

Performance Report of Distribution Licensees

2015

Public Utilities Commission of Sri Lanka

Nomenclature

CEB	-	Ceylon Electricity Board
DL	-	Distribution Licensee
DL1	-	Distribution Licensee DL1
DL2	-	Distribution Licensee DL2
DL3	-	Distribution Licensee DL3
DL4	-	Distribution Licensee DL4
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

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1 Introduction

Performance of each distribution licensee for the year 2015 was analyzed with the aid of data submitted by each licensee. This report produces comparative illustration of all five DLs on their purchases, sales, revenue, consumer base and energy losses for the year 2015. Facts and figure given in this report based on the data submissions by each DL through Licensee Information Submission System.

Total of **11.6 billion units** have been consumed by the **6.07 million** consumer accounts connected to distribution network. DLs have purchased electricity from Transmission licensee spending about **150.4 billion Rupees**, and distributed to consumers consist of five main categories namely Domestic, Religious, Industrial, Hotel and General Purpose. Revenue obtained from distribution business amounts to **192.3 billion Rupees** for the year 2015.

Numbers of consumers belong to each consumer category and each distribution region is depicted in below table 1-1 and graphically illustrated in figure 1-1.

Table 1-1 : Number of Consumers (Category and Region Wise)

Distribution Region	Consumer Category					Total
	Domestic	Religious	Industrial	Hotel	General Purpose	
DL1	1,329,575	9,288	26,621	125	178,272	1,543,881
DL2	1,683,283	11,616	14,150	185	199,663	1,908,897
DL3	1,007,544	6,054	8,022	50	108,610	1,130,280
DL4	850,312	4,807	6,041	116	88,844	950,120
LECO	452,214	2,493	3,927	56	78,713	537,402
Total	5,322,929	34,256	58,761	533	654,101	6,070,581

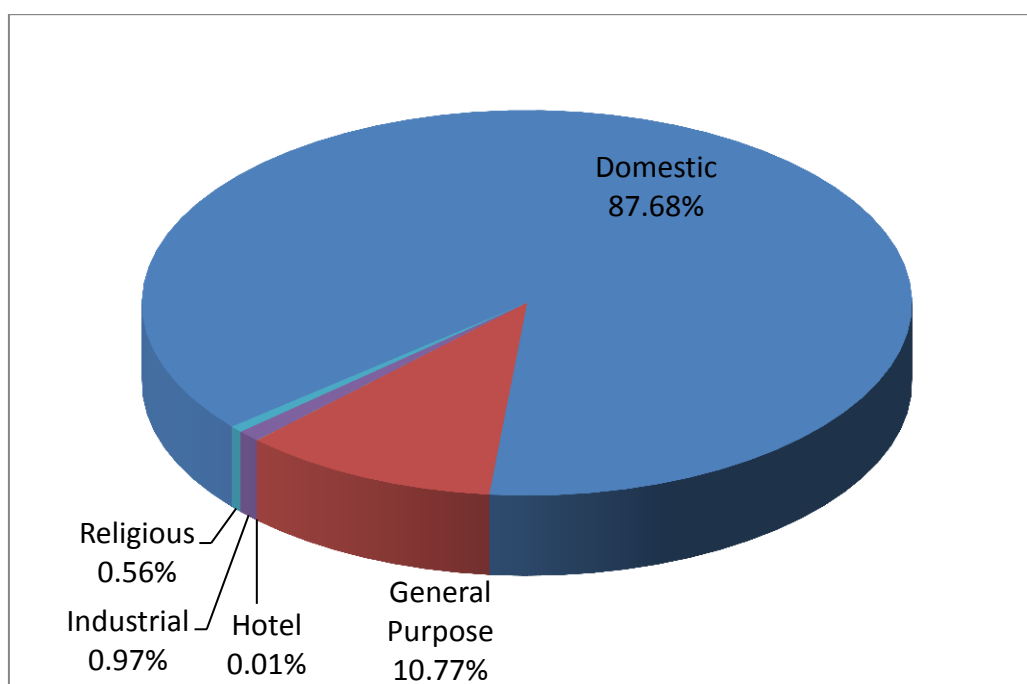


Figure 1-1 : Consumer Mix in Sri Lanka

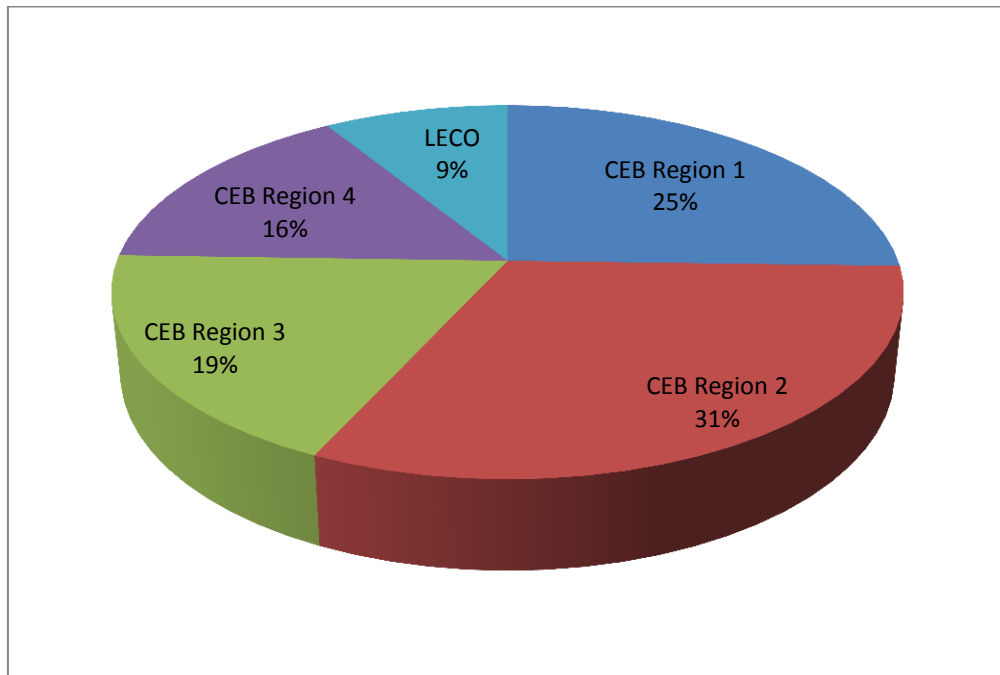


Figure 1-2 : Distribution Region Wise Consumer Accounts Base

Total consumer growth is depicted in figure 1-3 and it shows approximately 4%* of average consumer growth in each year. Further, figure 1-4, figure 1-5, figure 1-6 and figure 1-7 illustrate average consumer growth in each year for Religious, Hotel, Industrial and General Purpose consumer categories respectively.

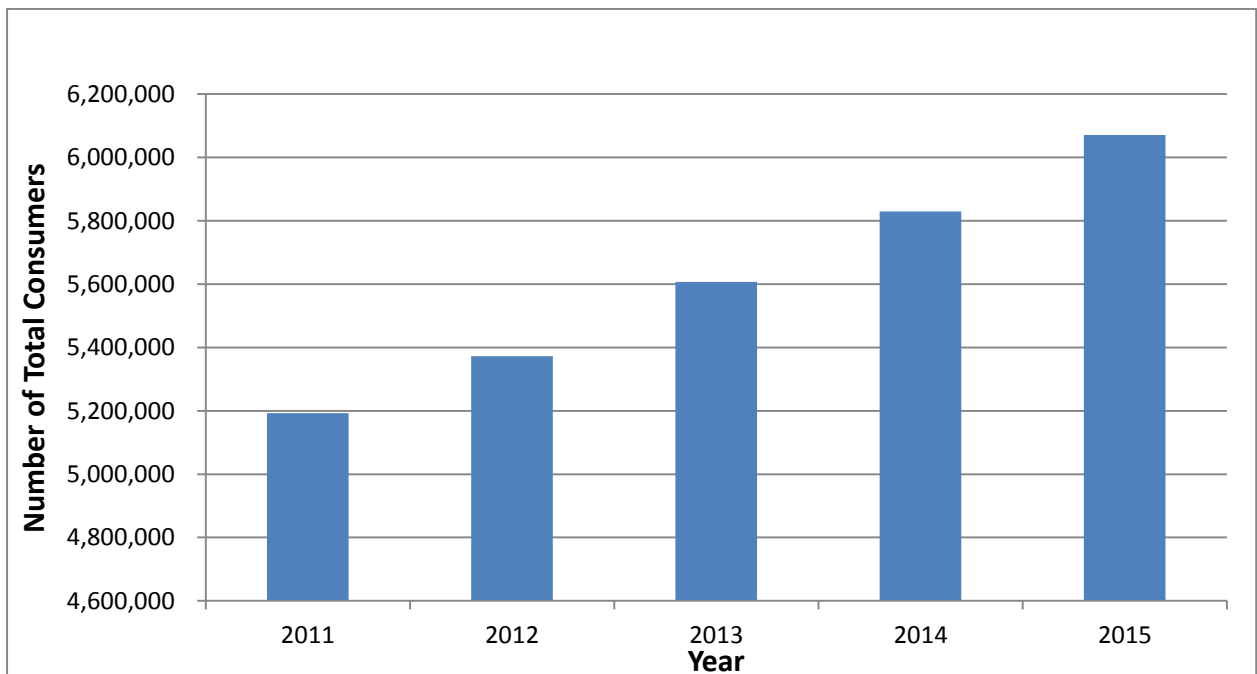


Figure 1-3: Total Consumer Growth

*considering year 2011, 2012, 2013, 2014 and 2015 only

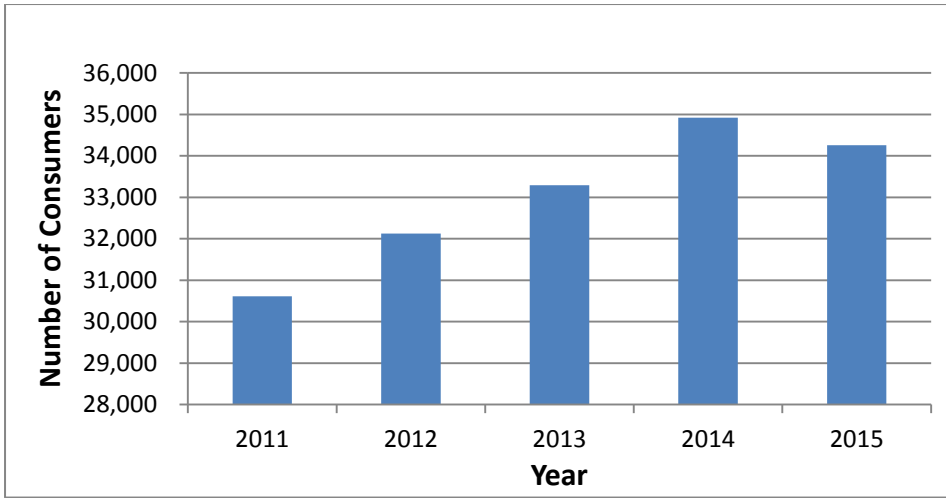


Figure 1-4 : Religious Consumer Growth

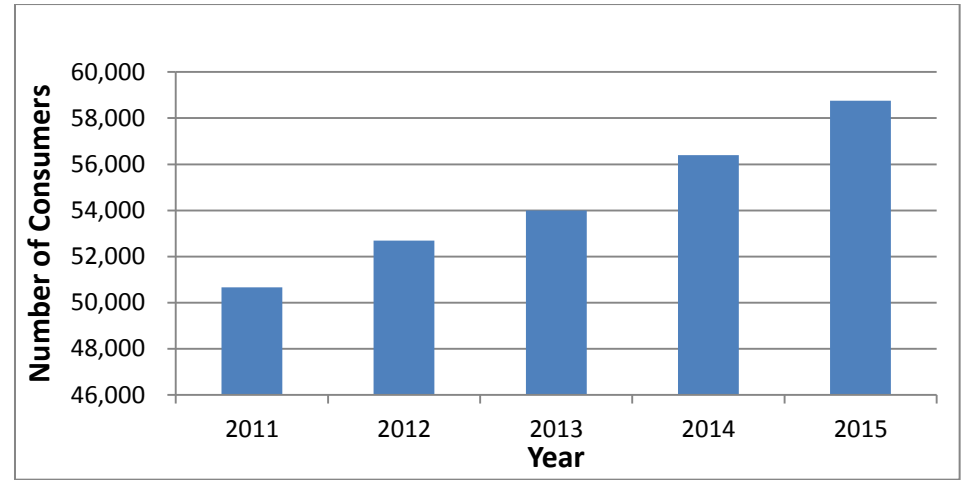


Figure 1-6 : Industrial Consumer Growth

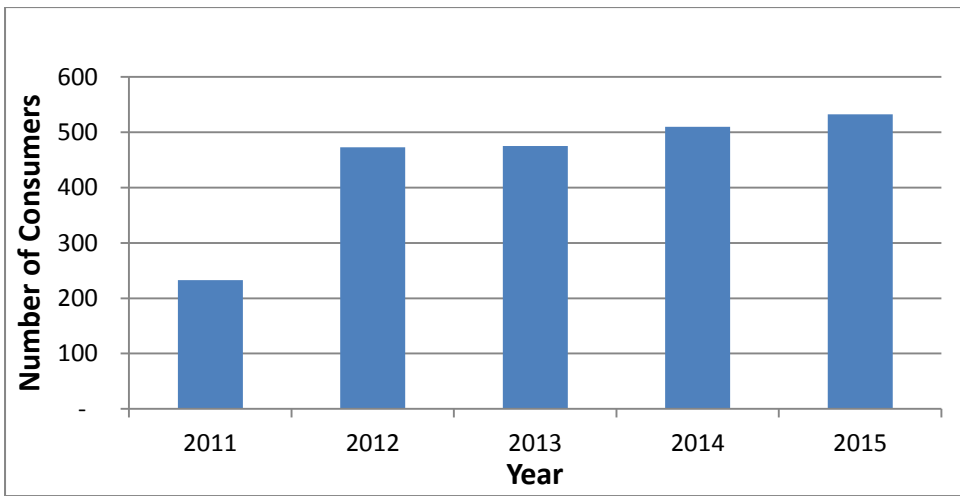


Figure 1-5 : Hotel Consumer Growth

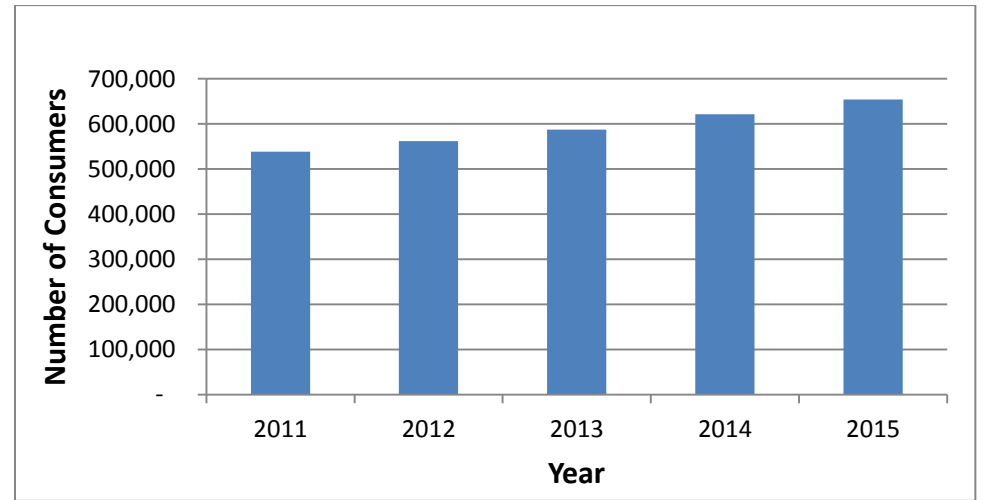


Figure 1-7 : General Purpose Consumer Growth

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.

Table 2-1 : DL Wise Energy Purchased According to Time of Use (GWh)

Licensee	Day	Peak	Off Peak	Total	Percentage (%)
DL1	2,117.04	692.66	722.57	3,532.28	27
DL2	2,329.15	844.91	927.71	4,101.77	31
DL3	1,327.18	498.49	444.04	2,269.72	17
DL4	991.02	384.51	383.61	1,759.14	13
LECO	841.27	281.72	323.37	1,446.36	11
Total	7,605.67	2,702.29	2,801.30	13,109.25	100

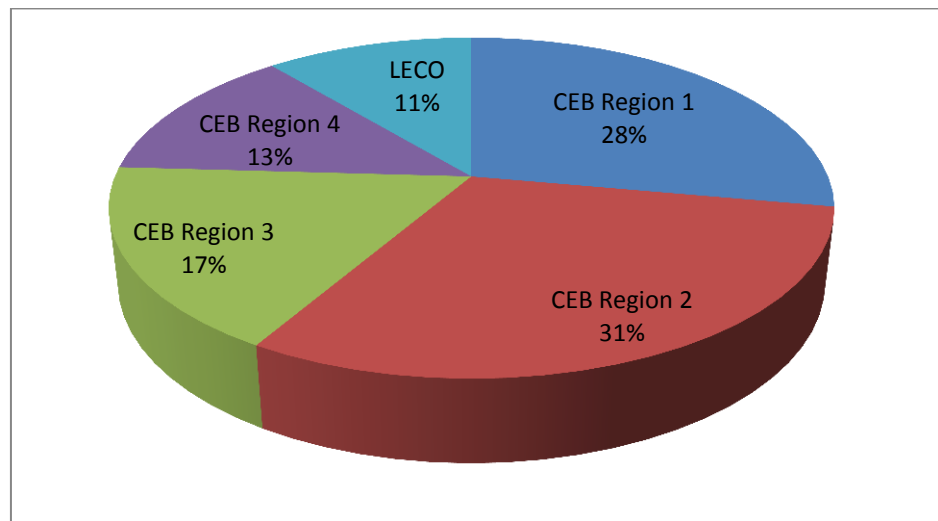


Figure 2-1 : DL Wise Energy Purchased (GWh)

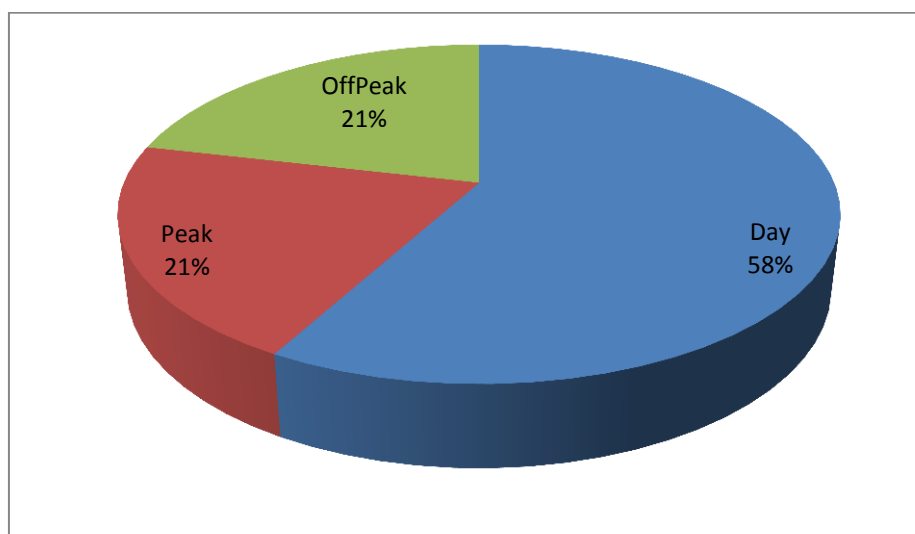


Figure 2-2 : Time of Use Wise Energy Purchased (GWh)

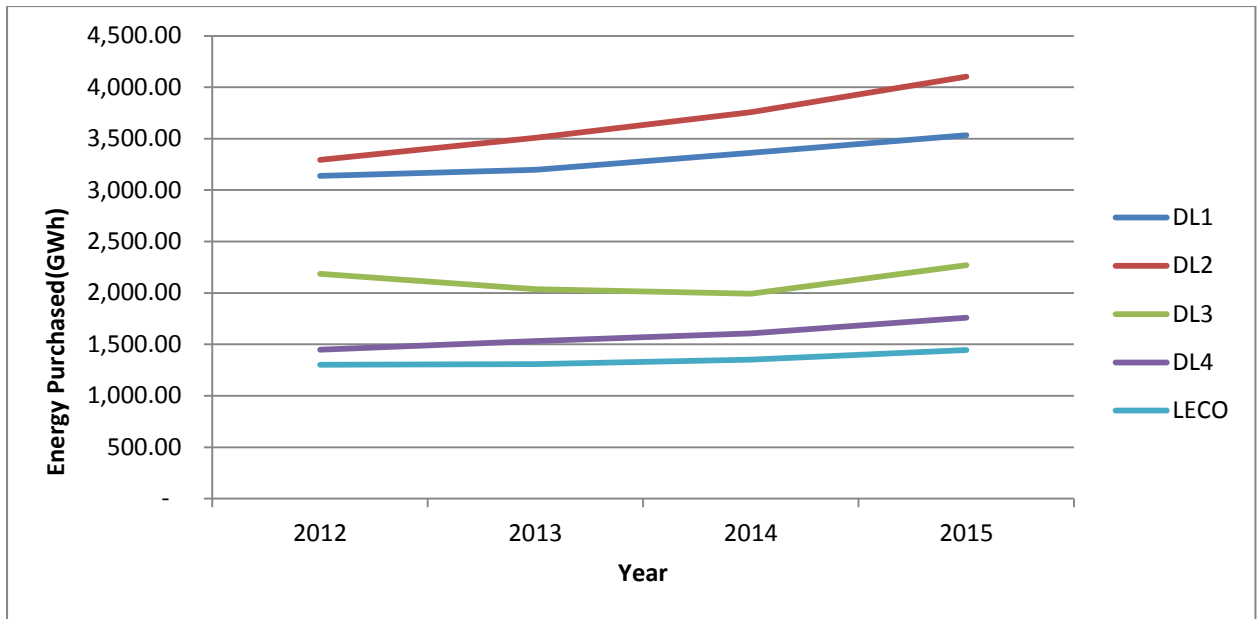


Figure 2-3: Energy Purchased by DLs

Figure 2-3, illustrates the energy purchased by each DLs during past four years. Table 2-2 shows per hour energy demand made by each DL from TL. It can be seen that highest average demands for all three time periods have been recorded from DL2 and lowest values are from LECO. Figure 2-4, shows the graphical representation of these data.

Table 2-2 : Average Demand by DLs (MW)

Licensee	Day	Peak	Off Peak	Total
DL1	446.16	474.43	282.81	1,203.40
DL2	490.86	578.70	363.09	1,432.66
DL3	279.70	341.43	173.79	794.93
DL4	208.86	263.36	150.14	622.36
LECO	177.30	192.96	126.56	496.82
Total	1,602.88	1,850.88	1,096.40	4,550.16

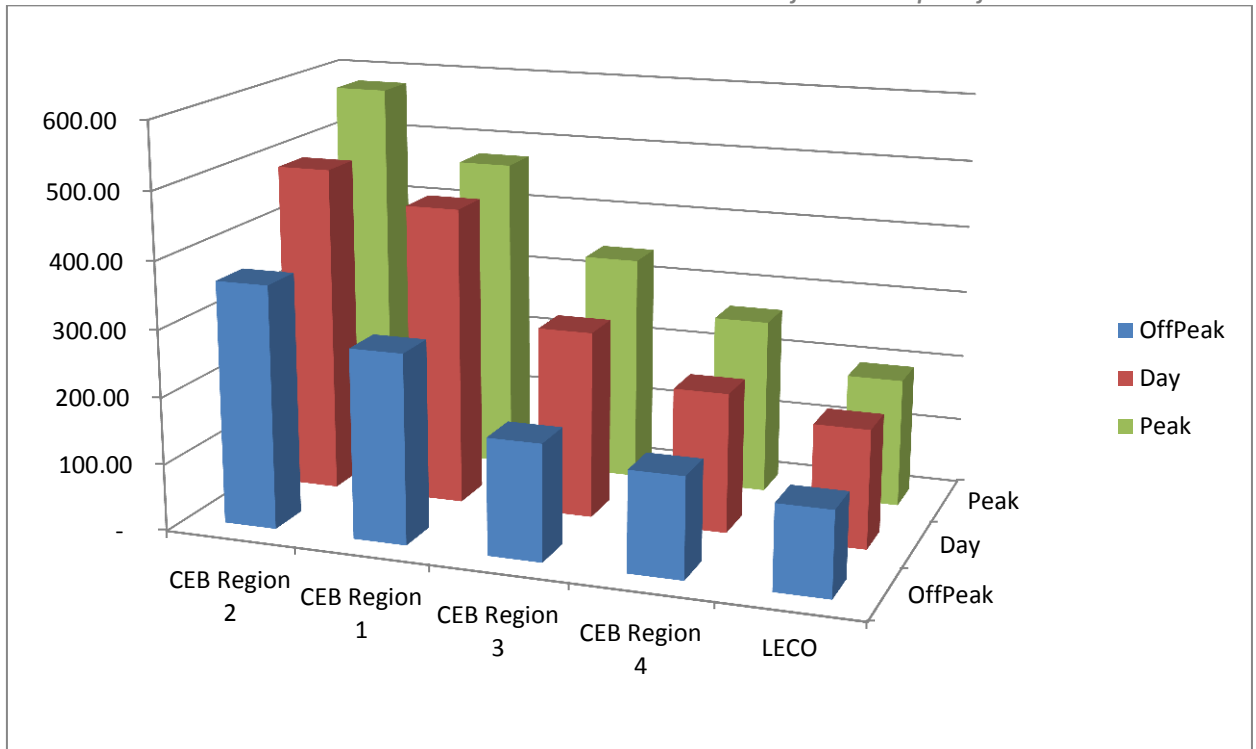


Figure 2-4 : Average Demand by DLs in MW

Coincident maximum demand given in following table 2-3, describes the demand claimed by each DL during the occurrence of national peak demand.

Table 2-3 : Monthly Coincident Maximum Demand (MW)

	January	February	March	April	May	June	July	August	September	October	November	December
DL1	533	543	579	581	551	556	533	545	585	555	570	573
DL2	593	591	597	589	540	625	612	641	672	663	640	632
DL3	299	306	323	284	292	298	253	327	377	354	332	333
DL4	272	286	297	281	302	308	271	215	307	273	317	292
LECO	216	224	233	234	229	229	218	227	232	232	230	231
Total	1,912	1,950	2,030	1,969	1,915	2,015	1,888	1,955	2,172	2,078	2,089	2,061

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

Table 3-1 : DL Wise Cost of Energy Purchased (LKR Mil.)

DL	Energy Cost(LKR in M)	Percentage (%)
DL1	30,630	32
DL2	25,186	27
DL3	12,483	13
DL4	10,913	12
LECO	15,411	16
Total	94,622	100

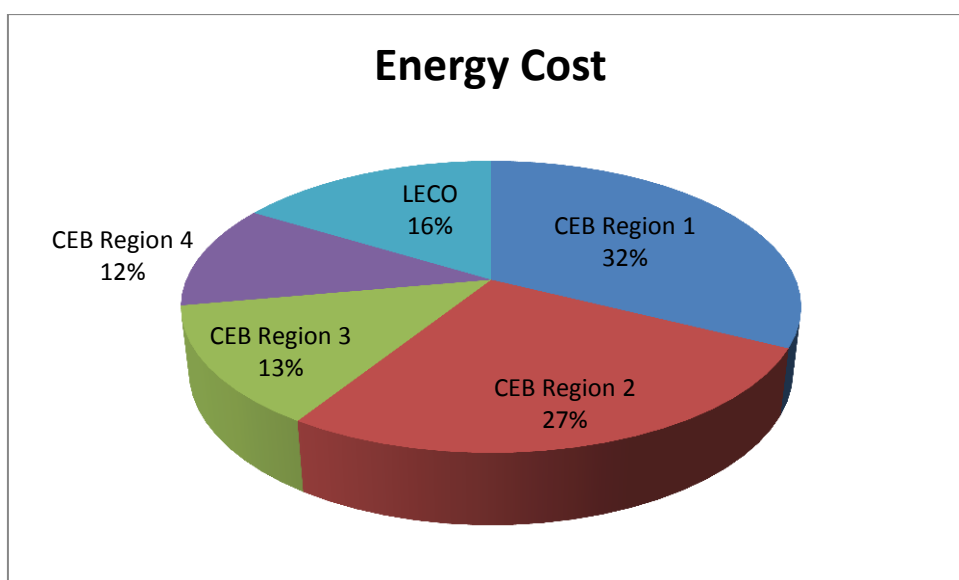


Figure 3-1 : DL Wise Cost of Energy Purchased (LKR Mil.)

3.2 Cost of Coincident Maximum Demand

Table 3-2 : DL Wise Cost of Coincident Maximum Demand (LKR Mil.)

DL	Capacity cost(LKR in M)	Percentage (%)
DL1	18,258.16	28
DL2	20,140.53	31
DL3	10,285.62	16
DL4	9,321.53	14
LECO	7,450.04	11
Total	65,455.88	100

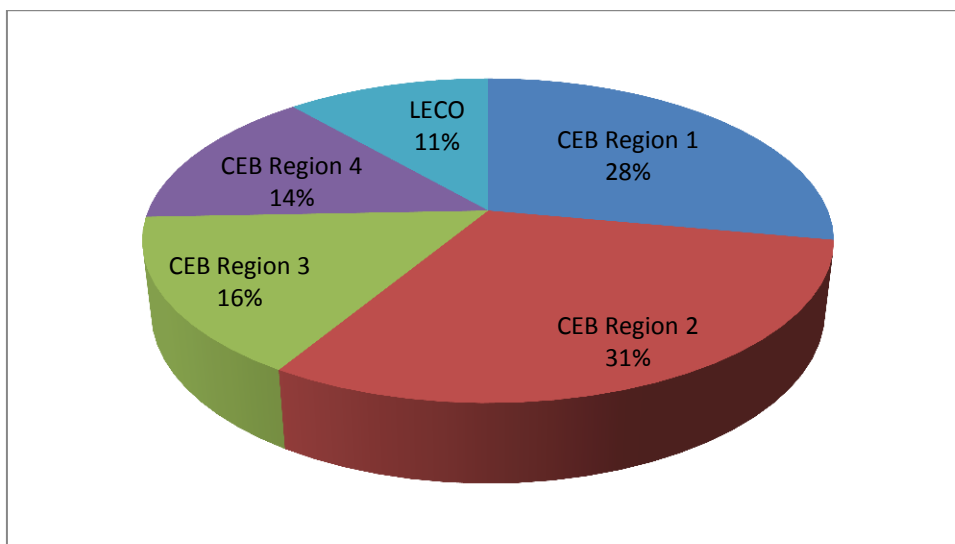


Figure 3-2 : DL Wise Cost of Coincident Maximum Demand (LKR Mil.)

3.3 Total Costs of Energy and Capacity Purchased

Table 3-3 : Total Costs of Energy and Capacity Purchased by each DL (LKR Mil.)

DL	Total (LKR in M)	Percentage (%)
DL1	48,574.56	30
DL2	46,846.90	29
DL3	20,882.32	13
DL4	20,151.90	13
LECO	22,950.68	14
Total	159,406.36	100

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.

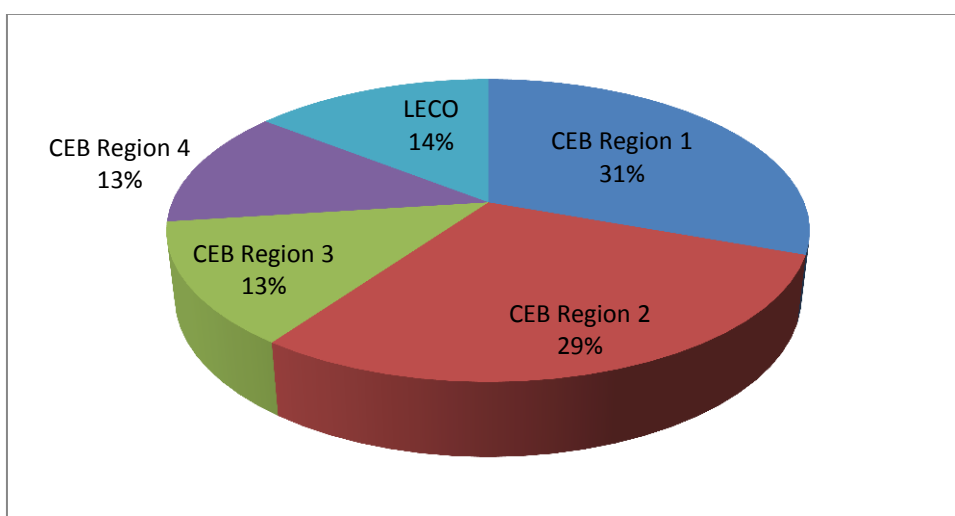


Figure 3-3 : Total Costs of Energy and Capacity Purchased by each DL (LKR Mil.)

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.

Table 4-1 : Total Energy Consumed by Each Consumer Category DL wise (GWh)

DL	Domestic	General Purpose	Hotel	Industrial	Religious	Total
DL1	1,114	1,200	96	762	27	3,199
DL2	1,331	602	56	1,552	22	3,563
DL3	750	352	6	832	9	1,949
DL4	682	319	53	470	10	1,533
LECO	562	450	53	265	9	1,340
Total	4,438	2,923	264	3,881	77	11,583

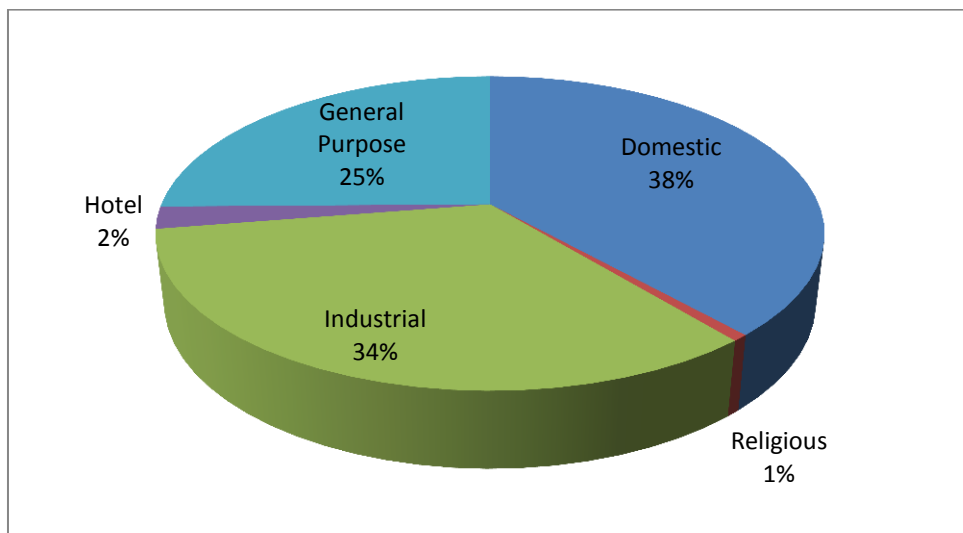


Figure 4-1 : Total Electricity Energy Consumed by each Consumer Category

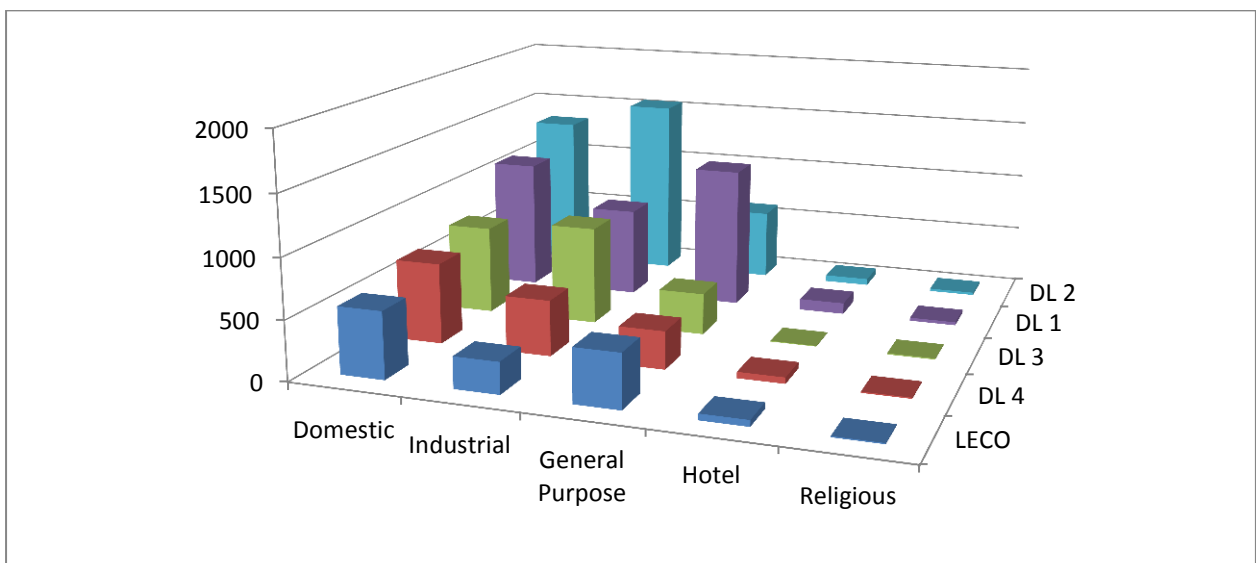


Figure 4-2 : Consumer Category and DL wise Electricity Consumption (GWh)

4.1 Electrical Energy Demand per Consumer Account

Table 4-2 : Average Units (kWh) Consumed per Month per Consumer Account

Consumer Category	Per Month Per Consumer Energy Consumption (kWh per Consumer per month)				
	Hotel	Industrial	General Purpose	Domestic	Religious
DL 3	10,000.00	8,643	270	62	124
DL 2	25,225.00	9,140	251	66	158
DL 4	38,075.00	6,483	299	67	173
DL 1	64,000.00	4,961	1,221	70	525
LECO	78,869.00	5,623	476	104	301
National Average	43,233.80	6,970	503	74	256

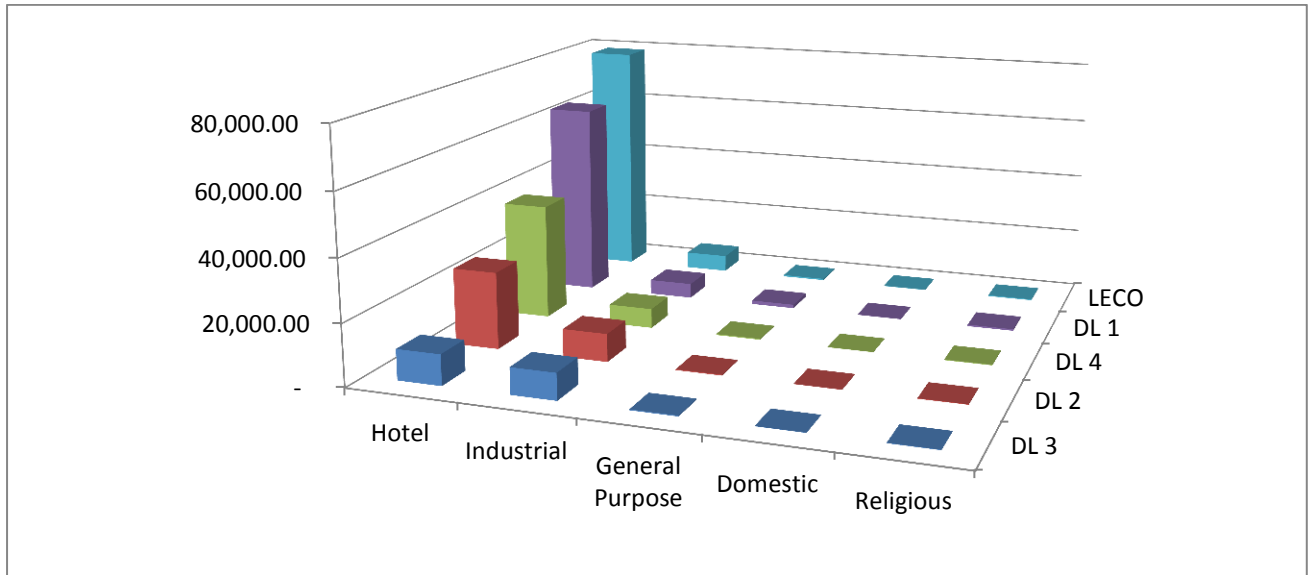


Figure 4-3 : Average Unit (kWh) Consumed per Month per Consumer Account

5 Revenue

Revenue from electricity distribution business consists of following components.

- Energy (kWh) charge
- Maximum demand charge
- Fixed charge

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.

Table 5-1 : Revenue from Energy Charge (LKR Mil.)

Licensee	Domestic	General Purpose	Hotel	Industrial	Religious	Total
DL1	13,612	25,260	1,399	8,719	179	49,169
DL2	13,055	12,509	859	17,384	132	43,938
DL3	7,398	7,378	90	9,445	55	24,366
DL4	7,318	6,702	799	5,325	62	20,206
LECO	8,976	9,821	800	3,063	71	22,731
Total	50,358	61,670	3,948	43,935	499	160,410

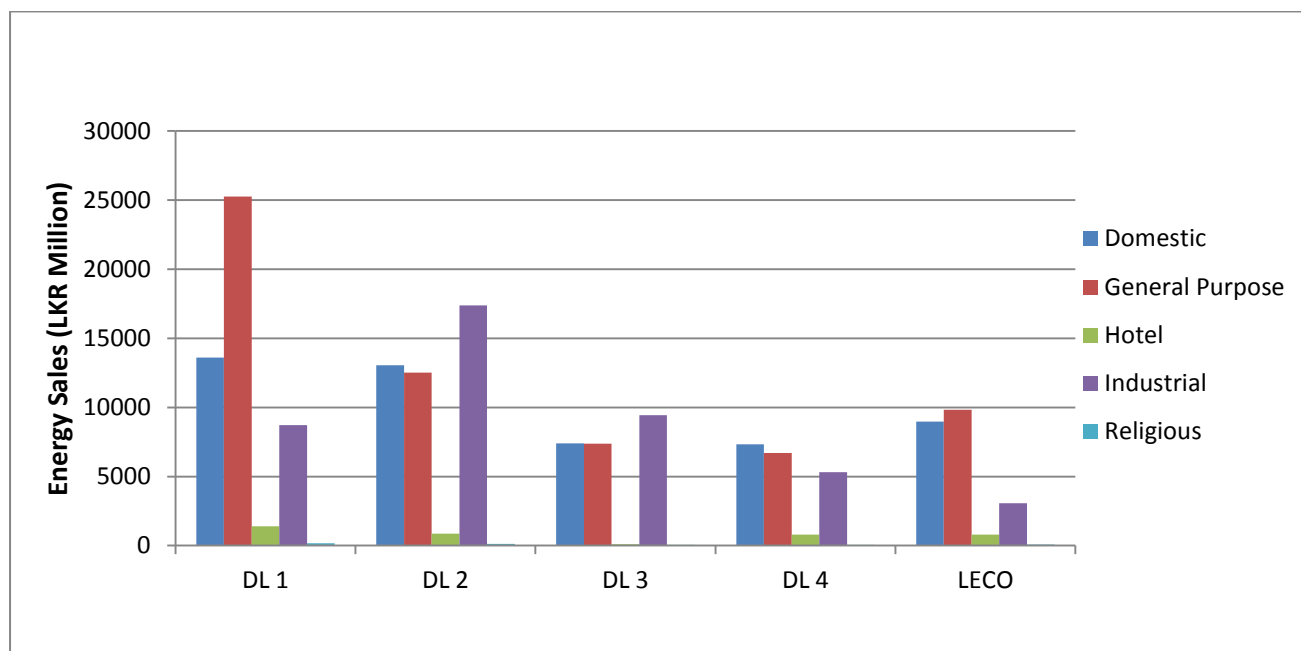


Figure 5-1 : Revenue from Energy Charge

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

Table 5-2: Revenue from Maximum Demand Charge (LKR Mil.)

	General Purpose	Hotel	Industrial	Total
DL1	2,911.03	231.20	2,478.00	5,620.24
DL2	855.91	179.25	5,154.43	6,189.59
DL3	600.80	19.91	2,664.01	3,284.72
DL4	487.12	158.16	1,651.70	2,296.98
LECO	880.20	145.50	996.05	2,021.75
Total	5,735.05	734.02	12,944.20	19,413.27

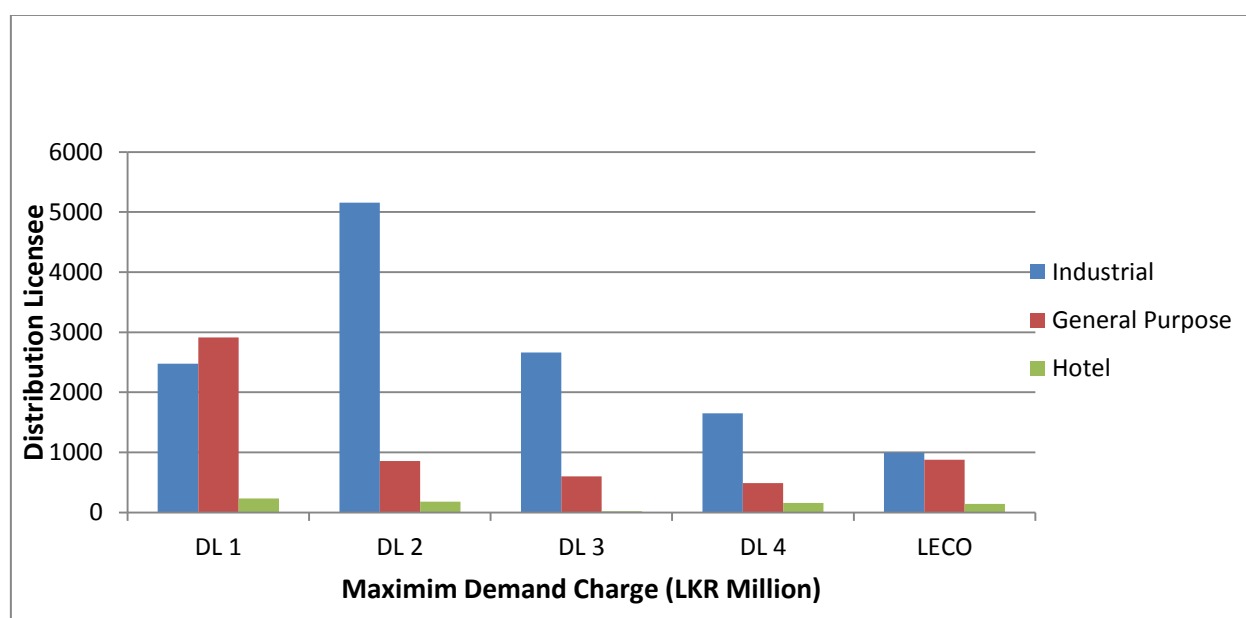


Figure 5-2: Category wise Revenue from Maximum Demand charge (LKR Mil.)

5.3 Revenue from Fixed Charge

Table 5-3: Revenue from Fixed Charge (LKR Mil.)

	Domestic	General Purpose	Hotel	Industrial	Religious	Total
DL1	2,391.95	596.01	2.92	229.33	17.31	3,237.52
DL2	2,993.21	619.16	4.13	150.12	17.38	3,783.99
DL3	1,625.41	341.67	0.68	87.33	8.39	2,063.49
DL4	1,493.81	278.21	3.36	67.35	7.44	1,850.18
LECO	1,499.77	78.48	1.90	18.31	4.78	1,603.25
Total	10,004.16	1,913.53	12.99	552.45	55.31	12,538.43

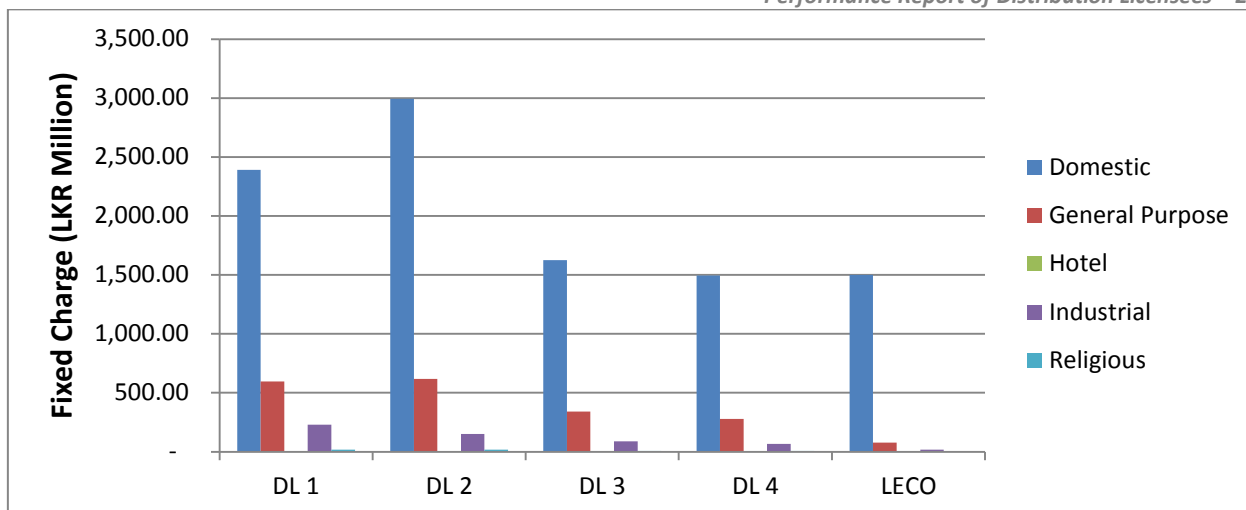


Figure 5-3: Revenue from Fixed Charge

5.4 Total Revenue

Table 5-4 : Total Revenue (Excluding FAC) from Distribution Business (LKR Mil.)

Licensee	Domestic	Religious	Industrial	Hotel	General Purpose	Total
DL1	16,003.75	196.37	11,426.10	1,633.53	28,766.88	58,026.63
DL2	16,047.94	149.15	22,688.15	1,042.30	13,983.93	53,911.47
DL3	9,023.35	63.12	12,196.66	110.91	8,320.23	29,714.26
DL4	8,811.41	69.56	7,043.60	960.98	7,467.72	24,353.27
LECO	10,475.52	76.01	4,077.18	947.40	10,779.76	26,355.87
Total	60,361.96	554.21	57,431.70	4,695.12	69,318.51	192,361.50

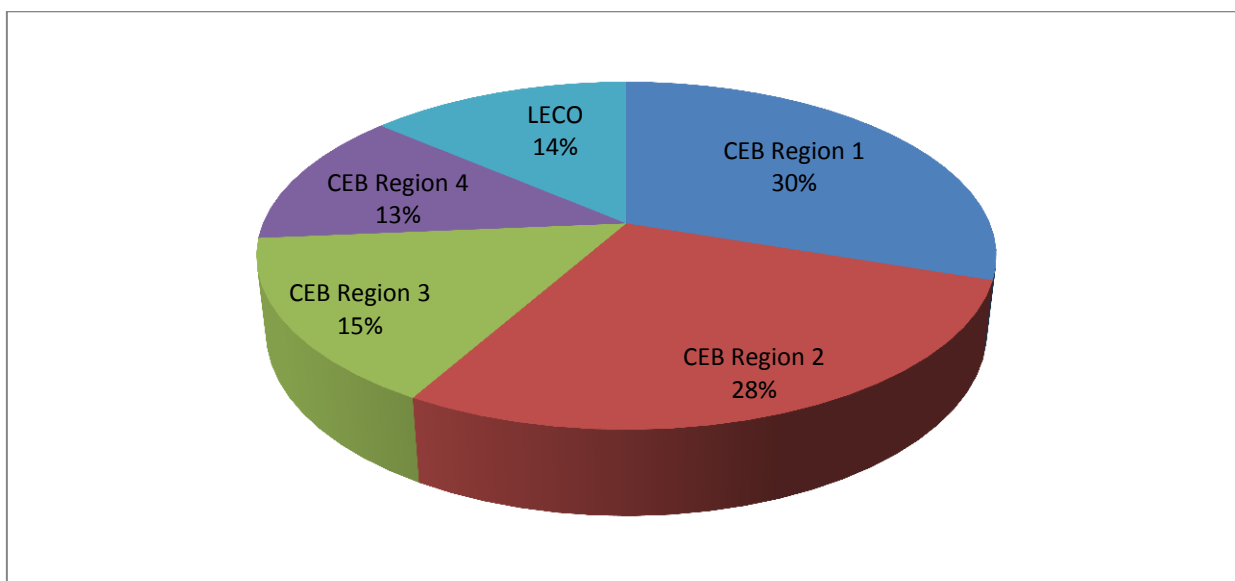


Figure 5-4 : DL wise Share of Total Revenue

5.5 Revenue per Unit of Energy Sold

Table 5-5 : Category wise Revenue per Unit of Energy Sold

Licensee	Domestic	Religious	Industrial	Hotel	General Purpose	Average
DL 1	14.37	7.37	15.00	17.00	23.96	15.54
DL 2	12.06	6.91	14.61	18.51	23.22	15.06
DL 3	12.03	6.67	14.66	19.67	23.66	15.34
DL 4	12.93	7.09	15.00	18.18	23.43	15.32
LECO	18.65	8.01	15.36	17.96	23.94	16.78
National Average	14.01	7.21	14.93	18.26	23.64	15.61

6 Distribution Energy Loss

Following table depicts the energy loss in each DL and the allowed loss. Total energy losses amounts to 1055.54 GWh.

Table 6-1: Energy Loss in Distribution System

Licensee	Loss (GWh)	Loss Percentage (%)	Allowed Loss for year 2015 (%)
DL 1	288.72	8.14	8.20
DL 2	371.45	9.23	10.00
DL 3	193.26	8.91	8.20
DL 4	175.75	10.16	8.60
LECO	26.36	1.85	5.00
Total	1,055.54		

Highest loss is recorded from DL 4 and lowest loss is recorded from LECO.

7 Consumer Accounts

7.1 Consumer Mix

Distribution business involve about 6.07 million consumer accounts nationally. DL2 accounts for the highest percentage of consumer accounts and also having the second largest area of operation among all DLs.

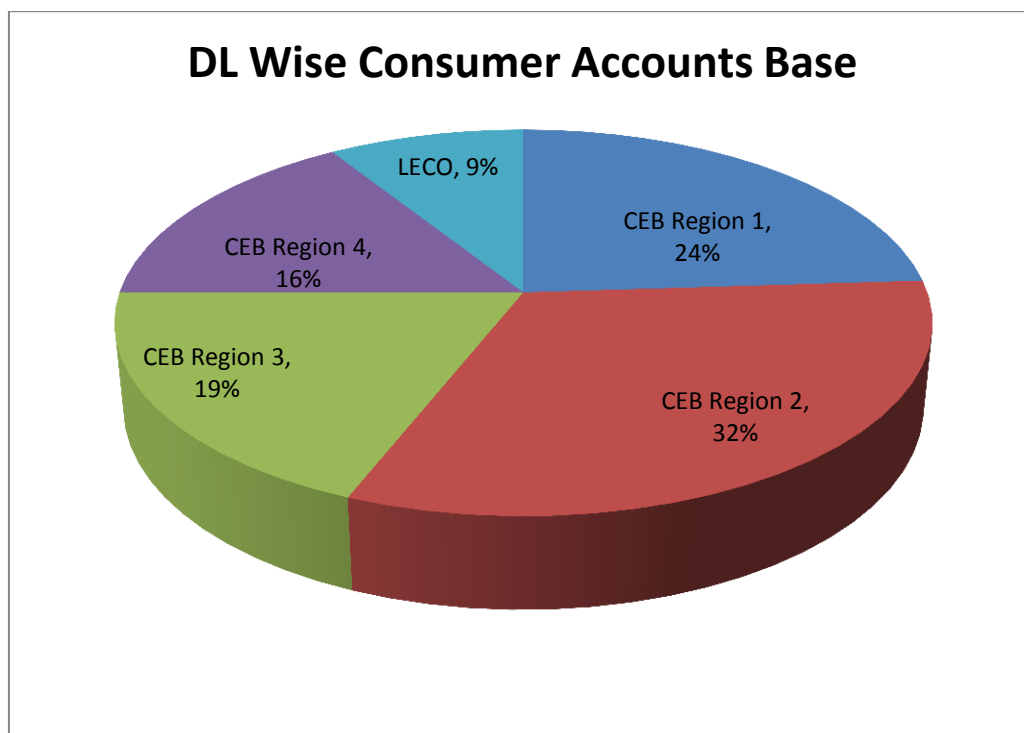


Figure 7-1 : DL Wise Consumer Accounts Base

Table 7-1 : Category wise Consumer Mix (Average)

Consumer Category	DL1	DL2	DL3	DL4	LECO
Domestic	1,329,575	1,683,283	1,007,544	850,312	452,214
General Purpose	81,902	199,663	108,610	88,844	78,713
Hotel	125	185	50	116	56
Industrial	12,801	14,150	8,022	6,041	3,927
Religious	4,283	11,616	6,054	4,807	2,493
Total	1,428,687	1,908,897	1,130,280	950,120	537,402
Percentage (%)	24	32	19	16	9

8 Summary

- Total electricity consumption 11.6 billion units
- Total consumer base 6.07 million
- Electricity purchased cost from TL 150.4 billion Rupees
- Total revenue by sales 192.3 billion Rupees
- Energy purchased from TL 13.1 billion units
- Total distribution loss 1055.51 GWh
- Total consumer growth 4% per year (based on data of year 2011 to 2015)
- Industrial consumer growth 3.8% per year (based on data of year 2011 to 2015)
- GP consumer growth 5% per year (based on data of year 2011 to 2015)

Table 2 : Summary table 1

Distribution Region	Number of Consumers	Energy Purchased from TL (GWh)	Coincident Maximum Demand(MW)	Average Demand by DL from TL (MW)	Energy Sales (GWh)	Total Revenue(LKR M)	Energy Loss (GWh)
DL1	1,543,881	3,532	6,703	1,203	3,199	58,027	
DL2	1,908,897	4,102	7,396	1,433	3,563	53,911	
DL3	1,130,280	2,270	3,777	795	1,949	29,714	
DL4	950,120	1,759	3,422	622	1,533	24,353	
LECO	537,402	1,446	2,735	497	1,340	26,356	
Total	6,070,581	13,109	24,033	4,550	11,583	192,362	

Table 3 : Summary table 2

Distribution Region	Percentage of Consumers (%)	Percentage of Energy Purchased from TL (%)	Coincident Maximum Demand Percentage (%)	Percentage of Energy Sales (%)	Percentage of Total Revenue (%)	Percentage of Energy Loss (%)
DL1	24	27	28	28	30	
DL2	32	31	31	31	28	
DL3	19	17	16	17	15	
DL4	16	13	14	13	13	
LECO	9	11	11	12	14	

Table 4 : Summary table 03

Consumer Category	Number of Consumers	Percentage of number of Consumers (%)	Energy Sales (GWh)	Percentage of energy Sales (%)	Total Revenue (LKR M)	Percentage of Total Revenue (%)
Domestic	5,322,929.00	87.68	4,438	38.31	60,362	31.38
Religious	34,256.00	0.56	77	0.66	554	0.29
Industrial	58,761.00	0.97	3,881	33.51	57,432	29.86
Hotel	533.00	0.01	264	2.28	4,695	2.44
General Purpose	654,101.00	10.77	2,923	25.24	69,319	36.04
Total	6,070,581		11,583		192,362	

Table 5 : Summary table 4

Per Month Per Consumer Energy Consumption (kWh per Consumer per month)					
Consumer Category	Hotel	Industrial	General Purpose	Domestic	Religious
DL 3	10,000	8,643	270	62	124
DL 2	25,225	9,140	251	66	158
DL 4	38,075	6,483	299	67	173
DL 1	64,000	4,961	1,221	70	525
LECO	78,869	5,623	476	104	301
National Average	43,233	6,970	503	74	256

Table 6 : Summary table 5

Category wise Revenue per Unit of Energy Sold (LKR per kWh)						
Licensee	Domestic	Religious	Industrial	Hotel	General Purpose	Average
DL 1	14.37	7.37	15.00	17.00	23.96	15.54
DL 2	12.06	6.91	14.61	18.51	23.22	15.06
DL 3	12.03	6.67	14.66	19.67	23.66	15.34
DL 4	12.93	7.09	15.00	18.18	23.43	15.32
LECO	18.65	8.01	15.36	17.96	23.94	16.78
National Average	14.01	7.21	14.93	18.26	23.64	15.61

Table 7 : Summary table 6

Licensee	Loss (GWh)	Loss Percentage (%)	Allowed Loss for year 2015 (%)
DL 1	288.72	8.14	8.20
DL 2	371.45	9.23	10.00
DL 3	193.26	8.91	8.20
DL 4	175.75	10.16	8.60
LECO	26.36	1.85	5.00