “Peak” and “Off-Peak” periods span for 13 hours, 4 hours and 7 hours respectively.

	Day	Peak	Off-Peak	Tot	%
<b>CEB Reg 1</b>	955	328	348	1,632	28.1
<b>CEB Reg 2</b>	1,002	378	392	1,772	30.5
<b>CEB Reg 3</b>	562	211	199	971	16.7
<b>CEB Reg 4</b>	424	171	169	764	13.2
<b>LECO</b>	386	133	152	670	11.5
<b>Tot</b>	3,328	1,221	1,260	<b>5,809</b>	100.0

**Table 2.1 : DL Wise Energy Purchased According to Time of Use (GWh)**

Following table provides the energy demanded per hour (or average demand in MW) by TL from DLs. It can be seen that highest average demands for all three time periods are from DL2 and lowest values are from LECO.

	Day	Peak	Off-Peak
<b>CEB Reg 1</b>	406	454	275
<b>CEB Reg 2</b>	426	522	309
<b>CEB Reg 3</b>	239	291	157
<b>CEB Reg 4</b>	180	236	134
<b>LECO</b>	164	183	120
<b>Tot</b>	1,414	1,686	995

**Table 2.2 : Average Demand by DLs (MW)**

Coincident maximum demand given in following table describes the demand claimed by each DL during the occurrence of national peak demand.

	Jan	Feb	Mar	Apr	May	Jun	Average	%
<b>CEB Reg 1</b>	524	529	544	546	521	531	533	27.7
<b>CEB Reg 2</b>	583	557	635	618	582	572	591	30.7
<b>CEB Reg 3</b>	289	324	336	314	334	293	315	16.4
<b>CEB Reg 4</b>	271	261	274	260	286	265	270	14.0
<b>LECO</b>	207	211	222	221	223	212	216	11.2
<b>Total</b>	1,874	1,881	2,011	1,960	1,945	1,874	1,924	100.0

**Table 2.3 : Monthly Coincident Maximum Demand (MW)**

### 3 Cost of Purchases

TL sells energy to all DLs. DLs have to pay the cost of kWh units according to the time of use, i.e Day (0530 to 1830 hrs), Peak (1830 to 2230 hrs) and Off peak (2230 to 0530 hrs). Further DLs have to pay a coincident maximum demand charge, which is the demand (MW) by DL coincide with national peak demand.

#### 3.1 Cost of Energy Purchased

	Day	Peak	Off-Peak	Tot	%
<b>CEB Reg 1</b>	8,444	3,662	2,292	14,397	34.9
<b>CEB Reg 2</b>	5,691	2,707	1,654	10,052	24.4
<b>CEB Reg 3</b>	2,909	1,376	766	5,050	12.2
<b>CEB Reg 4</b>	2,675	1,357	795	4,826	11.7
<b>LECO</b>	4,014	1,739	1,176	6,928	16.8
<b>Tot</b>	23,732	10,840	6,681	<b>41,253</b>	100.0

Table 3.1: DL Wise Cost of Energy Purchased according to Time of Use (LKR Mil.)

#### 3.2 Cost of Coincident Maximum Demand

DL	Jan	Feb	Mar	Apr	May	Jun	Total
<b>CEB Reg 1</b>	1,400	1,412	1,453	1,458	1,390	1,417	8,531
<b>CEB Reg 2</b>	1,556	1,487	1,694	1,649	1,554	1,527	9,467
<b>CEB Reg 3</b>	771	864	897	838	892	782	5,044
<b>CEB Reg 4</b>	723	697	731	695	763	708	4,317
<b>LECO</b>	553	562	592	591	594	567	3,458
<b>Total</b>	5,003	5,022	5,368	5,231	5,193	5,002	30,818

Table 3.2 :DL Wise Cost of Coincident Maximum Demand (LKR Mil.)

#### 3.3 Total Costs of Energy and Capacity Purchased

DL	Energy Cost	Capacity Cost	Tot
<b>CEB Reg 1</b>	14,397	8,531	22,929
<b>CEB Reg 2</b>	10,052	9,467	19,519
<b>CEB Reg 3</b>	5,050	5,044	10,094
<b>CEB Reg 4</b>	4,826	4,317	9,143
<b>LECO</b>	6,928	3,458	10,386
<b>Tot</b>	41,253	30,818	72,071

Table 3.3 : Total Costs of Energy and Capacity Purchased by each DL (LKR Mil.)

From Table 3.3, it can be seen that DL1 has paid the highest amount for distribution business to TL, while DL4 has paid the lowest to TL during 2014 first half.

## 4 Energy Sales

Total energy consumed by each consumer category is given below. Domestic and Industrial components carry a share of 38% and 34% of the electricity consumption of consumer categories, respectively. Energy sales depend on consumer mix and the number of consumers, where these parameters vary among DLs. Therefore it is worthwhile to look at the distribution business with respect to consumer mix.

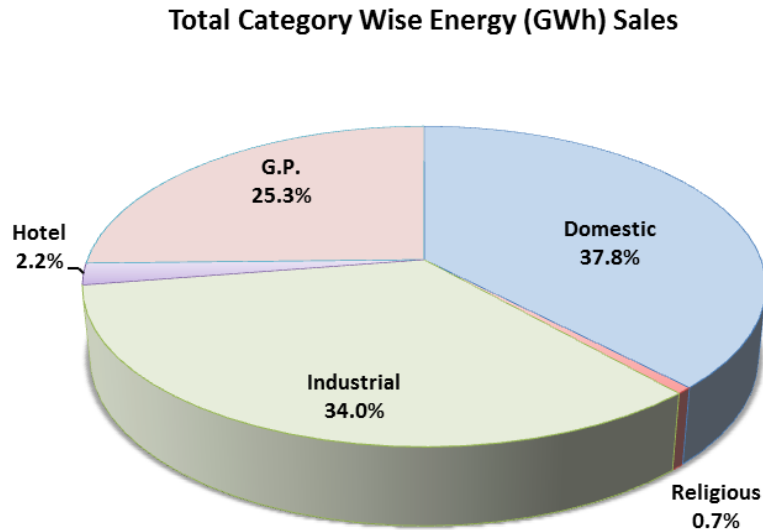


Figure 4.1 : Total Electricity Consumed by each Consumer Category

### 4.1 Consumer Category wise Sales

	Domestic	Religious	Industrial	Hotel	G.P.	Total
CEB Reg 1	502	12.3	356	43.2	555	1,468
CEB Reg 2	593	9.6	714	23.6	278	1,618
CEB Reg 3	336	4.3	387	2.3	158	888
CEB Reg 4	312	4.5	217	22.5	144	701
LECO*	260	4.5	122	24.2	206	630
<b>Total</b>	<b>2,002</b>	<b>35.1</b>	<b>1,797</b>	<b>115.8</b>	<b>1,341</b>	<b>5,304</b>

Table 4.1 : Consumer Category wise Electricity Consumption (GWh)

\*LECO total includes invoiced energy sales for street lighting

From the table 4.1, following information can be extracted.

Consumer Category	Highest consumption (GWh)	Lowest Consumption (GWh)
Domestic	CEB Reg 2 (593)	LECO (260)
Religious	CEB Reg 1 (12.3)	CEB Reg 3 (4.3)
Industrial	CEB Reg 2 (714)	LECO (122)
Hotel	CEB Reg 1 (43.2)	CEB Reg 3 (2.3)
General Purpose	CEB Reg 1 (555)	CEB Reg 4 (144)

Table 4.2 : Highest and Lowest Energy Demand from each Category



### Category Wise Energy Sales (GWh)

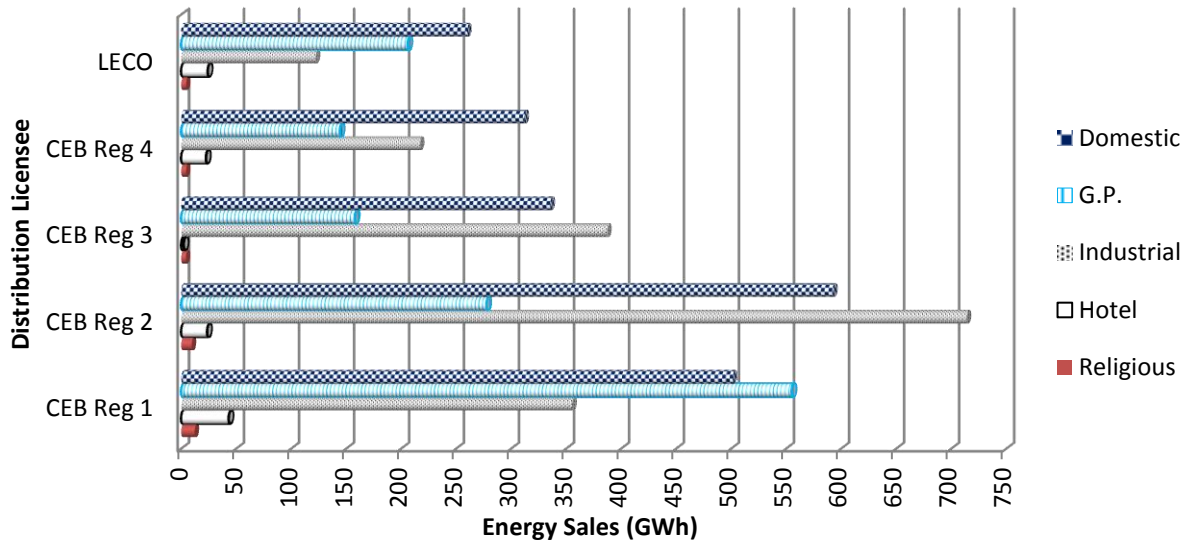


Figure 4.2 : Consumer Category wise Electricity Sales

## 4.2 Electrical Energy Demand per Consumer Account

Following table shows that average LECO consumer is the highest energy consumer of all DLs, while DL4 is having the average consumer with lowest consumption.

	Domestic	Religious	Industrial	Hotel	G.P.	All
CEB Reg 1	67	188	2,309	61,228	546	168
CEB Reg 2	61	146	8,551	22,129	245	147
CEB Reg 3	58	126	8,036	6,555	258	137
CEB Reg 4	63	162	6,101	35,791	287	127
LECO	99	304	5,969	84,490	449	201
National Average	66	169	5,256	38,110	360	152

Table 4.3: Average Units (kWh) Consumed per Month per Consumer Account

## 5 Revenue

Revenue from electricity distribution business consists of following components.

Energy (kWh) charge

Maximum demand charge

Fixed charge

Note that FAC is not considered as revenue from Distribution business, and FAC is collected by DLs and passed on to TL.

## 5.1 Revenue from Electrical Energy Sales

Following table depicts the energy charge distributed among each category. CEB Region1 had the highest share of revenue from all DLs .

	Domestic	Religious	Industrial	Hote	G.P.	Tot
CEB Reg 1	6,456	79	4,155	643	11,177	22,510
CEB Reg 2	6,079	57	8,228	369	5,577	20,310
CEB Reg 3	3,463	24	4,507	38	3,194	11,227
CEB Reg 4	3,493	27	2,529	350	2,923	9,323
LECO	4,240	33	1,436	374	4,252	10,339
Tot	23,732	221	20,856	1,774	27,124	73,706

Table 5.1: Revenue from Energy Charge (LKR Mil.)

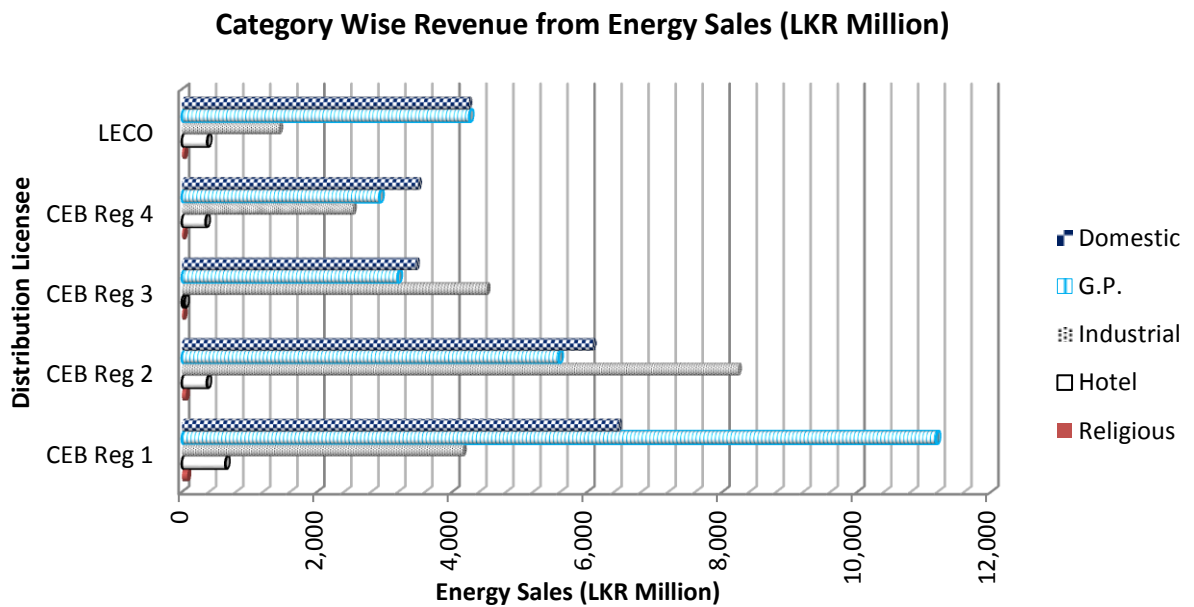


Figure 5.1: Revenue from Energy Charge

As it can be seen clearly from figure 5.1, the General Purpose consumers dominate the revenue of DL1 , for DL 2 it is the revenue from Industrial consumers, for DL4 it is the revenue from Domestic consumers and for LECO it is the General Purpose consumers.

## 5.2 Revenue from Maximum Demand Charge

In present tariff structure, maximum demand charge is applicable for following categories only.

Industrial ; in I-2 and I-3 sub categories

Hotel ; in H-2 and H-3 sub categories

General Purpose; in GP-2 and GP-3 sub categories

Licensee	Industrial	Hotel	G.P.	Tot
CEB Reg 1	1,199	104	1,405	2,708
CEB Reg 2	2,441	78	442	2,961
CEB Reg 3	1,279	9	274	1,562
CEB Reg 4	792	68	219	1,080
LECO	480	67	411	958
Tot	6,192	325	2,751	9,268

Table 5.2 : Revenue from Maximum Demand Charge

### Category Wise Revenue from Maximum Demand Charge (LKR Mil.)

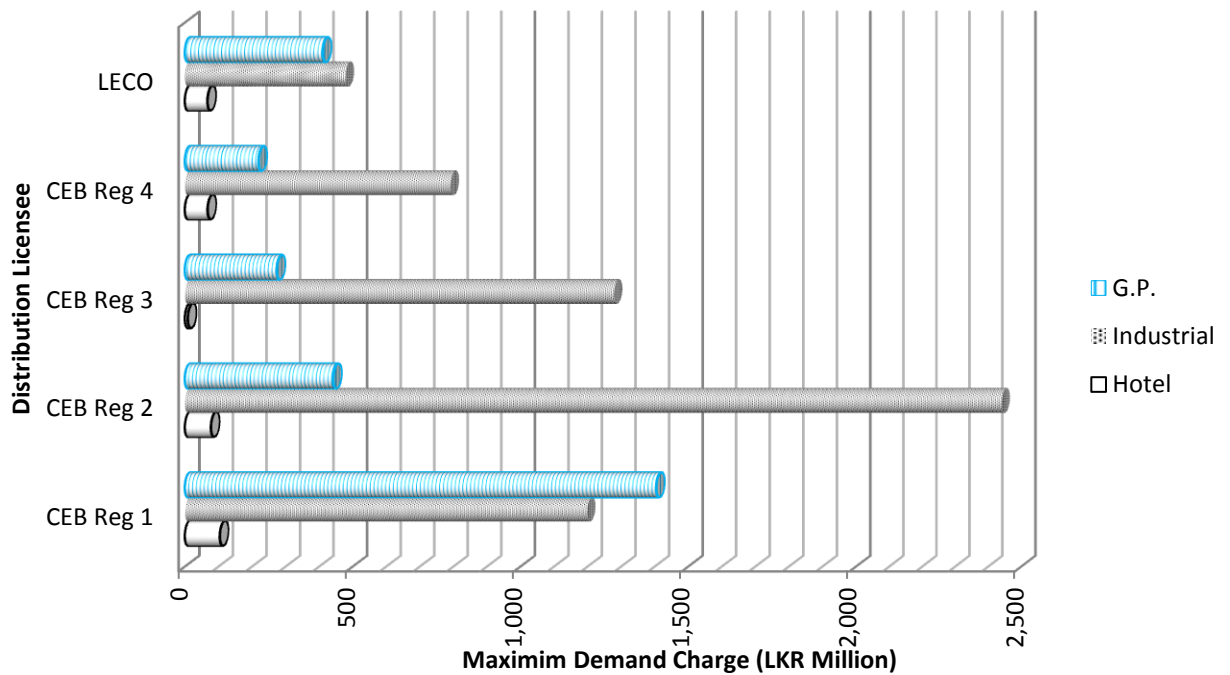


Figure 5.2 : Category wise Revenue from Maximum Demand charge (LKR Mil.)

### 5.3 Revenue from Fixed Charge

	Domestic	Religious	Industrial	Hotel	G.P.	Tot
CEB Reg 1	817	8.0	108	1.2	281	1,215
CEB Reg 2	1,015	8.0	73.2	1.8	293	1,391
CEB Reg 3	563	3.9	43.3	0.4	160	771
CEB Reg 4	523	3.5	33.1	1.5	131	692
LECO	501	2.3	18	0.8	102	625
Tot	3,419	25.7	276	5.8	967	4,693

Table 5.3 : Revenue from Fixed Charge (LKR Mil.)

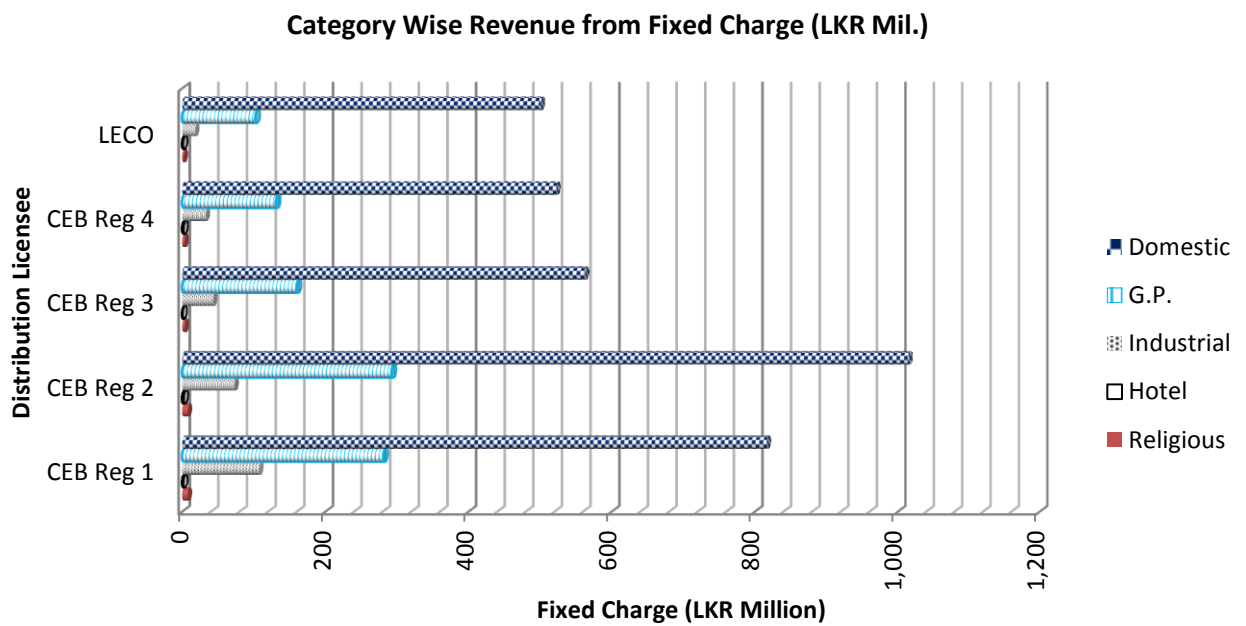


Figure 5.3: Revenue from Fixed Charge

It can be seen that about 73% of fixed charge revenue is from domestic category.

### 5.4 Fuel Adjustment Charge

Licensee	Domestic	Industrial	Hotel	G.P.	Tot
CEB Reg 1	2,134	1,390	210	3,877	7,610
CEB Reg 2	1,805	1,234	55	1,336	4,431
CEB Reg 3	1,060	676	6	770	2,512
CEB Reg 4	1,090	379	53	695	2,218
LECO	1,539	215	56	1,050	2,859
Tot	7,627	3,894	379	7,729	19,629

Table 5.4 : Fuel Adjustment Charge (LKR Mil.)

### Fuel Adjustment Charge (LKR Mil.)

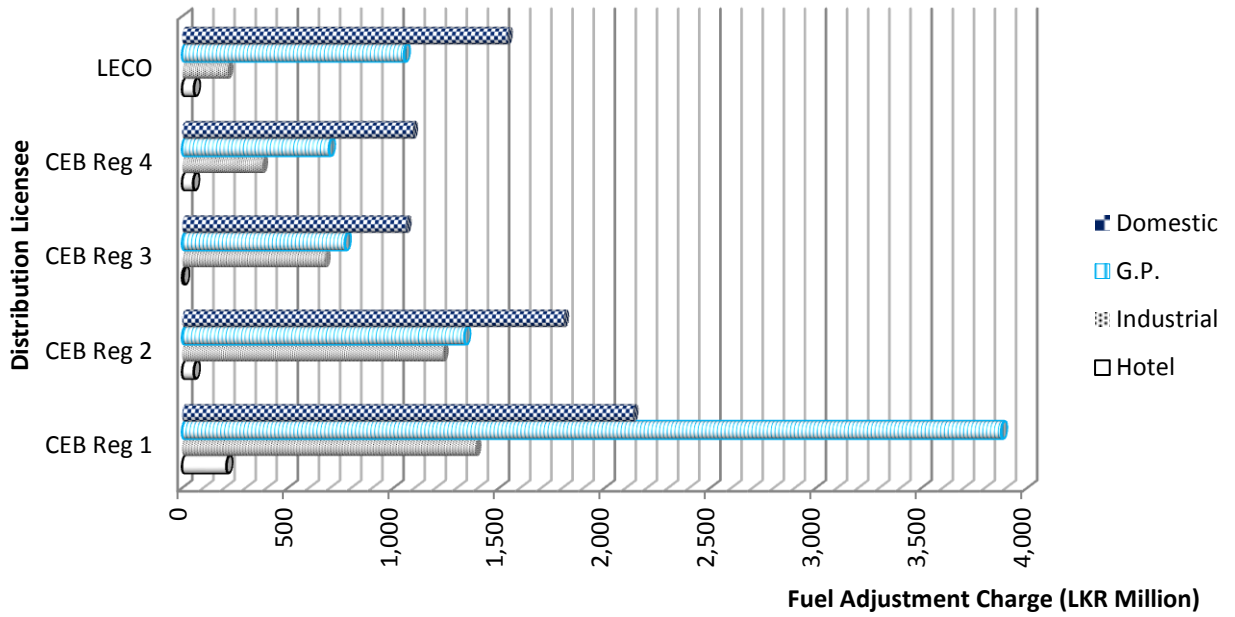


Figure 5.4: Fuel Adjustment Charge

## 5.5 Total Revenue

Licensee	Domestic	Religious	Industrial	Hotel	G.P.	Tot
CEB Reg 1	7,273	87	5,462	748	12,863	26,432
CEB Reg 2	7,094	65	10,743	448	6,311	24,662
CEB Reg 3	4,026	28	5,829	47	3,628	13,559
CEB Reg 4	4,016	31	3,354	419	3,274	11,094
LECO	4,742	36	1,934	442	4,766	11,922
<b>Tot</b>	<b>27,150</b>	<b>247</b>	<b>27,323</b>	<b>2,105</b>	<b>30,842</b>	<b>87,669</b>

Table 5.5 : Total Revenue (Excluding FAC) from Distribution Business (LKR Mil.)

### DL wise Share of Total Revenue

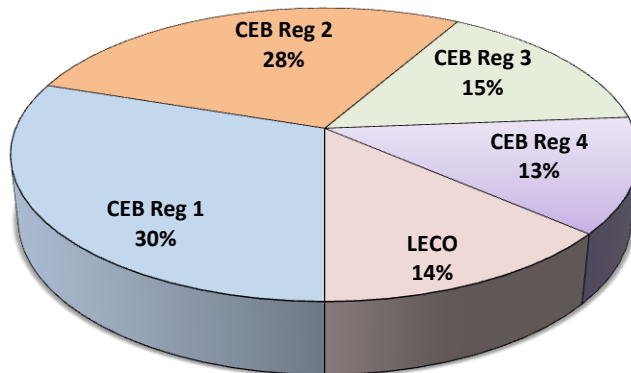


Figure 5.5 : DL wise Share of Revenue (including FAC)

## 5.6 Revenue per Unit of Energy Sold

Licensee	Domestic	Religious	Industrial	Hotel	G.P.	Avg.
<b>CEB Reg 1</b>	14.50	7.06	15.36	17.32	23.17	18.01
<b>CEB Reg 2</b>	11.97	6.78	15.04	19.01	22.73	15.24
<b>CEB Reg 3</b>	11.99	6.55	15.05	20.39	22.96	15.27
<b>CEB Reg 4</b>	12.86	6.92	15.44	18.59	22.69	15.83
<b>LECO</b>	18.23	7.97	15.80	18.30	23.13	18.92
<b>National Avg.</b>	13.56	7.02	15.21	18.17	23.00	<b>16.53</b>

Table 5.6 : Category wise Revenue per Unit of Energy Sold (Excluding FAC)

Note: Average price paid by a consumer is LKR **20.23** per unit of electricity (Including FAC).

## 5.7 Sales Margin

Licensee	Sales Margin (LKR/kWh)
<b>CEB Reg 1</b>	2.15
<b>CEB Reg 2</b>	2.90
<b>CEB Reg 3</b>	3.57
<b>CEB Reg 4</b>	2.55
<b>LECO</b>	2.29
<b>Distribution Business</b>	<b>2.69</b>

Table 5.7 : Sales Margin

In the table 5.7, the revenue include energy charge, maximum demand charge and fixed charge only.

## 6 Energy Loss

Following table depicts the energy loss in each DL and the allowed loss.

Distribution Licensee	Loss (%)*	Allowed* for 2014	Loss (GWh)*
	2014 1 <sup>st</sup> Half		2014 1 <sup>st</sup> Half
<b>CEB Reg 1</b>	<b>8.46</b>	8.3	138.0
<b>CEB Reg 2</b>	<b>7.71</b>	10.4	136.9
<b>CEB Reg 3</b>	<b>8.15</b>	8.3	79.4
<b>CEB Reg 4</b>	<b>7.40</b>	9.2	56.9
<b>LECO</b>	<b>2.19</b>	5.2	14.4

\*Adjusted for Street lighting

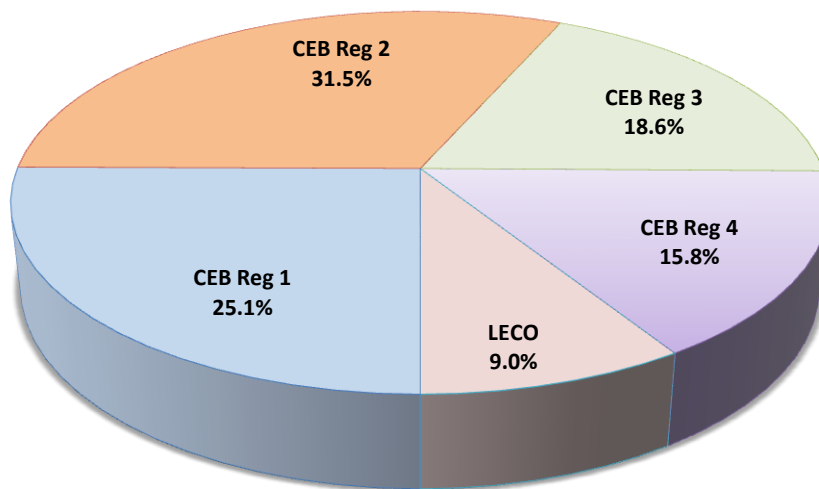
Table 6.1 : Energy Loss in Distribution System

## 7 Consumer Accounts

### 7.1 Consumer Mix

Distribution business involve about 5.8 million consumer accounts nationally. CEB Region 2 accounts for the highest percentage of consumer accounts and also having the second largest area of operation among all DLs.

**DL Wise Consumer Accounts Base**



**Figure 7.1 : DL Wise Consumer Accounts Base**

	Domestic	Religious	Industrial	Hotel	G.P.	Total
CEB Reg 1	1,250,277	10,862	25,671	118	169,457	1,456,384
CEB Reg 2	1,614,257	10,976	13,919	178	188,754	1,828,083
CEB Reg 3	960,237	5,723	8,034	59	102,145	1,076,197
CEB Reg 4	821,906	4,569	5,934	105	83,775	916,288
LECO	435,831	2,455	3,419	48	76,450	521,684
<b>Total</b>	<b>5,082,506</b>	<b>34,585</b>	<b>56,975</b>	<b>506</b>	<b>620,582</b>	<b>5,798,637</b>

**Table 7.1 : Category wise Consumer Mix (Average)**

## 8 Conclusion

During the period of 2014 – 1<sup>st</sup> half, LECO has recorded the lowest network loss amounting to 2.2% and DL1 has exhibited the highest (8.5%). National distribution network loss has amounted to 425.6 GWh 7.33% , (considering the invoiced sales).

Following table summarizes some important aspects from each DL.

Licensee	Network Loss	Sales Margin* per kWh Purchased	Average Units Consumed per Month per Consumer Account	Consumer Base
	(%)	(LKR/kWh)	(kWh/Account/Month)	% of Total
CEB Reg 1	8.5	2.15	168	25.1
CEB Reg 2	7.7	2.90	147	31.5
CEB Reg 3	8.1	3.57	137	18.6
CEB Reg 4	7.4	2.55	127	15.8
LECO	2.2	2.29	201	9.0

Table 8.1 : Important Aspects

$$* \text{ Sales Margin} = \frac{(\text{Revenue Excluding FAC}) - (\text{Cost of Energy Purchased} + \text{Cost of Coincident Demand})}{\text{Energy Purchased}}$$