4. The Outlines and the Results of Socioeconomic Survey

Appendices - 4

The Outlines and the Results of Socioeconomic Survey (Power Demand & Willingness to Pay)

In order to collect basic information for demand forecast and tariff revision, the following socioeconomic survey was conducted by hiring of local consultant firm. The local consultant firm was selected by the following criteria:

① It has experience of national census, similar socioeconomic survey, and /or demand survey conducted by the NPA

② It employs a survey expert (s) who has background of economics and statistics, and

③ It is familiar with the local conditions.

This socioeconomic survey was a sampling survey and, in order to implement in an effective and efficient manner, the following actions were conducted.

① To set up the significant sample number.

② Sampling method should be considered so as to select equipment probability.

The outline and results of socio-economic survey are as follows;

(1) The population and number of households in the survey area

The survey area is the entire Western Area, and the population and number of households in the survey area are shown in the following table.

Population and Number of Households in the Study Area

2004 Population Census					Based on 2004 Census	Based on Population Estimate*
Province	District	Ward	Population	Households	Population in 2008	Households in 2008
Western Area	(Rural + Urban)	**Total**	**947,122**	**164,198**	**1,133,247**	**196,442**
	Western Rural	Koya	22,996	3,967		5,266
		Mountain	9,925	1,712		2,273
		Waterloo	77,791	13,420		17,813
		York Rural	63,537	10,961		14,549
		Subtotal	**174,249**	**30,060**	**231,294**	**39,901**
	Western Urban	Central-1	50,271	8,725		10,182
		Central-2	20,135	3,495		4,078
		East-1	55,166	9,574		11,174
		East-2	79,934	13,873		16,190
		East-3	316,409	54,915		64,087
		West-1	46,319	8,039		9,382
		West-2	91,345	15,854		18,501
		West-3	113,294	19,663		22,947
		Subtotal	**772,873**	**134,138**	**901,953**	**156,541**

[Sources] Statistics Sierra Leone (2006.2), "Final Results 2004 Population and Housing Census"
Statistics Sierra Leone (2006.11), "Analytical Report on Population Projection for Sierra Leone"

[Note] *The number of households based on the population estimate is calculated by the Study Team on the basis of the average number of persons per household in the 2004 population statistics (Rural = 5.797, Urban = 5.762 persons/household).

(2) Survey Method

1) Examination of a Statistically Significant Number of Samples

The number of samples required satisfying a certain level of error and reliability is given by the following formula.

Number of samples $= \chi_{sq} NP(1-P) / \{C^2 (N-1) + \chi_{sq} P(1-P)\}$

Where, C: confidence interval (range of error of statistical samples)

N: number of the parent population

P: population rate (if the population rate is unknown, 0.5 is used for better reliability)

χ_{sq} : percent point of square distribution of χ (if the upper probability is 5%, the value of χ_{sq} is 3.841)

① Number of Samples in Areas with Existing Distribution Facilities

As the willingness to pay survey of this consumer survey for areas with existing distribution facilities, approximately 200 consumers were selected by random sampling method.

The following table shows the required number of samples in the case of a 5% confidence interval and 95% probability and in the case of a 10% confidence interval and 90% probability. For the former, the required number of samples is 1,159 which is substantially above the number of samples (200) planned. For the latter, the required number of samples is 253 which conform to the requirement set by the Terms of Reference. For this reason, the latter is used for the survey.

Numbers of Samples
（Electrified area）

Customer category	Numbers of Customers		Numbers of Samples of which Confidence is 5%, and Probability 95%		Numbers of Samples of which Confidence is 10%, and Probability 90%	
		Ratio		Ratio		Ratio
Residential	37,992	84.59%	381	32.9%	68	26.9
Commercial	5,676	12.64%	360	31.1%	67	26.5
Institutional	780	1.74%	258	22.3%	63	24.9
Industrial	272	0.61%	160	13.8%	55	21.7
Total	**44,720**		**1,159**		**253**	

② Number of Samples in Areas of Suspended Power Supply and Non-electrified Areas

In the same way as for areas with existing distribution facilities, the following table shows the required number of samples for these areas in the case of a 5% confidence interval and 95% probability and in the case of a 10% confidence interval and 90% probability. For the former, the required number of samples is 381 which is nearly double the number of samples indicated by the planned numbers (200). For the latter, the required number of samples is 68 which is approximately one-third of the number indicated by the planned numbers (200). As reliability exceeding the 10% confidence interval and 90% probability can be obtained with a total of 200 samples, the total number of samples will be set at 200 which will be proportionally distributed based on the number of households in each community.

Number of Samples
(Areas of Suspended Power Supply and Non-electrified Areas)

Area	No. of Households in 2008 (estimate)	Ratio	No. of Samples (Confidence Interval is 5%, and Probability is 95%)	Ratio	No. of Samples (Confidence Interval is 10%, and Probability is 90%)	Ratio	Proportional Distribution of the 200 Samples in Total	Ratio
Koya	5,266	13.2 %	50	13.2%	9	13.2%	26	13.2%
Mountain	2,273	5.7%	22	5.7%	5	5.7%	12	5.7%
Waterloo	17,813	44.6 %	170	44.6%	31	44.6%	89	44.6%
York Rural	14,549	36.5 %	139	36.5%	25	36.5%	73	36.5%
Total	**39,901**		**381**		**68**		**200**	

(3) Parent Population and Number of Samples for the Actual Survey Area

The existing distribution grid primarily covers eight areas of Western Area Urban. In Western Area Rural, the distribution line reaches Charlotte Village in Mountain Rural, Sussex Village in York Rural Chiefdom and Benguema Village in Waterloo. At present, however, power supply only reaches Lakka Village in York Rural and the Wellington Substation in the eastern part of Freetown in the direction of Waterloo. Meanwhile, Koya Chiefdom is not connected to the NPA's distribution grid. In considering above situations, the parent population and numbers of sample for the actual survey area were set.

1) Areas with Existing Distribution Facilities

Parent Population of this demand survey was set at four (4) customer categories, namely Domestic (T1), Commercial (T2), Institution (T3) and Industrial (T4), out of 16,384 customers of NPA which were rolled out of electric bills from November 2008. The actual survey consumers were selected by random sampling method from the parent population above and then downsized to actual sampling size. The calculated survey sample size by category is as follows:

	Domestic (T1)	Commercial (T2)	Institution (T3)	Industrial (T4)
Random Sample Size	92	90	81	65
Actual Sample Size after downsizing	70	70	65	55

Nos. of total samples ; 260

2) Areas of Suspended Power Supply and Non-electrified Areas

Concerning the Freetown Rural Areas such as Koya, Mountain Rural, Waterloo and York Rural, there are no significant customers identified as Industry, Commercial and Institutional customers. Therefore, all the samples identified as domestic consumers randomly in the survey and the total sample number is 200. Also, it is worth mentioning that in instances where the names were either duplicated or consumers have moved away from the premises, as well as change of meter ownership,

etc. enumerators and/or supervisors were good enough to secure on-the-spot data from alternate NPA and non-NPA consumers as well as supplement the shortfall.

(4) Summary of Survey results

1) The summary of the socio-economic survey (the power demand survey and the willingness to pay survey) by each category is attached to Annex 4-1

2) The summary of the socio economic survey report prepared by the local consultant is attached to Annex 4-2

Annex 4-1 The Summary of the Socio Economic Survey

Result of Socio Economic Survey (1); T1-Domestic Consumers

Area	Number of samples	Supply hours from NPA (hours/ day)	Monthly Electric consumption from NPA (kWh)	Monthly payment for power supply (leones)	Willingness to pay for electricity tariff (Yes)	Payment Increase (leones)	Number of inhabitants	Energy consumpti-on of appliance (W))	Generator own (Yes)	Generator capacity (kW)	Fuel consumption (gallons/ month)	Fuel cost for generator (leones/ month)	Investment cost for generator (thousand leones)
11 East-1	8	42 (5.3)	507 (63)	335,000 (41,875)	8 (100%)	240,000 (30,000)	49 (6.1)	8,120 (1,015)	4 (50%)	5.66 (0.7)	18 (2.3)	225,000 (28,125)	3,500 (437.5)
12 East-2	9	65 (7.2)	1,036 (115)	880,944 (97,883)	9 (100%)	565,924 (62,880)	85 (9.4)	9,340 (1,037.8)	5 (55.6%)	6.56 (0.7)	53 (5.9)	662,500 (73,611)	4,592 (510.2)
13 East-3	8	63 (7.9)	322 (40)	481,618 (60,202)	9 (112.5%)	309230 (38,654)	116 (14.5)	16,140 (2,017.5)	9 (112.5%)	15.96 (2)	136 (17)	1,700,000 (212,500)	12,500 (1,562.5)
21 West-1	8	91 (11.4)	394 (50)	430,000 (53,750)	8 (100%)	85,000 (10,625)	44 (5.5)	13,735 (1,716.9)	4 (50%)	5.6 (0.7)	44 (5.5)	550,000 (68,750)	4992 (624)
22 West-2	8	85 (10.6)	4,894 (612)	1,740,000 (217,500)	8 (100%)	292,000 (36,500)	61 (7.6)	9,825 (1,228.1)	5 (62.5%)	12.84 (1.6)	67 (8.4)	837,500 (104,688)	12,991 (1,623.9)
23 West-3	9	73 (8.1)	1,783 (198)	1,629,722 (181,080)	8 (88.9%)	774,504 (86,056)	57 (6.3)	29,825 (3,313.9)	6 (66.7%)	13.1 (1.5)	121 (13.4)	1,506,250 (167,361)	12,534 (1,392.7)
31 Central-1	10	128 (12.8)	3,676 (368)	1,039,697 (104,000)	10 (100%)	392,050 (39,205)	79 (7.9)	11,491 (1,149.1)	4 (40%)	8.4 (0.8)	52 (5.2)	650,000 (65,000)	6,208 (620.8)
32 Central-2	10	62 (6.2)	1,112 (111)	1,014,200 (101,420)	7 (70%)	326,300 (32,639)	43 (4.3)	28,272 (2,827.2)	5 (50%)	8.16 (0.8)	111 (11.1)	1,387,500 (138,750)	7,938 (793.8)
Total	70	609	13,726	7,551,181	67 (95.7%)	2,985,008	534	126,748	42 (60%)	76.28	602	7,518,750	65,255
Average / sample		8.7	196	107,874		42,643	7.6	1,810.7		1.1	8.6	107,410	932.2
Maximum / sample		12.8	368	217,500		86,056	14.5	3,313.9		2	17	212,500	1,623.9
Minimum / sample		5.3	40	41,875		10,625	4.3	1,015		0.7	2.3	28,125	437.5

[Remarks-1] The numbers in brackets show the value of each sample.

[Remarks-2] Income level frequency distribution is shown as follows (Unit: thousand leones) [Remarks-3] ① Frequency Distribution ②Total Income ③Average Income

		East-I			East-II			East-III			West-I			West-II			West-III			Central-I			Central-II		
Monthly Income		①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③
Low	0 – 350	3	525	175	2	350	175	1	175	175	6	1,050	175	2	350	175	1	175	175	1	175	175	1	1,050	175
Medium	351 – 650	4	2,022	506	5	2,528	506	7	3,539	506	2	1,011	506	6	3,033	175	7	3,539	506	3	1,517	506	1	1,011	506
High	651 – 1,500	1	826	826	2	1,651	826	-	-	-	-	-	-	-	-	-	1	826	826	6	4,953	826	1	1,651	826
Total		8	3,373	422	9	4,529	503	8	3,714	464	8	2,061	258	8	3,383	423	9	4,540	504	10	6,645	665	1	3,712	371

[Source] JICA Study Team

Result of Socio Economic Survey (2); T2-Commercial Consumers

Area	Number of samples	Supply hours from NPA (hours/ day)	Monthly Electric consumption from NPA (kWh)	Monthly payment for power supply (leones)	Willingness to pay for electricity tariff (Yes)	Payment Increase (leones)	Number of inhabitants	Energy consumpti-on of appliance (W)	Generator own (Yes)	Generator capacity (kW)	Fuel consumption (gallons/ month)	Fuel cost for generator (leones/ month)	Investment cost for generator (thousand leones)
11 East-1	8	37 (4.6)	592 (74)	380,626 (47,578)	7 (87.5%)	514,222 (64,278)	30 (3.8)	4,645 (580.6)	1 (12.5%)	2.72 (0.34)	4 (0.5)	50,000 (6,250)	2,600 (325)
12 East-2	9	66 (7.3)	437 (49)	476,058 (52,895)	8 (88.9%)	378,502 (42,056)	59 (6.6)	6,309 (701)	6 (66.7%)	8.79 (0.98)	98 (10.9)	1,225,000 (136,111)	8,817 (979.7)
13 East-3	9	78 (8.7)	50 (6)	656,030 (72,892)	9 (100%)	496,000 (55,111)	71 (7.9)	12,175 (1,352.7)	9 (100%)	17.81 (1.98)	253 (28.1)	3,162,500 (351,389)	19,514 (2,168.2)
21 West-1	8	63 (7.9)	1,225 (153)	1,346,150 (168,269)	8 (100%)	695,000 (86,875)	49 (6.1)	19,123 (2,390.3)	5 (62.5%)	14.8 (1.85)	124 (15.5)	1,550,000 (193,750)	11,742 (1,467.8)
22 West-2	9	70 (7.8)	2,701 (300)	1,628,575 (180,953)	8 (88.9%)	6,190,000 (687,778)	29 (3.2)	12,389 (1,376.6)	6 (66.7%)	137.6 (15.29)	566 (62.9)	29,000,000 (3,222,222)	62,826 (6,980.7)
23 West-3	8	113 (14.1)	4,093 (512)	5,666,830 (708,354)	13 (162.5%)	2,932,133 (366,517)	92 (11.5)	65,916 (8,239.5)	11 (137.5%)	135.91 (16.99)	1007 (125.9)	12,587,500 (1,573,438)	131,683 (16,460.4)
31 Central-1	10	83 (8.3)	779 (78)	1,713,000 (171,300)	8 (80%)	737,000 (73,700)	29 (2.9)	19,885 (1,988.5)	7 (70%)	20.2 (2.02)	146 (14.6)	1,825,000 (182,500)	21,902 (2,190.2)
32 Central-2	9	83 (9.2)	1,275 (142)	1,958,000 (217,556)	8 (88.9%)	1,215,000 (135,000)	82 (9.1)	53,068 (5,896.4)	8 (88.9%)	30.84 (3.43)	371 (41.2)	4,637,500 (515,278)	29,107 (3,234.1)
Total	70	593	11152	13,825,269	69 (98.6%)	13,157,857	441	193,510	53 (75.7%)	368.67	2569	7,518,750	288,191
Average / sample		8.5	159	197,504		187,969	6.3	2,764.4		5.267	36.7	107,410	4,117
Maximum / sample		14.1	512	708,354		687,778	11.5	8,239.5		16.99	125.9	212,500	16,460.4
Minimum / sample		4.6	6	47,578		42,056	2.9	580.6		0.34	0.5	28,125	325

[Remarks-1] The numbers in brackets show the value of each sample.

[Remarks-2] Income level frequency distribution is shown as follows. (Unit: thousand Leones), [Remarks-3] ① Frequency Distribution ②Total Income ③Average Income

		East-I			East-II			East-III			West-I			West-II			West-III			Central-I			Central-II		
Monthly Income		①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③
Low	0 – 350	5	875	175	4	700	175	-	-	-	2	350	175	4	700	175	-	-	-	3	525	175	-	-	-
Medium	351 – 650	2	1,011	506	4	700	175	2	1,011	506	2	1,011	506	3	1,517	506	-	-	-	-	-	-	2	1,011	506
High	651 – 1,500	1	826	826	1	826	826	7	5,779	826	4	3,302	826	2	1,651	826	8	6,604	826	7	5,779	826	7	5,779	826
Total		8	2,712	339	9	2,226	247	9	6,790	754	8	4,663	583	9	3,868	430	8	6,604	826	10	6,304	630	9	6,790	754

[Source] JICA Study Team

Result of Socio Economic Survey (3); T3-Institutional Consumers

Area	Number of samples	Number of lighting points	Number of power points	Energy consumption of appliance (kW)	Consumption of substitute energy (gallons/ month)	Investment cost for generator (thousand leones)	Fuel cost for generator (leones/ month)	Generator capacity (kW)	Payment of substitute energy (fuel, manitenance & lubricants) (leones)
11 East-1	8	332 (42)	97 (12)	20 (2)	244 (31)	32,780 (4,098)	3,050,000 (381,250)	25.60 (3.20)	8,018,000 (1,002,250)
12 East-2	6	162 (27)	60 (10)	5 (1)	300 (50)	174,500 (29,083)	3,750,000 (625,000)	44.56 (7.43)	4,126,200 (687,700)
13 East-3	9	560 (62)	444 (49)	126 (14)	1,353 (150)	1,116,727 (124,081)	16,912,500 (1,879,167)	364.40 (40.49)	19,009,500 (2,112,167)
21 West-1	10	262 (26)	118 (12)	22 (2)	284 (28)	54,200 (5,420)	3,550,000 (355,000)	24.50 (2.45)	4,720,000 (472,000)
22 West-2	8	380 (48)	483 (60)	120 (15)	2,450 (306)	641,300 (80,163)	30,625,000 (3,828,125)	296.00 (37.00)	31,489,000 (3,936,125)
23 West-3	6	194 (32)	128 (21)	66 (11)	1,372 (229)	697,150 (116,192)	17,150,000 (2,858,333)	161.90 (26.98)	18,860,000 (3,143,333)
31 Central-1	10	263 (26)	205 (21)	130 (13)	1,488 (149)	103,416 (10,342)	18,600,000 (1,860,000)	98.62 (9.86)	19,527,000 (1,952,700)
32 Central-2	8	985 (123)	499 (62)	259 (32)	1,688 (211)	709,000 (88,625)	21,100,000 (2,637,500)	237.60 (29.70)	24,529,000 (3,066,125)
Total	65	3,138	2,034	749	9,179	3,529,073	114,737,500	1253.18	130,278,700
Average / sample		48	31	12	141	54,293	1,765,192	19.28	2,004,288
Maximum / sample		123	62	32	306	124,081	3,828,125	40.49	3,936,125
Minimum / sample		26	10	1	28	4,098	355,000	2.45	472,000

[Remarks] The numbers in brackets show the value of each sample. [Source] JICA Study Team

Result of Socio Economic Survey (4); T4-Industrial Consumers

Area	Number of samples	Number of lighting points	Number of power points	Energy consumption of appliance (kW)	Operating hours of generator (hours)	Consumption of substitute energy (gallons/ month)	Investment cost for generator (thousand leones)	Fuel cost for generator (leones/ month)	Generator capacity (kW)	Payment of substitute energy (fuel, manitenance & lubricants) (leones)
11 East-1	9	479 (53)	245 (27)	1,402 (156)	7 (0.8)	5,081 (565)	1,639,551,468 (182,172,385)	63,512,500 (7,056,944)	1,464.24 (162.69)	72,310,501 (8,034,500)
12 East-2	9	603 (67)	239 (27)	1,682 (187)	8 (0.9)	10,161 (1,129)	3,945,423,527 (438,380,392)	127,012,500 (14,112,500)	2,503.20 (278.13)	137,709,167 (15,301,019)
13 East-3	5	659 (132)	615 (123)	156 (31)	5 (1.0)	4,188 (838)	1,314,684,280 (262,936,856)	52,350,000 (10,470,000)	1,152.24 (230.45)	61,710,000 (12,342,000)
21 West-1	4	116 (29)	152 (38)	0 (0)	1 (0.3)	1,621 (405)	874,875,008 (218,718,752)	20,262,500 (5,065,625)	160.00 (40.00)	25,062,500 (6,265,625)
22 West-2	1	200 (200)	250 (250)	0 (0)	1 (1.0)	520 (520)	90,562,500 (90,562,500)	6,500,000 (6,500,000)	96.00 (96.00)	7,346,000 (7,346,000)
23 West-3	8	516 (65)	317 (40)	105 (13)	8 (1.0)	5,630 (704)	329,302,800 (41,162,850)	70,375,000 (8,796,875)	1,134.40 (141.80)	74,671,000 (9,333,875)
31 Central-1	11	435 (40)	370 (34)	3 (0.3)	3 (0.3)	3,616 (329)	208,224,000 (18,929,455)	45,200,000 (4,109,091)	748.00 (68.00)	50,225,000 (4,565,909)
32 Central-2	8	2,227 (278)	1,670 (209)	698 (87)	17 (2.1)	12,854 (1,607)	4,639,661,444 (579,957,681)	160,675,000 (20,084,375)	2,755.00 (344.38)	224,263,000 (28,032,875)
Total	55	5,235	3,858	4,047	50	43,671	13,042,285,027	545,887,500	10,013.08	653,297,168
Average / sample		95	70	74	1	794	237,132,455	9,925,227	182.06	11,878,130
Maximum / sample		278	250	187	2.1	1,607	579,957,681	20,084,375	344.38	28,032,875
Minimum / sample		29	27	0	0.3	329	18,929,455	4,109,091	40.00	4,565,909

[Remarks] The numbers in brackets show the value of each sample. [Source] JICA Study Team

Result of Socio Economic Survey (5); Domestic Consumers of Non Electrified Area (Western Rural-T1)

Area	Number of samples	Number of lighting points	Number of power points	Number of safety lights	Energy consumption of appliance (kW)	Willingness to pay for electricity tariff (Yes)	Proposed payment amount (leones)	Number of inhabitants	Proposed power consumption (kW)	Generator own (Yes)	Generator capacity (kW)	Fuel consumption (gallons/ month)	Fuel cost for generator (leones/ month)	Investment cost for generator (thousand leones)
Mountain Rural	26	195 (7.5)	127 (4.9)	48 (1.8)	7,405 (285)	25 (96.2%)	1,083,000 (41,454)	293 (11.3)	66,750 (2,567)	18 (69.2%)	33 (1.3)	279 (10.7)	3,493,750 (134,375)	26,253 (1,010)
Koya	20	4 (0.2)	2 (0.1)	1 (0.1)	1,567 (78)	19 (95.0%)	2,290,000 (114,500)	276 (13.8)	109,125 (5,456)	6 (30.0%)	9 (0.5)	78 (3.9)	975,000 (48,750)	7,504 (375)
Waterloo	80	475 (5.9)	381 (4.8)	129 (1.6)	39,235 (490)	79 (98.8%)	6,038,000 (75,475)	715 (8.9)	200,865 (2,511)	50 (62.5%)	6,217 (77.7)	1,152 (14.4)	17,658,750 (220,734)	107,273 (1,341)
York Rural	74	364 (4.9)	208 (2.8)	48 (0.6)	31,530 (426)	73 (98.6%)	4,035,800 (54,538)	616 (8.3)	151,740 (2,051)	59 (79.7%)	59 (0.8)	633 (8.6)	8,100,000 (109,459)	45,899 (620)
Total	200	1,038	718	226	79,737	196 (98.0%)	13,446,800	1,900	528,480	133 (66.5%)	6,318	2,142	30,227,500	186,929
Average / sample		5	4	1	399		67,234	10	2,642		32	11	151,138	935
Maximum / sample		7.5	4.9	1.8	490		114,500	13.8	5,456		77.7	14.4	220,734	1,341
Minimum / sample		0.2	0.1	0.1	78		41,653	8.3	2,051		0.5	3.9	48,750	375

[Remarks] The numbers in brackets show the value of each sample. [Source] JICA Study Team

Annex 4-2 The Summary of the Socio Economic Survey Report Prepared by the Local Consultant

SUMMARY OF THE SURVEY FOR ELECTRICITY DEMAND AND WILLINGNESS - TO - PAY ON THE MASTER PLAN STUDY ON POWER SUPPLY IN WESTERN AREA IN THE REPUBLIC OF SIERRA LEONE

CONDUCTED BY
PENINSULAR GROUP OF COMPANIES (S.L.) LTD

Annex 4-2

CONTENTS

1. Survey Method

Method of Random Sampling

Sampling was conducted by means of special sampling procedures employed for the individual target "Parent Population" as explained below.

The customer list of the National Power Authority (NPA) was used as The Registrar of all customers for sampling, and simple random sampling was conducted for each of the four consumer categories using EXCEL Spreadsheet/Statistical Package with an empirical formula: **"= RANDO" (37,992-1) + 1.**

In cases of areas with Suspended Electrical Supply" and/or Non-electrified Areas, the Electoral Register used for the recently concluded Presidential and Parliamentary Elections held in August 2007 was used as The Register for Households for sampling purposes.

Size of Mother Population for each Category of Sample

Mother Samples were taken from National Power Authority (NPA) database consisting of **16,384** consumers, which was then downsized to "**Actual Random Samples**" which were be utilized in the Electricity Demand and Willingness-to-Pay Survey. Consequently, we were able to identify Domestic Consumers (T1), Commercial Consumers (T2), Institution Consumers (T3), and Industrial Consumers (T4) as indicated below : -

	T1	**T2**	**T3**	**T4**
Random sample size:	92	90	81	65
Actual sample size: (after downsizing)	70	70	65	55
Rural areas:	200			

Concerning the Freetown Rural Areas (T1) identified randomly in the Survey, we tried as much as possible to obtain a fair geographic spread for the collection of data for both **NPA and Non-NPA Consumers**.

It is worth mentioning that in instances where the names were either duplicated or consumers have moved away from the premises, as well as **Change of Meter Ownership**, etc. our enumerators and/or supervisors were good enough to secure on-the-spot data from alternate NPA and Non-NPA consumers as well as supplement the shortfall.

Summary Table of Samples (T1, T2, T3, T4 and Rural Areas)

DISTRICT	WARD	T1	T2	T3	T4	Total
Western	Central 1	10	10	10	11	41
Urban	Central 2	10	9	8	8	35
	East 1	8	8	8	9	33
	East 2	9	9	6	9	33
	East 3	8	9	9	5	31
	West 1	8	8	10	4	30
	West 2	8	9	8	1	26
	West 3	9	8	6	8	31
	Sub-Total	**70**	**70**	**65**	**55**	**260**
Western	Koya	20				20
Rural	Mountain	26				26
	Waterloo	80				80
	York Rural	74				74
	Sub-Total	**200**				**200**
TOTAL						**460**

2. Form of the Questionnaire

PENINSULAR GROUP OF COMPANIES

DATE: / / FORM # WU/D-C1
DAY MONTH YEAR

ELECTRICITY DEMAND AND WILLINGNESS-to- PAY SURVEY IN THE WESTERN AREA

T1 – DOMESTIC / T2 – COMMERCIAL CONSUMERS

A .CATEGORY OF PREMISES: **T1 - DOMESTIC** ☐ **T2 - COMMERCIAL** ☐

B. NAME OF CONSUMER: _____
LAST NAME MIDDLE NAME FIRST NAME

C. ADDRESS OF CONSUMER:_____

D. ACCOUNT NUMBER:_____

E. TYPE OF STRUCTURE: CONCRETE ☐ BRICKS ☐ WOODEN ☐ SHEET METAL / PAN BODY ☐

F. TYPE OF SUPPLY: PREPAID ☐ SINGLE PHASE ☐ THREE PHASE ☐

G. AVERAGE No. OF HOURS OF ELECTRICITY SUPPLY FROM NPA:_____

1. NO. OF LIGHTNING POINTS:_____ 2. NO. OF POWER POINTS: _____
3. NO. OF SECURITY LIGHTS: _____
4. ELECTRICAL APPLIANCES IN USE (see SEPARATE SHEET or ATTACHMENT)

H. AVERAGE MONTHLY CONSUMPTION: _____ Kwh (Unit)

I. AVERAGE MONTHLY PAYMENT(s) _____ Leones

J. WHAT SOURCE OF ENERGY IS USED FOR COOKING ?

1. KEROSENE ☐ 2. COOKING GAS ☐ 3. ELECTRICITY ☐ 4. WOOD ☐ 5. CHARCOAL ☐
QTY / WEEK: _____ _____ _____ _____ _____

K. WHAT SOURCE OF ENERGY IS USED FOR LIGHTING ? WHATS THE AVERAGE WEEKLY CONSUMPTION?

1. NPA ☐ 2. GEN SET – PET / DIE ☐ 3. KEROSENE ☐ 4. SOLAR ☐
QTY / WEEK: _____ _____ _____ _____
L. AFFORDABLE ELECTRICITY PRICE PER KWhr _____ Leone *****

M. ARE YOU PREPARED TO PAY MORE FOR 24 HOURS ELECTRIC SUPPLY: YES ☐ NO ☐

N. HOW MUCH MORE PER MONTH: LE _____

O. WHAT IS THE SIZE OF HOUSE HOLD? _____

P. WHAT IS THE INCOME LEVEL: LE _____

Q. ANY OTHER COMMENTS:

_____

_____

PENINSULAR GROUP OF COMPANIES

Form # WD-C1

APPENDIX TO QUESTIONAIRE FORMS

1. IN CASE OF A NON-ELECTRIFIED AREA, PLEASE ASK THE CONSUMER TO PLEASE SPECIFY

   I. WHAT KIND ELECTRICAL APPLIANCES THEY MAY WANT TO USE , AND

   II. HOW MANY OF THE SAID ELECTRICAL APPLIANCES

   LIST AS BELOW:

   TYPE OF ELECTRICAL APPLIANCES QUANTITY

   _____ _____

   _____ _____

   _____ _____

   _____ _____

   _____ _____

   _____ _____

   IF AND WHEN THERE WILL BE CONSTANT AND REGULAR NPA SUPPLY.

2. WHAT'S CONSUMERS OCCUPATION OR MAOR SOURCE OF INCOME:

   I. AVERAGE MONTHLY / ANNUAL INCOME:

   LE_____/ MONTH OR LE _____ / YEAR.

3. THE NUMBER OF HOUSEHOLD MEMBERS:

   MALE: _____ FEMALE: _____ TOTAL: _____

4. HOW MANY FAMILY UNITS ARE LIVING WITHIN THE HOME / HOUSE?

PENINSULAR GROUP OF COMPANIES

DATE: / /
FORM #WU/I-C
DAY MONTH YEAR

ELECTRICITY DEMAND AND WILLINGNESS –to-PAY SURVEY IN THE WESTERN AREA

T3 – INSTITUTIONAL AND T-4 INDUSTRIAL CONSUMERS

1. CATEGORY OF PREMISES: T3 – INSTITUTIONAL ☐ T4 – INDUSTRIAL ☐
2. NAME OF CONSUMER / BUSINESS:_____
3. ADDRESS OF CONSUMER / BUSINESS:
   _____
   _____
4. NPA ACCOUNT NUMBER:_____
5. TYPE OF SUPPLY: 220V ☐ 3 X 415V ☐ 11KV ☐
6. SIZE OF TRANSFORMER(s): _____
7. METER SIZE: _____
8. NO. OF LIGHTING POINTS:_____
10. NO. OF POWER POINTS:_____
11. LIST OF PLANTS AND MACHINERIES (SEPARATE LIST ATTACHED)
12. LIST OF AUTO GENERATORS (SEPARATE LIST ATTACHED)
13. LIST OF ELECTRICAL APPLIANCES: (SEPARATE LIST ATTACHED)

(A) SIZE OF AIR-CONDITIONER(s): 1.
_____

2.
_____

3.
_____

4.
_____

5.
_____

6.
_____

(B) SIZE OF TEA KETTLE (s): 1.
_____

2.
_____

(C) SIZE OF COMPUTER (s) (WITH CPU AND PRINTERS):

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

(D) SATELLITE / TV :

1. _____
2. _____
3. _____

(E) SIZE OF CACULATING MACHINE:

1. _____
2. _____
3. _____

14. OTHERS:

_____

_____

PENINSULAR GROUP OF COMPANIES

LIST OF ELECTRICAL APPLIANCES (ATTACHEMENT)

1. RADIO (SIZE/TYPE): _____
2. TELEVISION: SMALL ☐ MEDIUM ☐ LARGE ☐ EXTRA LARGE ☐
3. ELECTRICCOOKER: _____ KW
4. ELECTRIC IRON:_____W
5. DVD / VCRPLAYER:_____W
6. DESK TOP COMPUTER With CPU & PRINTER:_____
7. REFRIGERATOR (S): SMALL ☐ MEDIUM ☐ LARGE ☐ EXTRA LARGE ☐
   QUANTITY: _____ _____ _____ _____
8. FREEZER (S): SMALL ☐ MEDIUM ☐ LARGE ☐ EXTRA LARGE ☐
   QUANTITY: _____ _____ _____ _____
9. AIR CONDITIONER (S): WALL UNITS ☐ SPLIT UNITS ☐ PORTABLE UNITS ☐
   QUANTITY: _____ _____ _____
10. FAN (S): STANDING ☐ WALL ☐ CEILING ☐ TABLE TOP ☐

    QUANTITY: _____ _____ _____ _____
11. TEA KETTLE/WATER HEATER :_____
12. SHOWER WATER HEATER:_____
13. ELECTRIC TOASTER:_____
14. MICROWAVE:_____

15. AUDIO SYSTEMS: _____

PRIVATE GENERATOR SET: YES / NO

a. TYPE OF ENGINE: PETROL ☐ DIESEL ☐
b. CAPACITY OF FUEL TANK:_____GALLONS / LITRES
c. CONSUMPTION PER DAY / WEEK / MONTH:_____
d. SIZE OF GENERATOR:_____
e .COST OF REPAIRS / MONTH:_____
f. COST OF FUEL / MONTH:_____

PENINSULAR GROUP OF COMPANIES
LIST OF AUTO GENERATORS

1. **TYPE OF ENGINE (S):**

   (a) _____
   (b) _____

   (c) _____

   (d) _____

2. **FUEL CONSUMPTION (AS PER ABOVE):**

   (a) _____

   (b) _____

   (c) _____

   (d) _____

3. **POWER OUTPUT (AS PER ABOVE):**

   (a) _____

   (b) _____

   (c) _____

   (d) _____

4. **MAINTENANCE COST (AVERAGE PER MONTH):**

   (a) _____
   (b) _____

   (c) _____

   (d) _____

5. **FUEL COST (PER UNIT):** (a) Petrol_____ (b) Diesel_____

6. **TYPES OF LUBRICANT (S):**

   (a) _____
   (b) _____

   (c) _____

7. **COST OF LUBRICANT (S)**

   (a) _____
   (b) _____

   (c) _____

PENINSULAR GROUP OF COMPANIES
LIST OF PLANTS AND MACHINERIES

1. COMPRESSORS:
(a) _____
(b) _____
(c) _____
(d) _____
(e) _____
(f) _____
(g) _____
(i) _____

2. PUMPS:
(a) _____
(b) _____
(c) _____
(d) _____
(e) _____

3. MOTORS:
(a) _____
(b) _____
© _____
(d) _____
(e) _____
(f) _____
(g) _____
(h) _____

4. FANS:
(a) _____
(b) _____
(c) _____

5. OTHER RELATED INFORMATION:

_____

_____

3. Result of the Survey

SUMMARY TOTAL OF SORTED T1 DOMESTIC CONSUMERS

Area	Locality	Supply Hours / Day	Monthly Consuption / kWh	Monthly Payment (Leones)	Willingness	Payment Increase (Leones)	Payment Percentage Increase (%)	Household Size / Persons	Energy Consumed (Watts)	Generator Own
11	EAST 1	42	507	335,000	8	240,000	107.14	49	8,120	4
12	EAST II	65	1,036	880,944	9	565,924	106.62	85	9,340	5
13	EAST III	63	322	481,618	9	309,230	95.80	116	16,140	9
21	WEST I	91	394	430,000	8	85,000	23.36	44	13,735	4
22	WEST II	85	4,894	1,740,000	9	292,000	44.44	61	9,825	5
23	WEST III	73	1,783	1,629,722	8	774,504	111.04	57	29,825	6
31	CENTRAL 1	128	3,678	1,039,697	10	392,050	78.40	79	11,491	4
32	CENTAL II	62	1,112	1,014,200	7	326,300	41.41	43	28,272	5
	TOTALS:	**609**	**13,726**	**7,551,181**	**68**	**2,985,008**	**76.03**	**534**	**126,748**	**42**
	AVG	76	1,716	943,898	9	373,126	76.03	67	15,844	
	MAX	128	4,894	1,740,000	10	774,504	111.04	116	29,825	
	MIN	42	322	335,000	7	85,000	23.36	43	8,120	
	MED	69	1,074	947,572	9	317,765	87.10	59	12,613	

T1 DOMESTIC CONSUMER FINAL SUMMARY

Area	Locality	Supply Hours / Day	Monthly Consuption / kWh	Monthly Payment (Leones)	Energy Consumed (Watts)	MCSE (Fuel / Gallon)	MPSE (Fuel + MaintenanceCost)	Generator Capacity (kW)	Unit Price Substitute Energy
11	EAST 1	42	507	335,000	8,120	18	325,000	5.66	12500 + Maintena
12	EAST II	65	1,036	880,944	9,340	53	752,500	6.56	12500 + Maintena
13	EAST III	63	322	481,618	16,140	136	1,810,000	15.96	12500 + Maintena
21	WEST I	91	394	430,000	13,735	44	645,000	5.60	12500 + Maintena
22	WEST II	85	4,894	1,740,000	9,825	67	947,500	12.84	12500 + Maintena
23	WEST III	73	1,783	1,629,722	29,825	121	1,786,250	13.10	12500 + Maintena
31	CENTRAL 1	128	3,678	1,039,697	11,491	52	725,000	8.40	12500 + Maintena
32	CENTAL II	62	1,112	1,014,200	28,272	111	1,657,500	8.16	12500 + Maintena
	TOTALS:	**609**	**13,726**	**7,551,181**	**126,748**	**602**	**8,648,750**	**76.28**	
	AVG	76	1,716	943,898	15,844	75	1,081,094	9.54	
	MAX	128	4,894	1,740,000	29,825	136	1,810,000	15.96	
	MIN	42	322	335,000	8,120	18	325,000	5.60	
	MED	69	1,074	947,572	12,613	60	850,000	8.28	

SUMMARY TOTAL OF SORTED T2 COMMERCIAL CONSUMERS

Area	Locality	Supply Hours / Day	Monthly Consuption (kWh)	Monthly Payment (Leones)	Willingness	Payment Increase (Leones)	Payment Percentage Increase (%)	Household / Staff Size (Persons)	Energy Consumed (Watts)	Generator Own
11	EAST I	37	592	380,626	7	514,222	198.50	30	4,645	1
12	EAST II	66	437	476,058	8	378,502	100.88	59	6,309	6
13	EAST III	78	50	656,030	9	496,000	48.30	71	12,175	9
21	WEST I	63	1,225	1,346,150	8	695,000	56.61	49	19,123	5
22	WEST II	70	2,701	1,628,575	8	6,190,000	85.42	29	12,389	6
23	WEST III	113	4,093	5,666,830	13	2,932,133	32.38	92	65,916	11
31	CENTRAL I	83	779	1,713,000	8	737,000	60.78	29	19,885	7
32	CENTRAL 2	83	1,275	1,958,000	8	1,215,000	46.30	82	53,068	8
	TOTALS:	**593**	**11,152**	**13,825,269**	**69**	**13,157,857**	**78.65**	**441**	**193,510**	**53**
	AVG	74	1,394	1,728,159	9	1,644,732	78.65	55	24,189	
	MAX	113	4,093	5,666,830	13	6,190,000	198.50	92	65,916	
	MIN	37	50	380,626	7	378,502	32.38	29	4,645	
	MED	74	1,002	1,487,363	8	716,000	58.69	54	15,756	

T2 COMMERCIAL CONSUMERS FINAL SUMMARY

Area	Locality	Supply Hours / Day	Monthly Consuption (kWh)	Monthly Payment (Leones)	Energy Consumed (Watts)	Monthly Consumption - MCSE (Fuel / Gallon)	MPSE (Fuel + MaintenanceCost)	Generator Capacity (kW)	Unit Price Substitute Energy
11	EAST 1	37	592	380,626	4,645	4	75,000	2.72	12500 + Maintena
12	EAST II	66	437	476,058	6,309	98	1,312,000	8.79	12500 + Maintena
13	EAST III	78	50	656,030	12,175	253	3,357,500	17.81	12500 + Maintena
21	WEST I	63	1,225	1,346,150	19,123	124	1,845,000	14.80	12500 + Maintena
22	WEST II	70	2,701	1,628,575	12,389	566	39,160,000	137.60	12500 + Maintena
23	WEST III	113	4,093	5,666,830	65,916	1,007	15,297,500	135.91	12500 + Maintena
31	CENTRAL 1	83	779	1,713,000	19,885	146	2,290,000	20.20	12500 + Maintena
32	CENTAL II	83	1,275	1,958,000	53,068	371	5,717,500	30.84	12500 + Maintena
	TOTALS:	**593**	**11,152**	**13,825,269**	**193,510**	**2,569**	**69,054,500**	**368.67**	
	AVG	74	1,394	1,728,159	24,189	321	8,631,813	46.08	
	MAX	113	4,093	5,666,830	65,916	1,007	39,160,000	137.60	
	MIN	37	50	380,626	4,645	4	75,000	2.72	
	MED	74	1,002	1,487,363	15,756	200	2,823,750	19.01	

SUMMERY TOTAL OF SORTED T3 INSTITUTIONAL CONSUMERS

Area	Locality	Total Lighting Points	Total Power Points	Machineries (Watts)	Appliances (Watts)	Total Wattage - Machineries & Appliances (Watts)	Monthly Consumption - MCSE (Fuel / Gallon)	Investment Cost (Leones)	Maintenance Cost / Month (Leones)	Fuel Cost / Month (Leones)
11	EAST 1	332	97	0	19,630	19,630	244	32,780,000	2,760,000	3,050,000
12	EAST II	162	60	0	4,580	4,580	300	174,500,000	209,000	3,750,000
13	EAST III	560	444	3,125	123,280	126,405	1,353	1,116,726,500	1,165,000	16,912,500
21	WEST I	262	118	0	21,687	21,687	284	54,200,000	650,000	3,550,000
22	WEST II	380	483	31,565	88,860	120,425	2,450	641,300,000	480,000	30,625,000
23	WEST III	194	128	0	66,374	66,374	1,372	697,150,000	950,000	17,150,000
31	CENTRAL 1	263	205	49,448	80,590	130,038	1,488	103,416,000	515,000	18,600,000
32	CENTAL II	985	499	61,950	197,407	259,357	1,688	709,000,000	1,905,000	21,100,000
	TOTALS:	**3,138**	**2,034**	**146,088**	**602,408**	**748,496**	**9,179**	**3,529,072,500**	**8,634,000**	**114,737,500**
	AVG	392	254	18,261	75,301	93,562	1,147	441,134,063	1,079,250	14,342,188
	MAX	985	499	61,950	197,407	259,357	2,450	1,116,726,500	2,760,000	30,625,000
	MIN	162	60	0	4,580	4,580	244	32,780,000	209,000	3,050,000
	MED	298	167	1,563	73,482	93,400	1,363	407,900,000	800,000	17,031,250

T3 INSTITUTIONAL CONSUMERS FINAL SUMMARY

Area	Locality	Energy Consumed (Watts)	Monthly Consumption - MCSE (Fuel / Gallon)	MPSE (Fuel, Maintenance & Lubricants)	Generator Capacity (kW)	Unit Price Substitute Energy
11	EAST 1	19,630	244	8,018,000	25.60	12,500
12	EAST II	4,580	300	4,126,200	44.56	12,500
13	EAST III	126,405	1,353	19,009,500	364.40	12,500
21	WEST I	21,687	284	4,720,000	24.50	12,500
22	WEST II	120,425	2,450	31,489,000	296.00	12,500
23	WEST III	66,374	1,372	18,860,000	161.90	12,500
31	CENTRAL 1	130,038	1,488	19,527,000	98.62	12,500
32	CENTAL II	259,357	1,688	24,529,000	237.60	12,500
	TOTALS:	**748,496**	**9,179**	**130,278,700**	**1,253.18**	
	AVG	93,562	1,147	16,284,838	156.65	
	MAX	259,357	2,450	31,489,000	364.40	
	MIN	4,580	244	4,126,200	24.50	
	MED	93,400	1,363	18,934,750	130.26	

SUMMERY TOTAL OF SORTED T4 INDUSTRIAL CONSUMERS

Area	Locality	Total Lighting Points	Total Power Points	Machinery Rating (kW)	Appliance Rating (kW)	Total Rating - Machinery & Appliances (kW)	Generator Availabilty	Monthly Consumption - MCSE (Fuel / Gallon)	Fuel Cost / Month (Leones)	Investment Cost (Leones)
11	EAST 1	479	245	1,402	217	1,619	7	5,081	63,512,500	1,639,551,468
12	EAST II	603	239	1,682	300	1,982	8	10,161	127,012,500	3,945,423,527
13	EAST III	659	615	156	501	657	5	4,188	52,350,000	1,314,684,280
21	WEST I	116	152	0	42	42	1	1,621	20,262,500	874,875,008
22	WEST II	200	250	0	43	43	1	520	6,500,000	90,562,500
23	WEST III	516	317	105	140	246	8	5,630	70,375,000	329,302,800
31	CENTRAL 1	435	370	3	207	210	3	3,616	45,200,000	208,224,000
32	CENTAL II	2,227	1,670	698	320,637	321,335	17	12,854	160,675,000	4,639,661,444
	TOTALS:	**5,235**	**3,858**	**4,047**	**322,088**	**326,134**	**50**	**43,671**	**545,887,500**	**13,042,285,027**
	AVG	654	482	506	40,261	40,767		5,459	68,235,938	1,630,285,628
	MAX	2,227	1,670	1,682	320,637	321,335		12,854	160,675,000	4,639,661,444
	MIN	116	152	0	42	42		520	6,500,000	90,562,500
	MED	498	284	131	212	451		4,635	57,931,250	1,094,779,644

T4 INDUSTRIAL CONSUMERS FINAL SUMMARY

Area	Locality	Total Rating - Machinery & Appliances (kW)	Monthly Consumption - MCSE (Fuel / Gallon)	MPSE (Fuel, Maintenance & Lubricants)	Generator Capacity (kW)	Unit Price Substitute Energy
11	EAST 1	1,619	5,081	72,310,501	1,464.24	12,500
12	EAST II	1,982	10,161	137,709,167	2,503.20	12,500
13	EAST III	657	4,188	61,710,000	1,152.24	12,500
21	WEST I	42	1,621	25,062,500	160.00	12,500
22	WEST II	43	520	7,346,000	96.00	12,500
23	WEST III	246	5,630	74,671,000	1,134.40	12,500
31	CENTRAL 1	210	3,616	50,225,000	748.00	12,500
32	CENTAL II	321,335	12,854	224,263,000	2,755.00	12,500
	TOTALS:	**326,134**	**43,671**	**653,297,168**	**10,013.08**	
	AVG	40,767	5,459	81,662,146	1,251.64	
	MAX	321,335	12,854	224,263,000	2,755.00	
	MIN	42	520	7,346,000	96.00	
	MED	451	4,635	67,010,251	1,143.32	

SUMMERY TOTAL OF SORTED T1 RURAL CONSUMERS

Locality	Total Lighting Points	Total Power Points	Total Security Lights	Connected Appliances (Watts)	Willingness to Pay	Proposed Payment Amount	Household Size / Persons	Proposed Power Load (Watts)	Generator Own	Monthly Consumption (Fuel / Gallon)
AREA 1 - MOUNTAIN RURAL	195	127	48	7,405	25	1,083,000	293	66,750	18	279
AREA 2 - KOYA WARD	4	2	1	1,567	19	2,290,000	276	109,125	6	78
AREA 3 - WATERLOO	475	381	129	39,235	79	6,038,000	715	200,865	50	1,152
AREA 4 - YORK RURAL	364	208	48	31,530	73	4,035,800	616	151,740	59	633
TOTALS:	**1,038**	**718**	**226**	**79,737**	**196**	**13,446,800**	**1,900**	**528,480**	**133**	**2,142**
AVG	260	180	57	19,934	49	3,361,700	475	132,120	33	535
MAX	475	381	129	39,235	79	6,038,000	715	200,865	59	1,152
MIN	4	2	1	1,567	19	1,083,000	276	66,750	6	78
MED	280	168	48	19,468	49	3,162,900	455	130,433	34	456

Maintenance Cost / Month (Leones)	Fuel Cost / Month (Leones)	Investment Cost (Leones)	Generator Capacity (kW)	Cooking Quantity (MJ)	MCSE - Cooking & Lighting	MPSE - Cooking Energy (Leones)
926,000	3,493,750	26,253,200	33	81,901	348,008	1,585,661
325,000	975,000	7,504,070	9	25,931	25,944	1,021,593
1,990,000	17,658,750	107,273,160	6,217	145,965	121,328	2,060,898
2,150,000	8,100,000	45,899,035	59	140,917	140,879	2,544,253
5,391,000	**30,227,500**	**186,929,465**	**6,318**	**394,715**	**636,159**	**7,212,405**
1,347,750	7,556,875	46,732,366	1,580	98,679	159,040	1,803,101
2,150,000	17,658,750	107,273,160	6,217	145,965	348,008	2,544,253
325,000	975,000	7,504,070	9	25,931	25,944	1,021,593
1,458,000	5,796,875	36,076,118	46	111,409	131,104	1,823,280

T1 RURAL CONSUMERS / USERS FINAL SUMMARY

Locality	Connected Appliances (KW)	Proposed Payment Amount	Proposed Power Load (KW)	Generator Capacity (kW)	MCSE - Cooking & Lighting Energy (MJ)	MPSE - Cooking Energy (Leones)
AREA 1 - MOUNTAIN RURAL	7.41	1,083,000	66.75	32.96	348008.02	1585660.84
AREA 2 - KOYA WARD	1.57	2,290,000	109.125	9.06	25943.89	1021592.92
AREA 3 - WATERLOO	39.24	6,038,000	200.865	6217.46	121328.014	2060898.19
AREA 4 - YORK RURAL	31.53	4,035,800	151.74	58.84	140879.452	2544252.62
Totals:	**79.74**	**13,446,800**	**528.48**	**6318.32**	**636159.376**	**7212404.57**
AVG	19.93	3,361,700	132.12	1579.58	159039.844	1803101.143
MAX	39.24	6,038,000	200.865	6217.46	348008.02	2544252.62
MIN	1.57	1,083,000	66.75	9.06	25943.89	1021592.92
MED	19.47	3,162,900	130.4325	45.9	131103.733	1823279.515

DESCRIPTION AND HEADER NOTES

AREA_(Wards in Western_Urban Areas):	11 – East 1, 12 – East 2, 13 – East 3, 21 – West 1, 22 - West 2, 23 – West 3, 31 – Central 1, 32 – Central 2
SUPPLY HOURS/AY:	Hours of availability of NPA Light
MONTHLY CONSUMPTION:	NPA **Energy** or Light Consumed Monthly in **KWh** as per NPA Billing
MONTHLY PAYMENT:	Payment to NPA for Energy or Light Consumed Monthly in Local Currency, **Leones**
WILLINGNESS:	Willingness of Consumer to pay Energy Provider for "**Service**s" in the future, 1 – yes, 2 – No
PAYMENT INCREASE:	Extra Amount consumer is ready or willing to pay for Service, Leones
PAYMENT PERCENTAGE INCREASE:	Payment increase expressed as a percentage (%)
HOUSEHOLD SIZE/PERSONS:	Number of persons or individuals per household
ENERGY CONSUMED:	Total **Power** Rating as per List of Electrical Appliances (**Watts**)
GENERATOR OWNERSHIP:	1- Yes, 2- No
GENERATOR TYPE:	1- Petrol, 2 – Diesel
MONTHLY CONSUMPTION:	Monthly consumption of Generator Fuel (in **Gallons**)
MAINTENANCE COST:	Monthly Cost of Generator Repairs in Local Currency, **Leones**
FUEL COST:	Monthly Cost Fuel consumed by Consumer Generator in Local Currency (**Leones**)
INVESTMENT COST:	Purchasing Cost of Consumer Generator in Local Currency, **Leones**
GENERATOR CAPACITY:	Rating of Auto Generator (**Kilo Watts**)
TOTAL LIGHTING POINTSLIGHT:	Number of Lights
TOTAL POWER POINTS POWER:	Number of Power Points
MACHINERIES:	Power Output of all Machinery and Plant (**Watts**)
APPLIANCES	Combined Power of Electrical Appliance as per list provided (**Watts**)
LUBRICANT COST/MONTH:	Monthly Cost of Lubricants in Local Currency**, Leones**
AVAILABILITY	Hours of Operation or Available Electricity
MCSE:	Monthly Consumption of Substitute Energy, **Gallons**
MPSE:	Monthly Payment of Substitute Energy, **Leones**
COOKING QUANTITY:	Quantity of Substitute Energy (**MegaJoules or MJ**)
MCSE_COOKING & LIGHTING ENERGY:	Monthly Consumption of Substitute Energy (**MegaJoules or MJ**)
MPSE_COOKING PAYMENT:	Monthly Payment of Substitute Energy (**Leones**)