

Performance Report of Distribution Licensees

2014

Public Utilities Commission of Sri Lanka

30th July 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 (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 (Excluding FAC) from Distribution Business (LKR Mil.).....	12
Table 5.6 : Category wise Revenue per Unit of Energy Sold (Excluding FAC)	13
Table 5.7 : Sales Margin (Excluding FAC)	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 was analyzed with the aid of data submitted by each licensee. Total of **10.8 billion units** have been consumed by the **5.83 million** consumer accounts connected to distribution network.

DLs have purchased electricity from Transmission licensee spending about **145.6 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 **177.9 billion Rupees**** for the year 2014.

The consumer mix is depicted in the Figure 1.1.

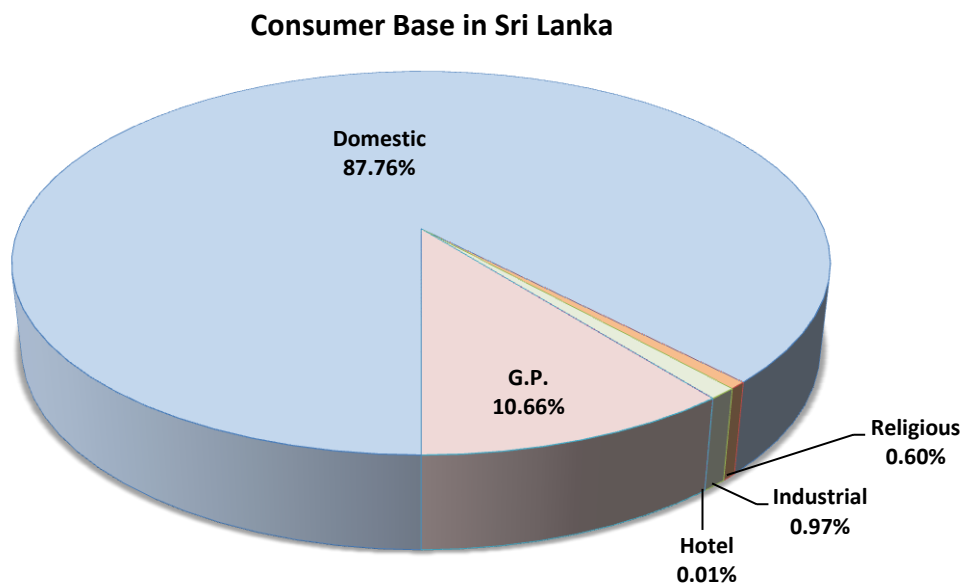


Figure 1.1: Category Wise Consumer Base (Average)

This report produces comparative illustration of all five DLs on their purchases, sales, revenue, consumer base and energy losses for the year 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	%
CEB Reg 1	1,993	663	705	3,362	27.8
CEB Reg 2	2,131	778	848	3,757	31.1
CEB Reg 3	1,162	436	396	1,994	16.5
CEB Reg 4	900	356	352	1,607	13.3
LECO	782	266	305	1,352	11.2
Tot	6,969	2,498	2,605	12,072	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
CEB Reg 1	420	454	276
CEB Reg 2	449	533	332
CEB Reg 3	245	299	155
CEB Reg 4	190	244	138
LECO	165	182	119
Tot	1,469	1,711	1,020

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	Jul	Aug	Sep	Oct	Nov	Dec
CEB Reg 1	524	529	544	546	521	531	539	512.2	554.8	545.3	530.4	543.7
CEB Reg 2	583	557	635	618	582	572	587	547.8	564.9	573.0	561.6	566.5
CEB Reg 3	289	324	336	314	334	293	304	280.3	297.0	256.1	261.6	230.6
CEB Reg 4	271	261	274	260	286	265	277	275.3	253.4	268.0	288.8	239.0
LECO	207	211	222	221	223	212	212	207.4	214.8	209.7	216.0	214.3
Total	1,874	1,881	2,011	1,960	1,945	1,874	1,919	1,823	1,885	1,852	1,858	1,794

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

DL	Energy Cost	%
CEB Reg 1	28,566	34
CEB Reg 2	20,861	25
CEB Reg 3	9,729	12
CEB Reg 4	10,072	12
LECO	13,942	17
Tot	83,171	100

Table 3.1: DL Wise Cost of Energy Purchased (LKR Mil.)

3.2 Cost of Coincident Maximum Demand

DL	Capacity Cost	%
CEB Reg 1	17,278	28
CEB Reg 2	18,689	31
CEB Reg 3	9,462	16
CEB Reg 4	8,660	14
LECO	6,914	11
Tot	61,003	100

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

3.3 Total Costs of Energy and Capacity Purchased

DL	Tot	%
CEB Reg 1	44,144	30
CEB Reg 2	40,214	28
CEB Reg 3	22,373	15
CEB Reg 4	18,703	13
LECO	20,135	14
Tot	145,569	100

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.

4 Energy Sales

Total energy consumed by each consumer category is given below. Domestic and Industrial components carry a share of 37.3% and 34.5% 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.

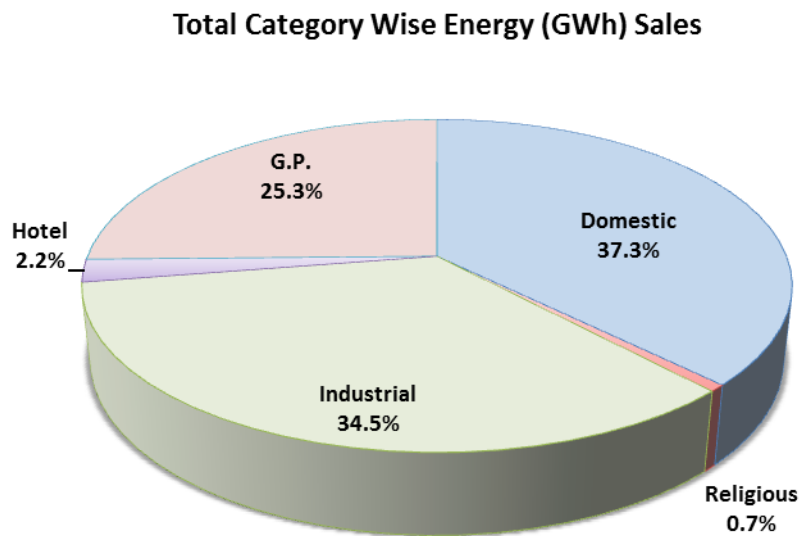


Figure 4.1 : Total Electricity Consumed by each Consumer Category

4.1 Consumer Category wise Sales

	Domestic	Religious	Industrial	Hotel	G.P.	Total
CEB Reg 1	1,014	25.1	718	89.4	1,134	2,981
CEB Reg 2	1,204	19.9	1,501	48.9	567	3,340
CEB Reg 3	681	8.9	797	4.9	324	1,815
CEB Reg 4	623	9.2	464	47.0	296	1,439
LECO*	519	9.1	252	48.8	416	1,272
Total	4,040	72.2	3,733	239.1	2,737	10,848

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 (1,204)	LECO (519)
Religious	CEB Reg 1 (25)	CEB Reg 3 (8.9)
Industrial	CEB Reg 2 (1501)	LECO (252)
Hotel	CEB Reg 1 (89)	CEB Reg 3 (4.9)
General Purpose	CEB Reg 1 (1134)	CEB Reg 4 (296)

Table 4.2 : Highest and Lowest Energy Demand from each Category

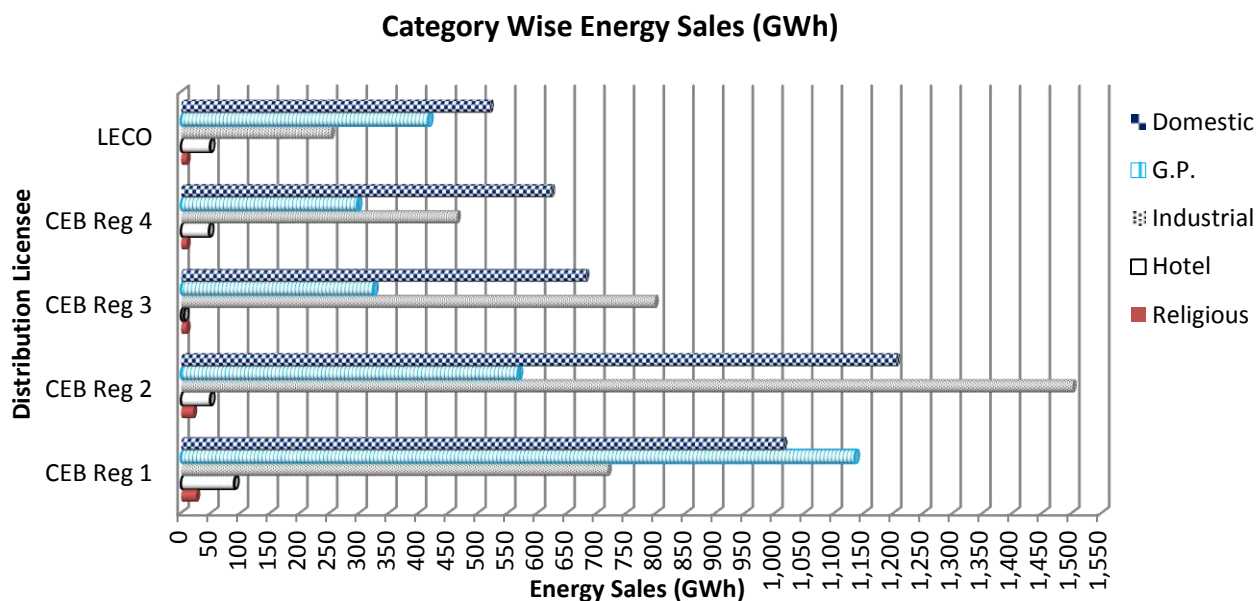


Figure 4.2 : Consumer Category wise Electricity Sales

4.2 Electrical Energy Demand per Consumer Account

Following table shows that the most energy intensive industrial consumer (on average) are from CEB region 2 and the LECO is having the average consumer in Domestic category with highest consumption by far.

	Domestic	Religious	Industrial	Hotel	G.P.	All
CEB Reg 1	67	191	2,306	62,197	552	169
CEB Reg 2	62	149	8,967	22,643	248	151
CEB Reg 3	58	128	8,882	7,371	261	139
CEB Reg 4	63	166	6,491	36,980	292	130
LECO	101	311	6,886	83,544	484	209
National Average	66	172	5,516	39,069	367	155

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	Hotel	G.P.	Tot
CEB Reg 1	12,732	165	8,373	1,328	22,896	45,493
CEB Reg 2	12,008	120	17,210	762	11,406	41,506
CEB Reg 3	6,798	50	9,254	81	6,570	22,753
CEB Reg 4	6,763	57	5,388	728	6,016	18,951
LECO*	8,179	68	2,939	748	8,621	20,560
Tot	46,478	460	43,163	3,646	55,510	149,257

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

*-LECO total includes invoiced energy sales for street lighting

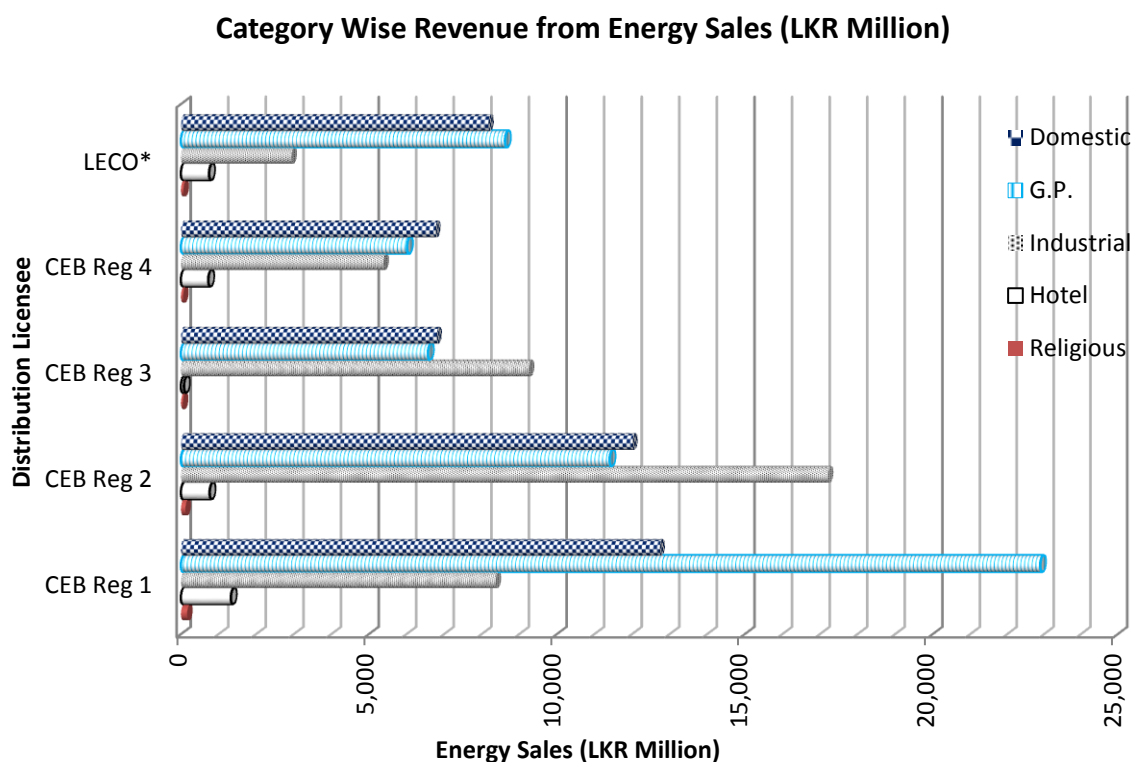


Figure 5.1: Revenue from Energy Charge

As it can be seen clearly from figure 5.1, the General Purpose consumers dominate the revenue of DL1, for DL2 it is the revenue from Industrial consumers and for DL4 it is the revenue from Domestic 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	2,415	213	2,813	5,440
CEB Reg 2	4,954	157	878	5,989
CEB Reg 3	2,566	18	564	3,148
CEB Reg 4	1,619	137	459	2,215
LECO	962	136	824	1,922
Tot	12,517	661	5,537	18,715

Table 5.2 : Revenue from Maximum Demand Charge

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

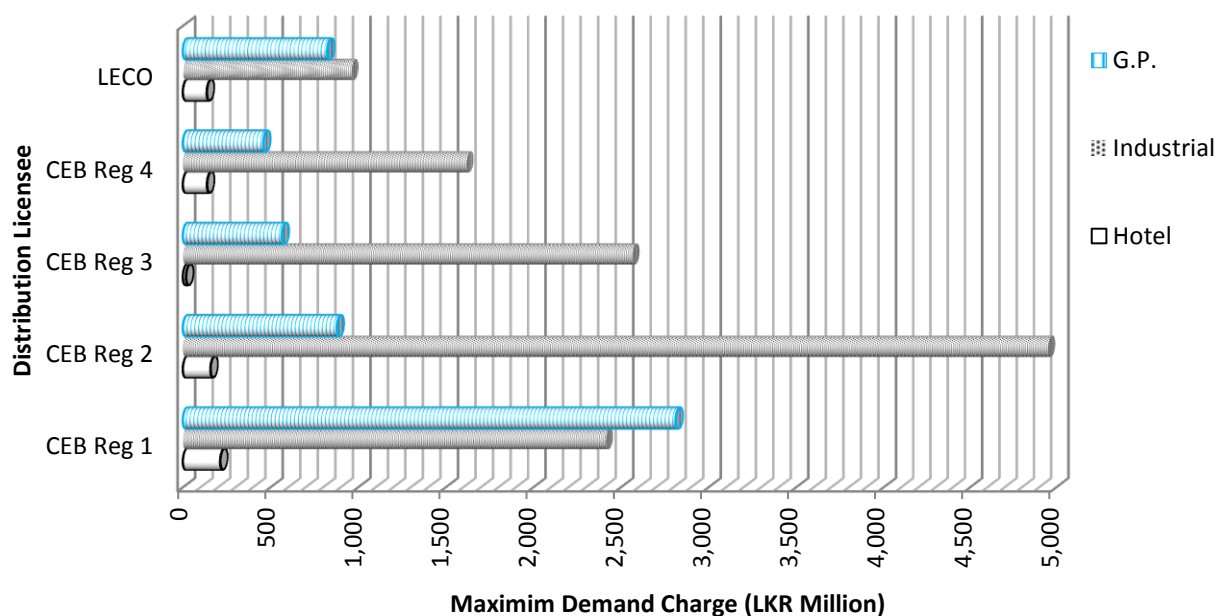


Figure 5.2 : Category wise Revenue from Maximum Demand charge (LKR Mil.)

5.3 Revenue from Fixed Charge

	Domestic	Religious	Industrial	Hotel	G.P.	Tot
CEB Reg 1	1,757	16.3	218	2.6	569	2,563
CEB Reg 2	2,182	16.4	146.9	3.8	592	2,940
CEB Reg 3	1,204	7.9	86.4	0.7	325	1,624
CEB Reg 4	1,107	7.1	66.3	3.0	265	1,448
LECO	1,126	4.7	33	1.8	184	1,350
Tot	7,375	52.4	551	11.8	1,935	9,925

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

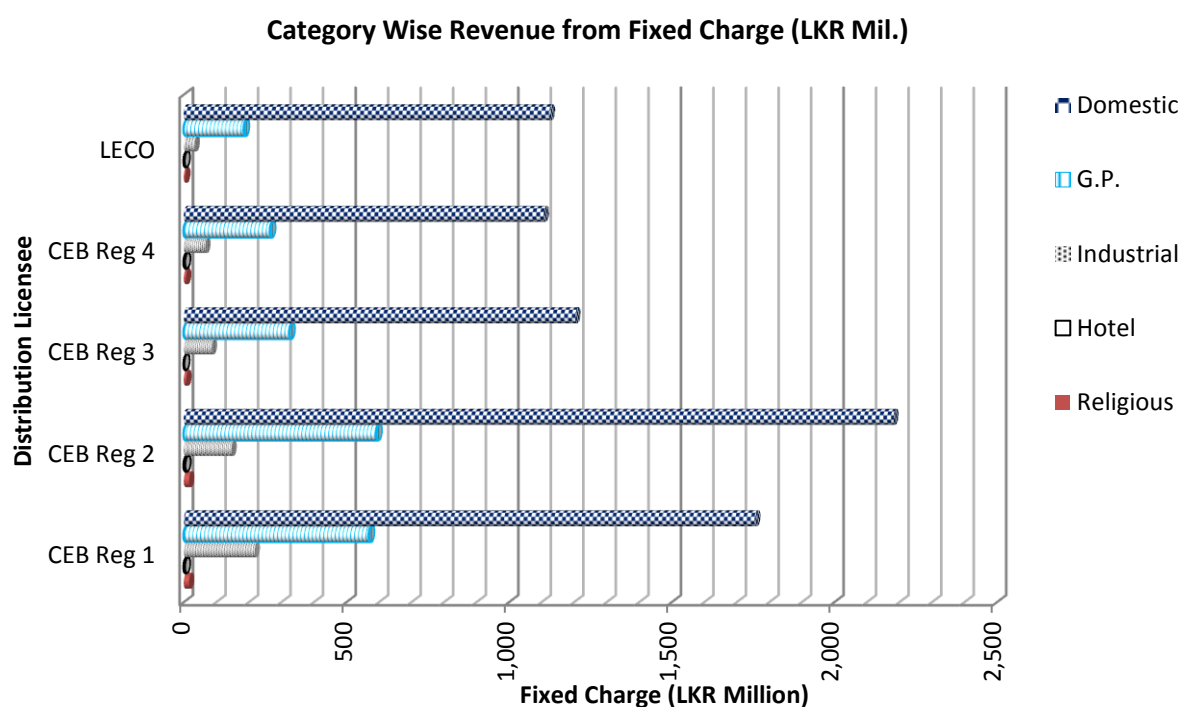


Figure 5.3: Revenue from Fixed Charge

It can be seen that about 74% of fixed charge revenue is from domestic category.

5.4 Fuel Adjustment Charge

Licensee	Domestic	Industrial	Hotel	G.P.	Tot
CEB Reg 1	3,245	1,923	296	6,247	11,710
CEB Reg 2	2,754	2,366	106	2,517	7,744
CEB Reg 3	1,585	1,272	11	1,448	4,315
CEB Reg 4	1,628	741	100	1,306	3,775
LECO	2,056	403	103	1,883	4,446
Tot	11,268	6,706	615	13,402	31,991

Table 5.4 : Fuel Adjustment Charge (LKR Mil.)

Fuel Adjustment Charge (LKR Mil.)

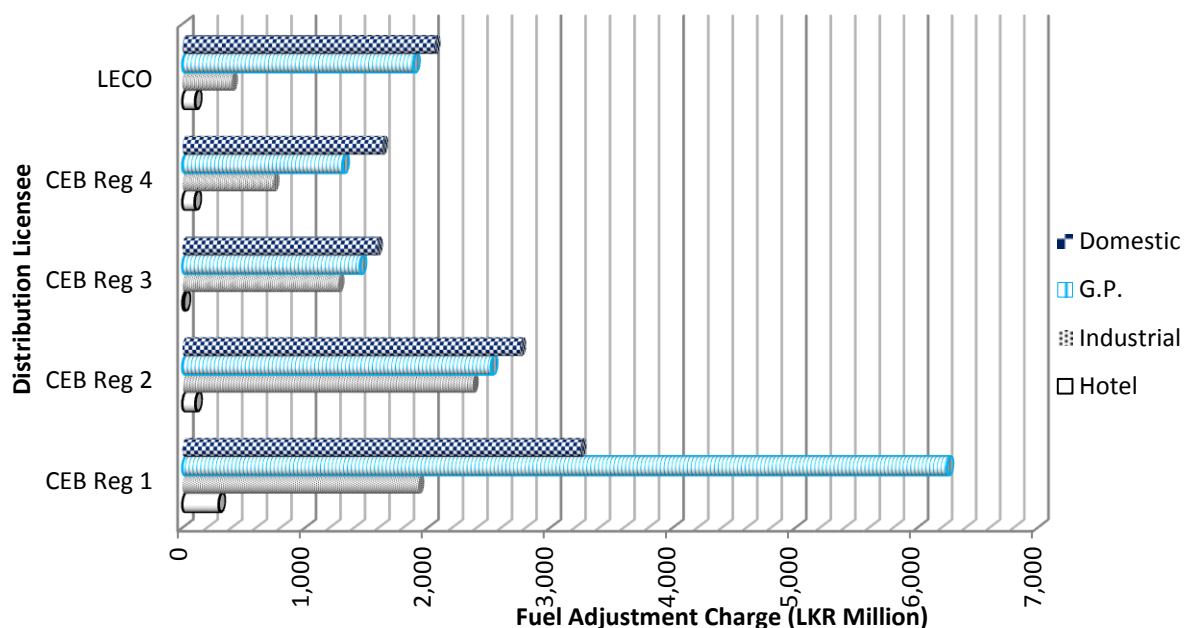


Figure 5.4: Fuel Adjustment Charge

5.5 Total Revenue

Licensee	Domestic	Religious	Industrial	Hotel	G.P.	Tot
CEB Reg 1	14,489	181	11,006	1,543	26,277	53,496
CEB Reg 2	14,189	136	22,311	923	12,876	50,436
CEB Reg 3	8,002	58	11,907	99	7,459	27,525
CEB Reg 4	7,870	64	7,073	868	6,740	22,615
LECO	9,304	73	3,934	886	9,629	23,832
Tot	53,853	512	56,231	4,319	62,982	177,904

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

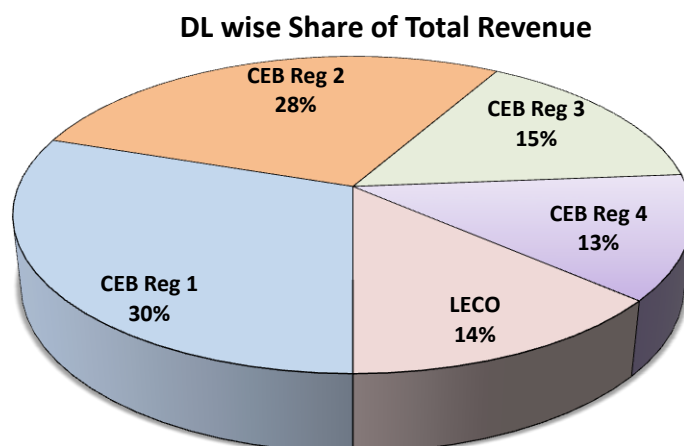


Figure 5.5 : DL wise Share of Revenue (including FAC)

5.6 Revenue per Unit of Energy Sold

Licensee	Domestic	Religious	Industrial	Hotel	G.P.	Avg.
CEB Reg 1	14.29	7.22	15.33	17.25	23.17	17.95
CEB Reg 2	11.79	6.83	14.86	18.89	22.71	15.10
CEB Reg 3	11.76	6.57	14.93	20.17	23.04	15.16
CEB Reg 4	12.64	6.99	15.25	18.45	22.74	15.71
LECO	17.91	7.96	15.58	18.16	23.15	18.73
National Avg.	13.33	7.09	15.06	18.07	23.01	16.40

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

Note: Average price paid by a consumer is **LKR 19.35** per unit of electricity (Including FAC).

5.7 Sales Margin

Licensee	Sales Margin (LKR/kWh)
CEB Reg 1	2.78
CEB Reg 2	2.72
CEB Reg 3	2.58
CEB Reg 4	2.43
LECO	2.73
Distribution Business	2.68

Table 5.7 : Sales Margin (Excluding FAC)

In the table 5.7, the revenue includes 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. Total energy losses amounts to 1148.3 GWh.

Distribution Licensee	Loss (%)*		Loss (GWh)*
	2014	Allowed* for 2014	2014
CEB Reg 1	9.4	8.3	366.4
CEB Reg 2	9.4	10.4	395.8
CEB Reg 3	7.1	8.3	155.8
CEB Reg 4	9.4	9.2	175.2
LECO	4.2	5.2	55.2

*Adjusted for Street lighting

Table 6.1 : Energy Loss in Distribution System

7 Consumer Accounts

7.1 Consumer Mix

Distribution business involve about 5.83 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

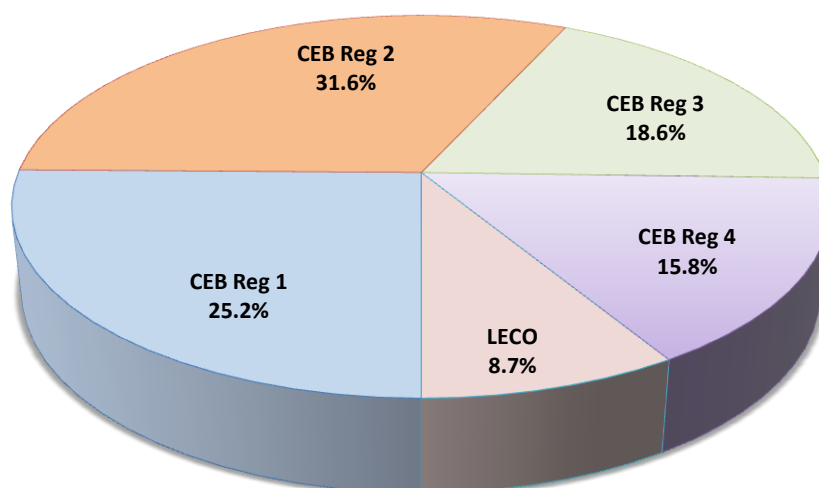


Figure 7.1 : DL Wise Consumer Accounts Base

	Domestic	Religious	Industrial	Hotel	G.P.	Total
CEB Reg 1	1,263,036	10,968	25,955	120	171,111	1,471,190
CEB Reg 2	1,627,951	11,112	13,948	180	190,808	1,843,999
CEB Reg 3	969,606	5,788	7,480	56	103,331	1,086,261
CEB Reg 4	827,327	4,616	5,954	106	84,676	922,678
LECO	427,498	2,438	3,056	49	71,676	507,836
Total	5,115,418	34,921	56,393	510	621,602	5,831,963

Table 7.1 : Category wise Consumer Mix (Average)

8 Conclusion

During the year 2014, LECO has recorded the lowest network loss amounting to 4.2% and DL1, DL2 and DL4 have exhibited around 9.4%. National distribution network loss has amounted to 1148.3 GWh (9.6%), (Adjusted for energy consumption of street lights). The Average price paid by an average consumer for a unit of electricity is approximately LKR **19.35** (Including Fuel Adjustment Charge). The number of consumer accounts has increased by 4% (approximately) with respect to 2013. Further it was noted that, the General Purpose consumers dominate the revenue of DL1, for DL2 it is the revenue from Industrial consumers and for DL4 it is the revenue from Domestic consumers.

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	Consumer Category Providing Highest Revenue
	(%)	(LKR/kWh)	(kWh/Account /Month)	% of Total	
CEB Reg 1	9.4	2.78	169	25.2	G.P.
CEB Reg 2	9.4	2.72	151	31.6	Industrial
CEB Reg 3	7.1	2.58	139	18.6	Industrial
CEB Reg 4	9.4	2.43	130	15.8	Domestic
LECO	4.2	2.73	209	8.7	G.P.

*- Excluding Fuel Adjustment Charge

Table 8.1 : Important Aspects

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