

CHAPTER 4

POWER DEMAND FORECAST AND GENERATION AND TRANSMISSION SYSTEM DEVELOPMENT PLANS

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4.1 Basic Concept of Power Demand Forecast

The power system must supply electric power of good quality with high reliability, satisfying the demand, to all consumers in the country in an impartial manner. The power system consists of the three major components of power generating plants, transmission system and distribution system. Each of these three components must be expanded and reinforced so as to meet the demand in adequate and coordinated manners with technical and economic soundness.

Normally, different planning methods are applied individually to each component of the power system. The power demand forecast is the most important element in planning a power system, and items to be taken into account in demand forecasting vary according to planning objectives and purposes of use as given below:

Development Plan	Items of Power Demand
(a) Generation expansion	All power requirement, i.e. 1) Station service power of power station 2) Transmission loss (line and transformer) 3) Distribution loss (line and transformer) 4) Demand (sold energy or power)
(b) Transmission extension	Sending out power from substations, i.e. 1) Distribution loss (line and transformer) 2) Demand (sold energy or power)
(c) Distribution extension	Power consumption of consumers, i.e. 1) Demand (sold energy or power)

For transmission system extension planning, substation loads need to be determined to identify the demand at the substation level. Such substation loads shall be well coordinated with the nation-wide demand forecast as the basis of the upstream generation expansion plan.

4.2 Economic Scenarios for Power Demand Forecast

4.2.1 Historical Records of GDP

Historical records of GDP (at 1982 constant), generated energy, energy sales, their average annual growth rate and its elasticity against the GDP growth rate for the period of 1982 to 1994 are given below, and details are shown in Table 4.2.1-1.

	1982	1994	Inc. Rate	Elasticity
(a) GDP	94,679 Rs. M	159,327 Rs. M	4.08%	-
(b) Generation	2,065.7 GWh	4,386.8 GWh	6.48%	1.59
(c) Energy Sales	1,686.0 GWh	3,564.8 GWh	6.44%	1.58

There is good correlation between growth rates for GDP and power demands. As seen above, the energy sales has grown at a rate of nearly 1.6 times the GDP growth rate. A high elasticity is forecast to be maintained through the plan period to 2015 reflecting expected increase in industrial consumption.

4.2.2 Economic Scenario for Power Demand Forecast

CEB prepared a nation-wide long-term (20 years) power demand forecast for the purpose of power generation expansion planning, financial planning, fund programming (mainly for receiving financial assistance), etc., and reviewed it every year to meet changes in situation.

The econometric model has been used mainly to prepare this demand forecast. In this model, assumed figures of total GDP and per capita GDP are used and these constitute the basis for power system development planning. In the 1994 demand forecast, the actual 1993 GDP growth rate of 6.9% in the Central Bank Annual Report - 1993, and the 4 year (1994, 5, 6 and 7) growth rates in the Public Investment Plan, 1993 - 1997; 6.0% for 1994, 6.0% for 1995, 6.5% for 1996 and 7.0% for 1997 were referred to. For the period after 1998, a growth rate of 7.0% was assumed.

4.3 Power Demand Forecast of CEB

4.3.1 Nation-Wide Demand Forecast

The nation-wide power demand forecast of CEB is prepared every year by the Load Forecasting and Tariff Branch of the Planning Division.

For forecasting nation-wide energy sales, the Econometric Software Package consisting of the Time Trend Analysis Model and Econometric Method Model is used. Further for forecasting generation energy and maximum demand at the generation end the following assumptions were used:

System loss

From the 1994 actual value of 18.3%, the loss factor is assumed to be improved at a rate of 0.5 to 0.7% per annum and becomes 12.0% in 10 years by 2004. After 2005, the loss factor is assumed to remain the same at 12.0%.

Annual load factor

The peak demand of the present power system appeared at around 19:00 o'clock in the evening (old time, summer time is applied from summer 1996), and the annual load factor was 55.7% in 1995. With the growth in the industrial and commercial demand, the annual load factor is assumed to become higher at a rate of 0.2 to 0.8% per annum and becomes 58.0% in 10 years time by 2004. As same as the loss factor, the annual load factor is also assumed to remain constant at 58.0% thereafter.

In the 1994 demand forecast, the high and low scenario forecasts were defined as the forecast values for the case that the energy sales in 1993, the base year of demand forecast, was increased or decreased from the base value by 3.15%. Actually, the forecast was further adjusted taking the historically highest growth of 1993 (12.4%), actual result of energy sales in the first quarter of 1994 (10.4% growth over the previous year), expectation for rapid growth in the Northern and Eastern Provinces, etc., into consideration.

The 1994 demand forecast was finally reviewed by the board of directors. The forecast was finalized by obtaining energy sales, generation energy and maximum demand using the annual growth rate recommended by them. The finally recommended demand forecast is summarized below:

1994 Energy and Maximum Demand Forecast

	Generated Energy (GWh)			Maximum Demand (MW)		
	Base	High	Low	Base	High	Low
1994	4,376	4,455	4,296	890	910	877
1999	6,799	7,576	6,096	1,360	1,520	1,222
2004	10,506	12,881	8,584	2,071	2,526	1,691
2009	16,164	21,587	12,039	3,181	4,249	2,370
2014	24,870	26,375	16,886	4,895	7,159	3,323

The results of power demand forecasts based on various models mentioned in the Power and Energy Demand Forecast Studies, 1994 - 2014, are tabulated in Table 4.3.1-1.

According to Table 4.3.1-1, in the base case forecast the energy sales is estimated to grow at the rate of 10% per annum during the initial 10 years and 9% for the next 10 years (as shown in the above table this corresponds to about 9% growth in the generated energy during the plan period), and this forecast is used mainly for preparation of medium to long term financial planning and fund programming. This forecast was judged to be reasonable for using to transmission system planning of the Study taking into account the actual growth of 8.4% per annum for the recent 5 years after 1990. The generation expansion plan of CEB explained in Clause 4.5 was prepared based on this base case forecast demand.

4.3.2 CEB's Demand Forecast Revised for the Study

Regarding the nation-wide power demand forecast as the basis of the long-term transmission system development study, CEB proposed revisions of the 1994 demand forecast taking into account recent changes in situation and presented the following forecast values. The forecast demands of each year are shown in Table 4.3.2-1 and summarized below:

Energy and Maximum Demand Forecast (Base Case)

	<u>Required Energy (GWh)</u>			<u>Maximum Demand (MW)</u>		
	Base	High	Low	Base	High	Low
1994	4,364	4,364	4,364	910	910	910
1999	6,805	7,119	6,501	1,365	1,428	1,304
2004	10,194	11,162	9,300	2,010	2,201	1,834
2009	15,684	17,977	13,665	3,087	3,538	2,690
2014	24,132	28,952	20,079	4,757	5,698	4,268

In this Study, the area-wise and substation-wise demand forecasts were prepared and the transmission system planning was carried out, based on the base case forecast demand among the above-mentioned alternatives.

4.3.3 Power Demand Forecast at Grid Substations

For the purpose of formulating a transmission system development plan, CEB prepared a forecast of substation-wise demands, and the applied methods are explained below.

(1) Area-Wise Energy Sales Forecast

The arithmetic average of annual growth rates of demand in the period was calculated for each of the CEB's areas based on the annual records, Sales and Generation Data Book, and the energy sales for the period of 15 years up to 2009 was forecast using the obtained annual rates.

The forecasting calculations of energy sales were performed using a computer program and not with spread sheet. Therefore, calculation process becomes complicated in case that special considerations are required for each area, and the current method does not work efficiently for yearly review.

Important considerations which were taken into account in demand forecasting are explained below.

CEB's areas

Sri Lanka is administratively divided into 9 provinces, but CEB divided the Western Province into three regions of Colombo City, Western Province - North and Western Province - South due to large consumption in the area. A provincial office is established for each province, and these offices are carrying out operation of their distribution systems and power sales to consumers. The provinces are further divided into 40 areas (called CEB's Areas in this report) in total as of the end of 1995.

The CEB's Areas do not fully coincide with the administrative divisions of Districts or Divisions. In preparing extension plans for the transmission and distribution systems, there are difficulties in keeping coordination with official figures of population, number of households, production quantity, area development plans, etc., as such official figures are prepared based on administrative divisions.

Average annual growth rate of energy sales

The annual growth rates used for demand forecasting were determined based on the growth rate of each year in the actual sales records for the past 9 years and their averages taking into account specific

features of each area and area development plans. The CEB's Areas do not have fixed boundaries, and their boundaries have been modified taking into account actual growth in demand and times of boundary change are irregular. This makes calculation of area-wise growth rate very difficult.

Coordination with the nation-wide demand forecast

The sum of the separately calculated demand of all the areas naturally does not coincide with the nation-wide forecast demand. The balance of two forecast values is distributed in proportion to area-wise forecast values so as to attain coordination of two forecasts.

(2) Substation-Wise Demand Forecast

The sending out energy from each substation including those of the new additions during the period of 8 years from 1995 to 2002 was forecast from the area-wise forecast energy obtained above and expected supply share of each substation including new additions. After 2003, it is assumed that the supply share in 2002 is kept unchanged through the plan period, which means the future growth of demand is assumed to be proportional to the forecast substation demands in 2002.

The annual maximum demand of each substation was calculated from the above forecast energy and the estimated annual load factor. The 1994 annual load factors used by CEB were in the range of 41.6% of Kilinochchi and 75% of Kolonnawa. These figures considerably differ from the 1995 annual load factors collected in relation to the Study.

CEB's demand forecast for energy sales and maximum demand for areas and grid substations are shown in Tables 4.3.3-1, 4.3.3-2 and 4.3.3-3.

4.4 Power Demand Forecast of the JICA Team

4.4.1 General

To work out a development plan of the transmission system, it is required to prepare and understand the trend of load variation of each substation. It is a widely applied practice to estimate area-wise power demand according to the ratio method (developed as a forecasting model of trend of area-wise population), i.e. application of changing rates of the past composition of demand to the total of each area.

However, as explained in the preceding clause the past records of energy sales, the most important component for demand forecast, has been collected and compiled only for the CEB's Areas. On the other hand, social indices which are required to verify the result of demand forecast such as, (a) trend of population shift including classification for occupations, (b) trend of change in industrial framework, (c) actual status of regional development, etc., are available only for the administrative divisions, and not estimated for the CEB's Areas.

Therefore, it was decided to adopt the CEB's demand forecasting method for this Study. In actual application, major items which were pointed out as doubtful have been reviewed for improvement. Further, utmost attention has been given to reflect the past trend of demand to the demand forecast.

The block diagram of the area-wise demand forecast and substation-wise demand forecast which were used in the Study are presented in Fig. 4.4-1.

As shown in Fig. 4.4-1, the demand forecast of each substation was prepared in the following process; (1) review of overload of each grid substation, (2) review of the method to mitigate overload problems by shifting a certain amount of load to other substations by changeover of the distribution network, (3) review of possibility of transformer addition and/or replacing with larger units, and if the overload problem can not be solved, (4) review of construction of a new substation as the final solution.

The forecasting methods in general including the one adopted in the Study are based on an assumption that the past trends of demand is to remain unchanged even in the future. It is to be kept in mind that this method is appropriate for application to a short-term forecast, and may create problems when applied to a long-term forecast. Therefore, review of forecasting method according to variation in situation is necessary.

4.4.2 Area-Wise Energy Demand Forecast

As the demand forecasting method basically same as the CEB's method, explained in the foregoing clause, has been adopted in the Study, only modifications made for use in general purpose and points which were rearranged and clarified are explained in this clause.

(1) Actual Average Growth Rates by Area

- (a) In this Study, the average annual growth rate of each area was calculated based on the energy sales record for the recent 10 years. In case that short-term records of around five years are used, values for low demand density area are much distorted by emerging of large consumers like large manufacturing plant. Therefore, such abnormality can be mitigated by extending the period.
- (b) A CEB's area is normally divided into two smaller areas with growth in area demand. Its time is arbitrary and not fixed. Therefore, there is possibility that the calculated figures of area growth rates do not reflect true status of the area. Therefore, in this Study the growth rate of old area was calculated for a few years period, and applied the obtained growth rate to the divided two areas. The area-wise records of sales energy for 10 years and average annual growth rates are tabulated in Tables 4.4.2-1 and 4.4.2-2.

(2) Growth Rates Used for Power Demand Forecast

The following problems are noted in applying the past growth rates to demand forecasting.

- (a) The recent past trend is assumed to be maintained to the near future, and this is the basic idea of this forecast. However, it is quite doubtful to apply this assumption for a long period of 20 years.
- (b) The sum of small demand in each area is much affected by a high growth in a certain portion. This trend become conspicuous with time and the overall growth rate becomes larger year by year.

To mitigate the above-mentioned problems to some extent, both basic growth rates (constant throughout the plan period) and adjusting growth rates (decreasing gradually year by year) were applied.

The assumed growth rates are shown in Table 4.4.2-4, and the forecast sales energy of the CEB's areas which were calculated using the above growth rates are shown in Table 4.4.2-3.

(3) Coordination with Nation-Wide Sales Energy Forecast

To attain coordination between the sum of area-wise energy sales forecast and the nation-wide forecast, the balance of two forecast values was distributed in proportion to the area forecast values. Adjusted area-wise demand forecast and growth rates of each year are presented in Tables 4.4.2-5 and 4.4.2-6.

(4) Area-Wise Energy Demand at Grid Substation Level

In the nation-wide demand forecast, the required energy for generation and annual maximum demand are calculated for each year from the energy sales, and assumed power system loss and annual load factor.

For preparing a transmission system development plan, energy requirements at the grid substations as the basis to calculate the substation loads at the system peak time are required, and these were obtained with assumptions mentioned below.

The System Control Center prepares the Monthly Review Report for System Control and Operations. The power system loss for one year in 1995 as the sum of 12 monthly reports is reported as summarized below, and as to details Table 4.4.2-7 is referred to:

1. Power station service:	26.3 GWh	(0.5%)
2. Transmission system loss:	335.8 GWh	(7.0%)
3. Distribution system loss:	511.5 GWh	(10.7%)
4. Overall loss:	873.7 GWh	(18.2%)
5. Transmission maximum power loss:	62.1 MW	(6.6%)

Note: 1 to 4 are figures of one year in 1995 and 5 is calculated from the average value of monthly maximum demand.

From the above, very large loss value of the transmission system is noted. According to the result of the 1995 power flow calculation at the time of the maximum demand of the year the transmission system loss not including that of transformers was 3.7% and considerable difference with the above is noted. The energy loss is slightly smaller than the power loss at the time of the maximum demand. Theoretically the latter shall be over two times compared with the former. These discrepancy is considered to be caused by inaccuracy of metering apparatus.

On the other hand, in the nation-wide demand forecast the 1994 actual system loss of 18.3% is estimated to be improved at a rate of 0.5 to 0.7% per annum to 12.0% in 2004.

Under such circumstance, in this Study the future loss values are estimated based on the recorded values though there is problem of metering as given below:

1. Transmission loss: 7.0% in 1995 is assumed to decrease at a rate of 0.3% per annum for the initial 5 years and 0.25% per annum thereafter and become 4.5% in 2004.
2. Distribution loss: 10.5% in 1995 is assumed to decrease at a rate of 0.35% per annum for the initial 6 years and 0.3% per annum thereafter and become 7.5% in 2004.

The required energy sales (sending out energy from the grid substations) of each CEB's area, obtained by adding the above assumed distribution loss on the energy sales, are shown in Table 4.4.2-8.

4.4.3 Power Demand Forecast of Substations

In preparing demand forecast of each grid substation, the nation-wide demand is required to be allocated to each substation. Therefore, such demand forecast is required to be reviewed at each occasion of new construction of substations. In this clause, various factors which affect maximum load of each substation are explained.

The Monthly Review Reports for System Control and Operations provide useful information on the power system, and the following factors are worked out from the reported figures in the 1995 reports.

(1) Annual Load Factor

The 1995 maximum demand was recorded on 28th November. However, the annual maximum demand of each substation should be based on the annual maximum demand of the substation obtained from the Monthly Review Reports of whole the year, and the results are presented in Table 4.4.3-1.

The annual load factor of each substation was calculated from the maximum demand and the annual sent out energy, and the estimated load factors up to 2015 are shown in Table 4.4.3-2.

(2) Conversion from Area-Wise Energy to Substation-Wise Energy

The table which clarifies power demand of each CEB area is to be supplied from which substations is in this Study called the power supply matrix. The matrixes have been prepared with cooperation of the system planning engineers of provinces. An example of matrix for the year 2000 is shown in Table 4.4.3-3. The other matrices for 2001 through 2010 and for 2015 are included in Appendix A6.3.

As there are some differences between the forecast values for each area of this Study and the forecast values of engineer in charge of each province, the presented figures differ from the values adjusted so as to avoid overloading as far as possible. Values which have been modified taking into account reallocation of load by inter-substation changeover operations of feeders, addition of substations, etc. are marked in the table with shade. The sent out energy of each year from each substation, which was calculated using the matrixes, is shown in Table 4.4.2-8.

(3) Load of Each Substation

The maximum load calculated using the sent out energy and annual load factor of each substation assumed in this clause is the annual maximum demand, and its time of occurrence does not always coincide with the time of system peak. As shown in Table 4.4.3-2, the sum of the annual maximum demand (the second from the right) is about 10% larger than the system peak demand. The result is shown in the right-end column of Table 4.4.3-4.

4.5 Generation Expansion Plans

Formerly, the generation expansion projects of Sri Lanka were financed mainly by soft loans from bilateral and multilateral funding institutions and partly from the Government and CEB funds. However, there are no more funds available abundantly to provide for the rapid expansion of the power sector. At

present only three projects, the Kukule hydropower (70 MW), Sapugaskanda diesel (40 MW) and Kelanitissa combined cycle (150 MW) are under execution utilizing official foreign fund. The Government therefore decided to seek for assistance of private investors to develop power projects by BOO and BOT schemes. Various proposals have been submitted to the Government for both thermal and hydro power projects. They include a coal thermal project, a combined cycle plant in the Colombo area, a diesel generation plant at Hambantota, the Broadland hydro power project, etc. At the present stage, only the 51 MW diesel plant of KHD at Sapugaskanda has been signed for execution.

It is not possible to anticipate far future regarding what type of private sector proposals will come out and what will be actually executed. The current problem for planning is that this trend makes the long term estimation of generation projects difficult.

4.5.1 Short Term Plans

The total capacity of the existing generating facilities will not be sufficient to meet the demand of the country in 1996 and thereafter before commissioning of the planned major base-load coal thermal power plants. To meet such short-term necessity for increasing generating capability, CEB has plans to install diesel engine, gas turbine and combined cycle generators with relatively short delivery and construction periods in the Colombo area. The CEB plan up to the year 2000 comprises the following:

1) Diesel engine generators	131 MW
2) Gas turbine generators	140 MW
3) Combined cycle generators	2 x 150 MW

Among these projects, 40 MW (4 x 10 MW) diesel generators are under construction at Sapugaskanda utilizing the ADB loan with target commissioning in April, 1997. The second 40 MW diesel plan with the same specifications as the above ADB project is under negotiation to purchase from the same German contractor utilizing German loan. Installation plan of 51 MW diesel plant has been signed with KHD (Klöckner Humboldt Deutz AG) under the private enterprise of German-UK joint operation.

Construction of single unit 115 MW gas turbine plant at Kelanitissa is progressing with CEB's own fund and is expected to be commissioned in May, 1997.

Two sets of 150 MW combined cycle plant are planned to be installed. A loan from OECF of Japan has been agreed in June 1996 for the first plant at Kelanitissa with target completion of 100 MW gas turbine sets in 1998 and succeeding 50 MW steam turbine set in 1999. Generated power of this plant will be stepped up to 220 kV. The second 150 MW combined cycle plant will be located at Muthuragawella to the north of Kelanitissa. The site has already been arranged, however its financial arrangement has not yet been determined.

The existing refinery capacity at Sapugaskanda is adequate to provide residual fuel for about 290 MW of diesel plants to operate for base load. Naphtha, another by-product of the refinery, can also be used for firing gas turbines and is planned to be used for the 150 MW Kelanitissa combined cycle plant. This fuel has the advantage of less environmental impacts. Heavy diesel fuel will be fired for the second combined cycle plant.

4.5.2 Long Term Plans

(1) Hydro Power Development

Only the construction of the Kukule Hydroelectric Project (70 MW) is under execution as of 1996 utilizing the OECF loan from Japan and is planned to be commissioned by 2002.

The construction of the Upper Kotmale project (150 MW) was once committed for loan from OECF, Japan, but its execution has been suspended due to environmental concerns. This project will be revived if the environmental problems are settled.

Investigation of the Broadland project (40 MW) is in progress by a consortium of a foreign investor and a local firm.

The total capacity of economically promising hydro power projects available for development is estimated at approximately 400 MW and candidate projects are given below:

Promising Hydropower Projects

Plant Name	Installed Capacity (MW)		Period (yrs)	Turbine Type	Ave. Annual Energy (GWh)
	No. x Unit Cap.	Total			
Broadland	2 x 20	40	4	Francis	145
Uma Oya	2 x 75	150	5	Pelton	447
Ging Ganga	2 x 24.8	49.6	4	Francis	212
Belihuloya	2 x 8.5	17	4	Pelton	71
Moragolla	2 x 13.6	27.2	4	Francis	111
Upper Kotmale	2 x 150	300	5	Francis	530

Note: Feasibility study has been conducted for the Upper Kotmale and Broadland Projects, and pre-feasibility study for the Uma Oya Project. Detailed studies have not yet been performed for the other projects.

In addition to the above, there are several small hydropower projects currently under execution and investigation with private sector investment.

Further exploitation of hydropower resources is becoming increasingly difficult due to impacts on the environment and eco-system of the country.

(2) Thermal Power Development

Due to the tendency toward depletion of economical hydro development sites, CEB is obliged to consider the construction of thermal plants as major developments. The construction of coal thermal plants as base-load stations will become feasible after the base-load operation of these plants is economically justified.

Currently conceived thermal project sites are outlined below:

West coast site near Puttalam: Investigation of a site facing to the outside ocean near Puttalam has been carried out by a Japanese organization, Japan Consulting Institute (JCI). This site is considered to be suitable for development up to 900 MW of coal thermal plant. As sea is shallow, a 2 km long approaching bridge is required for the belt conveyer transportation of coal. Another alternative site in

the area is Mundal located to the south of Puttalam. This alternative site was recommended by a Swiss consultant.

Trincomalee site: A deep sea harbor suitable for coal unloading can be constructed at this site and it is estimated that the overall cost for plant construction is cheapest among the studied alternative coal thermal sites. Feasibility studies were conducted by a consultant of the USA. The final capacity of this site is considered to be at least 1,200 MW. The development activities of this site have been suspended due to the security situation prevailing in the area and environmental concern to atmospheric pollution. However, this site will be taken up again when the security problems are settled.

Southern coast site: A site suitable for coal thermal development has been identified at Mawella to the east of Matara.

Boossa site: This site is located about 7 km to the north-west of Galle and is considered as a suitable site for construction of a combined cycle plant up to 2 x 300 MW capacity.

Generation by Hambantota oil refinery: There is a plan to construct a diesel power plant of 300 MW capacity as an IPP scheme by an investor for an oil refinery project. Its particulars are uncertain.

Jaffna site: This area is far separated from the existing and planned major power stations. With the future growth of power demand in the northern area, construction of a thermal power station to meet the area demand will surely be required as the power transmission over too long distance will be inadequate. Type of the power station, coal or oil fired, diesel or gas turbine, etc., has not been studied yet.

35 MW gas turbines: To meet the requirement for peak generation, CEB has a plan to install a number of 35 MW gas turbine generators as required at selected local substation sites.

At the present stage, the Puttalam site has been selected as the first site for the coal thermal development and a detailed design including review of the feasibility studies is planned to be commenced soon with the OECF fund from Japan.

The future sites for thermal power development are presumed to be selected from the above alternatives. The transmission system studies have to be carried out by allocating necessary output to these plants as agreed by CEB.

Due to the fact that the natural gas is free of polluting components such as sulfur, and in view of the high percentage of hydrogen content, and therefore produces the least amount of polluting gases for a given output, the Government is interested to utilize the natural gas for power generation by combined cycle or gas turbine plants. However, a lot of investment is required to arrange facilities to import and consume the natural gas. At the present stage, there is no concrete plan to use the natural gas. The Generation Planning branch of CEB has considered to use heavy diesel oil as fuel for the proposed combined cycle power plants

As Sri Lanka has no proven resources of fossil fuels, coal, oil or gas, or nuclear fuels, fuels for power generation must be imported from abroad.

(3) WASP Study by CEB

Based on the revised demand forecast to be used for the Study, CEB has recently revised their long-term generation expansion plan with the help of the WASP-III program and the results are presented in Fig. 4.5-1. This generation expansion plan is the basis of the transmission system planning of the Study.

4.6 Transmission System Extension Plans of CEB

The main objective of the transmission system is to connect power generating stations and demand centers with transmission lines to deliver necessary quantity of power of good quality with the minimum of supply interruption. As all the short-term power generation projects to be completed by 2000 are located in the Colombo area, in this period the transmission system in the Colombo area needs to be reinforced by converting the two existing 220 kV designed 132 kV lines to 220 kV operation and by extending and reinforcing the 132 kV system mainly. The construction of the Kotmale - Anuradhapura 220 kV line is also very important to strengthen the transmission system to the north.

At present, the 1995 - 97 transmission system extension plan as shown in Table 4.6-1 is in progress. Some of them have been completed by the middle of 1996. However, as of 1996 due to delay in financial arrangement there are projects, execution of which just have been commenced.

For the transmission system extension after 1997, a German consultant carried out a power system study in 1994 to identify system extension requirements to 2002 including the power transmission from the Trincomalee coal thermal power station, taking into account up to 600 MW development. The report concluded necessity of constructing two double circuit 220 kV lines, Trincomalee - Habarana - Kotugoda and Trincomalee - Kilinochchi, and some 132 kV system reinforcement. For construction after the above 1995 - 97 plan, financial arrangement has already been made for some priority projects as included in Table 4.6-1, and the other projects in the consultant's study and the CEB's extension plan are picked up as shown in Table 4.6-2. Among these, fund to priority projects has already been arranged.

Table 4.2.1 - 1 Historical Records of GDP, Generation and Sales Energy

Year	Population (1000)	GDP		Power Generation			Sales Energy				
		1982 Const Rs.Mn	Rate (%)	(GWh)	Rate (%)	Elas- tivity	Per Cap (kWh)	(GWh)	Rate (%)	Elas- tivity	Per Cap (kWh)
1982	15,060	94,679	4.96	2,065.7	2.36	0.48	137.2	1,686.0	6.29	1.27	112.0
1983	15,276	99,375	5.05	2,114.4	6.92	1.37	138.4	1,792.0	4.74	0.94	117.3
1984	15,496	104,395	4.96	2,464.0	7.62	1.78	145.9	1,877.0	8.30	1.94	121.1
1985	15,718	109,570	4.28	2,651.8	2.10	1.44	156.8	2,061.0	5.24	1.41	131.1
1986	15,944	114,261	2.70	2,707.5	3.37	1.25	166.3	2,232.0	3.21	1.06	140.0
1987	16,173	115,922	2.28	2,798.7	2.12	0.93	167.4	2,253.0	6.58	1.12	139.3
1988	16,405	119,050	4.60	2,858.1	4.84	1.13	170.6	2,371.0	5.14	1.48	144.5
1989	16,641	121,766	4.28	3,149.7	7.20	1.56	171.8	2,447.0	6.35	1.74	147.0
1990	16,880	129,303	6.96	3,376.6	10.26	1.83	186.6	2,608.0	12.14	1.61	154.5
1991	17,122	135,255	5.62	3,539.9	5.96%	1.46	197.2	2,742.0	9.02	1.45	160.1
1992	17,368	141,041	4.08%	3,978.6			203.8	2,916.0			167.9
1993	17,617	150,856		4,386.8			225.8	3,270.0			185.6
1994	17,870	159,327					245.5	3,564.8			199.5
Average	1,436%										

(a) Population of each year is calculated by averaged annual increased rate worked out from 14,846,800 of 1981 census and 18,127,000 of 1995 estimated by government.

Table 4.3.1 - 1 CEB's Power and Energy Demand Forecast 1994 - 2014 (1994)

Year	Authorized CEB's Forecast						System Losses (%)	Load Factor (%)	Time Trend Forecast (Sales) (GWh)	Econometric Analysis		Adjusted Econometric Analysis		Suggested Forecast	
	Base Forecast			High Forecast						Model E1	Model E2	Model E1	Model E2	Base Case	High Case
	Energy Sales (GWh)	Required Demand (MW)	Peak Demand (MW)	Energy Sales (GWh)	Required Demand (MW)	Peak Demand (MW)									
1993	3,270			3,270				3,270	3,270	3,270	3,270	3,270	3,270	3,270	3,270
1994	3,597	4,376	894	3,662	4,455	910	17.8	3,492	3,537	3,543	3,597	3,603	3,597	3,711	3,484
1995	3,957	4,779	972	4,102	4,954	1,008	17.2	3,727	3,819	3,831	3,959	3,971	3,959	4,084	3,834
1996	4,352	5,219	1,058	4,594	5,509	1,117	16.6	3,977	4,136	4,157	4,356	4,377	4,356	4,494	4,219
1997	4,788	5,700	1,152	5,145	6,125	1,238	15.4	4,248	4,449	4,471	4,791	4,821	4,711	4,860	4,562
1998	5,266	6,225	1,252	5,763	6,812	1,371	14.8	4,534	4,805	4,876	5,176	5,211	5,096	5,257	4,935
1999	5,793	6,799	1,364	6,454	7,576	1,520	14.2	4,841	5,189	5,328	5,585	5,628	5,505	5,680	5,331
2000	6,372	7,427	1,485	7,229	8,425	1,684	13.6	5,168	5,604	5,771	6,022	6,071	5,942	6,130	5,754
2001	7,010	8,113	1,616	8,096	9,371	1,867	13.0	5,517	6,053	6,247	6,492	6,547	6,412	6,615	6,209
2002	7,710	8,863	1,760	9,068	10,423	2,069	12.4	5,890	6,537	6,744	6,983	7,044	6,903	7,122	6,685
2003	8,482	9,682	1,916	10,156	11,594	2,294	12.0	6,288	7,060	7,276	7,512	7,576	7,432	7,667	7,197
2004	9,245	10,506	2,071	11,273	12,811	2,526	12.0	6,713	7,554	7,775	8,075	8,141	7,995	8,248	7,742
2005	10,077	11,451	2,254	12,513	14,220	2,799	12.0	7,167	8,083	8,444	8,675	8,744	8,595	8,867	8,323
2006	10,984	12,482	2,457	13,890	15,784	3,107	12.0	7,651	8,648	9,015	9,383	9,315	9,235	9,527	8,943
2007	11,972	13,605	2,678	15,418	17,520	3,448	12.0	8,199	9,254	9,697	9,997	10,065	9,917	10,231	9,604
2008	13,050	14,829	2,919	17,114	19,447	3,828	12.0	8,720	9,902	10,423	10,723	10,789	10,643	10,980	10,307
2009	14,224	16,164	3,181	18,996	21,587	4,249	12.0	9,310	10,595	11,199	11,499	11,559	11,419	11,780	11,058
2010	15,505	17,619	3,468	21,086	23,961	4,716	12.0	9,938	11,336	12,024	12,324	12,378	12,244	12,631	11,857
2011	16,900	19,205	3,780	23,405	26,597	5,235	12.0	10,610	12,130	12,904	13,204	13,249	13,124	13,539	12,709
2012	18,421	20,933	4,120	25,980	29,822	5,811	12.0	11,327	12,979	13,842	14,142	14,175	14,062	14,507	13,617
2013	20,079	22,817	4,491	28,838	32,770	6,450	12.0	12,092	13,887	14,843	15,143	15,161	15,063	15,539	14,586
2014	21,886	24,870	4,895	32,010	36,375	7,159	12.0	12,910	14,860	15,915	16,215	16,213	16,135	16,645	15,625

(1) Authorized Forecast

(a) Base : Growth rate - first 10 years 10%, next 10 years 9% and used for Financial Planning and Budgetary Proposes

(b) High : Growth rate - first 10 years 12%, next 10 years 11% and used for Generation Expansion Planning

(c) Base : Growth rate - first 10 years 8%, next 10 years 7%

(2) Percent system losses and load factor were commonly applied to all study cases.

(3) Time trend forecast : $\ln(E) = 6.564E-02 * t - 122.558$ (E=Sales energy at year t) $R^2=0.9778$, DW=0.5258, SE of regression=5.159E-02

(4) Model E1 : $E1 = 1.03787E-02 * GDP_{t+1} + 7.86161E-03 * GDP_{t-1} + 0.22631 * Ct - 1432.31$ (Ct=GDP per capita) $R^2=0.9950$, DW=2.0255, SE of regression=51.690

(6) Model E2 : $E2 = 9.67108E-03 * GDP_{t+1} + 0.27518 * Ct - 0.24254 * Et-1 - 1336.53$ (Ct=GDP per capita) $R^2=0.9952$, DW=2.1757, SE of regression=50.795

Table 4.3.2 - 1 National Demand Forecast of CEB's System for the Master Plan Study

(a) Base Case										(b) High Case										(c) Low Case									
Year	Energy Sales (GWh)	Sys. Loss (%)	Energy Product. (GWh)	Load Fact. (%)	Max. Demand (MW)	G. rate Sale (%)	G. rate Gene. (%)	Year	Energy Sales (GWh)	Sys. Loss (%)	Energy Product. (GWh)	Load Fact. (%)	Max. Demand (MW)	G. rate Sale (%)	G. rate Gene. (%)	Year	Energy Sales (GWh)	Sys. Loss (%)	Energy Product. (GWh)	Load Fact. (%)	Max. Demand (MW)	G. rate Sale (%)	G. rate Gene. (%)						
1994	3,587	18.3	4,364	54.7	910			1994	3,587	18.3	4,364	54.7	910			1994	3,587	18.3	4,364	54.7	910								
1995	3,946	17.9	4,806	55.1	996	10.0	10.1	1995	3,982	17.9	4,850	55.1	1,005	11.0	11.1	1995	3,910	17.9	4,762	55.1	987	9.0	9.1						
1996	4,341	17.2	5,242	55.9	1,071	10.0	9.1	1996	4,420	17.2	5,338	55.9	1,090	11.0	10.1	1996	4,262	17.2	5,147	55.9	1,051	9.0	8.1						
1997	4,775	16.5	5,718	56.2	1,161	10.0	9.1	1997	4,906	16.5	5,875	56.2	1,193	11.0	10.1	1997	4,645	16.5	5,563	56.2	1,130	9.0	8.1						
1998	5,252	15.8	6,238	56.7	1,256	10.0	9.1	1998	5,445	15.8	6,467	56.7	1,302	11.0	10.1	1998	5,063	15.8	6,013	56.7	1,211	9.0	8.1						
1999	5,777	15.1	6,805	56.9	1,365	10.0	9.1	1999	6,044	15.1	7,119	56.9	1,428	11.0	10.1	1999	5,519	15.1	6,501	56.9	1,304	9.0	8.1						
2000	6,355	14.2	7,407	57.1	1,481	10.0	9.1	2000	6,709	14.2	7,820	57.1	1,563	11.0	9.8	2000	6,016	14.2	7,011	57.1	1,402	9.0	7.8						
2001	6,927	13.6	8,017	57.3	1,597	9.0	8.8	2001	7,380	13.6	8,542	57.3	1,702	10.0	9.2	2001	6,497	13.6	7,520	57.3	1,498	8.0	7.3						
2002	7,550	12.8	8,659	57.5	1,719	9.0	8.2	2002	8,118	12.8	9,310	57.5	1,848	10.0	9.0	2002	7,017	12.8	8,047	57.5	1,598	8.0	7.0						
2003	8,230	12.2	9,373	57.7	1,854	9.0	8.0	2003	8,930	12.2	10,171	57.7	2,012	10.0	9.2	2003	7,578	12.2	8,631	57.7	1,708	8.0	7.3						
2004	8,971	12.0	10,194	57.9	2,010	9.0	8.3	2004	9,823	12.0	11,162	57.9	2,201	10.0	9.7	2004	8,184	12.0	9,300	57.9	1,834	8.0	7.8						
2005	9,778	12.0	11,111	58.0	2,187	9.0	8.8	2005	10,805	12.0	12,279	58.0	2,417	10.0	10.0	2005	8,839	12.0	10,044	58.0	1,977	8.0	8.0						
2006	10,658	12.0	12,111	58.0	2,384	9.0	9.0	2006	11,886	12.0	13,506	58.0	2,658	10.0	10.0	2006	9,546	12.0	10,848	58.0	2,135	8.0	8.0						
2007	11,617	12.0	13,201	58.0	2,598	9.0	9.0	2007	13,074	12.0	14,857	58.0	2,924	10.0	10.0	2007	10,310	12.0	11,716	58.0	2,306	8.0	8.0						
2008	12,663	12.0	14,389	58.0	2,832	9.0	9.0	2008	14,382	12.0	16,343	58.0	3,217	10.0	10.0	2008	11,135	12.0	12,653	58.0	2,490	8.0	8.0						
2009	13,802	12.0	15,684	58.0	3,087	9.0	9.0	2009	15,820	12.0	17,977	58.0	3,538	10.0	10.0	2009	12,026	12.0	13,665	58.0	2,690	8.0	8.0						
2010	15,044	12.0	17,096	58.0	3,365	9.0	9.0	2010	17,402	12.0	19,775	58.0	3,892	10.0	10.0	2010	12,988	12.0	14,759	58.0	2,905	8.0	8.0						
2011	16,398	12.0	18,635	58.0	3,668	9.0	9.0	2011	19,142	12.0	21,752	58.0	4,281	10.0	10.0	2011	14,027	12.0	15,939	58.0	3,137	8.0	8.0						
2012	17,874	12.0	20,312	58.0	3,998	9.0	9.0	2012	21,056	12.0	23,928	58.0	4,709	10.0	10.0	2012	15,149	12.0	17,214	58.0	3,388	8.0	8.0						
2013	19,483	12.0	22,140	58.0	4,358	9.0	9.0	2013	23,162	12.0	26,320	58.0	5,180	10.0	10.0	2013	16,361	12.0	18,592	58.0	3,659	8.0	8.0						
2014	21,236	12.0	24,132	58.0	4,750	9.0	9.0	2014	25,478	12.0	28,952	58.0	5,698	10.0	10.0	2014	17,669	12.0	20,079	58.0	3,952	8.0	8.0						
2015	23,148	12.0	26,304	58.0	5,177	9.0	9.0	2015	28,026	12.0	31,848	58.0	6,268	10.0	10.0	2015	19,083	12.0	21,685	58.0	4,268	8.0	8.0						

Source : CEB's Load Forecasting & Tariffs Branch, 1996-1-22

Remark : The above demand forecast has been modified for the Master Plan Study for Development of the Transmission System on 1st January of 1996 by CEB.

Table 4.3.3 - 2 CEB's Energy Demand Forecast of Grid Substation (1994 - 2009)

(Unit: GWh)

Provinces	Grid Substations	Year															
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
North	(1) Anuradhapura	88.4	76.9	87.6	68.1	77.5	96.1	133.7	163.6	182.5	203.4	226.6	252.4	281.0	312.7	347.9	
Central	(2) Habarana	53.9	62.8	71.3	104.8	118.9	131.6	129.8	129.6	143.8	159.5	176.8	196.0	217.2	240.5	266.3	
North	(3) Chunnakam	.0	74.6	84.9	112.7	128.2	146.5	164.2	183.2	204.3	227.7	253.7	282.6	314.6	350.1	389.5	
	(4) Kifinochchi	.0	14.4	16.4	19.4	22.0	25.2	28.2	31.5	35.1	39.1	43.6	48.6	54.1	60.2	66.9	
Central	(5) Kiribathkumbura	140.6	161.5	181.0	176.0	197.0	210.5	232.2	261.0	286.5	314.3	344.6	377.8	414.0	453.6	496.7	
	(6) Ukuwela	91.2	121.7	136.8	145.1	162.9	170.8	169.9	180.8	198.8	218.5	240.1	263.8	289.7	318.0	348.9	
	(7) Ranembe	17.7	21.0	24.3	27.8	32.3	37.5	42.8	48.6	55.2	62.7	71.1	80.6	91.4	103.6	117.3	
	(8) Nuwara Eliya	52.7	67.9	75.9	98.3	109.8	123.2	131.3	139.0	152.2	166.6	182.2	199.2	217.8	238.0	260.0	
	(9) Wimalasurandra	79.7	91.0	101.7	124.9	139.6	156.6	172.4	188.8	206.7	226.2	247.4	270.6	295.8	323.3	353.1	
North	(10) Kurunegala	105.9	104.3	117.7	131.1	147.8	180.3	214.6	237.2	262.1	289.5	319.7	352.8	389.2	429.3	473.3	
Western	(11) Puttalam	72.6	65.7	73.5	81.2	85.0	101.8	112.2	122.9	134.6	147.4	161.3	176.5	193.1	211.1	230.7	
	(12) Bolawatta	195.2	132.9	149.9	162.0	167.8	201.8	223.7	270.7	298.5	329.1	362.6	399.5	439.9	484.2	532.8	
	(13) Chilaw	.0	115.3	129.3	143.2	166.1	180.5	199.4	219.0	240.6	264.1	289.8	318.0	348.7	382.3	419.0	
Western	(14) Kesugoda	294.5	334.9	373.2	256.0	286.8	296.9	322.3	330.7	363.8	400.2	439.9	485.5	531.3	583.6	640.9	
North	(15) Sapugaskanda	331.0	373.0	411.8	440.3	463.9	460.5	393.8	361.3	389.4	419.6	451.9	486.7	523.9	563.8	606.6	
	(16) Biyagama	234.4	264.6	292.8	275.8	304.8	314.0	283.2	306.8	332.2	359.6	389.1	420.9	455.0	491.8	531.4	
	(17) Veyangoda	.0	.0	.0	76.7	135.2	153.4	177.0	196.1	217.2	240.5	266.2	294.5	325.8	360.3	398.3	
	(18) Aniyakanda	.0	.0	.0	98.6	102.6	124.5	166.8	214.6	231.5	249.7	269.3	290.3	312.8	337.1	363.1	
Eastern	(19) Trincomalee	60.5	70.3	80.1	95.6	108.8	124.4	139.4	155.5	173.4	193.3	215.3	239.8	267.0	297.2	330.7	
	(20) Inginiyala	75.1	84.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
	(21) Valaichenai	.0	13.5	20.5	28.4	32.1	36.4	40.5	44.9	49.7	55.0	60.8	67.3	74.4	82.3	91.0	
	(22) Ampara	.0	.0	90.6	101.5	96.7	106.2	114.3	126.8	140.6	155.9	172.8	191.4	212.1	234.9	260.2	
Western	(23) Ratmalana	189.3	207.8	225.3	241.2	217.5	272.1	278.1	289.2	307.6	327.1	347.7	369.5	392.4	416.7	442.3	
South	(24) Panzipiya	260.6	255.1	281.1	246.3	293.1	298.9	350.0	283.9	305.5	328.6	353.5	380.3	409.1	440.1	473.4	
	(25) O.D.S.(Kolonawala)	301.7	332.6	359.4	416.4	449.7	487.7	519.0	549.5	581.8	615.7	651.3	688.9	728.4	769.9	813.6	
	(26) Matugama	172.7	174.4	193.6	183.7	205.4	181.1	198.7	216.8	236.6	258.1	281.5	307.0	334.8	365.0	397.9	
	(27) Avissawella	81.4	96.7	108.8	126.8	142.5	153.8	133.0	137.7	151.6	166.8	183.4	201.6	221.5	243.3	267.2	
	(28) Panadura	.0	56.8	62.0	107.1	117.4	129.3	139.8	150.3	161.6	173.8	186.8	200.9	215.9	232.1	249.4	
	(29) Sidhawaka																
	(30) Athurugiriya	.0	.0	.0	79.2	109.6	170.5	212.5	288.2	312.6	339.0	367.4	398.1	431.1	466.8	505.2	
	(31) Sri Jayapura	.0	.0	.0	.0	.0	85.0	184.8	270.7	292.5	315.8	340.9	368.0	397.0	428.3	461.9	
Southern	(31) Galle	145.6	161.8	139.9	184.9	199.6	239.0	280.2	311.8	346.9	385.8	428.9	476.7	529.6	588.3	653.1	
	(32) Demiyaya	96.7	118.9	90.7	90.0	93.0	86.4	83.3	92.1	101.9	112.6	124.5	137.5	151.8	167.6	184.9	
	(33) Malara	.0	.0	77.3	103.0	138.8	165.8	185.3	205.9	228.9	254.3	282.4	313.6	348.0	386.1	428.2	
	(34) New Galle																
Uva	(35) Badulla	60.2	61.6	69.7	74.5	102.7	117.1	135.5	155.6	173.2	192.8	214.5	238.7	265.5	295.5	328.7	
Sabaragamuwa	(36) Balangoda	76.4	87.9	94.4	104.9	118.2	114.3	113.3	138.2	152.6	168.3	185.6	204.6	225.4	248.3	273.4	
	(37) Thulhiriya	143.4	157.3	176.7	187.3	175.9	182.1	200.8	220.2	241.6	264.8	290.2	318.0	348.3	381.3	417.3	
	(38) Embilipitiya	60.8	70.3	74.9	73.0	82.7	94.0	104.9	87.3	97.1	107.9	119.9	133.2	147.9	164.2	182.2	
	(39) Ratnapura	.0	.0	.0	.0	.0	31.3	85.4	120.7	133.1	146.8	161.7	178.2	196.2	216.0	237.7	
Colombo	(40) Kelaniyissa(KTS)	199.8	219.6	236.5	251.3	270.4	292.1	309.7	326.6	344.4	362.9	382.3	402.7	423.9	446.1	469.3	
	(41) Sub-E(Kollipiya)																
	(42) Sub-F(Fun)																
Total		3682.0	4251.6	4729.6	5075.1	5802.3	6165.2	6973.0	7538.3	8468.2	9243.0	10087.3	10694.3	11560.6	12897.5	13891.3	

Table 4.3.3 - 3 CEB's Power Demand Forecast of Grid Substation (1994 - 2009)

(Unit: MW)

Provinces	Grid Substations	Year															
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
North	(1) Anuradhapura	28.7	24.2	25.6	18.7	20.5	24.4	32.6	39.1	41.9	47.4	52.7	58.7	65.3	72.7	80.9	
Central	(2) Habarana	15.3	17.5	19.5	27.6	30.6	33.1	31.9	31.2	33.3	37.2	41.1	45.6	50.5	55.9	61.9	
Northern	(3) Chunnakam	.0	21.7	24.2	28.3	31.5	35.2	38.7	42.2	45.4	53.0	59.0	65.7	73.2	81.4	90.6	
	(4) Kilinochchi	.0	4.6	4.9	5.5	5.9	6.6	7.1	7.6	8.1	9.1	10.1	11.3	12.6	14.0	15.6	
Central	(5) Kiribathkumbura	37.5	42.0	45.5	41.5	44.4	45.7	48.3	53.3	56.7	73.2	80.1	87.9	96.3	105.5	115.5	
	(6) Ukuwela	25.6	33.6	37.1	37.8	41.5	42.6	41.4	43.1	45.7	50.9	55.8	61.3	67.4	73.9	81.1	
	(7) Rantembe	4.7	5.4	6.1	6.7	7.6	8.6	9.6	10.7	11.7	14.6	16.5	18.7	21.2	24.1	27.3	
	(8) Nuwara Eliya	15.6	19.9	21.7	27.0	29.4	32.2	30.9	32.0	33.8	38.8	42.4	46.3	50.6	55.3	60.5	
	(9) Wimalasumendra	20.1	22.6	24.9	29.5	32.2	35.7	38.6	41.4	43.8	52.7	57.5	62.9	68.8	75.2	82.1	
North	(10) Kurunegala	26.0	25.6	28.8	32.0	36.0	43.9	52.1	57.5	63.4	69.7	77.0	85.0	93.7	103.4	114.0	
Western	(11) Puttalam	19.0	16.8	18.3	19.3	19.6	22.9	24.3	25.7	26.8	34.3	37.5	41.1	44.9	49.1	53.7	
	(12) Bolawatta	46.5	31.5	35.3	38.0	39.1	47.0	52.1	63.1	69.5	76.7	84.3	92.9	102.3	112.6	123.9	
	(13) Chilaw	.0	27.5	30.3	32.9	37.6	40.2	43.2	46.5	48.6	51.7	55.1	60.4	66.2	72.6	79.6	
Western	(14) Kotugoda	77.0	86.2	94.6	62.0	66.8	66.6	69.8	69.2	72.5	79.5	87.3	95.9	105.4	115.8	127.1	
North	(15) Sapugaskanda	63.8	71.9	77.1	82.5	86.9	86.1	73.5	67.2	72.2	77.8	83.5	89.9	96.8	104.2	112.1	
	(16) Biyagama	47.1	53.2	58.8	55.4	61.3	63.1	58.8	64.6	71.1	78.2	86.0	93.1	100.6	108.7	117.5	
	(17) Veyangoda	.0	.0	.0	20.0	33.8	36.9	40.9	43.7	46.0	56.0	61.9	68.5	75.8	83.8	92.6	
	(18) Aniyakanda	.0	.0	.0	23.9	23.9	27.9	36.1	44.9	46.1	49.6	53.4	57.6	62.0	66.9	72.0	
Eastern	(19) Trincomalee	15.5	17.6	19.6	22.6	24.9	27.7	30.2	33.0	35.6	45.0	50.1	55.8	62.1	69.1	76.9	
	(20) Inginiyagala	19.6	21.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
	(21) Valaichchenai	.0	3.6	5.2	6.8	7.5	8.4	9.1	9.9	10.6	12.8	14.1	15.7	17.3	19.1	21.2	
	(22) Ampara	.0	.0	23.0	24.6	22.7	24.0	25.2	26.9	28.6	36.3	40.2	44.5	49.3	54.6	60.5	
Western South	(23) Ratmalana	49.5	51.5	55.1	56.9	49.8	60.5	60.2	60.9	61.7	76.2	80.9	85.9	91.3	96.9	102.8	
	(24) Pannipitiya	59.0	57.4	63.5	55.6	66.0	68.3	79.6	64.4	68.8	76.5	80.8	86.9	93.5	100.6	108.2	
	(25) O.D.S.S.(Kokonnawa)	54.3	59.8	64.6	74.9	82.0	90.1	97.2	104.4	112.1	118.6	125.5	132.7	140.3	148.3	156.8	
	(26) Matugama	47.2	47.4	52.0	47.9	52.1	44.7	48.0	51.3	53.9	60.1	65.5	71.4	77.9	84.9	92.5	
	(27) Avissawella	23.5	27.8	30.4	33.7	36.3	37.6	31.9	32.3	34.2	38.8	42.6	46.9	51.5	56.6	62.1	
	(28) Panadura	.0	14.6	15.3	25.0	26.9	29.0	30.8	32.4	33.7	40.5	43.4	46.7	50.2	54.0	58.0	
	(29) Athurugiriya	.0	.0	.0	18.7	25.1	37.9	46.0	60.3	62.3	77.6	84.0	91.0	98.6	106.7	115.5	
	(30) Sri Jayapura	.0	.0	.0	.0	.0	18.9	40.0	56.6	58.3	72.3	77.9	84.1	90.8	97.9	105.6	
	Southern	(30) Galle	44.5	48.6	42.1	47.3	50.0	59.6	67.4	74.4	81.9	90.5	99.7	110.9	123.2	136.8	151.9
		(31) Deniyaya	22.5	27.5	20.9	20.6	21.3	19.5	19.1	21.2	23.6	26.1	28.9	32.0	35.3	39.0	43.0
(32) Matara		.0	.0	16.7	24.9	33.4	39.7	44.1	48.8	54.1	59.8	65.7	72.9	80.9	89.8	99.6	
Uva	(33) Badulla	17.4	17.5	19.7	20.4	27.5	28.2	31.9	35.9	38.5	44.9	49.9	55.5	61.7	68.7	76.4	
Sabaragamuwa	(34) Balangoda	19.4	22.0	23.5	25.2	27.8	26.3	25.6	30.6	32.6	39.2	43.2	47.6	52.4	57.7	63.6	
	(35) Thetbiriya	41.5	45.2	48.4	48.9	44.0	43.8	46.4	49.1	51.1	61.7	67.5	73.9	81.0	88.7	97.0	
	(36) Embilipitiya	15.3	17.3	18.0	16.8	18.5	20.4	22.4	18.3	19.6	25.1	27.9	31.0	34.4	38.2	42.4	
	(37) Ratnapura	.0	.0	.0	.0	.0	7.2	19.3	26.7	28.4	34.2	37.6	41.4	45.6	50.2	55.3	
Colombo	(38) Kelanitissa(KTS)	41.5	45.6	49.1	52.1	56.1	60.6	64.3	67.8	71.5	75.3	79.3	83.6	88.0	92.6	97.4	
	(39) Sub-E(Kollipitiya)																
	(40) Sub-F(Fort)																
Total		897.6	1029.1	1121.8	1211.5	1320.5	1451.1	1568.6	1688.2	1797.7	2061.9	2245.9	2453.2	2678.9	2925.5	3194.7	

Table 4.4.2 - 1 Actual Electric Energy Sales by Areas (1985 - 1994)

(Unit: GWh)

Sales Energy (GWh)		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Provinces/Area											
I.	NORTH CENTRAL	42.27	45.38	44.83	45.15	38.87	53.81	51.37	57.53	68.61	88.22
	1) Anuradhapura	25.37	25.87	27.97	27.21	24.46	32.80	28.18	29.68	38.18	53.79
	2) Minneriya	16.90	19.51	16.86	17.94	14.41	21.01	23.19	27.85	30.46	34.93
II.	NORTHERN	109.15	121.02	77.55	89.46	90.51	58.76	0.39	2.76	4.96	5.80
	3) Jaffna	104.05	116.81	73.75	86.08	86.85	56.23	0.14	0.01	0.00	0.00
	4) Kilinochchi	5.10	4.22	3.80	3.38	3.66	2.53	0.26	2.75	4.95	5.80
III.	CENTRAL	214.66	228.94	233.22	245.50	235.50	271.47	274.01	289.02	314.09	325.96
	5) Nortonbridge	44.21	48.65	49.52	49.02	46.12	52.42	56.45	58.87	60.98	62.07
	6) Kandy	110.16	109.99	91.61	84.49	79.84	89.78	85.05	86.56	94.83	99.83
	7) Nuwara Eliya	57.93	60.50	60.62	64.16	59.85	65.44	61.47	62.96	72.48	73.54
	8) Matale	2.35	9.80	19.53	21.83	23.71	29.90	32.03	36.48	37.18	41.81
	9) Kundasale			11.93	26.00	25.99	33.95	39.01	44.14	48.62	48.72
IV.	NORTH WESTERN	117.20	140.85	130.26	121.03	122.70	158.97	181.21	212.71	246.27	265.34
	10) Kurunegala	48.17	54.98	46.79	42.97	48.70	42.37	39.89	40.50	50.55	56.07
	11) Wennappuwa					14.93	31.76	36.92	40.96	45.73	47.55
	12) Chilaw	69.04	85.88	83.47	78.06	59.08	68.88	74.18	97.42	109.12	109.67
	13) Kuliyapitiya						15.98	30.22	33.83	40.87	52.04
V.	WESTERN-NORTH	347.14	384.17	400.00	426.15	416.52	491.43	532.80	589.35	662.42	751.01
	14) Gampaha	56.62	63.73	68.16	68.46	69.69	89.42	56.48	52.68	59.49	61.73
	15) Veyangoda							30.76	42.84	46.29	51.90
	16) Negombo	121.88	132.13	143.21	152.01	139.77	146.49	165.95	153.07	176.57	193.56
	17) Kelaniya	98.99	108.79	103.90	118.05	132.86	135.59	120.74	248.26	273.11	323.17
	18) Ja-Ela	69.66	79.52	84.72	87.63	74.20	119.93	158.88	92.50	106.96	120.65
VI.	EASTERN	117.16	107.65	91.94	86.97	76.75	68.43	84.20	126.72	150.41	144.62
	19) Trincomalee	57.85	47.79	32.50	29.04	26.03	29.13	35.28	56.05	75.35	67.95
	20) Ampara	16.40	15.36	15.59	15.69	15.55	16.26	18.34	18.32	20.66	22.51
	21) Batticaloa	42.91	44.51	43.86	42.24	35.17	23.04	30.58	52.36	39.39	37.14
	22) Kalmunai									15.00	17.02
VII.	WESTERN-SOUTH	460.26	493.45	522.99	529.78	537.36	579.12	606.57	630.93	687.69	782.18
	23) Ratmalana	99.38	110.74	120.78	126.48	127.19	139.86	174.48	225.94	243.42	287.21
	24) Homagama	51.27	57.32	59.78	56.37	54.85	51.50	37.52	36.35	43.56	51.47
	25) Sri Jaya pura	110.36	108.81	116.58	127.49	129.71	191.89	203.26	222.24	236.35	264.59
	26) Kalutara	81.35	72.65	75.22	74.58	72.72	84.78	72.87	25.66	28.85	29.15
	27) Dehiwala	79.06	88.52	91.20	92.25	102.00	64.88	66.04	69.39	73.58	77.13
	28) Awissawelle	38.04	38.47	39.43	30.72	28.20	21.46	25.07	23.93	30.03	35.04
	29) Horana	0.81	16.95	19.99	21.90	22.68	24.76	27.32	27.42	31.91	37.60
VIII.	SOUTHERN	141.74	166.26	168.26	174.04	155.70	174.97	191.35	204.46	239.55	261.62
	30) Galle	38.00	44.04	44.71	46.75	48.10	56.98	63.11	81.23	92.84	106.81
	31) Ambalangoda	21.47	26.46	28.28	29.25	30.66	39.80	42.64	29.47	35.14	41.15
	32) Hambantota	29.06	36.05	33.09	36.25	24.14	21.58	21.55	26.65	29.78	32.06
	33) Matara	53.21	59.71	62.18	61.79	52.81	56.61	46.85	37.10	45.03	43.85
	34) Weligama							17.21	30.02	36.76	37.75
IX.	UVA	54.03	58.47	69.69	77.86	77.03	70.34	73.47	71.48	83.10	85.89
	35) Badulla	31.49	35.59	45.54	50.77	48.10	40.56	41.33	38.68	45.02	45.10
	36) Diyatalawa	22.54	22.87	24.15	27.08	28.93	29.78	32.13	32.80	38.08	40.79
X.	SABARAGAMUWA	55.78	56.67	68.54	94.10	117.47	143.48	175.71	178.99	211.07	226.56
	37) Kegalle	33.96	33.44	41.66	40.45	41.91	49.29	75.37	85.23	103.06	112.50
	38) Balangoda/Ratnapura	21.82	23.22	26.88	53.64	75.57	94.19	53.15	36.33	42.97	47.36
	39) Kahawatta							47.19	57.43	65.03	66.69
XI.	40) COLOMBO CITY	411.28	429.48	445.60	480.92	484.40	537.29	571.34	552.36	601.92	627.12
	TOTAL	2,070.67	2,232.32	2,252.86	2,370.95	2,352.83	2,608.07	2,742.41	2,916.31	3,270.10	3,564.82

Remarks :

- a) Shaded figures show that the annual increase rate is calculated together with the separated new Area and applied same values to both Areas.

Table 4.4.2 - 2 Annual Increase Rate of Energy Sales by Area (1986 - 1994)

(Unit:%)

Provinces/Area	Annual Increase Rate (%)										Averaged G Rate	
	1986	1987	1988	1989	1990	1991	1992	1993	1994	Arih-nctic	(1+i)/n	
I. NORTH CENTRAL	7.36	-1.21	0.71	-13.91	38.44	-4.55	11.99	19.32	29.25	9.71	8.59	
1) Anuradhapura	1.97	8.13	-2.73	-10.09	34.10	-14.11	5.34	28.65	40.88	10.24	8.71	
2) Minneriya	15.45	-13.60	6.43	-19.69	45.81	10.38	20.08	9.38	14.68	9.88	8.40	
II. NORTHERN	10.88	-35.92	15.36	1.18	-35.08							
3) Jaffna	12.26	-36.86	16.72	0.89	-35.26							
4) Kilinochchi	-17.25	-9.86	-11.13	8.40	-30.96							
III. CENTRAL	6.65	1.87	5.27	-4.07	15.27	0.93	5.48	8.68	3.78	4.87	4.75	
5) Nortonbridge	10.04	1.79	-1.01	-5.91	13.66	7.68	4.30	3.58	1.77	3.99	3.84	
6) Kandy	6.46	2.75	6.71	-4.22	12.45	-5.27	1.78	9.56	5.27	3.94	6.02	
7) Nuwara Eliya	4.43	0.20	5.84	-6.72	9.33	-6.06	2.43	15.12	1.45	2.89	2.69	
8) Matale	6.46	2.75	11.75	8.59	26.12	7.13	13.90	1.91	12.46	10.12	37.67	
9) Kundasale		2.75	6.71	-4.22	30.62	14.93	13.15	10.14	0.21	9.28	22.26	
IV. NORTH WESTERN	20.18	-7.52	-7.09	1.38	29.56	13.99	17.39	15.78	7.74	10.16	9.50	
10) Kurunegala	14.14	-14.89	-8.17	13.34	19.80	20.16	1.55	24.81	10.92	9.07	9.40	
11) Wennappuwa				-5.20	35.98	16.27	10.93	11.64	3.99	12.27	26.08	
12) Chilaw	24.39	-2.80	-6.48	-5.20	35.98	7.70	31.34	12.00	0.51	10.83	9.58	
13) Kuliapitiya					19.80	20.16	11.94	20.83	27.33	20.01	34.35	
V. WESTERN-NORTH	10.66	4.12	6.54	-2.26	17.98	8.42	10.61	12.40	13.37	9.09	8.95	
14) Gampaha	12.55	6.96	0.44	1.80	28.31	-2.44	9.50	12.92	3.77	8.20	8.05	
15) Veyangoda						-2.44	9.50	8.07	12.11	6.81	19.05	
16) Negombo	8.41	8.38	6.14	-8.05	4.80	13.29	-7.76	15.35	9.62	5.58	5.27	
17) Kelaniya	9.90	-4.49	13.62	12.54	2.06	-10.96	105.62	10.01	18.33	17.40	14.05	
18) Ja-Ela	14.16	6.54	3.43	-15.33	61.63	32.47	-41.78	15.63	12.80	9.95	6.29	
VI. EASTERN	-8.12	-14.59	-5.41	-11.74	-10.85	23.05	50.50	18.69	-3.85	4.19	2.37	
19) Trincomalee	-17.40	-31.99	-10.66	-10.34	11.90	21.10	58.90	34.42	-9.82	5.12	1.80	
20) Ampara	-6.37	1.48	0.67	-0.89	4.56	12.79	-0.15	12.81	8.93	3.76	3.58	
21) Batticaloa	3.73	-1.46	-3.68	-16.74	-34.50	32.76	71.20	3.90	-0.43	6.09	2.62	
22) Kalmunai								3.90	-0.43	1.74	13.46	
VII. WESTERN-SOUTH	7.21	5.99	1.30	1.43	7.77	4.74	4.02	9.00	13.74	6.13	6.07	
23) Ratmalana	11.43	9.06	4.72	0.56	9.96	24.75	29.49	7.74	17.99	12.86	12.52	
24) Homagama	11.81	4.30	-5.71	-2.70	-6.11	-27.14	-3.11	19.82	18.17	1.04	0.04	
25) Sri Jayapura	-1.41	7.15	9.35	1.75	47.93	5.93	9.34	6.35	11.95	10.93	10.20	
26) Kalutara	9.06	3.55	-0.86	-2.49	16.59	-14.04	-64.78	12.40	1.04	-4.39	-2.17	
27) Dehiwala	11.97	3.03	1.16	10.57	-36.40	1.80	5.07	6.03	4.82	0.89	-0.27	
28) Awissawelle	1.12	2.51	-22.08	-8.21	-23.89	16.84	-4.58	25.50	16.68	0.43	-0.91	
29) Horana	9.06	17.93	9.51	3.60	9.15	10.36	0.35	16.36	17.86	10.47	53.24	
VIII. SOUTHERN	17.30	1.20	3.44	-10.54	12.38	9.36	6.85	17.16	9.21	7.37	7.05	
30) Galle	15.89	1.52	4.56	2.88	18.47	10.76	28.70	14.30	15.05	12.46	12.17	
31) Ambalangoda	23.20	6.89	3.43	4.81	29.81	7.13	-30.87	19.24	17.08	8.97	7.49	
32) Hambantota	24.07	-8.23	9.57	-33.43	-10.58	-0.16	23.67	11.73	7.68	2.70	1.10	
33) Matara	12.22	4.14	-0.64	-14.53	7.20	13.15	4.78	21.39	-2.62	5.01	4.87	
34) Weligama						13.15	4.78	22.45	2.70	10.77	29.93	
IX. UVA	8.21	19.20	11.71	-1.06	-8.69	4.45	-2.71	16.26	3.36	5.64	5.28	
35) Badulla	13.03	27.96	11.48	-5.26	-15.68	1.91	-6.43	16.41	0.16	4.84	4.07	
36) Diyatalawa	1.47	5.58	12.15	6.80	2.95	7.90	2.07	16.09	7.14	6.91	6.81	
X. SABARAGAMUWA	1.59	20.96	37.29	24.84	22.14	22.46	1.87	17.92	7.34	17.38	16.85	
37) Kegalle	-1.52	24.56	-2.89	3.59	17.62	52.90	13.09	20.91	9.17	15.27	14.24	
38) Balangoda/Ratnapura	6.42	15.76	99.54	40.87	24.64	6.53	-6.56	18.28	10.21	23.97	20.17	
39) Kahawatta						6.53	-6.56	13.24	2.54	3.94	12.22	
XI. COLOMBO CITY	4.43	3.75	7.93	0.73	10.92	6.34	-3.32	8.97	4.19	4.88	4.80	
TOTAL	7.81	0.92	5.24	-0.76	10.85	5.15	6.34	12.13	9.01	6.30	6.22	

Table 4.4.2 - 3 Energy Demand Forecast by Area before Adjustment (1/2)

(Unit: GWh)

	Provinces/Area	Sales Energy	Base	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
		(GWh)	Year's										
		S Energy	S Energy										
I.	NORTH CENTRAL	88.7	98.6	109.2	120.7	133.1	146.5	160.9	174.6	189.3	205.2	222.4	
	1) Anuradhapura	53.8	59.8	66.4	73.4	81.1	89.3	98.2	106.6	115.7	125.6	136.2	
	2) Minneriya	34.9	38.7	42.8	47.2	52.0	57.1	62.7	67.9	73.6	79.7	86.3	
II.	NORTHERN	5.8	6.3	6.7	44.8	68.5	94.9	122.0	148.2	172.7	195.3	216.2	
	3) Jaffna	0.0	0.0	0.0	35.0	54.3	76.0	98.5	120.3	140.7	159.6	177.0	
	4) Kilinochchi	5.8	6.3	6.7	9.8	14.2	18.9	23.5	27.9	32.0	35.7	39.2	
III.	CENTRAL	326.0	346.6	368.3	391.2	415.4	440.9	467.7	493.6	521.0	550.0	580.7	
	5) Nortonbridge	62.1	65.2	68.3	71.6	75.0	78.5	82.1	85.5	89.0	92.7	96.5	
	6) Kandy	99.8	104.8	109.8	115.1	120.5	126.0	131.8	137.2	142.9	148.8	154.9	
	7) Nuwara Eliya	73.5	76.5	79.5	82.7	86.0	89.5	93.0	96.8	100.6	104.7	108.9	
	8) Matale	41.8	46.5	51.5	56.9	62.8	69.1	75.9	82.4	89.3	96.9	105.0	
	9) Kundasale	48.7	53.7	59.1	64.9	71.1	77.8	84.9	91.8	99.1	107.0	115.4	
IV.	NORTH WESTERN	265.3	299.6	337.4	379.1	425.0	475.6	531.3	584.8	643.8	708.6	779.9	
	10) Kurunegala	56.1	61.7	67.8	74.3	81.3	88.7	96.7	104.4	112.6	121.5	130.9	
	11) Wennappuwa	47.6	53.9	60.8	68.4	76.7	85.8	95.7	105.0	115.2	126.3	138.4	
	12) Chilaw	109.7	122.6	136.7	152.0	168.6	186.5	206.0	224.3	244.2	265.8	289.1	
	13) Kuliapitiya	52.0	61.4	72.2	84.5	98.5	114.6	132.8	151.1	171.7	195.1	221.5	
V.	WESTERN-NORTH	751.0	840.7	939.8	1,049.3	1,170.3	1,304.0	1,451.7	1,595.3	1,753.5	1,927.5	2,119.3	
	14) Gampaha	61.7	67.4	73.5	79.9	86.8	94.2	102.1	109.6	117.7	126.4	135.6	
	15) Veyangoda	51.9	56.0	60.2	64.8	69.6	74.7	80.1	85.4	91.0	97.0	103.3	
	16) Negombo	193.6	206.3	219.7	233.8	248.7	264.4	280.9	297.5	315.1	333.3	352.6	
	17) Kelaniya	323.2	377.1	438.2	507.3	585.1	672.7	771.3	867.3	974.5	1,094.3	1,228.2	
	18) Ja-Ela	120.7	133.9	148.1	163.5	180.1	198.0	217.3	235.6	255.3	276.6	299.5	
VI.	EASTERN	144.6	153.2	162.1	171.5	181.4	191.8	202.7	213.5	225.0	237.0	249.7	
	19) Trincomalee	68.0	72.1	76.5	81.1	85.9	91.0	96.4	101.7	107.4	113.4	119.7	
	20) Ampara	22.5	23.6	24.7	25.8	27.0	28.2	29.5	30.7	31.9	33.2	34.5	
	21) Batticaloa	37.1	39.8	42.5	45.5	48.6	51.8	55.3	58.7	62.3	66.2	70.3	
	22) Kalmunai	17.0	17.7	18.4	19.1	19.9	20.7	21.5	22.4	23.3	24.2	25.2	
VII.	WESTERN-SOUTH	782.2	865.6	956.4	1,055.3	1,162.9	1,279.9	1,407.0	1,527.5	1,658.3	1,800.2	1,954.2	
	23) Ratmalana	287.2	327.0	370.9	419.1	472.2	530.4	594.3	654.3	719.8	791.5	869.9	
	24) Homagama	51.5	53.5	55.7	57.9	60.2	62.6	65.1	67.7	70.4	73.3	76.2	
	25) Sri Jaya'pura	264.6	296.1	330.4	367.7	408.1	451.9	499.3	544.1	592.7	645.3	702.3	
	26) Kalutara	29.1	30.3	31.5	32.8	34.1	35.5	36.9	38.4	39.9	41.5	43.1	
	27) Dehiwala	77.1	80.2	83.4	86.8	90.2	93.8	97.6	101.5	105.6	109.8	114.2	
	28) Awissawelle	35.0	36.4	37.9	39.4	41.0	42.6	44.3	46.1	48.0	49.9	51.9	
	29) Horana	37.6	41.9	46.6	51.6	57.1	63.0	69.4	75.5	82.0	89.1	96.7	
VIII.	SOUTHERN	261.6	288.5	317.6	349.2	383.4	420.5	460.7	498.9	540.2	585.0	633.5	
	30) Galle	106.8	121.2	137.0	154.3	173.3	194.1	216.9	238.3	261.6	287.1	314.9	
	31) Ambalangoda	41.1	45.2	49.6	54.4	59.4	64.8	70.6	76.2	82.2	88.5	95.4	
	32) Hambantota	32.1	33.3	34.7	36.1	37.5	39.0	40.6	42.2	43.9	45.6	47.5	
	33) Matara	43.9	46.5	49.3	52.2	55.2	58.5	61.8	65.2	68.8	72.6	76.6	
	34) Weligama	37.7	42.2	47.0	52.2	57.9	64.1	70.7	77.0	83.8	91.1	99.1	
IX.	UVA	85.9	91.7	97.9	104.5	111.4	118.6	126.3	134.0	142.1	150.6	159.7	
	35) Badulla	45.1	47.7	50.5	53.4	56.5	59.7	63.1	66.5	70.1	73.9	77.9	
	36) Diyatalawa	40.8	44.0	47.4	51.1	54.9	59.0	63.3	67.5	72.0	76.7	81.8	
X.	SABARAGAMUWA	226.6	256.0	288.8	325.5	366.5	412.1	463.0	512.1	566.7	627.3	694.6	
	37) Kegalle	112.5	130.1	149.8	171.8	196.3	223.7	254.1	283.0	315.0	350.4	389.5	
	38) Balangoda/Ratnapura	47.4	55.9	65.7	76.9	89.7	104.3	120.9	137.5	156.3	177.5	201.6	
	39) Kahawatta	66.7	70.0	73.4	76.9	80.5	84.2	88.0	91.7	95.4	99.4	103.4	
XI.	40) COLOMBO CITY	627.1	664.0	702.8	743.5	786.3	831.4	878.8	926.6	977.0	1,030.1	1,086.1	
	TOTAL	3,564.8	3,910.61	4,287.13	4,734.66	5,201.17	5,716.07	6,271.93	6,809.15	7,389.55	8,016.85	8,696.23	
	(Increase Rate)		(9.7)	(9.6)	(10.4)	(9.9)	(9.8)	(9.7)	(8.6)	(8.5)	(8.5)	(8.5)	

Table 4.4.2 - 3 Energy Demand Forecast by Area before Adjustment (2/2)

(Unit : GWh)

Sales Energy (GWh)		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
		Provinces/Area										
I.	NORTH CENTRAL	241.0	261.0	282.7	306.0	330.7	357.3	386.1	417.2	450.7	487.0	526.2
	1) Anuradhapura	147.6	160.0	173.4	187.9	203.1	219.6	237.5	256.8	277.6	300.1	324.5
	2) Minneriya	93.4	101.0	109.3	118.2	127.5	137.7	148.6	160.4	173.1	186.9	201.7
II.	NORTHERN	235.9	254.9	273.5	291.9	306.5	321.8	337.9	354.8	372.5	391.1	410.7
	3) Jaffna	193.1	208.3	222.9	237.2	249.1	261.5	274.6	288.4	302.8	317.9	333.8
	4) Kilinochchi	42.8	46.6	50.5	54.6	57.4	60.2	63.2	66.4	69.7	73.2	76.9
III.	CENTRAL	613.0	647.2	683.6	722.2	762.6	805.6	851.2	899.8	951.4	1,006.3	1,064.8
	5) Nortonbridge	100.4	104.4	108.6	112.9	117.4	122.1	127.0	132.1	137.4	142.8	148.6
	6) Kandy	161.1	167.5	174.2	181.2	188.4	195.9	203.8	211.9	220.4	229.2	238.4
	7) Nuwara Eliya	113.2	117.7	122.4	127.3	132.4	137.7	143.2	149.0	154.9	161.1	167.6
	8) Matale	113.8	123.2	133.5	144.5	156.2	168.7	182.3	197.0	212.9	230.1	248.6
	9) Kundasale	124.6	134.4	144.9	156.3	168.2	181.0	194.9	209.8	225.8	243.0	261.6
IV.	NORTH WESTERN	858.4	944.9	1,040.2	1,145.2	1,258.3	1,383.0	1,520.7	1,672.8	1,840.9	2,026.8	2,232.3
	10) Kurunegala	141.1	152.1	163.9	176.5	189.8	204.1	219.5	236.1	253.9	273.0	293.6
	11) Wennappuwa	151.5	165.9	181.6	198.7	216.9	236.7	258.3	281.9	307.6	335.7	366.3
	12) Chilaw	314.4	341.7	371.4	403.5	437.5	474.3	514.1	557.4	604.3	655.1	710.2
	13) Kuliyaipitiya	251.3	285.1	323.3	366.5	414.1	467.9	528.8	597.5	675.2	763.0	862.2
V.	WESTERN-NORTH	2,330.8	2,564.1	2,821.6	3,105.8	3,412.5	3,751.3	4,125.7	4,539.6	4,997.4	5,503.8	6,064.2
	14) Gampaha	145.5	156.1	167.5	179.6	192.4	206.0	220.6	236.3	253.1	271.1	290.3
	15) Veyangoda	110.1	117.3	124.9	132.9	141.4	150.5	160.1	170.3	181.2	192.8	205.2
	16) Negombo	373.0	394.6	417.4	441.6	467.2	494.2	522.9	553.1	585.2	619.0	654.9
	17) Kelaniya	1,377.9	1,545.1	1,732.0	1,940.7	2,167.8	2,421.4	2,704.7	3,021.2	3,374.6	3,769.5	4,210.5
	18) Ja-Ela	324.3	351.0	379.8	410.9	443.7	479.1	517.4	558.7	603.2	651.4	703.4
VI.	EASTERN	263.0	277.1	291.8	307.4	323.8	341.2	359.4	378.7	399.0	420.4	443.0
	19) Trincomalee	126.3	133.4	140.8	148.6	156.9	165.6	174.8	184.5	194.8	205.6	217.0
	20) Ampara	35.9	37.4	38.9	40.4	42.0	43.7	45.5	47.3	49.2	51.1	53.2
	21) Batticaloa	74.6	79.1	83.9	88.9	94.3	100.0	106.0	112.4	119.2	126.4	134.1
	22) Kalmunai	26.2	27.3	28.3	29.5	30.7	31.9	33.2	34.5	35.9	37.3	38.8
VII.	WESTERN-SOUTH	2,121.4	2,303.0	2,500.2	2,714.3	2,941.0	3,187.4	3,455.3	3,746.6	4,063.3	4,407.7	4,782.3
	23) Ratmalana	955.7	1,049.5	1,152.1	1,264.3	1,383.5	1,514.0	1,656.8	1,813.0	1,984.0	2,171.1	2,375.8
	24) Homagama	79.2	82.4	85.7	89.1	92.7	96.4	100.3	104.3	108.4	112.8	117.3
	25) Sri Jayapura	764.0	831.0	903.5	982.2	1,065.3	1,155.4	1,253.1	1,359.2	1,474.1	1,598.9	1,734.1
	26) Kalutara	44.9	46.7	48.5	50.5	52.5	54.6	56.8	59.0	61.4	63.9	66.4
	27) Dehiwala	118.7	123.5	128.4	133.6	138.9	144.5	150.2	156.2	162.5	169.0	175.7
	28) Awissawelle	53.9	56.1	58.3	60.7	63.1	65.6	68.2	71.0	73.8	76.8	79.8
	29) Horana	105.0	113.9	123.6	134.0	145.0	157.0	169.9	183.9	199.0	215.4	233.1
VIII.	SOUTHERN	685.9	742.8	804.3	871.0	941.5	1,018.0	1,100.9	1,190.9	1,288.4	1,394.2	1,509.0
	30) Galle	345.2	378.4	414.5	454.0	495.9	541.7	591.7	646.3	706.0	771.2	842.3
	31) Ambalangoda	102.8	110.7	119.2	128.4	138.0	148.3	159.4	171.4	184.2	198.0	212.8
	32) Hambantota	49.4	51.3	53.4	55.5	57.7	60.1	62.5	65.0	67.6	70.3	73.1
	33) Matara	80.8	85.3	90.0	94.9	100.1	105.6	111.4	117.6	124.0	130.9	138.1
	34) Weligama	107.7	117.1	127.2	138.2	149.7	162.3	175.9	190.6	206.6	223.9	242.7
IX.	UVA	169.3	179.5	190.3	201.7	213.7	226.5	240.0	254.3	269.5	285.6	302.6
	35) Badulla	82.1	86.6	91.3	96.2	101.4	106.9	112.7	118.8	125.3	132.0	139.2
	36) Diyatalawa	87.2	92.9	99.0	105.5	112.3	119.6	127.3	135.5	144.2	153.5	163.4
X.	SABARAGAMUWA	769.2	852.2	944.5	1,047.1	1,158.3	1,282.1	1,419.9	1,573.3	1,744.1	1,934.4	2,146.5
	37) Kegalle	432.9	480.8	533.9	592.6	655.6	725.4	802.5	887.9	982.4	1,086.9	1,202.6
	38) Balangoda/Ratnapura	228.7	259.5	294.2	333.5	376.9	425.9	481.2	543.8	614.5	694.4	784.6
	39) Kahawatta	107.6	111.9	116.4	121.0	125.9	130.9	136.1	141.6	147.2	153.1	159.3
XI.	COLOMBO CITY	1,145.2	1,207.5	1,273.2	1,342.5	1,415.5	1,492.5	1,573.7	1,659.3	1,749.6	1,844.8	1,945.1
TOTAL		9,433.2	10,234.2	11,105.8	12,055.1	13,064.5	14,166.7	15,370.9	16,687.2	18,126.8	19,702.1	21,426.7
(Increase Rate)		(8.5)	(8.5)	(8.5)	(8.5)	(8.4)	(8.4)	(8.5)	(8.6)	(8.6)	(8.7)	(8.8)

Table 4.4.2 - 4 Estimated Annual Increase Rate of Energy Demand (1/2)

(Unit: %)

	Annual Increase Rate (%)	Calculated Increase Rate	Basic Increase Rate	Estimated Additional Annual Increase Rates for Adjustment									
				1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
I.	NORTH CENTRAL	9.71											
	1) Anuradhapura	10.24	8.12	3.12	2.81	2.53	2.27	2.05	1.84	0.46	0.41	0.37	0.34
	2) Minneriya	9.88	7.94	2.94	2.64	2.38	2.14	1.93	1.74	0.43	0.39	0.35	0.32
II.	NORTHERN												
	3) Jaffna		5.00	0.00	0.00	50.00	50.00	35.00	24.50	17.15	12.01	8.40	5.88
	4) Kilinochchi		5.00	3.00	2.70	40.00	40.00	28.00	19.60	13.72	9.60	6.72	4.71
III.	CENTRAL	4.87											
	5) Nortonbridge	3.99	4.00	0.99	0.89	0.80	0.72	0.65	0.58	0.15	0.13	0.12	0.11
	6) Kandy	3.94	4.00	0.94	0.85	0.76	0.69	0.62	0.56	0.14	0.13	0.11	0.10
	7) Nuwara Eliya	2.89	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	8) Matale	10.12	8.06	3.06	2.75	2.48	2.23	2.01	1.81	0.45	0.41	0.37	0.33
	9) Kundasale	9.28	7.64	2.64	2.38	2.14	1.93	1.74	1.56	0.39	0.35	0.32	0.28
IV.	NORTH WESTERN	10.16											
	10) Kurunegala	9.07	7.54	2.53	2.28	2.05	1.85	1.66	1.50	0.37	0.34	0.30	0.27
	11) Wennappuwa	12.27	9.13	4.14	3.73	3.35	3.02	2.72	2.44	0.61	0.55	0.50	0.45
	12) Chilaw	10.83	8.41	3.42	3.07	2.77	2.49	2.24	2.02	0.50	0.45	0.41	0.37
	13) Kuliyapitiya	20.01	13.00	5.00	4.50	4.05	3.65	3.28	2.95	0.74	0.66	0.60	0.54
V.	WESTERN-NORTH	9.09											
	14) Gampaha	8.20	7.10	2.10	1.89	1.70	1.53	1.38	1.24	0.31	0.28	0.25	0.23
	15) Veyangoda	6.81	6.40	1.41	1.27	1.14	1.03	0.92	0.83	0.21	0.19	0.17	0.15
	16) Negombo	5.58	5.79	0.79	0.71	0.64	0.57	0.52	0.46	0.12	0.10	0.00	0.00
	17) Kelaniya	17.40	11.70	5.00	4.50	4.05	3.65	3.28	2.95	0.74	0.66	0.60	0.54
	18) Ja-Ela	9.95	7.95	2.97	2.68	2.41	2.17	1.95	1.76	0.44	0.39	0.36	0.32
VI.	EASTERN	4.19											
	19) Trincomalee	5.12	5.56	0.56	0.51	0.46	0.41	0.37	0.33	0.00	0.00	0.00	0.00
	20) Ampara	3.76	4.00	0.76	0.68	0.62	0.55	0.50	0.45	0.11	0.10	0.00	0.00
	21) Batticaloa	6.09	6.04	1.05	0.94	0.85	0.76	0.69	0.62	0.15	0.14	0.13	0.11
	22) Kalmunai	1.74	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VII.	WESTERN-SOUTH	6.13											
	23) Ratmalana	12.86	9.43	4.43	3.98	3.59	3.23	2.90	2.61	0.65	0.59	0.53	0.48
	24) Homagama	1.04	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25) Sri Jayapura	10.93	8.46	3.47	3.12	2.81	2.53	2.27	2.05	0.51	0.46	0.41	0.37
	26) Kalutara	-4.39	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	27) Dehiwala	0.89	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	28) Awissawelle	0.43	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	29) Horana	10.47	8.23	3.24	2.91	2.62	2.36	2.12	1.91	0.48	0.43	0.39	0.35
VIII.	SOUTHERN	7.37											
	30) Galle	12.46	9.23	4.23	3.81	3.43	3.08	2.77	2.50	0.62	0.56	0.51	0.46
	31) Ambalagoda	8.97	7.49	2.48	2.23	2.01	1.81	1.63	1.46	0.37	0.33	0.30	0.27
	32) Hambantota	2.70	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	33) Matara	5.01	5.50	0.51	0.46	0.41	0.37	0.33	0.30	0.00	0.00	0.00	0.00
	34) Weligama	10.77	8.38	3.39	3.05	2.74	2.47	2.22	2.00	0.50	0.45	0.41	0.36
IX.	UVA	5.64											
	35) Badulla	4.84	5.42	0.42	0.38	0.34	0.31	0.28	0.25	0.00	0.00	0.00	0.00
	36) Diyatalawa	6.91	6.45	1.46	1.31	1.18	1.06	0.96	0.86	0.21	0.19	0.17	0.16
X.	SABARAGAMUWA	17.38											
	37) Kegalle	15.27	10.64	5.00	4.50	4.05	3.65	3.28	2.95	0.74	0.66	0.60	0.54
	38) Balangoda/Ratnapura	23.97	13.00	5.00	4.50	4.05	3.65	3.28	2.95	0.74	0.66	0.60	0.54
	39) Kahawatta	3.94	4.00	0.94	0.85	0.76	0.69	0.62	0.56	0.14	0.12	0.11	0.10
XI.	40) COLOMBO CITY	4.88	5.44	0.44	0.40	0.36	0.32	0.29	0.26	0.00	0.00	0.00	0.00
	TOTAL	6.30											

Note: Increase rates for adjustment for Kilinochchi Area are amended to meet Jaffna's ones (Jul.10.1996).

Table 4.4.2 - 4 Estimated Annual Increase Rate of Energy Demand (2/2)

(Unit : %)

Provinces/Area	Annual Increase Rate (%)	Estimated Additional Annual Increase Rates for Adjustment										
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
I. NORTH CENTRAL												
1) Anuradhapura	0.30	0.27	0.24	0.22								
2) Minneriya	0.28	0.26	0.23	0.21								
II. NORTHERN												
3) Jaffna	4.12	2.88	2.02	1.41								
4) Kilinochchi	4.24	3.81	3.43	3.09								
III. CENTRAL												
5) Nortonbridge	0.00	0.00	0.00	0.00								
6) Kandy	0.00	0.00	0.00	0.00								
7) Nuwara Eliya	0.00	0.00	0.00	0.00								
8) Matale	0.30	0.27	0.24	0.22								
9) Kundassale	0.26	0.23	0.21	0.19								
IV. NORTH WESTERN												
10) Kurunegala	0.25	0.22	0.20	0.18								
11) Wennappuwa	0.40	0.36	0.32	0.29								
12) Chilaw	0.33	0.30	0.27	0.24								
13) Kuliyaipitiya	0.48	0.44	0.39	0.35								
V. WESTERN-NORTH												
14) Gampaha	0.20	0.18	0.16	0.15								
15) Veyangoda	0.14	0.12	0.11	0.00								
16) Negombo	0.00	0.00	0.00	0.00								
17) Kelaniya	0.48	0.44	0.39	0.35								
18) Ja-Ela	0.29	0.26	0.23	0.21								
VI. EASTERN												
19) Trincomalee	0.00	0.00	0.00	0.00								
20) Ampara	0.00	0.00	0.00	0.00								
21) Batticaloa	0.10	0.00	0.00	0.00								
22) Kalmunai	0.00	0.00	0.00	0.00								
VII. WESTERN-SOUTH												
23) Ratmalana	0.43	0.39	0.35	0.31								
24) Homagama	0.00	0.00	0.00	0.00								
25) Sri Jaya'pura	0.34	0.30	0.27	0.24								
26) Kalutara	0.00	0.00	0.00	0.00								
27) Dehiwala	0.00	0.00	0.00	0.00								
28) Awissawelle	0.00	0.00	0.00	0.00								
29) Horana	0.31	0.28	0.25	0.23								
VIII. SOUTHERN												
30) Galle	0.41	0.37	0.33	0.30								
31) Ambalangoda	0.24	0.22	0.19	0.18								
32) Hambantota	0.00	0.00	0.00	0.00								
33) Matara	0.00	0.00	0.00	0.00								
34) Weligama	0.33	0.30	0.27	0.24								
IX. UVA												
35) Badulla	0.00	0.00	0.00	0.00								
36) Diyatalawa	0.14	0.13	0.11	0.10								
X. SABARAGAMUWA												
37) Kegalle	0.48	0.44	0.39	0.35								
38) Balangoda/Ratnapura	0.48	0.44	0.39	0.35								
39) Kahawatta	0.00	0.00	0.00	0.00								
XI. COLOMBO CITY												
40) COLOMBO CITY	0.00	0.00	0.00	0.00								
TOTAL												

Table 4.4.2 - 5 Energy Demand Forecast by Area after Adjustment (1/2)

	Provinces/Area	Sales Energy (GWh)	Base Year's	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
		S. Energy	S. Energy										
I.	NORTH CENTRAL	88.7	99.5	110.6	121.7	134.3	148.0	163.0	177.6	193.4	210.7	229.5	
	1) Anuradhapura	53.8	60.4	67.2	74.1	81.8	90.3	99.5	108.5	118.2	128.9	140.5	
	2) Minneriya	34.9	39.1	43.4	47.7	52.5	57.8	63.5	69.1	75.2	81.8	89.0	
II.	NORTHERN	5.8	6.3	6.8	45.2	69.1	95.9	123.6	150.8	176.5	200.5	223.0	
	3) Jaffna	0.0	0.0	0.0	35.3	54.8	76.8	99.8	122.4	143.8	163.8	182.6	
	4) Kilinochchi	5.8	6.3	6.8	9.9	14.3	19.1	23.8	28.4	32.7	36.7	40.5	
III.	CENTRAL	326.0	349.7	373.0	394.6	419.2	445.6	473.9	502.1	532.3	564.6	599.0	
	5) Nortonbridge	62.1	65.8	69.2	72.2	75.7	79.3	83.2	87.0	91.0	95.2	99.6	
	6) Kandy	99.8	105.7	111.2	116.0	121.6	127.4	133.5	139.6	146.0	152.7	159.8	
	7) Nuwara Eliya	73.5	77.2	80.5	83.4	86.8	90.4	94.3	98.4	102.8	107.4	112.3	
	8) Matale	41.8	46.9	52.1	57.4	63.3	69.8	76.9	83.8	91.3	99.4	108.3	
	9) Kundasale	48.7	54.2	59.9	65.5	71.8	78.6	86.1	93.3	101.2	109.8	119.1	
IV.	NORTH WESTERN	265.3	302.3	341.7	382.4	428.9	480.7	538.3	595.0	657.7	727.4	804.5	
	10) Kurunegala	56.1	62.3	68.6	74.9	82.0	89.7	98.0	106.2	115.1	124.7	135.1	
	11) Wenuappuwa	47.6	54.4	61.6	69.0	77.4	86.7	97.0	106.8	117.7	129.6	142.7	
	12) Chilaw	109.7	123.7	138.4	153.3	170.1	188.5	208.7	228.2	249.5	272.8	298.2	
	13) Kuliyaipitiya	52.0	62.0	73.1	85.2	99.4	115.8	134.6	153.7	175.4	200.3	228.5	
V.	WESTERN-NORTH	751.0	848.3	951.6	1,058.3	1,181.1	1,317.9	1,470.9	1,622.9	1,791.6	1,978.8	2,186.3	
	14) Gampaha	61.7	68.0	74.4	80.6	87.6	95.2	103.4	111.5	120.3	129.7	139.9	
	15) Veyangoda	51.9	56.5	61.0	65.3	70.2	75.5	81.2	86.9	93.0	99.6	106.6	
	16) Negombo	193.6	208.2	222.5	235.8	251.0	267.2	284.6	302.7	321.9	342.2	363.7	
	17) Kelaniya	323.2	380.5	443.7	511.6	590.5	679.9	781.5	882.3	995.6	1,123.4	1,267.1	
	18) Ja-Ela	120.7	135.1	150.0	164.9	181.8	200.1	220.1	239.6	260.8	283.9	309.0	
VI.	EASTERN	144.6	154.5	164.2	173.0	183.1	193.8	205.4	217.2	229.9	243.3	257.6	
	19) Trincomalee	68.0	72.8	77.4	81.8	86.7	92.0	97.7	103.5	109.7	116.4	123.5	
	20) Ampara	22.5	23.8	25.0	26.0	27.2	28.5	29.9	31.2	32.6	34.1	35.6	
	21) Batticaloa	37.1	40.1	43.1	45.9	49.0	52.4	56.0	59.7	63.7	67.9	72.5	
	22) Kalmunai	17.0	17.9	18.6	19.3	20.1	20.9	21.8	22.8	23.8	24.9	26.0	
VII.	WESTERN-SOUTH	782.2	873.4	968.4	1,064.3	1,173.6	1,293.5	1,425.6	1,554.0	1,694.3	1,848.1	2,016.0	
	23) Ratmalana	287.2	330.0	375.5	422.7	476.5	536.1	602.2	665.6	735.4	812.5	897.4	
	24) Homagama	51.5	54.0	56.4	58.4	60.8	63.3	66.0	68.9	72.0	75.2	78.6	
	25) Sri Jayapura	264.6	298.8	334.6	370.8	411.8	456.7	505.9	553.5	605.5	662.4	724.4	
	26) Kalutara	29.1	30.6	31.9	33.1	34.4	35.8	37.4	39.0	40.8	42.6	44.5	
	27) Dehiwala	77.1	80.9	84.5	87.5	91.1	94.8	98.9	103.2	107.8	112.7	117.8	
	28) Awissawelle	35.0	36.8	38.4	39.7	41.4	43.1	44.9	46.9	49.0	51.2	53.5	
	29) Horana	37.6	42.3	47.2	52.1	57.6	63.7	70.3	76.8	83.8	91.4	99.8	
VIII.	SOUTHERN	261.6	291.1	321.6	352.1	386.9	425.0	466.8	507.5	552.0	600.6	653.5	
	30) Galle	106.8	122.3	138.7	155.6	174.9	196.2	219.8	242.4	267.3	294.7	324.8	
	31) Ambalangoda	41.1	45.7	50.3	54.8	60.0	65.5	71.6	77.5	83.9	90.9	98.4	
	32) Hambantota	32.1	33.6	35.1	36.4	37.9	39.4	41.1	42.9	44.8	46.8	49.0	
	33) Matara	43.9	46.9	49.9	52.6	55.7	59.1	62.7	66.4	70.3	74.6	79.0	
	34) Weligama	37.7	42.6	47.6	52.7	58.4	64.7	71.6	78.3	85.6	93.6	102.2	
IX.	UVA	85.9	92.6	99.2	105.4	112.4	119.9	128.0	136.3	145.1	154.6	164.7	
	35) Badulla	45.1	48.2	51.1	53.9	57.0	60.3	63.9	67.6	71.6	75.9	80.4	
	36) Diyatalawa	40.8	44.4	48.0	51.5	55.4	59.6	64.1	68.6	73.5	78.8	84.4	
X.	SABARAGAMUWA	226.6	258.3	292.5	328.3	369.8	416.5	469.1	521.0	579.0	644.0	716.5	
	37) Kegalle	112.5	131.3	151.7	173.3	198.1	226.1	257.4	287.9	321.8	359.7	401.8	
	38) Balangoda/Ratnapura	47.4	56.4	66.5	77.5	90.5	105.4	122.5	139.9	159.7	182.3	207.9	
	39) Kahawatta	66.7	70.6	74.3	77.5	81.2	85.1	89.2	93.3	97.5	102.0	106.7	
XI.	40) COLOMBO CITY	627.1	670.0	711.6	749.8	793.5	840.2	890.4	942.6	998.2	1,057.5	1,120.5	
	TOTAL	3,564.8	3,946.0	4,341.0	4,775.0	5,252.0	5,777.0	6,355.0	6,927.0	7,550.0	8,230.0	8,971.0	

National Energy Sales Demand 3,587.0 3,946.0 4,341.0 4,775.0 5,252.0 5,777.0 6,355.0 6,927.0 7,550.0 8,230.0 8,971.0

Remarks: Difference of total energy sales in the base year is caused by private generation (22.2GWh).

Table 4.4.2 - 5 Energy Demand Forecast by Area after Adjustment (2/2)

Sales Energy (GWh)		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
		Provinces/Area										
I.	NORTH CENTRAL	249.8	271.9	295.7	321.5	349.4	379.4	411.9	446.8	484.5	524.9	568.5
	1) Anuradhapura	153.0	166.7	181.4	197.4	214.6	233.2	253.3	275.0	298.4	323.5	350.6
	2) Minneriya	96.8	105.2	114.3	124.1	134.7	146.2	158.5	171.8	186.1	201.4	217.9
II.	NORTHERN	244.6	265.5	286.1	306.6	323.8	341.7	360.4	380.0	400.4	421.6	443.7
	3) Jaffna	200.2	216.9	233.2	249.2	263.2	277.7	293.0	308.9	325.4	342.7	360.6
	4) Kilinochchi	44.4	48.5	52.9	57.4	60.6	64.0	67.5	71.1	74.9	78.9	83.1
III.	CENTRAL	635.4	674.0	715.0	758.6	805.7	855.5	908.1	963.8	1,022.6	1,084.7	1,150.3
	5) Nortonbridge	104.0	108.7	113.6	118.6	124.0	129.7	135.5	141.5	147.6	154.0	160.5
	6) Kandy	166.9	174.4	182.2	190.3	199.0	208.1	217.4	227.0	236.9	247.1	257.6
	7) Nuwara Eliya	117.3	122.6	128.1	133.8	139.9	146.3	152.8	159.6	166.5	173.7	181.0
	8) Matale	117.9	123.3	129.6	136.1	143.0	149.9	157.0	164.3	171.8	179.4	187.1
	9) Kundasale	129.1	139.9	151.6	164.1	177.7	192.3	207.9	224.7	242.7	262.0	282.6
IV.	NORTH WESTERN	889.8	984.0	1,088.1	1,203.0	1,329.3	1,468.7	1,622.4	1,791.8	1,978.7	2,184.5	2,411.6
	10) Kurunegala	146.3	158.4	171.4	185.4	200.5	216.8	234.2	252.9	272.9	294.3	317.2
	11) Wennappuwa	157.1	172.8	190.0	208.8	229.1	251.3	275.5	301.9	330.6	361.8	395.8
	12) Chilaw	325.9	355.9	388.5	423.9	462.2	503.6	548.5	597.0	649.5	706.1	767.2
	13) Kuliyaipitiya	260.5	296.9	338.2	384.9	437.5	496.9	564.1	640.0	725.7	822.4	931.4
V.	WESTERN-NORTH	2,416.0	2,670.3	2,951.5	3,262.4	3,605.1	3,983.6	4,401.4	4,862.5	5,371.2	5,932.3	6,551.4
	14) Gampaha	150.8	162.6	175.2	188.7	203.2	218.8	235.4	253.1	272.0	292.2	313.6
	15) Veyangoda	114.1	122.1	130.7	139.6	149.4	159.8	170.8	182.5	194.8	207.9	221.7
	16) Negombo	386.6	410.9	436.7	463.9	493.6	524.8	557.8	592.5	628.9	667.2	707.5
	17) Kelaniya	1,428.3	1,609.1	1,811.7	2,038.6	2,290.1	2,571.4	2,885.4	3,236.0	3,627.1	4,062.9	4,548.7
	18) Ja-Ela	336.1	365.5	397.3	431.7	468.8	508.8	551.9	598.4	648.4	702.1	759.9
VI.	EASTERN	272.7	288.5	305.3	322.9	342.1	362.3	383.4	405.6	428.9	453.2	478.6
	19) Trincomalee	131.0	138.9	147.3	156.1	165.7	175.8	186.5	197.6	209.3	221.6	234.5
	20) Ampara	37.2	38.9	40.6	42.4	44.4	46.4	48.5	50.6	52.8	55.1	57.4
	21) Batticaloa	77.3	82.4	87.7	93.4	99.6	106.2	113.1	120.4	128.1	136.3	144.8
	22) Kalmunai	27.2	28.4	29.6	31.0	32.4	33.9	35.4	36.9	38.5	40.2	41.9
VII.	WESTERN-SOUTH	2,198.9	2,398.3	2,615.2	2,851.2	3,107.1	3,384.8	3,686.2	4,013.0	4,367.3	4,750.9	5,166.5
	23) Ratmalana	990.6	1,092.9	1,205.1	1,328.1	1,461.6	1,607.8	1,767.5	1,942.0	2,132.4	2,340.1	2,566.7
	24) Homagama	82.1	85.8	89.6	93.6	97.9	102.4	107.0	111.7	116.6	121.6	126.7
	25) Sri Jayapura	792.0	865.4	945.1	1,031.7	1,125.4	1,226.9	1,336.9	1,455.8	1,584.4	1,723.3	1,873.4
	26) Kalutara	46.5	48.6	50.8	53.0	55.5	58.0	60.6	63.2	66.0	68.8	71.8
	27) Deliwala	123.1	128.6	134.3	140.3	146.7	153.4	160.3	167.4	174.6	182.1	189.9
	28) Awissawelle	55.9	58.4	61.0	63.7	66.7	69.7	72.8	76.0	79.3	82.7	86.3
	29) Horana	108.8	118.6	129.2	140.8	153.2	166.7	181.2	196.9	213.9	232.1	251.8
VIII.	SOUTHERN	711.0	773.5	841.3	914.9	994.7	1,081.1	1,174.5	1,275.6	1,384.8	1,502.7	1,630.2
	30) Galle	357.8	394.0	433.6	476.9	523.9	575.3	631.3	692.3	758.8	831.2	910.0
	31) Ambalangoda	106.5	115.3	124.7	134.8	145.8	157.5	170.1	183.5	198.0	213.4	229.9
	32) Hambantota	51.2	53.5	55.8	58.3	61.0	63.8	66.6	69.6	72.6	75.7	78.9
	33) Matara	83.8	88.8	94.1	99.7	105.8	112.2	118.9	125.9	133.3	141.1	149.2
	34) Weligama	111.7	121.9	133.1	145.1	158.2	172.3	187.7	204.2	222.1	241.4	262.2
IX.	UVA	175.5	186.9	199.0	211.9	225.8	240.5	256.0	272.4	289.6	307.8	326.9
	35) Badulla	85.1	90.1	95.5	101.1	107.1	113.5	120.2	127.3	134.6	142.3	150.4
	36) Diyatalawa	90.4	96.8	103.6	110.8	118.7	127.0	135.8	145.1	155.0	165.5	176.6
X.	SABARAGAMUWA	797.3	887.5	987.9	1,099.9	1,223.7	1,361.5	1,514.8	1,685.2	1,874.6	2,085.0	2,318.9
	37) Kegalle	448.7	500.7	558.4	622.4	692.6	770.3	856.2	951.1	1,055.9	1,171.5	1,299.2
	38) Balangoda/Ratnapura	237.1	270.2	307.8	350.3	398.1	452.2	513.4	582.5	660.5	748.4	847.7
	39) Kahawatta	111.5	116.5	121.7	127.1	133.0	139.0	145.2	151.6	158.3	165.0	172.0
XI.	40) COLOMBO CITY	1,187.1	1,257.5	1,331.8	1,410.2	1,495.4	1,585.0	1,678.9	1,777.3	1,880.5	1,988.4	2,101.4
TOTAL		9,778.0	10,658.0	11,617.0	12,663.0	13,802.0	15,044.0	16,398.0	17,874.0	19,483.0	21,236.0	23,148.0
National Energy Sales Demand		9,778.0	10,658.0	11,617.0	12,663.0	13,802.0	15,044.0	16,398.0	17,874.0	19,483.0	21,236.0	23,148.0

Table 4.4.2 - 6 Annual Increase Rate of Energy Demand after Adjustment (1/2)

	Provinces/Area	Annual Increase Rate (%)	Calculated Increase Rate	Basic Increase Rate	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
I.	NORTH CENTRAL		9.71											
	1) Anuradhapura		10.24		12.24	11.31	10.20	10.47	10.33	10.24	9.02	9.00	9.01	8.98
	2) Minneriya		9.88		11.88	10.97	9.88	10.16	10.03	9.96	8.81	8.80	8.81	8.78
II.	NORTHERN													
	3) Jaffna						55.10	40.20	29.83	22.64	17.51	13.94	11.42	
	4) Kilinochchi				8.98	8.08	44.42	45.10	33.19	24.92	19.20	15.10	12.26	10.24
III.	CENTRAL		4.87											
	5) Nortonbridge		3.99		5.94	5.26	4.38	4.79	4.80	4.85	4.56	4.58	4.61	4.61
	6) Kandy		3.94		5.89	5.21	4.34	4.76	4.77	4.82	4.56	4.58	4.61	4.61
	7) Nuwara Eliya		2.89		4.94	4.36	3.58	4.07	4.15	4.27	4.42	4.45	4.50	4.51
	8) Matale		10.12		12.13	11.20	10.10	10.36	10.23	10.15	8.95	8.94	8.94	8.92
	9) Kundasale		9.28		11.28	10.40	9.34	9.64	9.53	9.48	8.46	8.46	8.47	8.45
IV.	NORTH WESTERN		10.16											
	10) Kurunegala		9.07		11.07	10.20	9.15	9.46	9.36	9.31	8.35	8.34	8.36	8.34
	11) Wannappuwa		12.27		14.29	13.25	12.03	12.22	12.01	11.86	10.18	10.15	10.15	10.11
	12) Chilaw		10.83		12.84	11.87	10.73	10.97	10.81	10.71	9.35	9.34	9.34	9.31
	13) Kuliyaipitiya		20.01		19.07	17.91	16.58	16.72	16.45	16.25	14.19	14.16	14.14	14.09
V.	WESTERN-NORTH		9.09											
	14) Gampaha		8.20		10.19	9.37	8.37	8.70	8.64	8.62	7.84	7.84	7.85	7.85
	15) Veyangoda		6.81		8.78	8.04	7.11	7.50	7.48	7.51	7.04	7.05	7.08	7.07
	16) Negombo		5.58		7.54	6.87	6.00	6.43	6.46	6.53	6.33	6.35	6.29	6.31
	17) Kelaniya		17.40		17.76	16.60	15.29	15.42	15.15	14.95	12.89	12.85	12.83	12.79
	18) Ja-Ela		9.95		11.96	11.04	9.95	10.22	10.09	10.02	8.85	8.84	8.85	8.83
VI.	EASTERN		4.19											
	19) Trincomalee		5.12		7.08	6.44	5.59	6.04	6.08	6.16	5.98	6.02	6.06	6.08
	20) Ampara		3.76		5.71	5.05	4.20	4.62	4.65	4.72	4.53	4.55	4.50	4.51
	21) Batticaloa		6.09		8.05	7.35	6.46	6.87	6.88	6.93	6.62	6.64	6.67	6.67
	22) Kalmunai		1.74		4.94	4.36	3.58	4.07	4.15	4.27	4.42	4.45	4.50	4.51
VII.	WESTERN-SOUTH		6.13											
	23) Ratmalana		12.86		14.89	13.81	12.56	12.73	12.50	12.33	10.52	10.49	10.48	10.44
	24) Homagama		1.04		4.94	4.36	3.58	4.07	4.15	4.27	4.42	4.45	4.50	4.51
	25) Sri Jayapura		10.93		12.94	11.97	10.82	11.06	10.89	10.79	9.41	9.39	9.39	9.36
	26) Kalutara		-4.39		4.94	4.36	3.58	4.07	4.15	4.27	4.42	4.45	4.50	4.51
	27) Dehiwala		0.89		4.94	4.36	3.58	4.07	4.15	4.27	4.42	4.45	4.50	4.51
	28) Awissawelle		0.43		4.94	4.36	3.58	4.07	4.15	4.27	4.42	4.45	4.50	4.51
	29) Horana		10.47		12.47	11.53	10.41	10.66	10.51	10.42	9.14	9.13	9.14	9.11
VIII.	SOUTHERN		7.37											
	30) Galle		12.46		14.49	13.43	12.21	12.39	12.17	12.01	10.29	10.27	10.26	10.22
	31) Ambalangoda		8.97		10.97	10.10	9.06	9.37	9.28	9.23	8.29	8.29	8.30	8.28
	32) Hambantota		2.70		4.94	4.36	3.58	4.07	4.15	4.27	4.42	4.45	4.50	4.51
	33) Matara		5.01		6.97	6.33	5.49	5.94	5.99	6.07	5.92	5.96	6.00	6.01
	34) Weligama		10.77		12.78	11.82	10.68	10.92	10.76	10.66	9.32	9.30	9.30	9.28
IX.	UVA		5.64											
	35) Badulla		4.84		6.80	6.17	5.34	5.80	5.85	5.94	5.84	5.88	5.92	5.93
	36) Diyatalawa		6.91		8.88	8.14	7.20	7.58	7.56	7.58	7.09	7.11	7.13	7.13
X.	SABARAGAMUWA		17.38											
	37) Kegalle		15.27		16.69	15.54	14.23	14.36	14.09	13.88	11.82	11.79	11.77	11.72
	38) Balangoda/Ratnapura		23.97		19.07	17.91	16.58	16.72	16.45	16.25	14.19	14.16	14.14	14.09
	39) Kahawatta		3.94		5.89	5.21	4.34	4.76	4.77	4.82	4.56	4.58	4.61	4.61
XI.	40) COLOMBO CITY		4.88		6.84	6.20	5.37	5.83	5.88	5.97	5.86	5.90	5.94	5.95
	TOTAL		6.30		10.69	10.01	10.00	9.99	10.00	10.01	9.00	8.99	9.01	9.00

Table 4.4.2 - 6 Annual Increase Rate of Energy Demand after Adjustment (2/2)

		Annual Increase Rate (%)										
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
I	NORTH CENTRAL											
	1) Anuradhapura	8.94	8.90	8.85	8.80	8.74	8.68	8.62	8.56	8.49	8.43	8.37
	2) Minneriya	8.74	8.70	8.65	8.60	8.56	8.50	8.44	8.37	8.31	8.25	8.19
II	NORTHERN											
	3) Jaffna	9.64	8.39	7.49	6.86	5.60	5.54	5.48	5.42	5.36	5.30	5.24
	4) Kilinochchi	9.76	9.32	8.91	8.54	5.60	5.54	5.48	5.42	5.36	5.30	5.24
III	CENTRAL											
	5) Nortonbridge	4.50	4.49	4.46	4.44	4.60	4.54	4.48	4.42	4.36	4.29	4.24
	6) Kandy	4.50	4.49	4.46	4.44	4.60	4.54	4.48	4.42	4.36	4.29	4.24
	7) Nuwara Eliya	4.50	4.49	4.46	4.44	4.60	4.54	4.48	4.42	4.36	4.29	4.24
	8) Matale	8.88	8.83	8.78	8.73	8.68	8.62	8.56	8.50	8.43	8.37	8.31
	9) Kundasale	8.41	8.38	8.33	8.28	8.26	8.20	8.14	8.07	8.01	7.94	7.89
IV	NORTH WESTERN											
	10) Kurunegala	8.30	8.27	8.22	8.17	8.16	8.10	8.04	7.97	7.91	7.84	7.79
	11) Wennappuwa	10.06	10.00	9.94	9.88	9.76	9.70	9.63	9.57	9.51	9.44	9.38
	12) Chitaw	9.26	9.22	9.16	9.11	9.03	8.97	8.91	8.85	8.78	8.72	8.66
	13) Kuliyaipitiya	14.03	13.97	13.90	13.83	13.65	13.59	13.52	13.46	13.39	13.32	13.26
V	WESTERN-NORTH											
	14) Gampaha	7.82	7.79	7.74	7.70	7.71	7.66	7.59	7.53	7.47	7.40	7.35
	15) Veyangoda	7.05	7.02	6.98	6.85	7.01	6.95	6.89	6.83	6.77	6.70	6.64
	16) Negombo	6.30	6.29	6.26	6.23	6.40	6.34	6.28	6.22	6.15	6.09	6.03
	17) Kelaniya	12.72	12.66	12.59	12.52	12.34	12.28	12.21	12.15	12.09	12.02	11.96
	18) Ja-Ela	8.79	8.75	8.69	8.64	8.60	8.54	8.48	8.41	8.35	8.29	8.23
VI	EASTERN											
	19) Trincomalee	6.07	6.06	6.03	6.00	6.17	6.11	6.05	5.99	5.92	5.86	5.80
	20) Ampara	4.50	4.49	4.46	4.44	4.60	4.54	4.48	4.42	4.36	4.29	4.24
	21) Batticaloa	6.65	6.54	6.51	6.49	6.65	6.59	6.53	6.47	6.41	6.34	6.28
	22) Kalmunai	4.50	4.49	4.46	4.44	4.60	4.54	4.48	4.42	4.36	4.29	4.24
VII	WESTERN-SOUTH											
	23) Ratmalana	10.39	10.33	10.26	10.20	10.06	10.00	9.93	9.87	9.81	9.74	9.68
	24) Homagama	4.50	4.49	4.46	4.44	4.60	4.54	4.48	4.42	4.36	4.29	4.24
	25) Sri Jaya'pura	9.32	9.27	9.21	9.16	9.08	9.02	8.96	8.90	8.83	8.77	8.71
	26) Kalutara	4.50	4.49	4.46	4.44	4.60	4.54	4.48	4.42	4.36	4.29	4.24
	27) Dehiwala	4.50	4.49	4.46	4.44	4.60	4.54	4.48	4.42	4.36	4.29	4.24
	28) Awissawelle	4.50	4.49	4.46	4.44	4.60	4.54	4.48	4.42	4.36	4.29	4.24
	29) Horana	9.06	9.02	8.97	8.91	8.85	8.79	8.73	8.67	8.60	8.54	8.48
VIII	SOUTHERN											
	30) Galle	10.17	10.11	10.05	9.99	9.86	9.80	9.73	9.67	9.61	9.54	9.48
	31) Ambalangoda	8.25	8.21	8.16	8.12	8.11	8.05	7.99	7.92	7.86	7.79	7.74
	32) Hambantota	4.50	4.49	4.46	4.44	4.60	4.54	4.48	4.42	4.36	4.29	4.24
	33) Matara	6.01	5.99	5.97	5.94	6.11	6.05	5.99	5.93	5.86	5.80	5.74
	34) Weligama	9.23	9.19	9.13	9.08	9.00	8.94	8.88	8.82	8.75	8.69	8.63
IX	UVA											
	35) Badulla	5.93	5.91	5.89	5.86	6.02	5.97	5.91	5.84	5.78	5.72	5.66
	36) Diyatalawa	7.10	7.08	7.04	7.00	7.06	7.00	6.94	6.88	6.82	6.75	6.69
X	SABARAGAMUWA											
	37) Kegalle	11.66	11.60	11.52	11.46	11.27	11.21	11.15	11.09	11.02	10.95	10.89
	38) Balangoda/Ratnapura	14.03	13.97	13.90	13.83	13.65	13.59	13.52	13.46	13.39	13.32	13.26
	39) Kahawatta	4.50	4.49	4.46	4.44	4.60	4.54	4.48	4.42	4.36	4.29	4.24
XI	40) COLOMBO CITY	5.95	5.93	5.91	5.88	6.05	5.99	5.93	5.86	5.80	5.74	5.68
	TOTAL	9.00	9.00	9.00	9.00	8.99	9.00	9.00	9.00	9.00	9.00	9.00

Table 4.4.2 - 8 Sentout Energy Demand Forecast at Grid Substation by Area (1/2)

Provinces	Sales Energy (GWh) CEB's Areas	Base Year's E.Safe	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
			Transmission Losses in %		7.00	6.70	6.40	6.10	5.80	5.50	5.25	5.00
Distribution Losses in %		10.50	10.15	9.80	9.45	9.10	8.75	8.40	8.10	7.80	7.50	
I.North	1) Anuradhapura	53.8	68.1	75.4	82.7	91.0	99.9	109.7	119.0	129.3	140.4	152.5
Central	2) Minneriya	34.9	44.1	48.7	53.2	58.4	63.9	70.0	75.8	82.2	89.1	96.6
II.Northern	3) Jaffna	0.0	0.0	0.0	39.5	60.9	85.1	110.0	134.3	157.2	178.5	198.1
	4) Kilinochchi	5.8	7.1	7.7	11.0	15.9	21.1	26.3	31.2	35.7	40.0	43.9
III.Central	5) Nortonbridge	62.1	74.1	77.7	80.7	84.2	87.8	91.7	95.4	99.4	103.7	108.0
	6) Kandy	99.8	119.2	124.8	129.6	135.2	141.0	147.1	153.2	159.6	166.3	173.4
	7) Nuwara Eliya	73.5	87.0	90.4	93.2	96.5	100.1	103.9	108.0	112.4	117.0	121.9
	8) Matale	41.8	52.8	58.5	64.1	70.4	77.3	84.8	91.9	99.8	108.3	117.5
	9) Kundasale	48.7	61.1	67.2	73.1	79.8	87.0	94.8	102.4	110.7	119.6	129.2
IV.North	10) Kurunegala	56.1	70.2	77.0	83.7	91.2	99.3	108.0	116.5	125.8	135.8	146.6
Western	11) Wennappuwa	47.6	61.3	69.1	77.0	86.0	96.0	106.9	117.2	128.7	141.2	154.9
	12) Chilaw	109.7	139.5	155.3	171.2	189.2	208.7	230.0	250.4	272.8	297.2	323.6
	13) Kuliyaipitiya	52.0	69.9	82.0	95.1	110.5	128.2	148.3	168.6	191.8	218.1	247.9
V.Western	14) Gampaha	61.7	76.7	83.5	90.0	97.4	105.4	114.0	122.4	131.5	141.3	151.8
North	15) Veyangoda	51.9	63.6	68.4	73.0	78.1	83.6	89.4	95.3	101.7	108.4	115.7
	16) Negombo	193.6	234.7	249.6	263.4	279.1	295.8	313.7	332.1	351.9	372.7	394.7
	17) Kelaniya	323.2	429.0	497.9	571.4	656.5	752.6	861.3	968.1	1,088.4	1,223.6	1,375.0
	18) Ja-Ela	120.7	152.3	168.3	184.2	202.1	221.5	242.6	262.9	285.1	309.2	335.3
VI.Eastern	19) Trincomalee	68.0	82.0	86.9	91.3	96.4	101.8	107.6	113.6	120.0	126.8	134.0
	20) Ampara	22.5	26.8	28.0	29.1	30.3	31.6	32.9	34.2	35.7	37.1	38.7
	21) Batticaloa	37.1	45.2	48.3	51.2	54.5	58.0	61.7	65.5	69.6	74.0	78.7
	22) Kalmunai	17.0	20.1	20.9	21.6	22.3	23.2	24.1	25.0	26.0	27.1	28.2
VII.Western	23) Ratmalana	287.2	372.0	421.4	472.2	529.9	593.4	663.6	730.3	804.0	885.0	973.9
South	24) Homagama	51.5	60.9	63.3	65.2	67.6	70.1	72.7	75.6	78.7	81.9	85.3
	25) Sri Jayapura	264.6	336.9	375.4	414.2	457.9	505.5	557.6	607.4	662.0	721.5	786.2
	26) Kalutara	29.1	34.5	35.8	36.9	38.3	39.7	41.2	42.8	44.6	46.4	48.3
	27) Dehiwala	77.1	91.2	94.8	97.7	101.2	105.0	109.0	113.3	117.9	122.7	127.8
	28) Awissawelle	35.0	41.4	43.1	44.4	46.0	47.7	49.5	51.5	53.6	55.8	58.1
	29) Horana	37.6	47.7	52.9	58.2	64.1	70.5	77.5	84.2	91.6	99.6	108.3
VIII.Southe	30) Galle	106.8	137.8	155.6	173.8	194.5	217.2	242.2	266.0	292.2	321.0	352.5
	31) Ambalangoda	41.1	51.5	56.4	61.2	66.7	72.5	78.9	85.1	91.8	99.0	106.8
	32) Hambantota	32.1	37.9	39.4	40.6	42.1	43.6	45.3	47.1	49.0	51.0	53.1
	33) Matara	43.9	52.9	56.0	58.8	62.0	65.4	69.1	72.8	76.9	81.2	85.8
	34) Weligama	37.7	48.0	53.4	58.9	65.0	71.7	78.9	85.9	93.6	101.9	111.0
IX.UVA	35) Badulla	45.1	54.3	57.4	60.2	63.4	66.8	70.4	74.2	78.3	82.6	87.2
	36) Diyatalawa	40.8	50.1	53.9	57.5	61.6	66.0	70.6	75.3	80.4	85.8	91.6
XI.Sagara-	37) Kegalle	112.5	148.0	170.2	193.5	220.3	250.2	283.7	315.9	351.8	391.8	436.1
gamua	38) Balangoda/Rainapura	47.4	63.6	74.6	86.6	100.6	116.6	135.0	153.5	174.6	198.5	225.7
	39) Kahawatta	66.7	79.6	83.4	86.6	90.3	94.2	98.3	102.3	106.6	111.1	115.8
XII.Colom-	40) COLOMBO CITY	627.1	755.3	798.4	837.5	882.3	930.1	981.3	1,034.3	1,091.2	1,151.8	1,216.0
bo City												
TOTAL		3,564.8	4,448.2	4,870.9	5,333.4	5,839.7	6,394.8	7,003.5	7,600.8	8,253.7	8,964.1	9,735.6

Note : (a) Distribution losses 10.5% of the year 1995 are assumed to be decreased by 0.35 percent per annum for first 6 years and 0.3 percent per annum for following years upto 7.5%.

(b) Transmission losses 7.0% of the year 1994 are assumed to be decreased by 0.25 percent per annum for first 5 years and 0.25% per annum for following years upto 4.5%.

Table 4.4.2 - 8 Sentout Energy Demand at Grid Substation by Area (2/2)

Provinces	Sales Energy (GWh)		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	CEB's Areas												
Transmission Losses in %			4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
Distribution Losses in %			7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
I.North	1)	Anuradhapura	166.1	180.9	196.9	214.2	232.9	253.1	274.9	298.5	323.8	351.1	380.5
Central	2)	Minneriya	105.0	114.2	124.0	134.7	146.2	158.7	172.0	186.5	201.9	218.6	236.5
II.Northern	3)	Jaffna	217.2	235.4	253.1	270.4	285.6	301.4	317.9	335.2	353.2	371.9	391.4
	4)	Kilinochchi	48.2	52.7	57.4	62.3	65.8	69.4	73.2	77.2	81.3	85.6	90.1
III.Central	5)	Nortonbridge	112.9	118.0	123.2	128.7	134.6	140.7	147.0	153.5	160.2	167.1	174.2
	6)	Kandy	181.2	189.3	197.7	206.5	216.0	225.8	235.9	246.4	257.1	268.1	279.5
	7)	Nuwara Eliya	127.3	133.1	139.0	145.2	151.8	158.7	165.8	173.2	180.7	188.5	196.5
	8)	Matale	128.0	139.3	151.5	164.7	179.0	194.5	211.1	229.0	248.4	269.1	291.5
	9)	Kundasale	140.1	151.9	164.5	178.1	192.8	208.6	225.6	243.8	263.4	284.3	306.7
IV.North	10)	Kurunegala	158.8	171.9	186.0	201.2	217.6	235.3	254.2	274.4	296.1	319.4	344.2
Western	11)	Wennappuwa	170.5	187.5	206.2	226.5	248.6	272.8	299.0	327.6	358.8	392.7	429.5
	12)	Chilaw	353.6	386.2	421.6	460.0	501.6	546.5	595.2	647.9	704.8	766.3	832.6
	13)	Kuliyapitiya	282.7	322.2	367.0	417.8	474.8	539.3	612.2	694.6	787.6	892.5	1,010.8
V.Western	14)	Gampaha	163.7	176.4	190.1	204.7	220.5	237.4	255.4	274.7	295.2	317.1	340.3
North	15)	Veyangoda	123.8	132.5	141.8	151.5	162.1	173.4	185.3	198.0	211.4	225.6	240.6
	16)	Negombo	419.6	446.0	473.9	503.4	535.6	569.6	605.3	643.0	682.5	724.1	767.8
	17)	Kelaniya	1,550.0	1,746.2	1,966.1	2,212.3	2,485.3	2,790.5	3,131.4	3,511.8	3,936.2	4,409.2	4,936.4
	18)	Ja-Ela	364.8	396.7	431.2	468.4	508.7	552.2	599.0	649.4	703.6	761.9	824.6
VI.Eastern	19)	Trincomalee	142.1	150.7	159.8	169.4	179.8	190.8	202.4	214.5	227.2	240.5	254.4
	20)	Ampara	40.4	42.2	44.1	46.1	48.2	50.4	52.6	55.0	57.3	59.8	62.3
	21)	Batticaloa	83.9	89.4	95.2	101.4	108.1	115.2	122.7	130.7	139.1	147.9	157.2
	22)	Kalmunai	29.5	30.8	32.2	33.6	35.1	36.7	38.4	40.1	41.8	43.6	45.5
VII.Western	23)	Ratmalana	1,075.0	1,186.1	1,307.8	1,441.3	1,586.2	1,744.8	1,918.1	2,107.5	2,314.2	2,539.5	2,785.4
South	24)	Hornagarna	89.1	93.1	97.3	101.6	106.3	111.1	116.1	121.2	126.5	131.9	137.5
	25)	Sri Jayapura	859.4	939.1	1,025.7	1,119.6	1,221.3	1,331.5	1,450.8	1,579.9	1,719.5	1,870.2	2,033.1
	26)	Kalutara	50.5	52.7	55.1	57.5	60.2	62.9	65.7	68.6	71.6	74.7	77.9
	27)	Dchiwala	133.6	139.6	145.8	152.2	159.2	166.5	173.9	181.6	189.5	197.7	206.1
	28)	Awissawelle	60.7	63.4	66.2	69.2	72.3	75.6	79.0	82.5	86.1	89.8	93.6
	29)	Horana	118.1	128.7	140.3	152.8	166.3	180.9	196.7	213.7	232.1	251.9	273.3
VIII.Southern	30)	Galle	388.3	427.6	470.6	517.6	568.6	624.3	685.1	751.3	823.5	902.0	987.6
	31)	Ambalangoda	115.6	125.1	135.3	146.3	158.2	170.9	184.6	199.2	214.8	231.6	249.5
	32)	Hambantota	55.5	58.0	60.6	63.3	66.2	69.2	72.3	75.5	78.8	82.2	85.7
	33)	Matara	90.9	96.4	102.1	108.2	114.8	121.7	129.0	136.7	144.7	153.1	161.9
	34)	Weligama	121.2	132.3	144.4	157.5	171.7	187.0	203.6	221.6	241.0	261.9	284.5
IX.UVA	35)	Badulla	92.4	97.8	103.6	109.7	116.3	123.2	130.5	138.1	146.1	154.5	163.2
	36)	Diyatalawa	98.1	105.0	112.4	120.3	128.8	137.8	147.4	157.5	168.2	179.6	191.6
XI.Sagara-garnua	37)	Kegalle	486.9	543.4	606.0	675.5	751.6	835.9	929.1	1,032.1	1,145.9	1,271.4	1,409.9
	38)	Balangoda/Ratnapura	257.3	293.3	334.0	380.2	432.1	490.8	557.1	632.1	716.7	812.2	919.9
	39)	Kahawatta	121.0	126.5	132.1	138.0	144.3	150.8	157.6	164.6	171.7	179.1	186.7
XII.Colombo City	40)	COLOMBO CITY	1,288.3	1,364.7	1,445.3	1,530.4	1,622.9	1,720.0	1,822.0	1,928.8	2,040.8	2,157.9	2,280.5
TOTAL			10,611.4	11,566.4	12,607.1	13,742.2	14,978.3	16,326.2	17,795.6	19,397.4	21,143.5	23,045.9	25,120.8

Note : (a) Distribution losses 10.5% of the year 1995 are assumed to be decreased by 0.35 percent per annum for first 6 years and 0.3 percent per annum for following years upto 7.5%.

(b) Transmission losses 7.0% of the year 1994 are assumed to be decreased by 0.25 percent per annum for first 5 years and 0.25% per annum for following years upto 4.5%.

Table 4.4.3 - 1 Actual Monthly and Annual Peak Demand by Substation in The Year 1995

(Unit : MW)

Provinces	Grid Substation	Monthly Peak Demand (MW)												Annual Peak
		95.1	95.2	95.3	95.4	95.5	95.6	95.7	95.8	95.9	95.10	95.11	95.12	
North	(1) Anuradhapura	20.0	20.0	20.0	20.0	20.0	24.0	20.0	22.0	15.6	20.0	20.0	18.2	24.0
Central	(2) Habarana	20.0	18.0	17.0	17.0	16.0	16.0	17.0	18.0	19.1	18.5	23.4	22.7	23.4
Northern	(3) Chunnakam													0.0
	(4) Kilinochchi													0.0
Central	(5) Kiribathkumbura	35.0	35.0	36.0	37.0	37.0	36.0	39.0	32.0	38.0	37.2	37.2	36.5	39.0
	(6) Ukuwela	27.0	26.0	28.0	27.0	27.0	27.0	27.0	26.0	27.0	28.0	28.0	28.0	28.0
	(7) Rantambe	8.0	8.0	8.0	8.0	4.0	5.0	8.0	7.9	8.7	8.8	9.1	8.7	9.1
	(8) Nuwara Eliya	12.0	11.0	12.0	13.0	13.0	13.0	14.0	12.0	12.2	12.4	13.0	12.3	14.0
	(9) Wimalasurendra	18.0	18.0	17.0	18.0	19.0	18.0	17.0	17.0	16.0	16.2	16.0	16.0	19.0
North	(10) Kurunegala	17.0	22.0	23.0	20.0	21.0	19.0	19.0	19.0	18.2	16.9	17.8	18.3	23.0
Western	(11) Puttalam	17.0	17.0	16.0	17.0	18.0	18.0	16.0	17.0	17.2	15.2	16.8	17.2	18.0
	(12) Bolawatta	37.0	38.0	41.0	37.0	42.0	39.0	44.0	45.0	44.3	43.7	46.1	44.6	46.1
Western-	(13) Kotugoda	63.0	69.0	61.0	69.0	68.0	74.0	76.0	72.0	77.6	75.0	80.7	78.0	80.7
North	(14) Sapugaskanda	54.0	60.0	64.0	60.0	52.0	56.0	55.0	57.0	55.0	54.0	56.0	58.8	64.0
	(15) Biyagama	42.0	47.0	44.0	42.0	49.0	47.0	40.0	40.0	46.0	46.0	48.0	50.0	50.0
Eastern	(16) Trincomalee	16.0	16.0	10.0	10.0	10.0	15.0	15.0	15.0	15.6	16.3	16.3	16.3	16.3
	(17) Inginiyagara	18.0	18.0	22.0	19.0	20.0	24.0	21.0	22.0	21.3	23.5	23.3	18.0	24.0
Western-South	(18) Ratmalana	48.0	49.0	51.0	44.0	46.0	48.0	28.0	30.0	28.0	29.0	23.0	34.1	51.0
	(19) Pannipitiya	59.0	58.0	59.0	58.0	61.0	57.0	81.0	80.0	74.2	82.5	86.4	83.0	86.4
	(20) Matugama	44.0	44.0	45.0	46.0	49.0	48.0	50.0	45.0	51.0	54.0	53.0	46.1	54.0
	(21) Awissawella	10.4	10.2	10.4	11.4	11.5	10.5	10.5	10.4	10.4	9.8	10.9	8.6	11.5
	(22) Padukka	10.0	11.0	11.0	10.0	12.0	11.0	12.0	10.0	10.6	11.0	11.1	9.0	12.0
	(23) O.D.S.St(Kolonnawa)	45.0	49.0	52.0	46.0	48.0	45.0	43.0	41.0	40.0	39.8	45.9	45.9	52.0
Southern	(24) Galle	43.0	48.0	45.0	42.0	44.0	40.0	45.0	47.0	42.0	52.0	57.0	57.0	57.0
	(25) Deniyaya	21.0	18.0	22.0	25.0	26.0	21.0	21.0	22.0	22.0	20.0	22.0	21.0	26.0
Uva	(26) Badulla	18.0	17.0	17.0	16.0	19.0	18.0	17.0	17.0	17.5	16.7	17.8	15.9	19.0
Sabaragamuwa	(27) Balangoda	17.0	17.0	17.0	14.0	15.0	17.0	16.0	17.0	16.9	13.1	16.1	16.5	17.0
	(28) Thulhiriya	38.0	38.0	38.0	36.0	44.0	40.0	41.0	43.0	40.0	44.5	44.0	47.5	47.5
	(29) Embilipitiya	12.0	14.0	14.0	14.0	12.0	15.0	14.0	14.0	12.0	14.0	12.0	12.0	15.0
Colombo	(30) Kelanitissa(KPS)	31.0	32.0	32.0	30.0	32.0	34.0	33.0	33.0	39.0	40.6	35.3	34.0	40.6
	(31) Sub-E(Kollipitiya)	25.0	24.0	21.0	22.0	24.0	24.0	22.0	23.0	24.3	24.0	25.0	24.5	25.0
	(32) Sub-F(Fort)	12.0	10.0	11.0	12.0	12.0	10.0	10.0	12.0	11.4	11.7	9.7	12.1	12.1
	Total	837.4	862.2	864.4	840.4	871.5	869.5	871.5	866.3	871.1	891.4	920.9	910.8	1004.7

Table 4.4.3-3 Power Supply Matrix of CEB's Areas - Grid Substations after Feeders' Rearrangement and Substation Addition in The Year 2000

Power Grid	North Central		Northern		Central		North Western		Western-North		Eastern		Western-South		Southern		Uva		Sinhgaramang														
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60													
Power Grid	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60													
Power Grid	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60													
Power Grid	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60													
North	100																																
Central		100																															
North Western			100																														
Western-North				100																													
Eastern					100																												
Western-South						100																											
Southern							100																										
Uva								100																									
Sinhgaramang									100																								
North										100																							
Central											100																						
North Western												100																					
Western-North													100																				
Eastern														100																			
Western-South															100																		
Southern																100																	
Uva																	100																
Sinhgaramang																		100															
North																			100														
Central																				100													
North Western																					100												
Western-North																						100											
Eastern																							100										
Western-South																								100									
Southern																									100								
Uva																										100							
Sinhgaramang																											100						
North																												100					
Central																													100				
North Western																														100			
Western-North																															100		
Eastern																															100		
Western-South																																100	
Southern																																100	
Uva																																100	
Sinhgaramang																																	100

Table 4.5 - 1 Long Term Generation Expansion Plan (1995 - Base Case)

Year	Hydro Additions	Thermal Additions	Thermal Retirements	LOLP (%)
1996	--	---	Sapugas Diesel 2x18MW (for refurbishment)	34.24
1997	---	* Diesel 40MW (Sapugaskanda) Refurb Diesel 2x18MW (Sapugaskanda)	Sapugas Diesel 2x18MW (for refurbishment)	37.43
1998	---	Gas Turbine 100MW (Kelanitissa) Diesel 90MW (Sapugas) Refurb. Diesel 2x18MW	---	4.404
1999	--	* Combined Cycle 150MW (Kelanitissa)	---	0.359
2000	---	Combined Cycle 150MW	---	0.024
2001	---	Gas Turbine 70MW	KPS Oil Steam	0.358
2002	* Kukule 70MW	Coal 150MW (Site 1, Unit 1)	Gas Turbine 3x18MW (for refurbishment)	0.325
2003	--	Coal 150MW (Site 1, Unit 2) Refurb. GT 3x20MW	Gas Turbine 3x18MW (for refurbishment)	0.331
2004	---	Coal 300MW (Site 1, Unit 3) Refurb. GT 3x20MW	Sapugas Diesel 2x18MW	0.253
2005	---	Coal 300MW (Site 1, Unit 4)	---	0.188
2006	---	---	---	0.951
2007	--	Coal 300MW (Site 2, Unit 1)	---	0.872
2008	---	Combined Cycle 300MW (Outside Colombo, Boosa)	Sapugas Diesel 2x18MW	0.898
2009	--	Coal 300MW (Site 2, Unit 2)	--	1.015
2010	--	Coal 300MW (Site 2, Unit 3)	---	1.255
2011	---	Combined Cycle 300MW (Outside Colombo)	---	1.479
2012	---	Combined Cycle 300MW (Outside Colombo) Coal 300MW (Site 2, Unit 4)	---	0.697

2013	---	Coal 300MW (Site 3, Unit 1)	---	1.179
2014	---	Coal 300MW (Site 3, Unit 2) Gas Turbine 35MW	---	1.794
2015	---	Combined Cycle 300MW (Outside Colombo) Gas Turbine 175MW (Outside Colombo)	---	1.754
Total PV Cost up to 2015		2,579 million US\$		

Note:

- (1) Assumed discount rate is 10%.
- (2) Calculation of long-term average generation cost does not include energy contribution from the existing hydro plants, plant commissioning and retirement at the beginning of the year indicated.
- (3) At the present stage, the first site conceived for development as coal thermal plant is Puttalam.
- (4) * denote committed projects.

Table 4.6-1 List of 1995-97 Transmission System Extension Plan

1. Ongoing Projects

1-A Transmission System Augmentation & Development Project (TSADP)

(1) 132 kV Transmission Lines

- Laxapana - Badulla	2-cct	Lynx	75 km	<u>Completed</u> (July 96)
- T-connection of Panadura SS	2-cct	Lynx	7 km	<u>Completed</u>
- T-connection of Avissawella SS	2-cct	Lynx	0.5 km	(Dec. 96)

(2) Grid Substations

- Construction of new 132/33 kV substations at Panadura Avissawella (2 x 31.5 MVA) Nuwara Eliya (2 x 31.5 MVA)				<u>Completed</u> (Dec. 96) <u>Completed</u> (June 96)
- Augmentation of existing stations at Badulla (switchgear addition) ODSS Kolonnawa (2 x 31.5 MVA addition) Puttalam (2 x 31.5 MVA replacing existing 2 x 10 MVA and feeder bays)				<u>Completed</u> (Dec. 96) <u>Compl</u>

1-B Transmission & Grid Substation Development Project (TGSDP)

(1) 132 kV Transmission Lines

- Puttalam - Anuradhapura	2-cct	Lynx	80 km	(Nov. 97)
- Embilipitiya - Matara	2 - cct	Lynx	62 km	(Nov. 97)
- Loop connection on Ukuwela SS	2 - cct	Lynx	6 km	(Nov. 97)
- Kotugoda - Bolawatta (Replacing conductors of existing line - Coyote)	2 - cct	Zebra	21 km	(Nov. 97)

(2) Grid Substations

- Construction of new 132/33 kV Matara substation (2 x 31.5 MVA)				(Nov. 97)
- Construction of double busbar at Puttalam substation				(Nov. 97)
- Augmentation and reinforcement of existing substations at Ukuwela and Embilipitiya (switchgear)				(Nov. 97)

1-C Power Distribution & Transmission Project (PDTP)

(1) 132 kV Transmission Line

- T-connection of Chilaw SS	2 - cct	Lynx	8 km	<u>Completed</u>
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(2) Grid Substation

- Construction of new 132/33 kV Chilaw substation (2 x 31.5 MVA)				<u>Completed</u>
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1-D Second Power Distribution & Transmission Project (SPDTP)

(1) Transmission Lines

- 220 kV Kotmale - Anuradhapura	2 - cct	Zebra	160 km	(Jan. 98)
- 132 kV Rantembe - Badulla	1 - cct	Lynx	37 km	(Jan. 98)
	(2nd cct)			
- 132 kV Kotmale T - off	2 - cct	Lynx	8 km	<u>Completed</u>

- (2) Substations
- Addition of 132 kV switchgear at Kotmale Completed
 - Addition of 132 kV switchgear at Rantembe and Badulla Completed

1-E CEB Fund

- 132 kV Habarana - Valaichchenai 1-cct Lynx 96 km Completed
- Valaichchenai substation (Not fixed)
- Pannipitiya transformer addition (1 x 31.5 MVA) Completed
- Ratmalana transformer addition (1 x 31.5 MVA) Completed
- Anuradhapura substation (2 x 31.5 MVA replacing 2 x 10 MVA and switchgear addition) (March 96)

2. Newly Started Projects

2-A Korean Fund

- (1) Capacity increase by replacing existing transformers
- Habarana 2 x 31.5 MVA (replace 2 x 10 MVA) (end 1998)
 - Balangoda 2 x 31.5 MVA (replace 2 x 10 MVA) (end 1998)
 - Trincomalee 2 x 31.5 MVA (replace 2 x 10 MVA) (end 1998)
- (2) Addition of 2 feeder bays at Kiribatkumbra substation for connection change (end 1998)

2-B IDA Fund

- (1) Conversion of 132 kV Biyagama - Kelanitissa line to 220 kV operation
- Transmission line Insulator addition on suspension towers (end 1998)
 - Biyagama 2 - 220 kV outgoing bays (end 1998)
 - Kelanitissa 220 kV indoor GIS substation with 2 x 150 MVA, 220/132/33 kV transformers and switchgear for 4 incoming and 2 outgoing bays (end 1999)

2-C ADB Fund (To be completed by end-1998)

(2) 132 kV Transmission Lines

- a) New construction
- Kotugoda - Veyangoda 2- cct Lynx 20 km
- b) Conductor upgrading
- Kolonnawa - Kotugoda grid SS 2- cct Coyote to Zebra 38 km

(3) 132 kV Substations

- (a) Construction of new substation
- Veyangoda 2 x 31.5 MVA
- (b) Capacity increase by installing additional transformers and feeder bays:
- Sapugaskanda grid SS 2 x 31.5 to 4 x 31.5 MVA
 - Kiribatkumbra 2 x 31.5 to 3 x 31.5 MVA
 - Matugama 2 x 31.5 to 3 x 31.5 MVA
 - Bolawatta 2 x 31.5 to 3 x 31.5 MVA
 - Ratmalana 33 kV grid SS Rehabilitation by replacing transformers, etc.

Table 4.6 - 2 List of Recommended Transmission System After 1995 - 1997 Plans

1. 1997 - 1998 Period

(1) 132 kV Transmission Lines

- Ampara - Valaichchenai 1- cct Lynx 80 km

(2) Upgrading of 220 kV designed 132 kV line between Biyagama and Pannipitiya

- Transmission line Insulator addition on suspension towers
 - Biyagama SS Outgoing 220 kV switchgear
 - Pannipitiya SS 2 x 250 MVA transformers
 220 kV and 132 kV switchgear

(3) Addition of transformer capacity

- Thulhiriya 1 x 31.5 MVA
 - Badulla 1 x 31.5 MVA
 - Galle 1 x 31.5 MVA

(4) Replacement of existing transformers

. Ukuwela	2 x 15	to	2 x 31.5 MVA
. Chunnakam	2 x 30, 1 x 10	to	3 x 31.5 MVA
. Valaichchenai	2 x 10	to	2 x 31.5 MVA

2. After 1997 - 1998

(1) 132 kV Transmission Lines

. Matugama - Galle (220 kV design) 2- cct Zebra 50 km

(2) Future seven grid substations for construction by the year 2000:

. Veyangoda
 . Anniyakanda
 . Sri Jaya'pura
 . Aturugiriya
 . Sithawakapura (industrial complex demand)
 . Ratnapura

Note: Six substations except Sithawakapura coincide with the CEB's Medium Voltage Distribution Development Plan, 1995 - 2005.

