TIME DEPENDENT TRANSMISSION LOSSES IN NATIONAL NETWORK

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in partial fulfillment of the requirements for the
Degree of Master of Science

by

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DECLARATION

The work submitted in this dissertation is the result of my own investigation, except where otherwise stated.

It has not already been accepted for any degree, and is also not being concurrently submitted for any other degree.

UOM Verified Signature

P.A.N.Shantha
2008/11/24

I endorse the declaration by the candidate.

UOM Verified Signature

Prof. Ranjit Perera

ABSTRACT

Ceylon Electricity Board (CEB) has the responsibility of Transmission and most of the Generation and Distribution of electric power in Sri Lanka. Today, total technical and non technical losses (Energy losses) are around 15.67%. It is a large loss compared with losses in developed countries. Losses will also affect electricity tariff. At the end, it affects domestic, commercial and industrial consumers as well as Gross Domestic Product (GDP) of the country. Transmission losses are very important to future planning and design of the National Network. Losses should be minimized as much as possible.

As Ceylon Electricity Board has not yet investigated time dependent transmission losses in National Electric Network accurately, this study focused on the following,

- Study thirty minutes time interval transmission losses in National Network for a day.
- Transmission network is modelled and simulated using MATLAB programme and calculation of power flow and transmission losses.
- Analysis of the simulated results.

Simulation results show that peak loss is recorded at 19.30 p.m. and amounting to 3.17% of total generation. Day minimum is recorded at 3.30 a.m. and minimum loss is 1.52% of total generation. Any time in between 0.00 a.m. to 24.00 midnight, Transmission losses vary from 1.52 % to 3.17 %.

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Chapter 1

Introduction

1.1 Background

Electric power transmission is an essential component in our electricity network. Typically, power transmission is between the power plant and a substation near a populated area. This is distinct from electricity distribution, which is concerned with the delivery from the substation to the consumers. Due to the large amount of power involved, AC transmission takes place at high voltage levels. Electricity is usually transmitted over long distance through overhead power transmission lines. Underground power transmission is used only in densely populated areas (such as Colombo city). Engineers design transmission networks to transport the energy as efficiently as feasible, while at the same time taking into account economic factors, network safety and redundancy. These networks use components such as power lines, cables, circuit breakers, switches and transformers. Efficiency is improved by increasing the transmission voltage using a step-up transformer, which has the effect of reducing the current in the conductors, whilst keeping the power transmitted nearly equal to the power input.

Losses

The reduced current flowing through the conductor reduces the losses in the conductor and since the losses are proportional to the square of the current, halving the current results in a four-fold decrease in transmission losses. At the generating plants the energy is produced at a relatively low voltage of up to 15 kV then stepped up by the power station transformer to a higher voltage (132 kV or 220 kV) for transmission over long distances to grid exit points (substations).

In an alternating current transmission line, the inductance and capacitance of the line conductors can be significant. The currents that flow in these components of transmission line impedance constitute reactive power, which transmits no energy to the load. Reactive current flow causes extra losses in the transmission circuit. The ratio of real power (transmitted to the load) to apparent power is the power factor. As reactive current increases, the reactive power increases and the power factor decreases. For low power factors losses will increase. CEB adds capacitor banks and Static Var Compensators (SVC) throughout the system.

1.2 Motivation

Time dependent transmission losses have not been investigated by the CEB yet. CEB has calculated energy losses, based on gross generation and gross sales units figures. The outcome of this study will evaluate time dependent transmission losses in national network. This can be used for proper planning of the transmission network expansions. As an Engineer, the author was motivated to select this topic for his study due to above facts.

1.3 Objective

Time dependent transmission losses in national electric network have not investigated by CEB yet. Therefore, the objectives is to,

- Investigate the thirty minutes time interval transmission losses in national network using load flow analysis.

1.4 Scope of work

1 Data Collection

- Thirty minutes time interval power generation of each power plant, connected to the system.
- Thirty minutes time interval loads at 33 kV feeders
- Maximum and Minimum reactive power generation of each generators.
- Transformer impedances and Transformer types
- Transmission line resistance (R), Reactance (X) and line charging Suceptance (Y)

2. Modelling the National Network
   - Model all transmission lines; three phase two winding transformers and three phase three winding transformers using standard mathematical models.
3. Write MATLAB programme for modelled network to analyze load flow and calculate transmission losses.
4. Analyze the results and make concluding remarks

Chapter 2

National Generation, Transmission and Distribution System

2.1 Ceylon Electricity Board

Ceylon Electricity Board (CEB) is the statutory body established by an Act of Parliament of Sri Lanka in 1969. CEB has the responsibility of Transmission and most of the Generation and Distribution of electric power. In addition to its own hydro and thermal electricity generation, CEB purchases power from private producers as well. It is estimated that 80% [13] of the population has access to electricity from the national electricity grid at the end of 2007.

2.2 Generation

The existing generating system in the country is mainly owned by CEB with considerable share owned by private sector. Until 1996 total electricity system was owned by CEB. Since 1996, private sector has also being participated in power generation. The existing generating system in the country has 2444 MW [13] of capacity including non-dispatchable plants. The dispatchable capacity is predominantly owned by CEB , which includes 1207 MW of hydro and 548 MW of thermal generation capacity. Balance dispatchable capacity 567 MW [13], which is totally thermal plants, is owned by Independent Power Producers (IPPs). Wind capacity is 3 MW and Small hydro capacity is 119 MW [13] at the end of 2007. Sixty nine percent of the total existing CEB system capacity is installed at 16 hydro power stations. Details of the existing hydro power stations are given in Annex 5 and the geographical locations of the Power Stations are shown in Annex 6.

The major hydropower schemes already developed are associated with Kelani and Mahaweli river basins. Five hydro power stations with a total installed capacity of 335 MW [11] (28% of the total hydropower capacity) have been built in two cascaded systems associated with the two main tributaries of Kelani River; Kehelgamu Oya and Maskeliya Oya (Laxapana Complex). The five stations in this complex are generally not required to operate for irrigation or other water requirements; hence they are primarily designed to meet the power requirements of the country. Castlereigh and Moussakelle are the major storage reservoirs in the Laxapana hydropower complex located at main tributaries Kehelgamu Oya and Maskeliya Oya respectively. Castlereigh reservoir with a storage of 44.8 MCM feeds the Wimalasurendra Power Station of capacity 2 x 25 MW at Norton-bridge, while Canyon (2 x 30 MW) is fed from the Moussakelle reservoir of storage 123.4 MCM. Similarly in the down stream of these two tributaries, Canyon, Norton and Laxapana ponds having smaller storage capacity feed to New Laxapana, Old Laxapana and Polpitiya power stations respectively.

The development of the major hydro-power resources under the Mahaweli project added six hydro power stations (Ukuwela, Bowatenna, Kotmale, Victoria, Randenigala and Rantambe) to the national grid with a total installed capacity of 660 MW (55% of the total hydropower capacity).

The schematic diagrams of the hydro reservoir networks are shown in Annex 7 and Annex 8. Unlike the Laxapana cascade, the Mahaweli system is operated as a multi-purpose system. Hence power generation from the associated power stations is governed by the down-stream irrigation requirements as well. These requirements being highly seasonal constrain the operation of power stations during certain periods of the year.

Samanalawewa hydro power plant of capacity 120 MW was commissioned in 1992. Samanalawewa reservoir, which is on Walawe River. Kukule power project which was commissioned in 2003, is run-of river type plant located on Kukule Ganga, a tributary of Kalu Ganga. Kukule power plant is 70 MW in capacity.

The contribution of the three small hydro plants (Inginiyagala - 11MW, Uda Walawe - 6MW and Nilambe - 3MW) to the National Grid is small and is dependent on irrigation water releases from the respective reservoirs.

In addition to the above hydro plants, CEB has a 3 MW wind plant at Hambantota. This project was implemented as a pilot project in order to see the feasibility of wind development in Sri Lanka. However, wind is a non-dispatchable power source.

2.3 Transmission

Transmission system which is from power station sending end to substation is operated by the CEB Transmission Division. Electrical power is transferred from generation station to consumers through overhead lines and underground cables. Under ground cables are used in Colombo city. National Network uses three phase alternating current (AC) and 50Hz frequency. The voltage criteria defines the permitted voltage deviation at any line bus bar of the national network under normal operating conditions are as shown below.

	Tolerance	Maximum Voltage kV	Minimum voltage kV
Normal state 1. 220kV	+5% ,-5%	231	209
2. 132kV	+10%, -10%	145.2	118.2
Emergency state 1. 220kV	+5%,-10%	213	198
2. 132kV	+10%,-10%	145.2	118.2

Table 2.1 CEB Transmission voltage levels and allowable tolerances

2.4 Distribution

For operational convenience, there are four distribution divisions (Annex 9) in CEB headed by four Additional General Managers.

Distribution Division 01

Area of operation of Distribution Division 1 covers Colombo Municipality, North Western Province, North Central Province and Northern Province which is 42% of the total land area of Sri Lanka. Colombo city is the most profitable part of the division while area such as Jaffna and Kilinochchi are the areas where the business is far below the satisfactory level

Distribution Division 02

Distribution Division 2 consists of Eastern Province, Central Province and Western Province North.

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Distribution Division 02

Distribution Division 2 consists of Eastern Province, Central Province and Western Province North.

Distribution Division 03

Distribution Division 3 consists of three CEB Provinces namely as Western Province South- II, Sabaragamuwa and Uva. Western Province South- II is the highest revenue generating Province having a larger number of industrial and commercial consumers.

Distribution Division 04

Distribution Division 4 consists of Western Province South -I and Southern Province.

2.5 Transmission losses

During the process of transferring power across the transmission system, some of the power is lost. The lost power is known as transmission losses which consist of two components, active power and reactive power losses. Since current is dependent on the volume of power transferred, losses are variable and increase with the distance to which electricity has to travel.

There are mainly two kinds of losses in a transformer, namely core loss and ohmic loss. The core loss occurring in the transformer iron, consists of two components, hysteresis loss and eddy current loss. When a transformer is loaded, ohmic loss occurs in both the primary and secondary winding resistances. In addition to the core and ohmic losses, stray load loss and dielectric loss are also present in a transformer. The Stray load loss and dielectric loss are small and are, therefore neglected.

The Map of Sri Lanka Transmission System

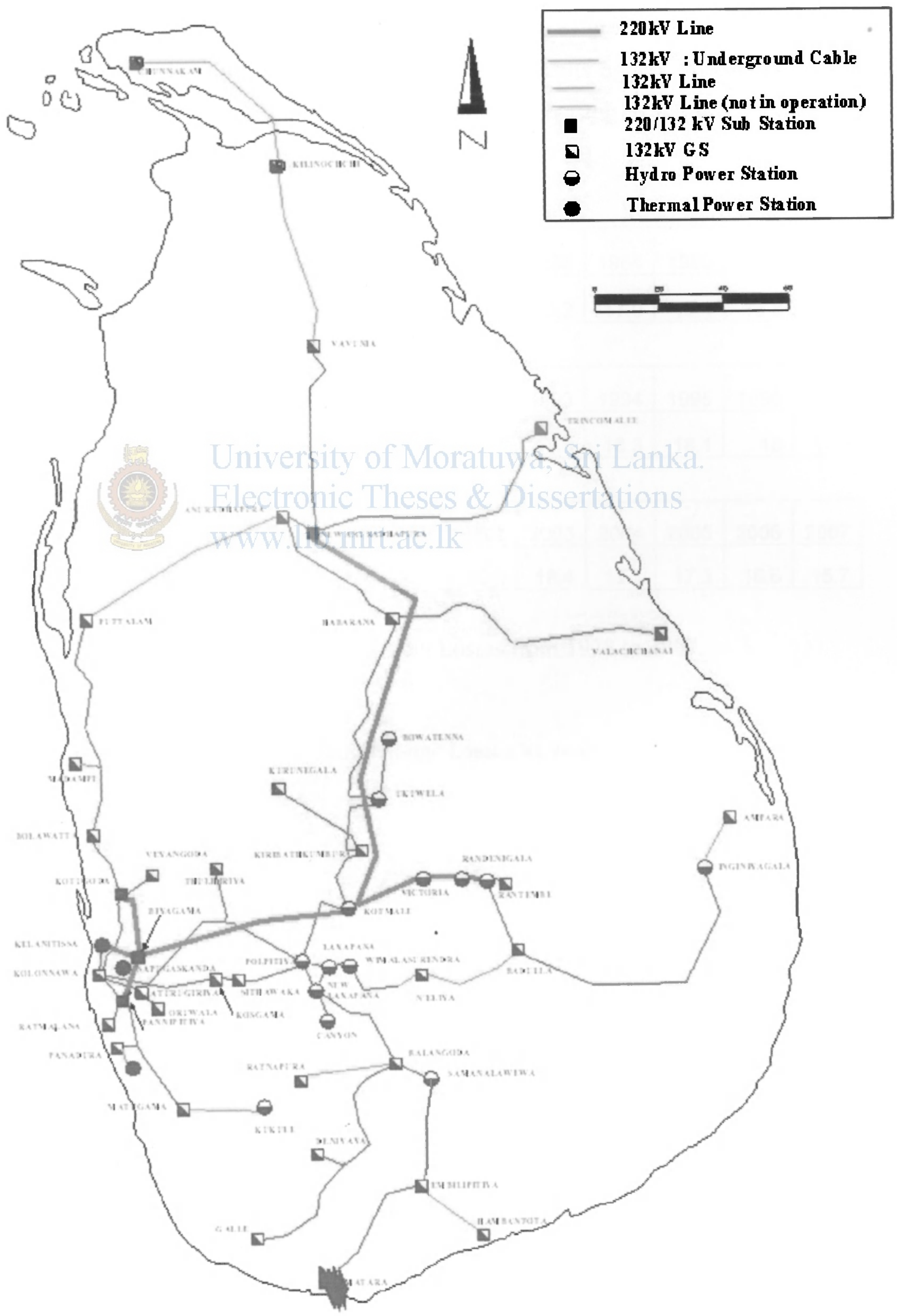


Figure 2.1 Map of National Transmission System

2.6 Total System Losses

As evident from Table 2.2 and Figure 2.2, percentage of gross system energy losses (calculated based on gross generation and gross sales units figures), shows a decrease during 2000-2007 (except 2005) which had been increasing in the preceding years. This is due to unmetered supply in those years [11][13][14].

Year	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Losses %	16.1	14.9	16.6	19.7	18.4	15.2	17.0	16.4	15.8	16.8

Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Total Losses %	15.3	17.7	17.2	18.8	19.0	17.8	18.3	18.1	18	17.7

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total Losses %	18.8	20.9	21.4	19.7	19.2	18.4	17.1	17.3	16.6	15.7

Table 2.2 Total System Losses from 1978 to 2007.

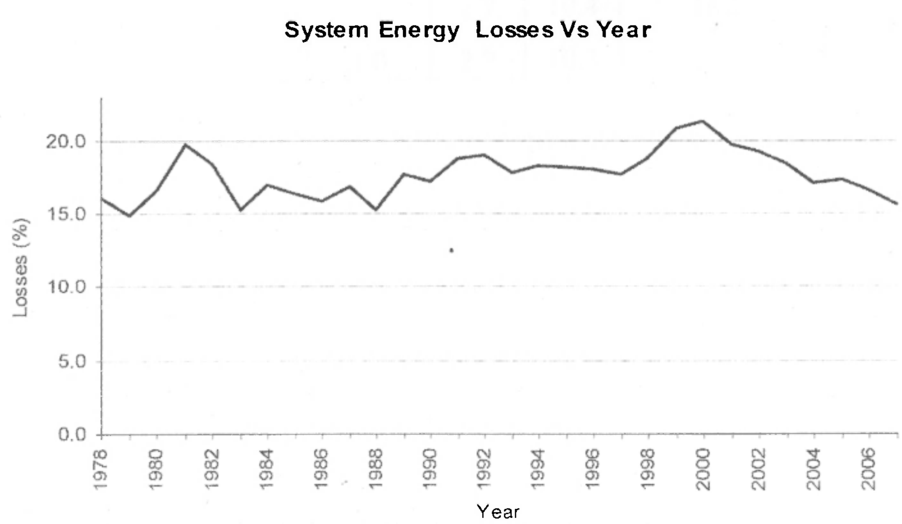


Figure 2.2 System losses form 1978 to 2007

Total energy losses are calculated from balancing total generation and total sales. Currently CEB does not have accurate figures of generation, transmission, distribution and non technical losses separately. Generation losses are assumed as 1% [12].

The targeted percentage of transmission losses i.e. 2.7 % is to be reached in 16 years time (2021). Table 2.3 gives the total energy losses used for the demand forecast. [12]

Year	Losses (as a % of Gross Generation)			
	Gx	Tx	Dx	Total
2006	1.0	2.4	13.8	17.1
2007	1.0	2.3	13.3	16.7
2008	1.0	2.4	12.7	16.1
2009	1.0	2.1	12.5	15.5
2010	1.0	2.0	12.0	15.0
2011	1.0	2.3	11.3	14.6
2012	1.0	2.5	10.9	14.4
2013	1.0	2.3	10.9	14.2
2014 -2021	1.0	2.7	10.4	14.1
2022 - 2026	1.0	2.7	10.3	14.0

Table 2.3 - Forecast Energy Losses

Therefore, it is essential to calculate transmission losses and improve the system to reduce the losses for the targeted value as well as keep the system voltage levels as given in the table 2.1.

This study will help to find out transmission losses more accurately and the results obtained will help for planning of the transmission network as efficiently as feasible.

Chapter 3

Theoretical Development

3.1 Electrical characteristics of transmission lines

3.1.1 Overhead lines

A transmission lines is characterized by four parameters, series resistance (R) due to the conductor resistivity, shunt conductance (G) due to leakage currents between the phases and ground, series inductance (L) due to magnetic field surrounding the conductors and shunt capacitance (C) due to the electric field between conductors.

Series resistance (R)

The resistance of lines accounting for stranding and skin effect.

$$R = \frac{\rho . l}{A} \quad \Omega \qquad (3.0)$$

R – Resistance of the transmission line

ρ – Resistivity of conductor material (Ωm)

A – Effective conductor area m^2

l – Length of the transmission line

It should also be added that, because the conductors are of considerable size. The effective ac resistance will be some what higher than the dc value due to "skin effect."

Shunt conductance (G)

The shunt conductance represents losses due to leakage currents along insulator strings and corona. Its effect is small in overhead power lines.

Series inductance (L)

The line inductance depends on the partial flux linkage within the conductor cross section and external flux linkages. For overhead lines, the inductances of the three phases are different from each other unless the conductors have equilateral spacing, a geometry not usually adopted in practice. However this effect is compensated by transposing the lines regularly.

For three phase line, the inductance per phase is

$$L = 2x10^{-7} \ln \frac{D_{eq}}{D_s} \qquad H/m \tag{3.1}$$

D_s is the self geometric mean distance (geometric mean radius)

D_{eq} is the geometric mean of the distances between the conductors of the three phases a, b and c

$$D_{eq} = (d_{ab} d_{bc} d_{ca})^{1/3} \tag{3.2}$$

Shunt capacitance (C)

The potential difference between the conductors of a transmission line causes the conductors to be charged. The charge per unit of potential difference is the capacitance between conductors.

For three phase line, the capacitance of each phase to neutral is

$$C = \frac{2\pi\varepsilon_0}{\ln\left(D_{eq}/r\right)} F/m \tag{3.3}$$

r is the conductor radius

ε_0 is the permittivity of the dielectric medium

3.1.2 Underground cables

Underground cables have the same basic parameters as overhead lines: series resistance and inductance, shunt capacitance and conductance. The values of the parameters and hence the characteristics of the cable differ significantly from those of overhead lines for the following reasons:

1. The conductors in a cable are much closer to each other than are the conductors of overhead lines.

2. The conductors in a cable are surrounded by metallic bodies such as shields, lead or aluminum sheets, and steel pipes.
3. The insulating material between conductors in a cable is usually impregnated paper, low viscosity oil or an inert gas.

3.2 Performance equations of the transmission lines

Figure 3.1 shows the relationship between current and voltage along one phase of the line in terms of the distributed parameters, with

$z = R + j\omega L$ = series impedence per unit length/phase
$y = G + j\omega C$ = shunt admittance per unit length/phase
l = length of the line

Voltages and currents are phasors representing sinusoidal time varying quantities

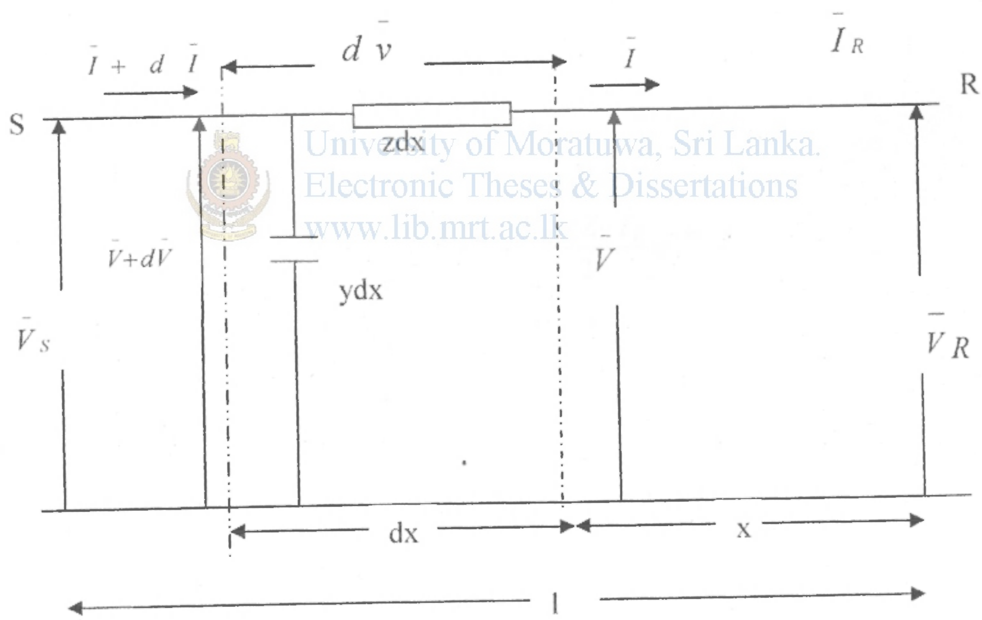


Figure 3.1 Current and voltage relationship of a distributed parameter lines

A differential section of the line of length dx at a distance x from the receiving end
The differential voltage across the elemental length is

$$d\bar{V} = \bar{I}(zdx)$$

$$\frac{d\bar{V}}{dx} = \bar{I}z \qquad (3.4)$$

The differential current flowing into the shunt admittance is

$$d\bar{I} = \bar{V}(ydx)$$

$$\frac{d\bar{I}}{dx} = \bar{V}y \qquad (3.5)$$

Differentiating equations with respect to x,

$$\frac{d^2\bar{V}}{dx^2} = z\frac{d\bar{I}}{dx} = yz\bar{V} \qquad (3.6)$$

$$\frac{d^2\bar{I}}{dx^2} = y\frac{d\bar{V}}{dx} = yz\bar{I} \qquad (3.7)$$

V_R and I_R known at x=0 then General solution

$$\bar{V} = \frac{\bar{V}_R + Z_c\bar{I}_R}{2}e^{\gamma x} + \frac{\bar{V}_R - Z_c\bar{I}_R}{2}e^{-\gamma x} \qquad (3.8)$$

$$\bar{I} = \frac{\bar{V}_R/Z_c + \bar{I}_R}{2}e^{\gamma x} - \frac{\bar{V}_R/Z_c - \bar{I}_R}{2}e^{-\gamma x} \qquad (3.9)$$

$$Z_c = \sqrt{\frac{z}{y}}$$

$$\gamma = \sqrt{yz} = \alpha + j\beta$$

Z_c = Characteristic impedance

γ = Propagation constant

α = attenuation constant

β = phase constant

$$e^{\gamma x} = e^{\alpha + j\beta} = e^{\alpha x}(\cos\beta x + j\sin\beta x)$$

$$e^{-\gamma x} = e^{-\alpha - j\beta} = e^{-\alpha x}(\cos\beta x - j\sin\beta x)$$

3.2.1 Equivalent circuit of a transmission line

By letting x=l in equation 3.8 and 3.9 and rearranging

$$\bar{V_S} = \frac{\bar{V_R}(e^{\gamma l} + e^{-\gamma l})}{2} + \frac{Z_c \bar{I_R}(e^{\gamma l} - e^{-\gamma l})}{2}$$

$$\bar{V_S} = \bar{V_R}\cosh(\gamma l) + Z_c \bar{I_R}\sinh(\gamma l) \tag{3.10}$$

$$\bar{I_S} = \bar{I_R}\cosh(\gamma l) + \frac{\bar{V_R}}{Z_c}\sinh(\gamma l) \tag{3.11}$$

A π circuit with lumped parameters

From equivalent circuit the sending end voltage

$$\bar{V_S} = Z_e(\bar{I_R} + \frac{Y_e}{2}\bar{V_R}) + \bar{V_R}$$

$$\bar{V_S} = (\frac{Z_e Y_e}{2} + 1)\bar{V_R} + Z_e \bar{I_R} \tag{3.12}$$

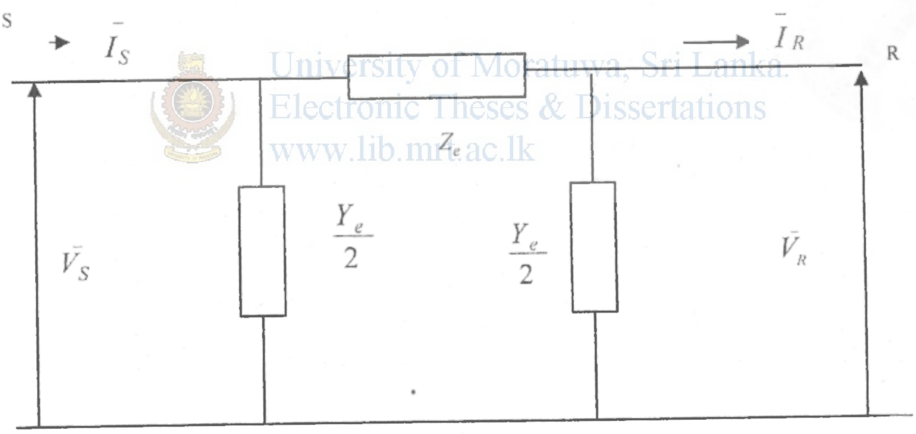


Figure 3.2 Equivalent Circuit of a Transmission Line

Comparing 3.12 and 3.10

$$Z_e = Z_c \sinh(\gamma l) \tag{3.13}$$

$$\frac{Z_e Y_e}{2} + 1 = \cosh(\gamma l)$$

$$\frac{Y_e}{2} = \frac{\cosh(\gamma l) - 1}{Z_c \sinh(\gamma l)}$$

$$\frac{Y_e}{2} = \frac{\tanh(\gamma l)}{Z_c} \qquad (3.14)$$

Equation 3.13 and 3.14 give the elements of the equivalent circuit

3.2.2 Nominal π equivalent circuit

If γl <<1, Z_e, Y_e may be approximated as follows

$$Z_e = Z_c \sinh(\gamma l) = Z_c(\gamma l) = zl = Z \qquad (3.15)$$

$$\frac{Y_e}{2} = \frac{1}{Z_c}\tanh(\gamma l / 2)$$

$$= \frac{1}{Z_c}(\gamma l / 2) = \frac{yl}{2} = \frac{Y}{2} \qquad (3.16)$$

Z = total series impedance (zl)

Y = total shunt admittance (yl)

3.3 Transformers

Transformers enable utilization of different voltage levels across the system. 220kV and 132kV voltage levels are being used to transmit power by Ceylon Electricity Board (CEB). In addition to voltage transformation, transformers are used to control of voltage and reactive power flow. Two types of tap changing facilities are provided. Off load (No Load) tap changing and on load tap changing (OLTC)

3.3.1 Representation of two-winding transformers.

Basic equivalent circuit in physical units

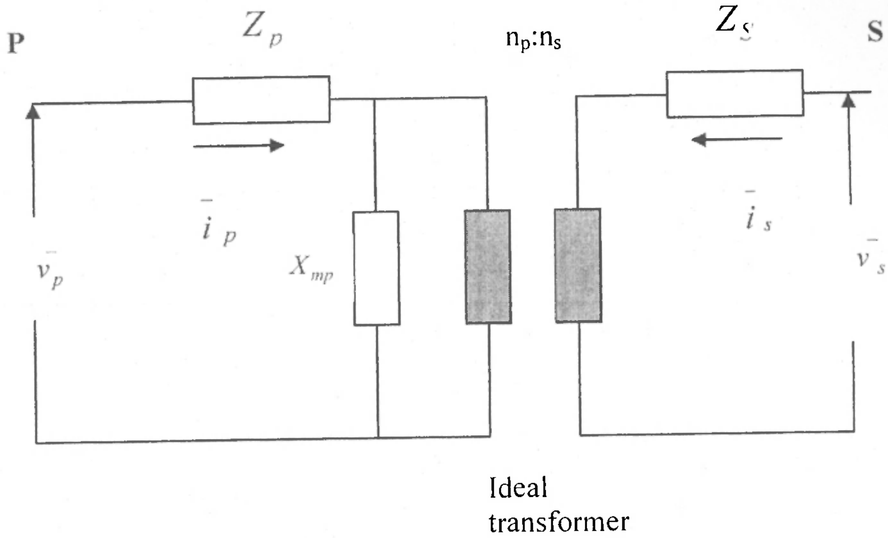


Figure 3.3 Basic equivalent circuit of a two winding transformer

$$Z_p = R_p + jX_p$$

$$Z_s = R_s + jX_s$$

R_p, R_s – primary and secondary winding resistance

X_p, X_s – primary and secondary winding leakage reactance

n_p, n_s – number of turns of primary and secondary winding

X_{mp} – magnetizing reactance referred to the primary side

Let

Z_{po} -- Z_p At nominal primary side tap position

Z_{so} -- Z_s At nominal secondary side tap position

n_{po} -- Primary side nominal number of turns

n_{so} -- Secondary side nominal number of turns

X_{mp} is very large and is usually neglected

$$\bar{v}_p = Z_p \bar{i}_p + \frac{n_p}{n_s}\bar{v}_s - \frac{n_p}{n_s} Z_s \bar{i}_s \tag{3.17}$$

$$\bar{v}_s = \frac{n_s}{n_p}\bar{v}_p - \frac{n_s}{n_p} Z_p \bar{i}_p + Z_s \bar{i}_s \tag{3.18}$$

Equations 3.17 and 3.18 in terms of the nominal values

$$\bar{v}_p = \left(\frac{n_p}{n_{po}}\right)^2 Z_{po}\bar{i}_p + \frac{n_p}{n_s}\bar{v}_s - \left(\frac{n_s}{n_{so}}\right)^2 Z_{so}\bar{i}_s \tag{3.19}$$

$$\bar{v}_s = \frac{n_s}{n_p}\bar{v}_p - \frac{n_s}{n_p}\left(\frac{n_p}{n_{po}}\right)^2 Z_{po}\bar{i}_p + \left(\frac{n_s}{n_{so}}\right)^2 Z_{so}\bar{i}_s \tag{3.20}$$

Nominal number of turns related to the base voltages are

$$\frac{n_{po}}{n_{so}} = \frac{v_{pbase}}{v_{sbase}}$$

$$v_{pbase} = z_{pbase} i_{pbase}$$

$$v_{sbase} = z_{sbase} i_{sbase}$$

Per unit form

$$\bar{v}_p = \bar{n}_p^2 \bar{Z}_{po}\bar{i}_p + \frac{\bar{n}_p}{\bar{n}_s}\bar{v}_s - \bar{n}_s^2 \frac{\bar{n}_p}{\bar{n}_s}\bar{Z}_{so}\bar{i}_s \tag{3.21}$$

$$\bar{v}_s = \frac{\bar{n}_s}{\bar{n}_p}\bar{v}_p - \bar{n}_p^2 \frac{\bar{n}_s}{\bar{n}_p}\bar{Z}_{po}\bar{i}_p + \bar{n}_s^2 \bar{Z}_{so}\bar{i}_s \tag{3.22}$$

Super bars denote per unit values

$$\bar{n}_p = \frac{n_p}{n_{po}} \qquad \bar{n}_s = \frac{n_s}{n_{so}}$$

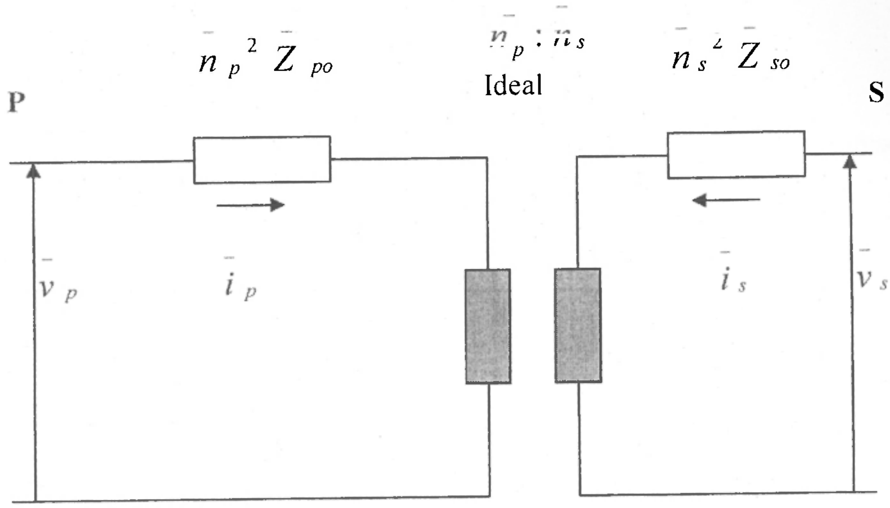


Figure 3.4 Per unit equivalent circuit

$$\bar{n} = \frac{\bar{n}_p}{\bar{n}_s} = \frac{n_p n_{so}}{n_{po} n_s} \qquad (3.23)$$

$$\bar{Z}_e = \bar{n}_s^{\,2}\left(\bar{Z}_{po} + \bar{Z}_{so}\right) \qquad (3.24)$$

$\bar{n}$ = Per unit turn ratio

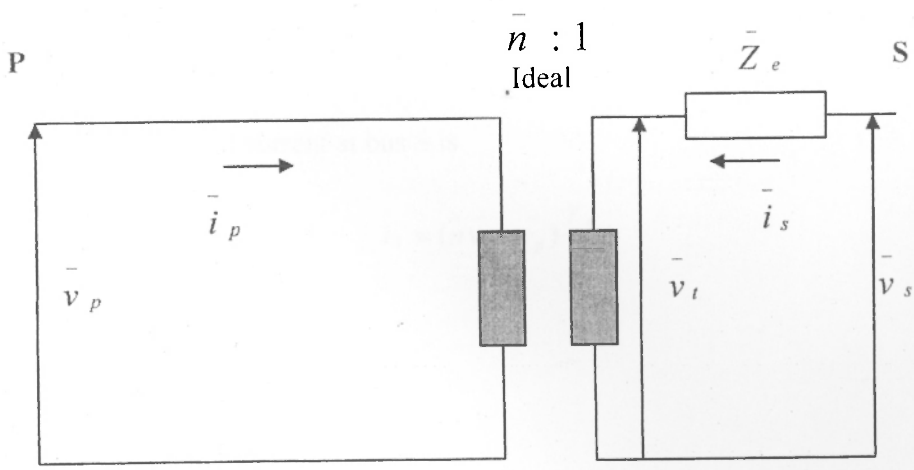


Figure 3.5 Standard equivalent circuit for a transformer

If the actual turns ratio is equal to nominal turns ratio, then $\bar{n} = 1.0$

When the actual turns ratio is not equal to nominal turns ratio, then $\bar{n}$ represents off-nominal ratio (ONR). The equivalent circuit of figure 3.5 can be used to represent a transformer with a fixed (off load) tap on one side and on load tap changer (OLTC) on the other side. The off nominal turns ratio is assigned to the side with OLTC and $\bar{Z}_e$ has a value corresponding to the fixed-tap position of the other side.

3.3.2 Equivalent π circuit representation

From figure 3.5, the terminal current at bus P is

$$\bar{i}_p = (\bar{v}_t - \bar{v}_s)\frac{\bar{Y}_e}{\bar{n}}$$

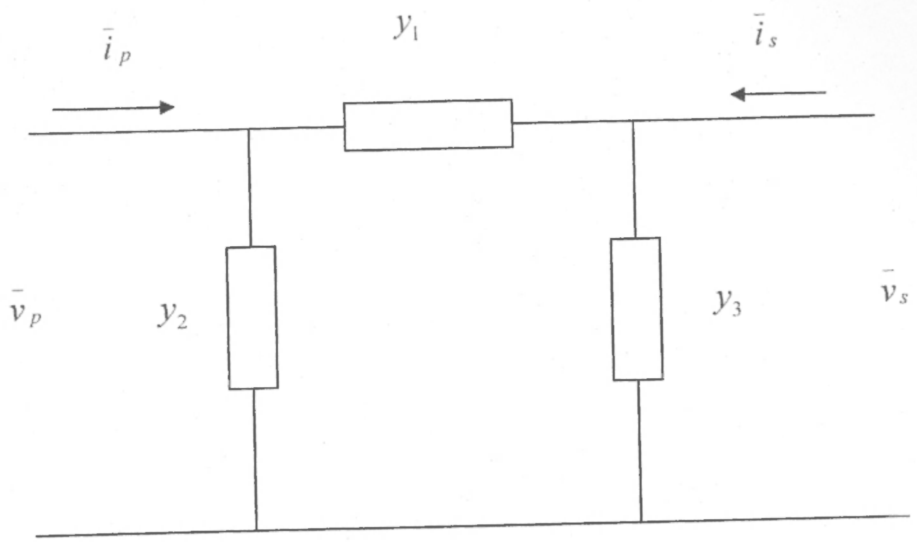
$$= \left(\frac{\bar{v}_p}{\bar{n}} - \bar{v}_s\right)\frac{\bar{Y}_e}{\bar{n}}$$

$$= (\bar{v}_p - \bar{n}\bar{v}_s)\frac{\bar{Y}_e}{\bar{n}^2} \tag{3.25}$$

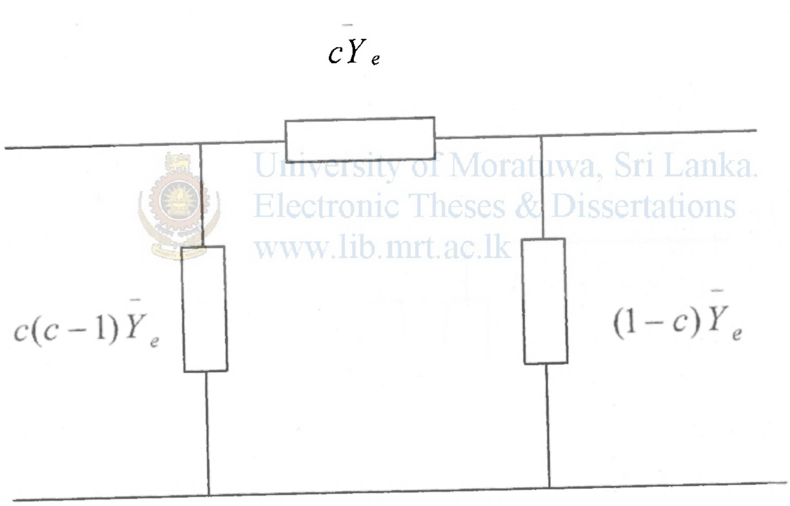
$$\bar{Y}_e = 1/\bar{Z}_e$$

Similarly the terminal current at bus S is

$$\bar{i}_s = (\bar{n}\bar{v}_s - \bar{v}_p)\frac{\bar{Y}_e}{\bar{n}} \tag{3.26}$$



(a) General π network



(b) Equivalent π circuit

Figure 3.6 Transformer representation with ONR

$$\bar{Y}_e = 1/\bar{Z}_e \qquad c = 1/n$$

Corresponding terminal currents for the π network shown in figure 3.6 (a)

$$\bar{i}_p = y_1(\bar{v}_p - \bar{v}_s) + y_2\,\bar{v}_p \tag{3.27}$$

$$\bar{i}_s = y_1(\bar{v}_s - \bar{v}_p) + y_3\,\bar{v}_s \tag{3.28}$$

Equating the corresponding admittance terms in equations 3.25 and 3.27

$$y_1 = \frac{1}{\bar{n}} \bar{Y}_e$$

$$y_2 = \left(\frac{1}{\bar{n}^2} - \frac{1}{\bar{n}} \right) \bar{Y}_e = c(c-1)\bar{Y}_e$$

$c = 1/\bar{n}$

From equations 3.26 and 3.28

$$y_3 = (1-c)\bar{Y}_e$$

3.4 Three winding transformers

This type can be represented under balanced three phase conditions by a single phase equivalent circuit of three impedances star connected (Figure 3.7)

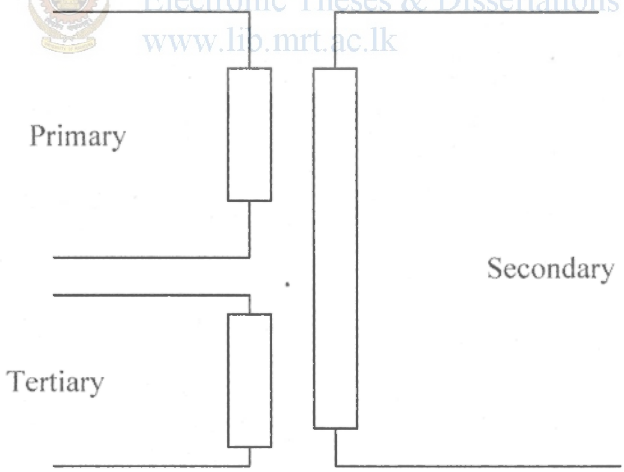


Figure 3.7 Three winding Transformer

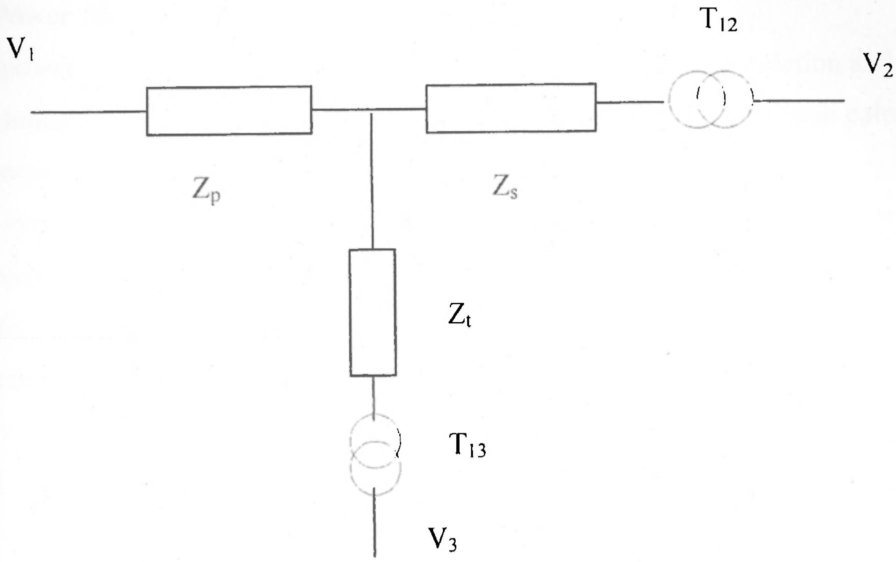


Figure 3.8 Three winding Transformer equivalent circuit

Z_{ps} = Impedance of the primary when the secondary is short circuited and the tertiary open.

Z_{pt} = Impedance of the primary when the tertiary is short circuited and the secondary open.

Z_{st} = Impedance of the secondary when the tertiary is short circuited and the primary open.

$$Z_{ps} = Z_p + Z_s$$

$$Z_{pt} = Z_p + Z_t$$

$$Z_{st} = Z_s + Z_t$$

$$Z_p = \tfrac{1}{2}\,(Z_{ps} + Z_{pt} - Z_{st})$$

$$Z_s = \tfrac{1}{2}\,(Z_{ps} + Z_{st} - Z_{pt})$$

$$Z_t = \tfrac{1}{2}\,(Z_{pt} + Z_{st} - Z_{ps})$$

Star point is fictitious. Z_s is very small and can be negative

3.5 Power flow analysis

The power flow (load flow) analysis involves the power flows calculation and voltage of a transmission network for specified terminal or bus conditions. Such calculations are required for the analysis of transmission losses.

The system is assumed to be balanced. This allows a single phase representation of the system. Associated with each bus there are four quantities: active power P, reactive power Q, voltage magnitude V, and voltage angle θ. Three types of buses are represented, and at each bus two of the above four quantities are specified

1. Voltage controlled (PV) bus : Active power and voltage magnitude are specified . limits to the reactive power are specified.
2. Load (PQ) bus: Active power and reactive power are specified. Normally loads are assumed to have constant power.
3. Slack (Swing) bus: Voltage magnitude and phase angle are specified. Because power losses in the system are not known a priori, at least must have unspecified P and Q. the slack bus is the only bus with known voltage.

$$\begin{bmatrix} \overline{I}_1 \\ \overline{I}_2 \\ \cdots \\ \overline{I}_n \end{bmatrix} = \begin{bmatrix} Y_{11} & Y_{12} & \cdots & Y_{1n} \\ Y_{21} & Y_{22} & \cdots & Y_{2n} \\ \cdots & \cdots & \cdots & \cdots \\ Y_{n1} & Y_{n2} & \cdots & Y_{nn} \end{bmatrix} \cdot \begin{bmatrix} \overline{V}_1 \\ \overline{V}_2 \\ \cdots \\ \overline{V}_n \end{bmatrix} \tag{3.29}$$

n is the total number of nodes

Y_{ii} is the self admittance of node i (sum of all the admittances terminating at node i)

Y_{ij} is the mutual admittance between nodes i and node j (negative of the sum of all the admittances between nodes i and node j)

$\overline{I}_i$ is the phasor current flowing into the network at node i

$\overline{V}_i$ is the phasor voltage to ground at node i

3.5.1 Nonlinear power flow

Equation 3.29 would be linear if the current injection $\bar{I}$ was known, In practice, the current injections are not known for most nodes. The current at any node k is related to P, Q and $\bar{V}$

$$\bar{I}_k = \frac{P_k - jQ_k}{\bar{V}_k^{*}} \qquad (3.30)$$

For P Q nodes, P and Q specified and for the P V nodes P and the magnitude of the $\bar{V}$ are specified. For other type of nodes, the relationship between P, Q, $\bar{V}$ and $\bar{I}$ are defined by the characteristics of the devices connected to the nodes. The boundary conditions imposed by the different types of nodes make the problem nonlinear and therefore power flow equations are solved iteratively using techniques such as the Gauss- Seidel (G-S) or Newton Raphson (N-R) method.

3.5.2 Selection of solution method

The time taken to perform one iteration of the computation is relatively smaller in case of G-S method as compared to N-R method but the number of iteration required by G-S method are larger as compared to N-R method . They increase with the increasing system size. The convergence of N-R method is not effected by the selection of the slack bus whereas G-S method is sometimes very seriously affected and the selection of the particular bus may result in poor convergence.

G-S method is easy to programme and uses core memory most efficiently. Large power systems N-R method is found to be more efficient and practical from the view point of computational time and convergence characteristics.

Therefore Newton Raphson method is selected as the best method for load flow analysis

3.5.3 Newton Raphson (N-R) method

For any node k

$$\bar{S}_k = P_k + jQ_k = \bar{V}_k \bar{I}_k^{*} \qquad (3.31)$$

From equation 3.29

$$\overline{I_k} = \sum_{m=1}^{n} \overline{Y_{km} V_m} \tag{3.32}$$

From equation 3.31 and 3.32

$$P_k + jQ_k = \overline{V_k} \sum_{m=1}^{n} (G_{km} - jB_{km}) \overline{V_m}^* \tag{3.33}$$

$$\overline{V_k V_m}^* = (V_k e^{j\theta_k})(V_m e^{-j\theta_m}) = V_k V_m e^{j(\theta_k - \theta_m)}$$

$$\overline{V_k V_m}^* = V_k V_m (\cos\theta_{km} + j\sin\theta_{km}) \tag{3.34}$$

P_k and Q_k from real form

$$P_k = V_k \sum_{m=1}^{n} (G_{km} V_m \cos\theta_{km} + B_{km} V_m \sin\theta_{km}) \tag{3.35}$$

$$Q_k = V_k \sum_{m=1}^{n} (G_{km} V_m \sin\theta_{km} - B_{km} V_m \cos\theta_{km})$$

P and Q at each bus are functions of voltage magnitude V and angle θ

sp denotes specified values, then load flow equations are

$$\begin{aligned}
&P_1(\theta_1 \ldots \theta_n, V_1 \ldots V_n) = P_1^{sp} \\
&\ldots\ldots\ldots\ldots\ldots\ldots \\
&P_n(\theta_1 \ldots \theta_n, V_1 \ldots V_n) = P_n^{sp} \\
&Q_1(\theta_1 \ldots \theta_n, V_1 \ldots V_n) = Q_1^{sp} \\
&\ldots\ldots\ldots\ldots\ldots\ldots \\
&Q_n(\theta_1 \ldots \theta_n, V_1 \ldots V_n) = Q_n^{sp}
\end{aligned} \tag{3.36}$$

Using Taylor's theorem and neglecting higher terms we can arrange above load flow Equations in the form

$$\begin{bmatrix} P_1^{sp} - P_1(\theta_1^0 ... \theta_n^0, V_1^0 ... V_n^0) \\ .... \\ P_n^{sp} - P_n(\theta_1^0 ... \theta_n^0, V_1^0 ... V_n^0) \\ Q_1^{sp} - Q_1(\theta_1^0 ... \theta_n^0, V_1^0 ... V_n^0) \\ .... \\ Q_n^{sp} - Q_n(\theta_1^0 ... \theta_n^0, V_1^0 ... V_n^0) \end{bmatrix} = \begin{bmatrix} \frac{\partial p_1}{\partial \theta_1} ... \frac{\partial p_1}{\partial \theta_n} \frac{\partial p_1}{\partial V_1} ... \frac{\partial p_1}{\partial V_n} \\ .... \\ \frac{\partial p_n}{\partial \theta_1} ... \frac{\partial p_n}{\partial \theta_n} \frac{\partial p_n}{\partial V_1} ... \frac{\partial p_n}{\partial V_n} \\ \frac{\partial Q_1}{\partial \theta_1} ... \frac{\partial Q_1}{\partial \theta_n} \frac{\partial Q_1}{\partial V_1} ... \frac{\partial Q_1}{\partial V_n} \\ .... \\ \frac{\partial Q_n}{\partial \theta_1} ... \frac{\partial Q_n}{\partial \theta_n} \frac{\partial Q_n}{\partial V_1} ... \frac{\partial Q_n}{\partial V_n} \end{bmatrix} \cdot \begin{bmatrix} \Delta\theta_1 \\ ...... \\ \Delta\theta_n \\ \Delta V_1 \\ ...... \\ \Delta V_n \end{bmatrix}$$

$$\begin{bmatrix} \Delta P \\ \Delta Q \end{bmatrix} = \begin{bmatrix} \frac{\partial P}{\partial \theta} \frac{\partial P}{\partial V} \\ \frac{\partial Q}{\partial \theta} \frac{\partial Q}{\partial V} \end{bmatrix} \cdot \begin{bmatrix} \Delta\theta \\ \Delta V \end{bmatrix} \tag{3.37}$$

$$\begin{bmatrix} \Delta P \\ \Delta Q \end{bmatrix} = [J] \cdot \begin{bmatrix} \Delta\theta \\ \Delta V \end{bmatrix}$$

J –Jacobian matrix

3.6 Line flow equations

After the iterative solution of bus voltage is completed, line flows can be calculated. The current at bus p in the line connecting bus p to q is

$$i_{pq} = (V_p - V_q) y_{pq} + V_p \frac{y'_{pq}}{2}$$

$$P_{pq} - jQ_{pq} = V_{pq}^* i_{pq}$$

$$P_{pq} - jQ_{pq} = V_p^* [(V_p - V_q) y_{pq} + V_p \frac{y'_{pq}}{2}]$$

$$= V_p^* (V_p - V_q) y_{pq} + V_p^* V_p \frac{y'_{pq}}{2}$$

P_{pq} is the real power flow from bus p to q and Q_{pq} is the reactive power flow from bus p to q.

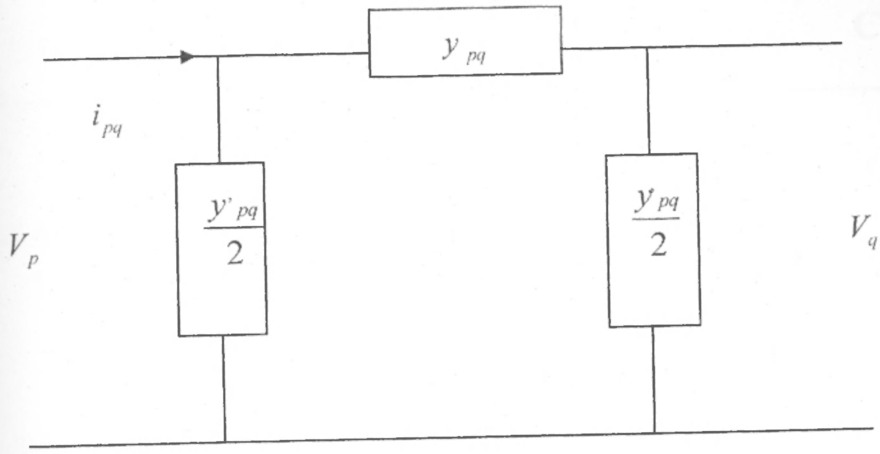


Figure 3.9 Equivalent circuit of a transmission link for evaluating line flows

Similarly, at bus q the power flow from bus q to p is

$$P_{qp} - jQ_{qp} = V_q^*(V_q - V_p)y_{pq} + V_q^* V_q \frac{y'_{pq}}{2}$$

The power loss (active and reactive) in the line pq is sum of the power flows from p to q and from q to p.

$$P_{pq} - jQ_{pq} \quad \text{and} \quad P_{qp} - jQ_{qp}$$

3.7 MATLAB

MATLAB is selected for load flow programming, because it is a special purpose computer programming tool to perform engineering & scientific calculations. It is designed to perform matrix mathematics very conveniently. MATLAB has many advantages compared to conventional computer languages for technical problem solving.

1. Ease of use
2. Platform independence
3. Pre defined functions

Main disadvantage is that it is an interpreted language and therefore executes more slowly compared to compiled languages.

Chapter 4

Methodology

4.1 Assumptions for load flow calculation

1. A balanced three phase power system is assumed, and the transmission system is represented by its positive phase sequence network of linear lumped series and shunt branches.
2. The generators are assumed to be three phase balance voltage sources and only the generator positive voltages are present.
3. The load on each bus is assumed to be three phase balanced loads.
4. Each bus of the system is described by four parameters P, Q, V, δ. Two of the parameters are known and the other two are unknown for any given node.
5. Slack (swing) bus is created and defined in the problem formulation. It arises because the system I^2R losses are not known precisely prior to the load flow calculation.
6. Embedded generations are not included.
7. The National transmission network is modelled from Generator step up transformer (A) to 33kV distribution level (B) as shown in figure 5.1

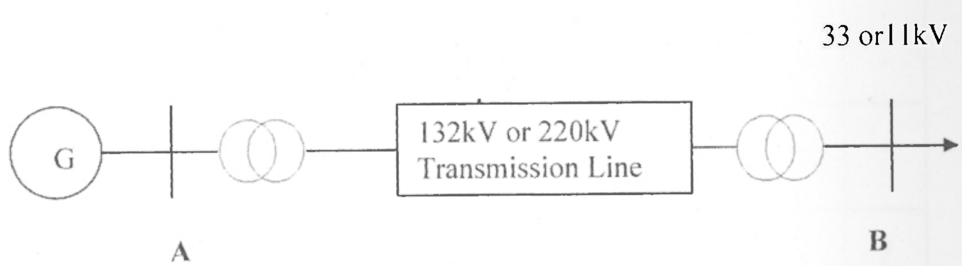


Figure 4.1 Selected bus bars of the transmission network

4.2 Modelling national transmission network

All the data regarding generation, transmission lines, transformers and node points are systematically categorized. Then the two input files which are line, transformer parameters and bus information are prepared for the load flow simulation. Transformer taps are kept fixed and the nominal values are being used. Then transmission network is modelled using MATLAB and run for the load flow analysis.

V = Bus voltage

δ = phase angle

P_Gen = Active power generation (MW)

Q_Gen = Reactive power generation (Mvar)

Q_Max = Maximum reactive power generation (Mvar)

Q_Min = Minimum reactive power generation (Mvar)

P_Load = Active power consumption (MW)

Q_Load = Reactive power consumption (Mvar)

Bus type	Bus Identification No.	V	δ	P_Gen	Q_Gen	Q_Max	Q_Min	P_Load	Q_Load
Slack bus	1	√	√	?	?	√	√	-	-
Voltage controlled bus	2	√	?	√	?	√	√	-	-
Load bus	0	?	?	-	-	-	-	√	√

Initially, Voltage and phase angle of each node is assumed one per unit and zero degrees. For the Slack bus, Voltage and angle are known, active power generation and reactive power generation are calculated by the programme. For the Voltage controlled busses, Voltage and active power generation are known, angle and reactive power generation are calculated by the programme. For Load buses, active power consumption and reactive power consumption are known, Voltage and angle are calculated by the programme.

4.3 Simulation procedure

Transmission System shown in annex 15 was simulated using MATLAB.

1. Transmission line data and bus data are listed in Table 4.1 and Table 4.2 respectively.

From Bus	To Bus	Resistance (R) P.U	Reactance (X) P.U.	Half of total line charging Suceptance Y/2	Tap Position P.U

Table 4.1 Line data

Bus No.	Bus type	Voltage (p.u.)	Angle (Degrees)	P_Load (MW)	Q_Load (Mvar)	P_Gen (MW)	Q_Gen (Mvar)	Q_Min (Mvar)	Q_Max (Mvar)	Q_Cap. Bank (Mvar)

Table 4.2 Bus data

2. Specify some programme parameters :

   Base MVA: 100

   Accuracy: 0.001

   Maximum iterations: 100

3. Each row in the bus-data matrix corresponds to a bus in the system and there are 11 entries (columns) per row.

Column 1 is the bus number. Column 2 is designated for bus code where code 0, 1 and 2 are used to specify load buses, slack bus, and voltage controlled bus respectively. Column 3 & 4 are reserved for voltage magnitude and phase angle. For slack bus, voltage bus and phase angle will be specified. Column 5 & 6 are for load buses, real and reactive powers are entered in positive MW and Mvar. It is important to enter initial bus voltage and phase angle. A flat start ($V=1$, $\delta=0$) is used. Column 7 & 8 are used to specify generated MW and Mvar respectively. Column 9 & 10 are denoted for generator unit minimum and maximum limits of Mvar. The last column is used to specify positive injected Mvar of shunt capacitors. Power flow programme reads bus data from "Budata.xls" input file.

4. Transmission line parameters are entered in line-data matrix which consists of 6 columns.

Columns 1 and 2 are reserved for the bus numbers column 3 through 5 are used for line resistance, reactance and one-half of the total line charging Suceptance. The last column has the value of 1 for transmission line or transformer tap setting. Power flow programme reads line data from "Lndata.xls" input file.

5. The following functions are used in sequence to compute and display power flow solution in MATLAB work space, (Annex 12).

Function	Description
Lfybus.m	Forms bus admittance matrix
Lfnewton.m	Load flow solution by Newton Raphson method
Busout.m	Prints power flow solution on the screen
Lineflow.m	Computes and displays line flow and losses

Table 4.3 MATLAB functions

6. MATLAB input file is shown in below

```
clear;
basemva=100;
accuracy=0.0001;
maxiter=100;
busdata=xlsread('Budata.xls');
linedata=xlsread('Lndata.xls');
Lfybus
Lfnewton
busout
Lineflow
```

Chapter 5

Results and Analysis

5.1 Results of load flow study

Table 5.1 summarizes thirty minutes load, generation and losses in transmission network over the twenty four hours. Load and generation data (Wednesday, August 13, 2008) were taken for the load flow analysis.

Time	Load		Generation				Losses		Losses (%)
	MW	Mvar	MW	Mvar (Generator)	Mvar (BSC)	Total Mvar	MW	Mvar	
0:30	783.10	390.34	796.25	213.78	45.00	258.78	13.15	-131.56	1.65%
1:00	782.90	384.14	795.93	206.33	45.00	251.33	13.03	-132.81	1.64%
1:30	782.30	383.32	795.26	204.41	45.00	249.41	12.96	-133.91	1.63%
2:00	767.40	365.50	779.55	176.34	45.00	221.34	12.15	-144.16	1.56%
2:30	775.20	377.40	787.57	192.42	45.00	237.42	12.37	-139.98	1.57%
3:00	762.50	365.70	774.54	174.87	45.00	219.87	12.04	-145.83	1.55%
3:30	761.80	343.60	773.56	148.42	45.00	193.42	11.76	-150.19	1.52%
4:00	771.70	366.05	784.20	178.85	45.00	223.85	12.50	-142.20	1.59%
4:30	812.90	372.85	825.78	191.21	45.00	236.21	12.88	-136.64	1.56%
5:00	877.40	361.25	891.31	191.03	45.00	236.03	13.91	-125.22	1.56%
5:30	955.80	385.60	972.15	244.15	45.00	289.15	16.35	-96.46	1.68%
6:00	1029.00	403.98	1047.81	288.37	45.00	333.37	18.81	-70.61	1.79%
6:30	1036.40	416.08	1055.44	281.24	65.00	346.24	19.04	-69.84	1.80%
7:00	1033.60	430.01	1052.75	299.16	65.00	364.16	19.15	-65.85	1.82%
7:30	1035.90	466.51	1055.27	336.37	70.00	406.37	19.37	-60.14	1.84%
8:00	1146.90	534.96	1168.86	435.50	85.00	520.50	21.96	-14.46	1.88%
8:30	1175.60	598.00	1200.05	540.72	95.00	635.72	24.45	37.72	2.04%
9:00	1208.40	635.07	1234.37	604.40	95.00	699.40	25.97	64.33	2.10%
9:30	1224.29	653.37	1251.14	636.62	95.00	731.62	26.85	78.25	2.15%
10:00	1265.00	643.51	1293.82	643.36	95.00	738.36	28.82	94.85	2.23%

Time	Load		Generation				Losses		Losses (%)
	MW	Mvar	MW	Mvar (Generator)	Mvar (BSC)	Total Mvar	MW	Mvar	
10:30	1271.30	674.05	1300.31	651.44	120.00	771.44	29.01	97.39	2.23%
11:00	1274.40	687.50	1304.15	670.76	120.00	790.76	29.75	103.26	2.28%
11:30	1268.00	685.10	1297.31	663.79	120.00	783.79	29.31	98.69	2.26%
12:00	1233.70	694.15	1262.03	655.20	120.00	775.20	28.33	81.05	2.24%
12:30	1206.40	675.45	1234.68	636.13	115.00	751.13	28.28	75.68	2.29%
13:00	1196.30	673.65	1223.74	630.22	115.00	745.22	27.44	71.57	2.24%
13:30	1218.10	690.70	1244.94	651.25	115.00	766.25	26.84	75.55	2.16%
14:00	1232.30	700.25	1259.44	662.67	115.00	777.67	27.14	77.42	2.15%
14:30	1242.60	695.75	1269.77	661.63	115.00	776.63	27.17	80.88	2.14%
15:00	1239.15	687.15	1265.81	647.89	115.00	762.89	26.66	75.74	2.11%
15:30	1214.80	674.65	1240.05	607.81	120.00	727.81	25.25	53.16	2.04%
16:00	1230.30	664.45	1254.85	603.45	105.00	708.45	24.55	44.00	1.96%
16:30	1201.40	676.82	1224.49	596.55	105.00	701.55	23.09	24.73	1.89%
17:00	1186.00	650.18	1208.39	549.63	105.00	654.63	22.39	4.45	1.85%
17:30	1186.40	635.88	1208.75	526.24	105.00	631.24	22.35	-4.64	1.85%
18:00	1207.10	605.90	1229.56	503.81	95.00	598.81	22.46	-7.09	1.83%
18:30	1324.30	636.05	1354.53	597.41	95.00	692.41	30.23	56.36	2.23%
19:00	1596.00	694.12	1645.77	815.59	90.00	905.59	49.77	211.47	3.02%
19:30	1635.40	702.92	1688.88	858.99	90.00	948.99	53.48	246.07	3.17%
20:00	1599.50	682.77	1650.43	824.11	80.00	904.11	50.92	221.34	3.09%
20:30	1570.20	671.58	1617.26	772.39	85.00	857.39	47.06	185.81	2.91%
21:00	1492.00	634.95	1533.69	678.62	85.00	763.62	41.69	128.67	2.72%
21:30	1338.90	578.78	1370.38	561.88	85.00	646.88	31.48	68.10	2.30%
22:00	1206.80	530.59	1231.32	435.32	85.00	520.32	24.52	-10.27	1.99%
22:30	1123.90	499.27	1145.17	388.88	75.00	463.88	21.27	-35.39	1.86%
23:00	999.90	462.50	1016.02	297.17	75.00	372.17	16.12	-90.33	1.59%
23:30	950.30	454.20	965.05	275.10	75.00	350.10	14.75	-104.10	1.53%
24.00	866.50	452.90	880.00	254.96	70.00	324.96	13.50	-127.94	1.53%

Table 5.1 Results of thirty minutes load-flow analysis

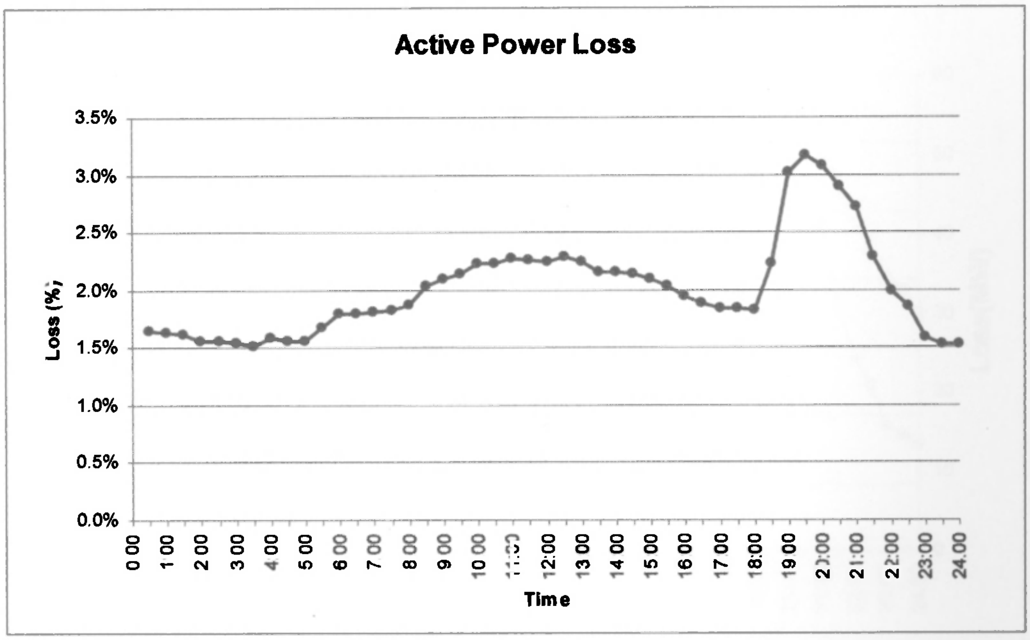


Figure 5.1 Transmission losses as a percentage

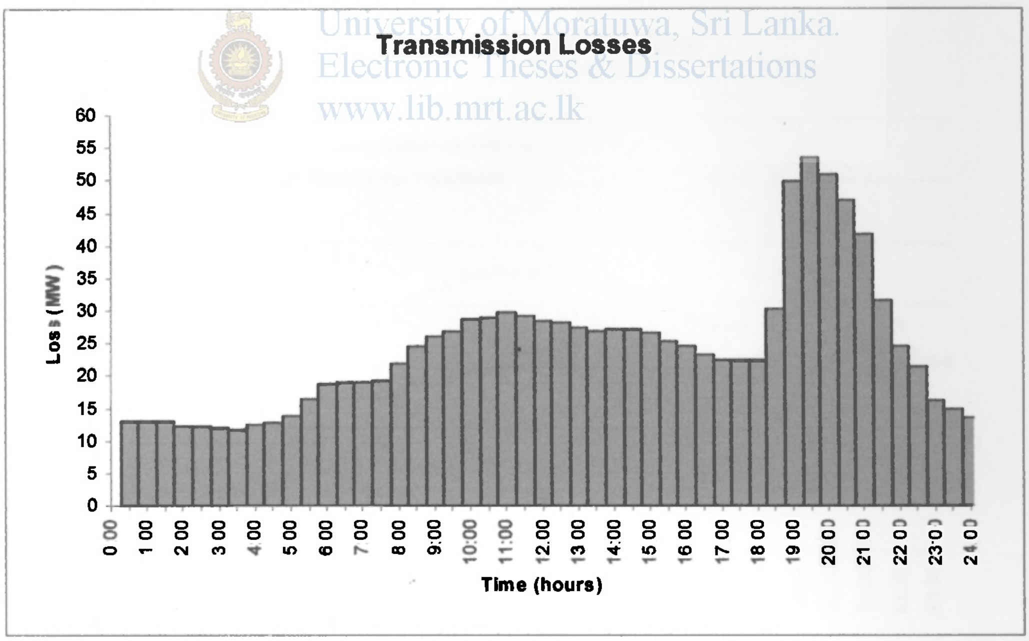


Figure 5.2 Transmission losses (MW)

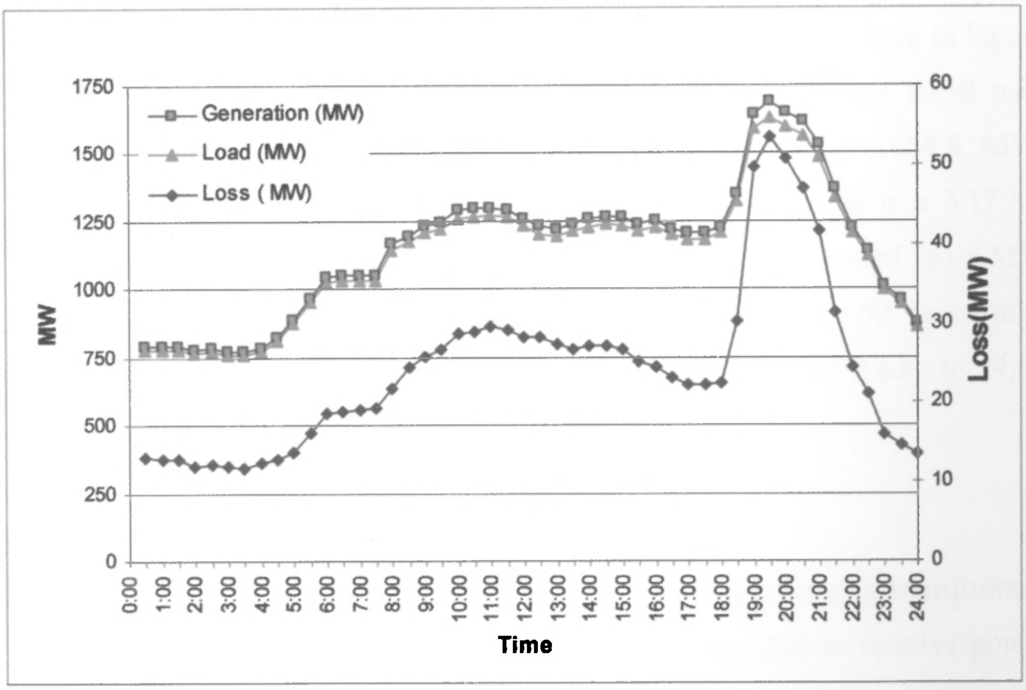


Figure 5.3 Active power generation, consumption and losses

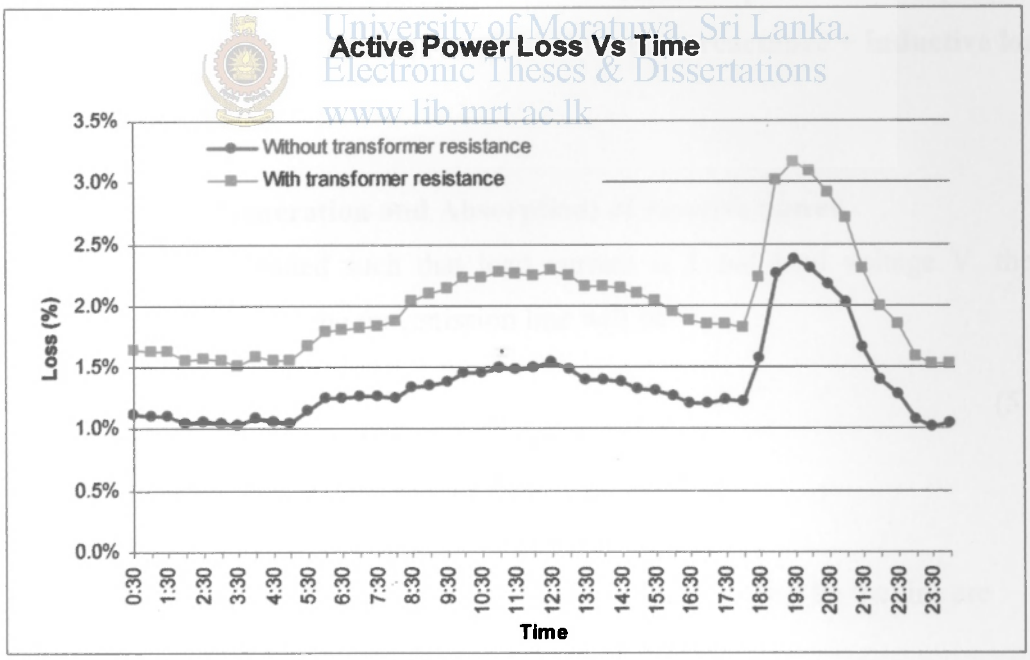


Figure 5.4 Transmission loss with and without transformer resistance

5.2 Active power generation, consumption and losses

Percentage variation of transmission losses over twenty four hours is shown in Figure 5.1. Evening peak demand which is 1635.4 MW is recorded around 19.30 p.m. Evening peak starts 18.00 p.m. The total generation required is 1688.8 MW. Maximum loss is 53.4 MW. As a percentage of total generation, It is a 3.17 %. Lowest demand and generation are recorded around 3.30 a.m. It is around 761.8 MW and 773.56 MW respectively. Minimum loss is 11.75 MW and 1.52 % of total generation. Day peak is around 11.00 a.m. Any time in between 0.00 a.m. to 24.00 midnight, Transmission losses vary from 1.52 % to 3.17 %.

5.3 Reactive power generation, consumption and losses

Reactive power sources are generators, shunt capacitors, tap changing transformers and transmission lines. Reactive power generation must be equal to reactive power consumption at any time.

Reactive power generation = Reactive power consumption

[Generators + Transmission lines +Capacitor banks)] [Line inductive reactance + Inductive loads]

Sources and Sinks (Generation and Absorption) of reactive power

Transmission line be loaded such that load current is I and load voltage V. then reactive power absorbed by the transmission line will be

$$I^2\omega L \tag{5.1}$$

ω – supply angular frequency

L – line inductance

Due to the shunt capacitance of the line, the reactive vars supplied by the line are

$$V^2\omega C \tag{5.2}$$

C – shunt capacitance of the line

In case the reactive vars supplied by the line are equal to the reactive vars absorbed,

$$I^2\omega L = V^2\omega C$$

$$\frac{V}{I} = \sqrt{\frac{L}{C}} = Z_n \tag{5.3}$$

Z_n – characteristics impedance of the line.

The loading condition in which the vars absorbed are equal to the vars generated by the line is surge impedance loading (SIL) and it is where the voltage throughout the length of the line is same. i.e. if the transmission line is terminated by a load corresponding to its surge impedance the voltage at the load is constant.

If $I^2\omega L > V^2\omega C$ then the receiving end voltage will drop and if $I^2\omega L < V^2\omega C$ (light load) the voltage will rise. Normally the loading is higher than the SIL and therefore, the condition $I^2\omega L > V^2\omega C$ exists and the net effect of the line will be to absorb the reactive vars. Under light load conditions, the line will work as vars generator.

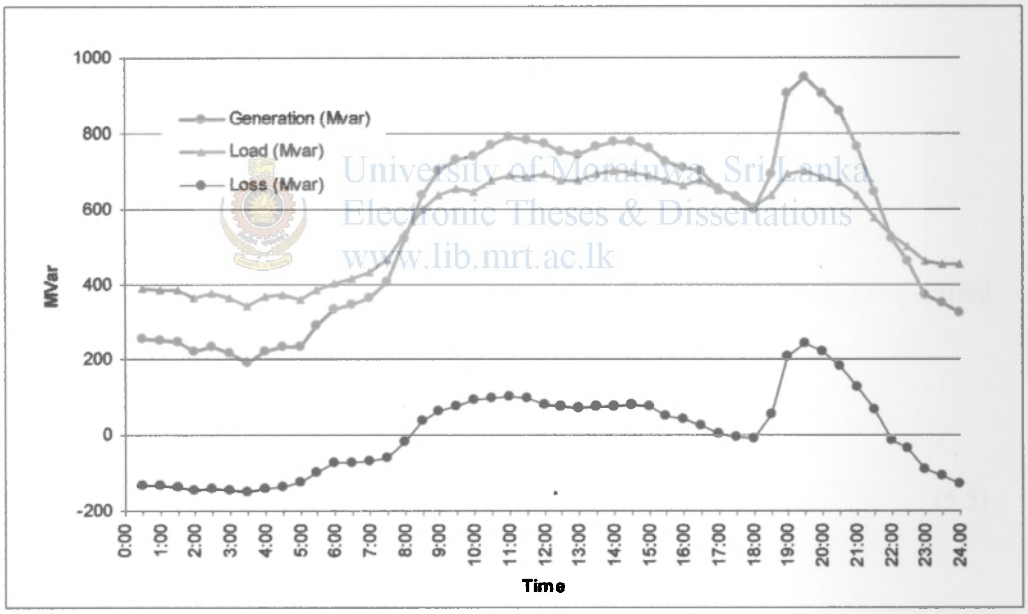


Figure 5.5 Reactive power generation, consumption and losses

Variation of reactive power loss, generation and consumption over twenty four hours are shown in Figure 5.5. Highest reactive power loss is around 19.30 p.m.and It is 246 Mvar. Figure 5.5 shows that reactive power consumption is greater than reactive power generation in light load condition (0.00 a.m. to 8.00 a.m, and 22.00 p.m to 24.00 p.m). Because part of the total reactive power consumption will be met by transmission lines. Balance will be provided by generators and breraker switch capacitors (BSC) to maintain voltage within allowable range. Minimum reactive power generation is around 3.30 a.m. At heavy load condition (8.00 a.m to 22.00 p.m.), reactive power consumption is less than reactive power generation.

5.4 Evaluation of Energy loss

Load factor (e)

It is "the ratio of the average load over a designated period of time to the peak load occurring on that period [15]." Therefore, the load factor e is

$$e = \frac{Average\_load}{Peak\_load} \qquad (5.4)$$

$$e = \frac{P_{av}}{P_{max}}$$

$$P_{av} = \frac{1}{T}\int_0^T P(t)dt$$

Loss factor (LF)

It is "the ratio of the average power loss to the peak load power loss during a specified period of the time [15]." Therefore, the loss factor LF is

$$LF = \frac{Average\ \ power\ \ loss}{Power\ \ loss\ \ at\ \ peak\ \ load} \qquad (5.5)$$

Utilization time of losses (UTL)

The UTL is defined as the time required to dissipate same amount of energy losses if peak power loss is maintained instead of actual demand curve.

An empirical formula (Jung's Formula) for UTL in terms of load factor (e) is as follows

$$UTL = \frac{e^2(2+e^2)}{(1+2e)} * 24 \qquad Hrs / Day \qquad (5.6)$$

An approximate formula to relate the loss factor to the load factor is

$$LF = (0.2 * e) + (0.8 * e^2) \qquad (5.7)$$

P_{av} = 1130.38 MW

P_{max} = 1635.4 MW

Peak power loss = 53.48 MW

Total energy delivered = 27128.17 MWh

From equation 5.4

e = 0.6912

From equation 5.7

LF = 0.5204

From equation 5.6

UTL = 11.925 hrs/day

Method 1

By definition of UTL

Energy loss = (Peak power loss) x (UTL) MWh

= 637.73 MWh

= 2.35 %

Method 2

From equation 5.5

Average power loss = (Peak power loss) x (LF) MW

Total daily energy loss = Average power loss x 24 MWh

= 667.97 MWh

= 2.46 %

Chapter 6

Conclusion and Recommendation

6.1 Conclusion and Discussion

According to the 2007 CEB statistics, total system losses (Energy losses) amount to around 15.67%. It is a heavier loss compared with losses in developed countries. CEB has forecasted that the transmission losses are 2.4% and 2.0% at 2008 and 2010 respectively with their expansions.

According to this study, evening peak demand which is 1635.4 MW is recorded around 19.30 p.m. The total generation required is 1688.8 MW. Maximum active power loss is 53.4 MW. As a percentage of total generation, it is a 3.17 %.

Lowest demand and generation are recorded around 3.30 a.m. It is around 761.8 MW and 773.56 MW respectively. Minimum loss is 11.75 MW and 1.52 % of total generation. Day peak is around 11.00 a.m. Any time in between 0.00 a.m. to 24.00 midnight, Transmission losses vary from 1.52 % to 3.17 %.

Highest reactive power loss is around 19.30 p.m. and It is 246 Mvar. Reactive power consumption is greater than reactive power generation in light load condition. Minimum reactive power generation is around 3.30 a.m. At heavy load condition reactive power consumption is less than reactive power generation.

At light load condition, vars absorbed are higher than vars generated, because part of the total reactive power consumption will be met by transmission lines. Due to available excess system capacity of var generation, vars can be sold to the embedded power producers and which will generate additional revenue to the CEB. At peak time period, vars can be obtained from the embedded power producers.

Most of studies have been done neglecting transformer series resistance. But the loss due to transformer resistance is significant. The difference between with and without transformer resistance varies in between 0.5 % to 0.8 % .Thus, It can be concluded that neglecting transformer series resistance is not justifiable.

MATLAB is found to be a powerful and convenient programming tool for load flow analysis. It is easy to handle complex numbers and matrix calculations with MATLAB due to inbuilt functions for handling complex numbers.

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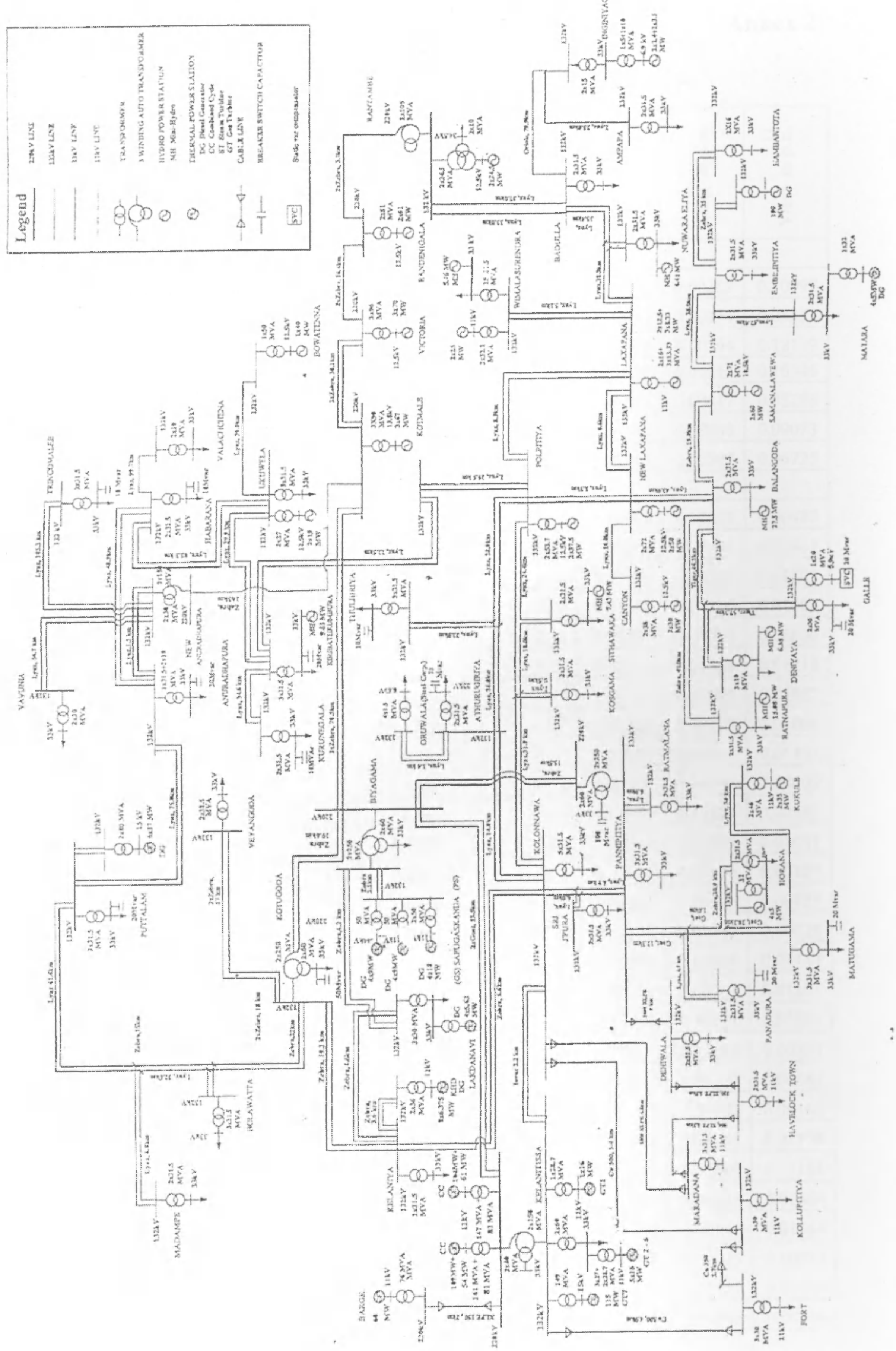
National Transmission Network



Data of Transmission Lines/ Under Ground Cables

Line Section	kV	Circuits	Conductor	Length (km)	R/cct in p.u.	X/cct in p.u.	Y/cct in p.u.
132kV Transmission lines UG							
Kelanitissa-Fort	132	1	Cu500	4.9	0.00143	0.00267	0.10997
Fort-Kollupitiya	132	1	Cu350	2.7	0.00093	0.00153	0.05321
Kollupitiya-Kolonnawa	132	1	Cu500	5.4	0.00158	0.00294	0.12119
Pannipitiya-Dehiwala	132	1	XLPE, 1000	9.0	0.00139	0.00816	0.10346
Colombo I-Kolonnawa	132	1	XLPE, 1000	4.6	0.00071	0.00417	0.05288
Dehiwala-Havelock Town	132	1	XLPE, 800	8.5	0.00151	0.00805	0.09073
Colombo A-Colombo I	132	1	XLPE. 800	6.3	0.00112	0.00597	0.06725
132kV Transmission lines OH							
New Laxapana-Canyon	132	1	Lynx	10.0	0.01022	0.02301	0.00487
Ukuwela-Bowatenna	132	1	Lynx	30.0	0.03065	0.06904	0.01462
Rantambe-Badulla 1	132	1	Lynx	37.0	0.03780	0.08515	0.01803
Rantambe-Badullla 2	132	1	Lynx	33.0	0.03371	0.07595	0.01608
Badulla-Inginiyagala	132	1	Oriole	79.9	0.08759	0.19993	0.03866
Inginiyagala-Ampara	132	1	Lynx	25.0	0.02554	0.05754	0.01218
Habarana-Valachchena	132	1	Lynx	99.7	0.10185	0.22945	0.04857
Kotmale-Kiribathkumbura	132	2	Lynx	22.5	0.02299	0.05178	0.01096
Kiribathkumbura-Ukuwela	132	2	Lynx	29.9	0.03055	0.06881	0.01457
Ukuwela-Habarana	132	2	Lynx	82.3	0.08408	0.18941	0.04009
Habarana-Anuradapura	132	2	Lynx	48.9	0.04996	0.11254	0.02382
Polpitiya-Kotmale	132	2	Lynx	29.5	0.03014	0.06789	0.01437
Biyagama-Sapugaskanda PS	132	2	Zebra	2.1	0.00092	0.00466	0.00109
Kelanitissa-Kolonnawa	132	2	Invar	2.2	0.00048	0.00386	0.00155
Kolonnawa-Pannipitiya	132	2	Lynx	12.9	0.01318	0.02969	0.00628
Kotugoda-Bolawatta(T)	132	2	Zebra	22.0	0.00960	0.04886	0.01144
Bolawatta(T)-Madampe(T))	132	2	Lynx	22.6	0.02309	0.05201	0.01101
Madampe(T)-Puttalam	132	2	Lynx	61.4	0.06272	0.14131	0.02991
Madampe(T)-SS	132	2	Lynx	6.8	0.00695	0.01565	0.00331
Kolonnawa-Aturugiriya	132	2	Lynx	14.0	0.01430	0.03222	0.00682
Athurugiriya-Oruwala	132.	2	Lynx	3.4	0.00347	0.00782	0.00166
Athurugiriya-Thulhiriya(T)	132	2	Lynx	36.0	0.03678	0.08285	0.01754
Thulhiriya(T)-SS	132	2	Lynx	23.9	0.02442	0.05500	0.01164
Thulhiriya(T)-Polpitiya	132	2	Lynx	28.0	0.02860	0.06444	0.01364
Kolonnawa-Kosgama(T)	132	2	Lynx	31.9	0.03259	0.07342	0.01564
Kosgama(T)-SS	132	2	Lynx	0.5	0.00051	0.00115	0.00024
Kosgama(T)-Polpitiya	132	2	Lynx	34.4	0.03514	0.07917	0.01676
Pannipitiya-Ratmalana	132	2	Lynx	6.9	0.00705	0.01588	0.00336

Pannipitiya-Panadura(T)	132	2	Goat	12.3	0.00629	0.02734	0.00631
Panadura(T)-Matugama	132	2	Goat	29.1	0.01488	0.06467	0.01493
Panadura(T)-SS	132	2	Lynx	4.7	0.00480	0.01082	0.00229
Polpitiya-Laxapana	132	2	Lynx	8.3	0.00848	0.01910	0.00404
Laxapana-Wimalasurendra	132	2	Lynx	5.1	0.00521	0.01174	0.00248
Laxapana-New Laxapana	132	2	Lynx	0.6	0.00061	0.00138	0.00029
New Laxapana-Polpitiya	132	2	Lynx	8.0	0.00817	0.01841	0.00390
Kiribathkumbura-Kurunegala	132	2	Lynx	34.6	0.03535	0.07963	0.01686
New Anuradapura-Trinco	132	2	Lynx	103.3	0.10553	0.02377	0.05033
New Laxapana-Balangoda	132	2	Lynx	43.9	0.04485	0.10103	0.02139
Balangoda-Samanalawewa	132	2	Zebra	19.0	0.00829	0.04220	0.00988
Samanalawewa-Embilipitiya	132	2	Lynx	38.0	0.03882	0.08745	0.01851
Balangoda-Deniyaya(T)	132	2	Tiger	44.2	0.06266	0.10527	0.02093
Deniyaya(T)-Galle	132	2	Tiger	57.3	0.08123	0.13648	0.02713
Laxapana-NuwaraEliya	132	2	Lynx	38.8	0.03964	0.08930	0.01890
NuwaraEliya-Badulla	132	2	Lynx	35.4	0.03616	0.08147	0.01725
Embilipitiya-Matara	132	2	Lynx	52.0	0.05312	0.11967	0.02533
Embilipitiya-Hambantota	132	2	Zebra	35.0	0.01527	0.07774	0.01820
Puttalam-Anuradapura	132	2	Lynx	75.0	0.07662	0.17261	0.03654
Anuradapura-New Anuradapura	132	2	Lynx	1.5	0.00153	0.00345	0.00073
Anuradapura-Vavunia	132	2	Lynx	54.7	0.05588	0.12589	0.02665
Kotugoda-Weyangoda	132	2	2xZebra	17.0	0.00371	0.02986	0.01195
Sapugaskanda GS-Biyagama	132	2	Zebra	4.2	0.00183	0.00933	0.00218
Kolonnawa-Kelaniya	132	2	Zebra	6.6	0.00288	0.01466	0.00343
Kelaniya-Kotugoda	132	2	Zebra	19.3	0.00842	0.04287	0.01004
Kelaniya-KHD*	132	2	Zebra	3.6	0.00157	0.00800	0.00187
Kelaniya-Sapugas. GS*	132	2	Zebra	4.6	0.00201	0.01022	0.00239
Single in out to Horana from Panadura T-Matugama*	132	2	Zebra	20.0	0.00872	0.04442	0.01040
Kukule-Matugama	132	2	Lynx	30.0	0.03065	0.06904	0.01462
Anuradapura-Vavunia	132	2	Zebra	54.7	0.02386	0.12149	0.02845
220 kV transmission lines							
Victoria-Randenigala	220	1	2xZebra	16.4	0.00129	0.01037	0.03202
Randenigala-Rantambe	220	1	2xZebra	3.1	0.00024	0.00196	0.00605
Kotmale-New Anuradapura	220	1	Zebra	163.0	0.02560	0.13033	0.23545
Biyagama-Kelanitissa	220	2	2xGoat	12.5	0.00134	0.00764	0.02361
Biyagama-Kotugoda	220	2	Zebra	19.6	0.00308	0.01567	0.02831
Biyagama-Kotmale	220	2	2xZebra	70.5	0.00554	0.04457	0.13764
Kotmale-Victoria	220	2	2xZebra	30.1	0.00236	0.01903	0.05877
Pannipitiya-Biyagama	220	2	Zebra	15.5	0.00243	0.01239	0.02239
Note: The Line parameters are given in p.u. values w.r.t. $Z_{base}=V^2_{base}/MVA_{base}$ ($MVA_{base}=100$, V_{base} in kV)							

Data of Existing Two Winding Transformers

		Z% p.u.	MVA base	Units	H kV	L kV	Z p.u. (100MVA base)
Generator Transformers							
1	Victoriya	15.00	96.0	3	220.0	12.5	0.15625
2	Kotmale	10.50	90.0	3	220.0	13.8	0.11667
3	Randenigala	14.50	81.0	2	220.0	12.5	0.17901
4	Ukuwela	12.30	27.0	2	132.0	12.5	0.45556
5	Bowatenna	10.00	50.0	1	132.0	12.5	0.20000
6	Polpitiya	12.10	53.7	2	132.0	12.5	0.22533
7	Canyon	10.80	38.0	2	132.0	12.5	0.28421
8	Nlaxapana	13.50	72.0	2	132.0	12.5	0.18750
9		10.00	40.0	1	132.0	11.0	0.25000
10	Olaxapana	10.00	16.0	2	132.0	11.0	0.62500
11	Iginiyagala	8.00	10.0	1	33.0	6.9	0.80000
12		4.00	5.0	1	33.0	6.9	0.80000
13	Samanalawewa	11.00	71.0	2	132.0	10.5	0.15493
14	Kukule	11.00	46.0	2	132.0	13.8	0.23913
15	Wimalasurendra	12.30	32.1	2	132.0	11.0	0.38318
16	Ambilipitiya	13.00	70.0	2	132.0	11.0	0.18571
17	Matara	10.00	32.0	1	33.0	11.0	0.31250
18	Horana	10.00	32.0	1	33.0	11.0	0.31250
19	Colombo(Barge)	12.00	76.0	1	220.0	11.0	0.15789
20	CCY-AES -GT	12.50	161.0	1	220.0	11.0	0.07764
21	CCY-AES -ST	12.50	81.0	1	220.0	11.0	0.15432
22	CCY-Kalanitissa -GT	12.00	147.0	1	220.0	11.0	0.08163
23	CCY-Kalanitissa -ST	12.00	83.0	1	220.0	11.0	0.14458
24	KHD(Asia Power)	10.00	36.0	2	132.0	11.0	0.27778
25	Lakdanavi	9.04	20.0	1	33.0	11.0	0.45200
26	Sapugas(Old-4 nos)	17.80	50.0	2	142.0	11.0	0.35600
27	Sapugas(Ext-4 nos)	17.80	50.0	1	142.0	11.0	0.35600
28	Sapugas(Ext.-4 nos)	17.80	50.0	1	142.0	11.0	0.35600
29	Puttalam-Heladanavi	12.00	80.0	2	132.0	15.0	0.15000
30	GT7	11.00	149.0	1	132.0	11.0	0.07383
31	GT4-5	14.70	27.0	2	34.0	11.5	0.54444
Grid Station Transformers							
32	Kalanitissa	15.00	60.0	2	132.0	33.0	0.25000
33	Kalaniya	10.00	31.5	1	132.0	33.0	0.31746
34	Sapugaskanda	9.90	30.0	3	132.0	33.0	0.33000
35	Bolawatta	10.95	31.5	3	132.0	33.0	0.34762
36	Madampe	10.00	31.5	2	132.0	33.0	0.31746

37	Puttalam	9.95	31.5	2	132.0	33.0	0.31587
38	Veyangoda	10.00	31.5	2	132.0	33.0	0.31746
39	Kurunagala	10.00	31.5	2	132.0	33.0	0.31746
40	Kiribathkubura	10.90	31.5	3	132.0	33.0	0.34603
41	Anuradhapura	10.65	10.0	2	132.0	33.0	1.06500
42	Anuradhapura	10.00	31.5	1	132.0	33.0	0.31746
43	Vavniya	10.70	10.0	2	132.0	33.0	1.07000
44	Trinco	10.52	31.5	2	132.0	33.0	0.33397
45	Habarana	10.46	31.5	2	132.0	33.0	0.33206
46	Valachchena	10.00	10.0	2	132.0	33.0	1.00000
47	Ukuwela	9.67	31.5	2	132.0	33.0	0.30698
48	Rantabe	9.90	105.0	1	220.0	132.0	0.09429
49	WPS	10.00	15.0	1	132.0	33.0	0.66667
		10.30	31.5	1	132.0	33.0	0.32698
50	Thuliriya	10.00	31.5	3	132.0	33.0	0.31746
51	Athurugiriya	10.00	31.5	2	132.0	33.0	0.31746
52	Sithawaka	10.00	31.5	2	132.0	33.0	0.31746
53	Kosgama	10.00	31.5	2	132.0	33.0	0.31746
54	N'Eliya	9.64	31.5	2	132.0	33.0	0.30603
55	Badulla	11.00	31.5	2	132.0	33.0	0.34921
56	Ampara	10.02	31.5	2	132.0	33.0	0.31810
57	Iginiyagala	11.00	15.0	2	132.0	33.0	0.73333
58	Hambantota	10.87	16.0	2	132.0	33.0	0.67938
59	Ambilipitiya	10.00	31.5	2	132.0	33.0	0.31746
60	Matara	10.00	31.5	3	132.0	33.0	0.31746
61	Balangoda	10.00	31.5	2	132.0	33.0	0.31746
62	Deniyaya	10.76	31.5	3	132.0	33.0	0.34159
63	Galle	10.40	30.0	2	132.0	11.0	0.34667
64	Ratnapura	10.00	31.5	2	132.0	33.0	0.31746
65	Matugama	9.98	31.5	3	132.0	33.0	0.31683
66	Horana	10.00	31.5	2	132.0	33.0	0.31746
67	Panadura	9.98	31.5	2	132.0	33.0	0.31683
68	Pannipitiya	9.90	31.5	3	132.0	33.0	0.31429
69	Ratmalana	10.20	31.5	3	132.0	33.0	0.32381
70	Kolonnawa	10.00	31.5	5	132.0	33.0	0.31746
71	S'Japura	10.00	31.5	2	132.0	33.0	0.31746
72	Dehiwala	10.00	31.5	2	132.0	33.0	0.31746
73	H'Town	10.00	31.5	2	132.0	33.0	0.31746
74	Kollupitiya	29.20	30.0	3	132.0	11.0	0.97333
75	Fort	29.20	30.0	3	132.0	11.0	0.97333
76	Maradana	29.00	31.5	3	132.0	11.0	0.92063

Data of Existing Three Windings Transformers

Description	Units	kV			MVA			Between	Z% p.u.	MVAbase		Z% (Equivalent Star Connection)	Z p.u. (MVAb=100)
		H	L	M	H	L	M						
Kelanitissa	1.2	220.0	33.0	132.0	150.0	40.0	150.0	H-M	14.2	150.0	H	10.37	9.47
								H-L	85.8	150.0	L	46.83	57.20
								M-L	68.9	150.0	M	-0.90	45.93
Pannipitiya	1.2	220.0	33.0	132.0	250.0	60.0	250.0	H-M	14.16	250.0	H	6.72	5.66
								H-L	16.61	60.0	L	20.97	27.68
								M-L	11.95	60.0	M	-1.05	19.92
Biyagama	1.2	220.0	33.0	132.0	250.0	60.0	250.0	H-M	13.8	250.0	H	-10.24	5.52
								H-L	91.3	250.0	L	46.76	36.52
								M-L	156.3	250.0	M	15.76	62.52
Kotugoda	1.2	220.0	33.0	132.0	250.0	60.0	250.0	H-M	13.8	250.0	H	-10.52	5.52
								H-L	89.9	250.0	L	46.48	35.96
								M-L	156.3	250.0	M	16.04	62.52
NEW Anuradhapura	1.2	220.0	33.0	132.0	150.0	30.0	150.0	H-M	14	150.0	H	-16.67	9.33
								H-L	22.7	30.0	L	92.33	75.67
								M-L	35.5	30.0	M	26.00	118.33
Rantabe	1.2	132.0	12.5	34.5	34.5	34.5	10.0	H-M	12.2	34.5	H	24.64	35.36
								H-L	12.7	34.5	L	12.17	36.81
								M-L	7.9	34.5	M	10.72	22.90

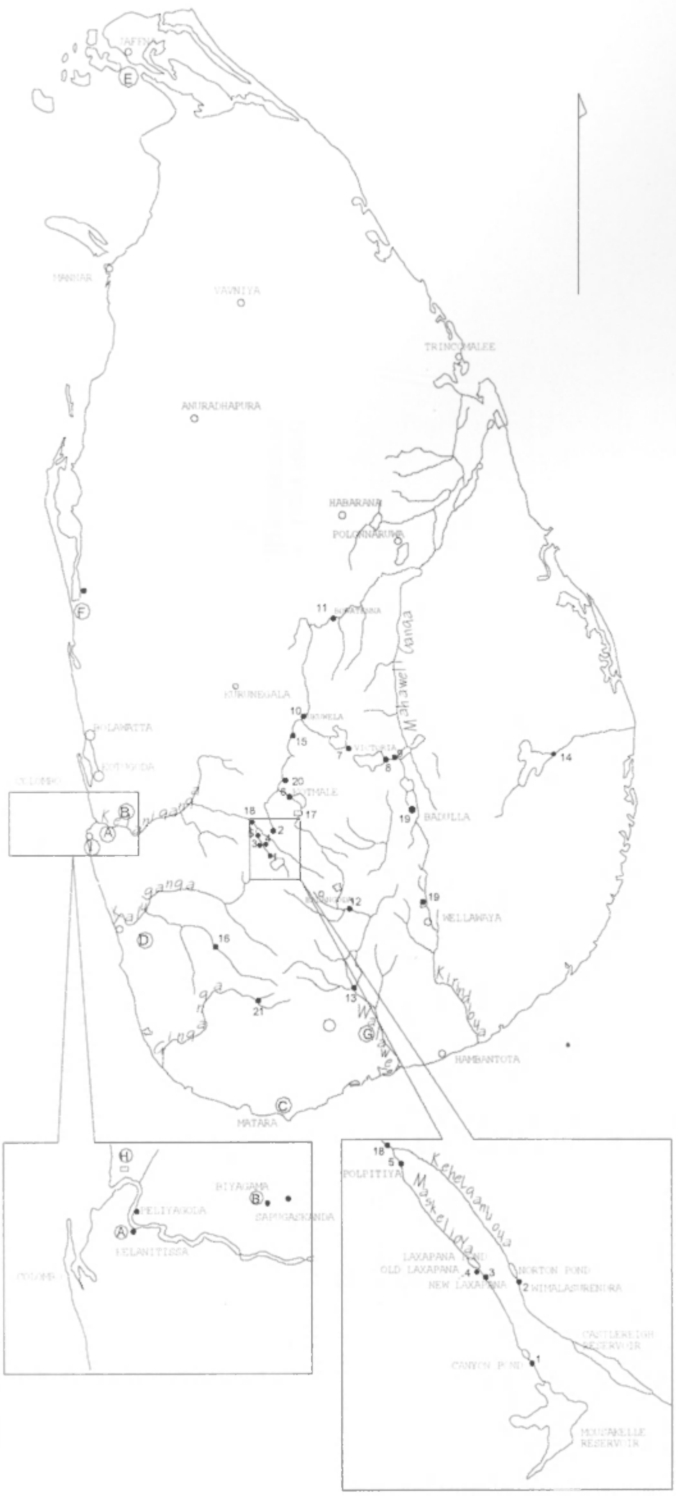
Annex 5

Data of Generators

Power Station	Generator Units x Capacity (MW)	Total Capacity (MW)	MVA	Total MVA	COS Φ	Mvar at rated P.F.
Canyon	2 x 30	60	2x37.5	75	0.85	19.75
Wimalasurendra	2 x 25	50	2x31.25	62.5	0.80	18.75
Old Laxapana	3 x 8.33	25	3x9.8	29.4	0.85	5.16
	2 x 12.5	25	2x14.7	29.4	0.85	7.74
New Laxapana	2 x 50	100	2x62.5	125	0.80	37.50
Polpitiya	2 x 37.5	75	2x53.9	107.8	0.80	28.14
Victoria	3 x 70	210	3x82.5	247.5	0.85	43.46
Kotmale	3 x 67	201	3x90	270	0.80	47.41
Randenigala	2 x 61	122	2x81	162	0.80	42.67
Ukuwela	2 x 19	38	2x21.4	42.8	0.80	16.50
Bowatenna	1 x 40	40	1x47	47	0.80	30.00
Rantambe	2 x 24.5	49	2x30	60	0.80	18.00
Samanalawewa	2 x 60	120	2x70.6	141.2	0.85	37.19
Kukule	2 x 35	70	2x42	84	0.85	22.12
Iginiyagala	2x2.75	5.5	2x3.5	7	0.80	
	2x3.25	6.5	2x4	8	0.80	
Udawalawe	2x3	6	2x3.3	6.6	0.90	
Nillambe	2x1.6	3.2	2x2	4.4	0.80	
CEB Hydro Total		**1206.2**				
GT2	1x20	20	1x31	31	0.85	
GT3	1x20	20	1x31	31	0.85	
GT4	1x20	20	1x27	27	0.85	12.00
GT5	1x20	20	1x27	27	0.85	12.00
GT6	1x20	20	1x27	27	0.85	

GT7	1 x 115	115	1x154.6	154.62	0.80	92.78
CCY- GT	1x104	104	1x133	133	0.80	80.00
CCY-ST	1x61	61	1x81	81	0.80	48.60
Sapugaskanda Diesel	4 x 20	80	4x26.5	106	0.80	8.00
Sapugaskanda Diesel (Ext.)	4 x 10	40	4x12.9	51.6	0.80	6.00
	4x 10	40	4x12.9	51.6	0.80	6.00
Chunnakam	1x8	8				
CEB Thermal Total		**548**				
Lakdhanavi	4x5.63	22.5	4x7.5	30.00	0.80	4.50
Asia Power Ltd	8x6.375	51	8x8	64.00	0.80	4.80
Colombo Power (Pvt) Ltd	4x16	64	4x19.622	78.48	0.80	11.77
ACE Power Matara	4x6.2	24.8	4x7.97	31.88	0.80	4.78
ACE Power Horana	4x6.2	24.8	4x7.97	31.88	0.80	4.78
AES Kelani (Pvt.) Ltd-CCY-GT	1x109	109	1x144.95	144.95	0.80	80.00
AES Kelani (Pvt.) Ltd-CCY-ST	1x54	54	1x80	80.00	0.80	43.20
Heladanavi (Pvt.) Ltd.	6x16.6	100	6x21.34	128.07	0.80	12.81
ACE Power Embilipitiya	14x7.107	100	14x9.21	129.01	0.80	5.53
IPP Total		**550.1**				
Small hydro		119				
Wind		3				
Grand Total		**2426.3**	.			

Location of Existing, Committed and Candidate Power Stations



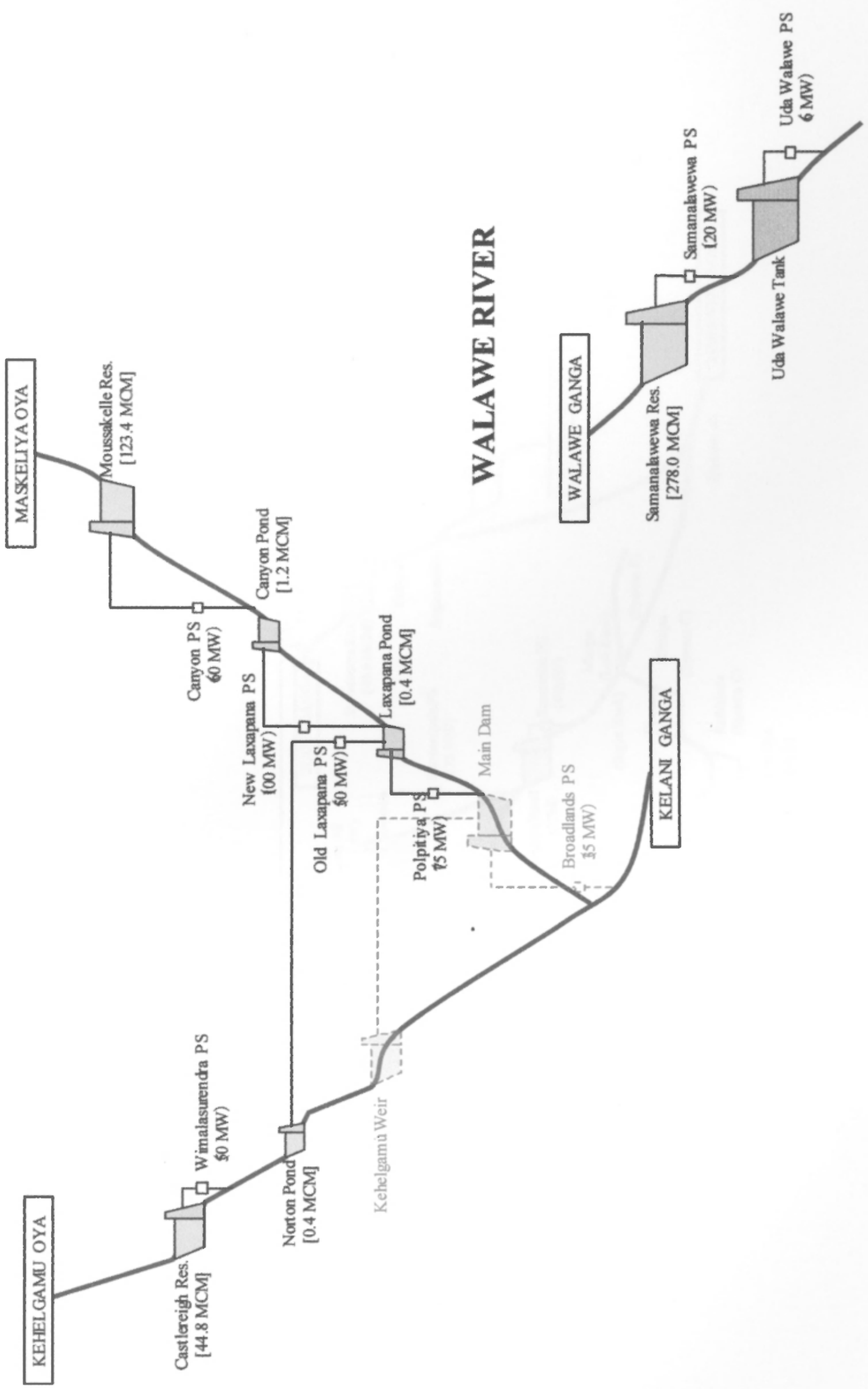
No.	HYDROPOWER PLANT		CAPACITY (MW)
1	CANYON	•	60
2	WIMALASURENDRA	•	50
3	NEW LAXAPANA	•	100
4	OLD LAXAPANA	•	50
5	POLPITIYA	•	75
6	KOTMALE	•	201
7	VICTORIA	•	210
8	RANDENIGALA	•	122
9	RANTAMBE	•	49
10	UKUWELA	•	38
11	BOWATENNA	•	40
12	SAMANALAWEWA	•	120
13	UDAWALAWE	•	06
14	INGINIYAGALA	•	11
15	NILAMBE	•	03
16	KUKULE	•	70
17	UPPER KOTMALE	▭	150
18	BROADLANDS	x	40
19	UMA OYA	X	150
20	MORAGOLLA	X	27
21	GINGANGA	X	49

No.	THERMAL POWER PLANT		CAPACITY (MW)
Ⓐ	KELANITISSA POWER STATION		
	GAS TURBINE (OLD)	•	48
	GAS TURBINE (NEW)	•	115
	GAS TURBINE (JBIC)	•	65
	COMBINED CYCLE (AES)	•	163
	COLOMBO POWER (Pvt)Ltd.	•	60
	SAPUGASKANDA POWER STATION		
Ⓑ	DIESEL	•	144
	SAPUGASKANDA GRID SUBSTATION		
	LAKDANAVI		22.5
	ASIA POWER Ltd.		49
Ⓒ	ACE POWER MATARA	•	20
Ⓓ	ACE POWER HORANA	•	20
Ⓔ	CHUNNAKAM	•	08
Ⓕ	HELADANAVI	•	100
Ⓖ	ACE POWER EMBILIPITIYA	•	100
Ⓗ	COMBINED CYCLE PLANT KERAWALAPITIYA	▭	300
Ⓘ	COLOMBO POWER Pvt. lTD.	•	

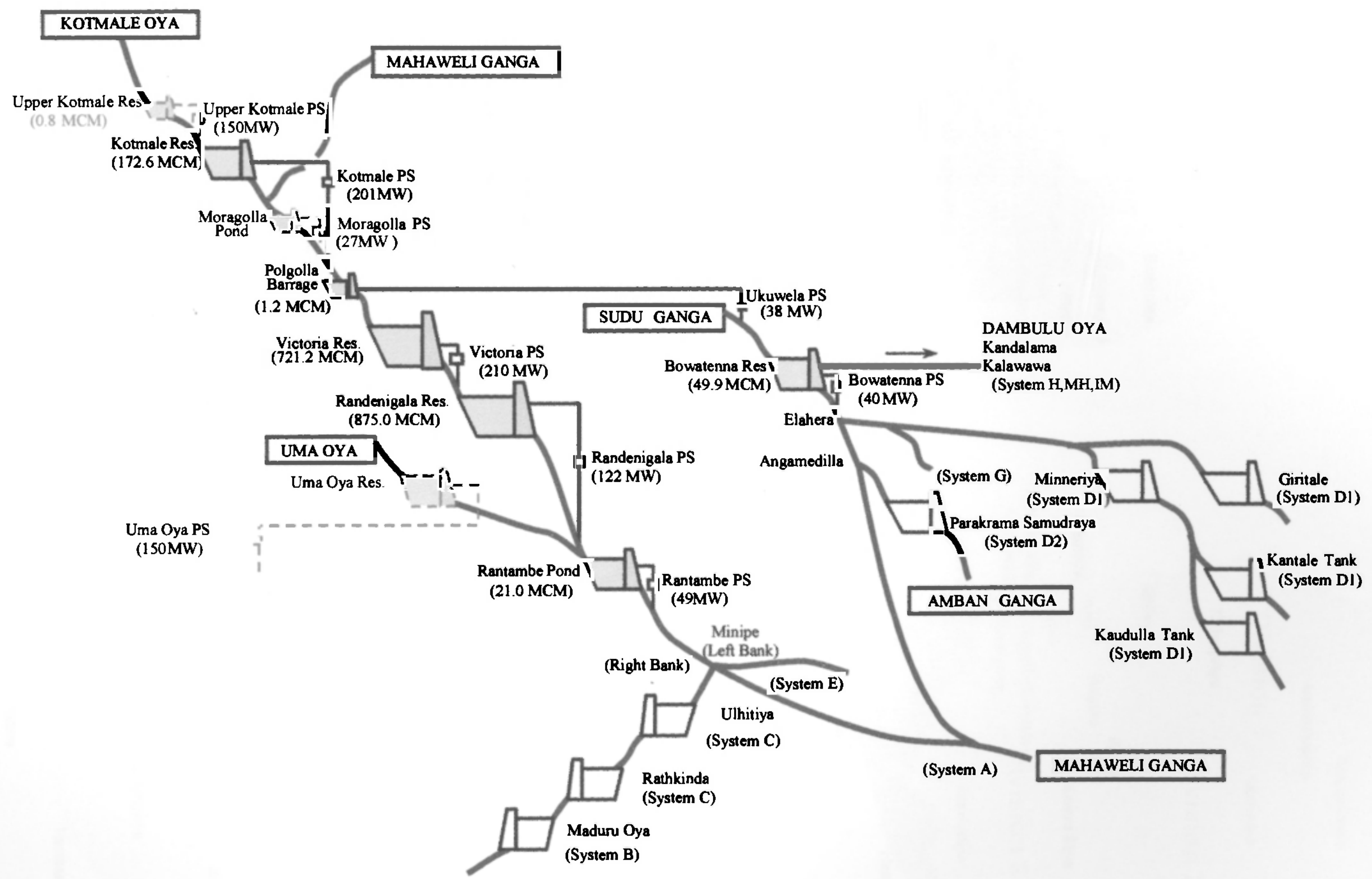
LEGEND

EXISTING PLANTS	•
CANDIDATES PLANTS	X
COMMITTED PLANTS	▭

Reservoir Systems in Mahaweli, Kelani and Walawe River basins



Reservoir Systems in Mahaweli River basins



CEB Distribution Regions

MATLAB Programme for Load Flow Analysis

Input file to power flow programme
powerflow.m

```
clear;
basemva=100;          % MVA Base
accuracy=0.0001;      % Accuracy
maxiter=100;          % Maximum Iterations

busdata=xlsread('Budata.xls'); % Read bus data from input file

linedata=xlsread('Lndata.xls'); % Read line data from input file

Lfybus      % Call file "Lfybus "
Lfnewton    % Call file " Lfnewton "
busout      % Call file " busout "
Lineflow    % Call file " Lineflow "
```

This program obtains Y Bus Admittance Matrix for power flow solution
Lfybus.m

```
j=sqrt(-1);              % Square root of -1
i = sqrt(-1);            % Square root of -1
nl = linedata(:,1);      % Read From bus data
nr = linedata(:,2);      % Read To bus data
R = linedata(:,3);       % Resistances of lines
X = linedata(:,4);       % Reactances of the lines
Bc = j*linedata(:,5);            % Half of the total line charging suceptance ex. Y/2
a = linedata(:,6);                       % Transformer Tap setting (one for transmission line)
nbr=length(linedata(:,1));               % Number of rows in line data matrix
nbus = max(max(nl), max(nr));            % Maximum of from or to bus column
      Z = R + j*X;                       % Impedance matrix
      y= ones(nbr,1)./Z;                 % Branch admittance
      for n = 1:nbr
         if a(n) <= 0                    % if Tap<=0 then tap=1
    a(n) = 1;
   else;end
      Ybus=zeros(nbus,nbus);             % initialize Ybus to zero
                                         % formation of the off diagonal elements
   for k=1:nbr;
     Ybus(nl(k),nr(k))=Ybus(nl(k),nr(k))-y(k)/a(k);
     Ybus(nr(k),nl(k))=Ybus(nl(k),nr(k));
   end
      end
                                         % formation of the diagonal elements
      for  n=1:nbus
    for k=1:nbr
       if nl(k)==n
       Ybus(n,n) = Ybus(n,n)+y(k)/(a(k)^2) + Bc(k);
       %Ybus(n,n) = Ybus(n,n)+y(k) +Bc(k);
       elseif nr(k)==n
        % Ybus(n,n) = Ybus(n,n)+y(k)/(a(k)^2) + Bc(k);
```

```
        Ybus(n,n) = Ybus(n,n)+y(k) +Bc(k);
        else, end
    end
     end
     clear Pgg
```

Power flow solution by Newton-Raphson method
Lfnewton.m

```
ns=0; ng=0; Vm=0; delta=0;
yload=0; deltad=0;
nbus = length(busdata(:,1));              % Number of busses
kb=[]; Vm=[]; delta=[];
Pd=[]; Qd=[]; Pg=[];
Qg=[]; Qmin=[]; Qmax=[];
Pk=[]; P=[]; Qk=[]; Q=[]; S=[]; V=[];
  for k=1:nbus
    n=busdata(k,1);                       % Read (last)bus numbers ex 1,2,3, ...6
    kb(n) = busdata(k,2);                 % Read bus type
    Vm(n) = busdata(k,3);                 % Read Voltage magnitude
    delta(n) = busdata(k,4);              % Read Voltage angel delta
    Pd(n) = busdata(k,5);                 % Read P_load
    Qd(n) = busdata(k,6);                 % Read Q_load
    Pg(n) = busdata(k,7);                 % Read P_generation
    Qg(n) = busdata(k,8);                 % Read Q_generation
    Qmin(n) = busdata(k,9);               % Read Q_minimum
    Qmax(n) = busdata(k,10);              % Read Q_maximum
    Qsh(n) = busdata(k,11);               % Read +ve injected power

  if Vm(n) <= 0
    Vm(n) = 1.0;                          % if V<=0 then assign 1
    V(n) = 1 + j*0;                       % Complex form
   else delta(n) = pi/180*delta(n);       % Convert into radian
    V(n) = Vm(n)*(cos(delta(n)) + j*sin(delta(n)));   % Complex form
    P(n) = (Pg(n)-Pd(n))/basemva;                     % P at a bus
    Q(n) = (Qg(n)-Qd(n)+ Qsh(n))/basemva;             % Q at a bus
    S(n) = P(n) + j*Q(n);                 % Complex power P & Q complex form
  end
end
  for k=1:nbus
    if kb(k) == 1, ns = ns+1;
    else, end
    if kb(k) == 2 ng = ng+1;
    else, end
      ngs(k) = ng;                        % No of generator busses
      nss(k) = ns;                        % No of slack busses
  end
    Ym=abs(Ybus);                         % Absulute value of Ybus matrix ex |x|
    t = angle(Ybus);                      % Angle of Ybus matrix ex: x= a+jb angle=atan(b/a)

    m=2*nbus-ng-2*ns;
         maxerror = 1; converge=1;        % Initial condition
    iter = 0;
                                          % added for parallel lines
    mline=ones(nbr,1);                    % (11x1) matrix
```

```
for k=1:nbr
    for mm=k+1:nbr
      if((nl(k)==nl(mm)) & (nr(k)==nr(mm)));
        mline(mm)=2;
      elseif ((nl(k)==nr(mm)) & (nr(k)==nl(mm)));
        mline(mm)=2;
      else, end
    end
  end

 % Start of iterations

clear A  DC   J  DX
while maxerror >= accuracy & iter <= maxiter          % Test for max. power mismatch
   for ii=1:m
      for k=1:m
         A(ii,k)=0;                                    %Initializing Jacobian matrix 8x8 matrix
   end, end
   iter = iter+1;
for n=1:nbus
   nn=n-nss(n);
   lm=nbus+n-ngs(n)-nss(n)-ns;
   J11=0; J22=0; J33=0; J44=0;
  for ii=1:nbr
        if mline(ii)==1                               % Added to include parallel lines
        if nl(ii) == n | nr(ii) == n
        if nl(ii) == n ,  l = nr(ii);
        end
        if nr(ii) == n , l = nl(ii);
        end
     J11=J11+ Vm(n)*Vm(l)*Ym(n,l)*sin(t(n,l)- delta(n) + delta(l));
     J33=J33+ Vm(n)*Vm(l)*Ym(n,l)*cos(t(n,l)- delta(n) + delta(l));
               if kb(n)~=1
               J22=J22+ Vm(l)*Ym(n,l)*cos(t(n,l)- delta(n) + delta(l));
               J44=J44+ Vm(l)*Ym(n,l)*sin(t(n,l)- delta(n) + delta(l));
               else,end
                  if kb(n) ~= 1  & kb(l) ~=1
                        lk = nbus+l-ngs(l)-nss(l)-ns;
                        ll = l -nss(l);
                                                        % off diagonalelements of J1

                        A(nn, ll) =-Vm(n)*Vm(l)*Ym(n,l)*sin(t(n,l)- delta(n) + delta(l));
                        if kb(l) == 0              % off diagonal elements of J2
                        A(nn, lk) =Vm(n)*Ym(n,l)*cos(t(n,l)- delta(n) + delta(l));
            end
                        if kb(n) == 0              % off diagonal elements of J3
                        A(lm, ll) =-Vm(n)*Vm(l)*Ym(n,l)*cos(t(n,l)- delta(n)+delta(l));
            end
                        if kb(n) == 0 & kb(l) == 0   % off diagonal elements of  J4
                        A(lm, lk) =-Vm(n)*Ym(n,l)*sin(t(n,l)- delta(n) + delta(l));
            end
        else, end
              else , end
```

```
    else, end
  end
  Pk = Vm(n)^2*Ym(n,n)*cos(t(n,n))+J33;
  Qk = -Vm(n)^2*Ym(n,n)*sin(t(n,n))-J11;
  if kb(n) == 1 P(n)=Pk; Q(n) = Qk; end                % Swing bus P
   if kb(n) == 2  Q(n)=Qk;
      if Qmax(n) ~= 0
        Qgc = Q(n)*basemva + Qd(n) - Qsh(n);
        if iter <= 7                                   % Between the 2th & 6th iterations
          if iter > 2                                  % the Mvar of generator buses are
            if Qgc  < Qmin(n),                         % tested. If not within limits Vm(n)
            Vm(n) = Vm(n) + 0.01;                      % is changed in steps of 0.01 pu to
            elseif Qgc  > Qmax(n),                     % bring the generator Mvar within
            Vm(n) = Vm(n) - 0.01;end                   % the specified limits.
          else, end
        else,end
      else,end
   end

     if kb(n) ~= 1
   A(nn,nn) = J11;                                     %diagonal elements of J1
   DC(nn) = P(n)-Pk;
  end
  if kb(n) == 0
   A(nn,lm) = 2*Vm(n)*Ym(n,n)*cos(t(n,n))+J22;         %diagonal elements of J2
   A(lm,nn)= J33;                                      %diagonal elements of J3
   A(lm,lm) =-2*Vm(n)*Ym(n,n)*sin(t(n,n))-J44;         %diagonal of elements of J4
   DC(lm) = Q(n)-Qk;
  end
end

DX=A\DC';
for n=1:nbus
 nn=n-nss(n);
 lm=nbus+n-ngs(n)-nss(n)-ns;
  if kb(n) ~= 1
  delta(n) = delta(n)+DX(nn); end
  if kb(n) == 0
  Vm(n)=Vm(n)+DX(lm); end
 end

  maxerror=max(abs(DC));
   if iter == maxiter & maxerror > accuracy
  fprintf('\nWARNING: Iterative solution did not converged after ')
  fprintf('%g', iter), fprintf(' iterations.\n\n')
  fprintf('Press Enter to terminate the iterations and print the results \n')
  converge = 0; pause, else, end

end
if converge ~= 1
  tech= ('                      ITERATIVE SOLUTION DID NOT CONVERGE'); else,
  tech=('                   Power Flow Solution by Newton-Raphson Method');
end
V = Vm.*cos(delta)+j*Vm.*sin(delta);
```

```
deltad=180/pi*delta;
i=sqrt(-1);
k=0;
for n = 1:nbus
   if kb(n) == 1
   k=k+1;
   S(n)= P(n)+j*Q(n);
   Pg(n) = P(n)*basemva + Pd(n);
   Qg(n) = Q(n)*basemva + Qd(n) - Qsh(n);
   Pgg(k)=Pg(n);
   Qgg(k)=Qg(n);
   elseif  kb(n) ==2
   k=k+1;
   S(n)=P(n)+j*Q(n);
   Qg(n) = Q(n)*basemva + Qd(n) - Qsh(n);
   Pgg(k)=Pg(n);
   Qgg(k)=Qg(n);      % June 1997
 end
yload(n) = (Pd(n)- j*Qd(n)+j*Qsh(n))/(basemva*Vm(n)^2);
end
busdata(:,3)=Vm'; busdata(:,4)=deltad';
Pgt = sum(Pg);  Qgt = sum(Qg); Pdt = sum(Pd); Qdt = sum(Qd); Qsht = sum(Qsh);

%clear A DC DX  J11 J22 J33 J44 Qk delta lk ll lm
%clear A DC DX  J11 J22 J33  Qk delta lk ll lm
```

This program prints the power flow solution in a tabulated form on the screen.
busout.m

```
disp(tech)
fprintf('                    Maximum Power Mismatch = %g \n', maxerror)
fprintf('                            No. of Iterations = %g \n\n', iter)
head =['   Bus  Voltage  Angle    ------Load------   ---Generation---   Injected'
     '   No.  Mag.     Degree    MW       Mvar      MW       Mvar       Mvar '
     '                                                                       '];
disp(head)
for n=1:nbus
   fprintf(' %5g', n), fprintf(' %7.3f', Vm(n)),
   fprintf(' %8.3f', deltad(n)), fprintf(' %9.3f', Pd(n)),
   fprintf(' %9.3f', Qd(n)),  fprintf(' %9.3f', Pg(n)),
   fprintf(' %9.3f ', Qg(n)), fprintf(' %8.3f\n', Qsh(n))
end
  fprintf('      \n'), fprintf('    Total              ')
  fprintf(' %9.3f', Pdt), fprintf(' %9.3f', Qdt),
  fprintf(' %9.3f', Pgt), fprintf(' %9.3f', Qgt), fprintf(' %9.3f\n\n', Qsht)
```

This program is used in conjunction with lf Newton
For the computation of line flow and line losses.
Lineflow.m

```
SLT = 0;
fprintf('\n')
fprintf('                    Line Flow and Losses \n\n')
fprintf('    --Line--  Power at bus & line flow    --Line loss--  Transformer\n')
fprintf('    from  to    MW      Mvar     MVA       MW      Mvar       tap\n')

for n = 1:nbus
busprt = 0;
  for L = 1:nbr;
     if busprt == 0
     fprintf('   \n'), fprintf('%6g', n), fprintf('     %9.3f', P(n)*basemva)
     fprintf('%9.3f', Q(n)*basemva), fprintf('%9.3f\n', abs(S(n)*basemva))
     busprt = 1;
     else, end
     if nl(L)==n      k = nr(L);
     In = (V(n) - a(L)*V(k))*y(L)/a(L)^2 + Bc(L)/a(L)^2*V(n);
     Ik = (V(k) - V(n)/a(L))*y(L) + Bc(L)*V(k);
     Snk = V(n)*conj(In)*basemva;
     Skn = V(k)*conj(Ik)*basemva;
     SL  = Snk + Skn;
     SLT = SLT + SL;
     elseif nr(L)==n  k = nl(L);
     In = (V(n) - V(k)/a(L))*y(L) + Bc(L)*V(n);
     Ik = (V(k) - a(L)*V(n))*y(L)/a(L)^2 + Bc(L)/a(L)^2*V(k);
     Snk = V(n)*conj(In)*basemva;
     Skn = V(k)*conj(Ik)*basemva;
     SL  = Snk + Skn;
     SLT = SLT + SL;
     else, end
       if nl(L)==n | nr(L)==n
       fprintf('%12g', k),
       fprintf('%9.3f', real(Snk)), fprintf('%9.3f', imag(Snk))
       fprintf('%9.3f', abs(Snk)),
       fprintf('%9.3f', real(SL)),
          if nl(L) ==n & a(L) ~= 1
          fprintf('%9.3f', imag(SL)), fprintf('%9.3f\n', a(L))
          else, fprintf('%9.3f\n', imag(SL))
          end
       else, end
  end
end
%SLT = SLT;
SLT = SLT/2;
fprintf('  \n'), fprintf('   Total loss                    ')
fprintf('%9.3f', real(SLT)), fprintf('%9.3f\n', imag(SLT))
fprintf('  \n'), fprintf('   Total loss %% ')
fprintf('%9.4f', ((real(SLT)*100)/Pgt))
clear Ik In SL SLT Skn Sn
```

Bus Data Input File (Budata.xls)

Bus No.	Bus type	Voltage (P.U)	Angle (Degrees)	P_Load (MW)	Q_Load (Mvar)	P_Gen (MW)	Q_Gen (Mvar)	Q_Min (Mvar)	Q_Max (Mvar)	Q_Cap. Bank (Mvar)

Annex 12

Line Data Input File (Lndata.xls)

From Bus	To Bus	Resistance (R) p.u	Reactance (X) p.u.	Half of total line charging Suceptance (Y/2) p.u.	Tap position p.u.

Thirty Minutes Loads

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
Embilipitiya T1	MW	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	9.0	9.0	9.0	9.0	8.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
T2	MW	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	9.0	9.0	9.0	9.0	8.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total	MW	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	14.0	18.0	18.0	18.0	18.0	16.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Matara T1	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	5.2	5.0	4.0	2.5	5.5	3.0	7.0	7.0	8.0	8.0	8.0	8.0	8.0	7.5
	Mvar	6.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.5	6.0	6.5	5.0	5.5	6.0	6.8	8.2	8.2	9.2	9.2	10.2	10.2	10.0	10.0
T2	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	5.2	5.0	4.0	2.5	5.5	3.0	7.0	7.0	8.0	8.0	8.0	8.0	8.0	7.5
	Mvar	6.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.5	6.0	6.5	5.0	5.5	6.0	6.8	8.2	8.2	9.2	9.2	10.2	10.2	10.0	10.0
Total	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	6.0	10.4	10.0	8.0	5.0	11.0	6.0	14.0	14.0	16.0	16.0	16.0	16.0	16.0	15.0
	Mvar	13.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	11.0	12.0	13.0	10.0	11.0	12.0	13.6	16.4	16.4	18.4	18.4	20.4	20.4	20.0	20.0
Balangoda T1	MW	1.1	0.9	0.9	0.6	0.6	0.3	0.3	0.8	0.8	1.9	3.6	4.0	4.8	4.3	4.3	3.7	3.9	3.6	3.5	3.4	3.4	3.4	3.6	3.6	3.6
	Mvar	1.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.9	1.0	1.0	1.1	1.6	1.6	1.6	2.2	2.4	2.9	2.9	2.9	2.6	2.6	3.2	3.2
T2	MW	1.1	0.9	0.9	0.6	0.6	0.3	0.3	0.8	0.8	1.9	3.6	4.0	4.8	4.3	4.3	3.7	3.9	3.6	3.5	3.4	3.4	3.4	3.6	3.6	3.6
	Mvar	1.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.9	1.0	1.0	1.1	1.6	1.6	1.6	2.2	2.4	2.9	2.9	2.9	2.6	2.6	3.2	3.2
Total	MW	2.2	1.8	1.8	1.2	1.2	0.6	0.6	1.6	1.6	3.8	7.2	8.0	9.6	8.6	8.6	7.4	7.8	7.2	7.0	6.8	6.8	6.8	7.2	7.2	7.2
	Mvar	2.8	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.8	2.0	2.0	2.2	3.2	3.2	3.2	4.4	4.8	5.8	5.8	5.8	5.2	5.2	6.4	6.4
Deniyaya T1	MW	6.8	6.8	6.8	5.6	5.6	5.6	5.6	5.6	6.8	7.4	8.6	10.0	10.0	8.4	8.4	8.4	8.4	8.4	8.4	6.4	6.4	6.4	6.4	6.4	8.0
	Mvar	3.3	3.3	3.3	2.7	2.7	2.7	2.7	2.7	3.3	3.6	4.2	4.8	4.8	4.1	4.1	4.1	4.1	4.1	4.1	3.1	3.1	3.1	3.1	3.1	3.9
Galle T1	MW	9.3	10.2	10.2	10.8	10.8	10.8	10.8	10.9	10.9	11.2	11.2	13.8	14.7	15.3	15.3	16.8	16.8	17.7	17.7	18.6	18.6	18.6	18.6	17.7	17.7
	Mvar	4.5	4.9	4.9	5.2	5.2	5.2	5.2	5.3	5.3	5.4	5.4	6.7	7.1	7.4	7.4	8.1	8.1	8.6	8.6	9.0	9.0	9.0	9.0	8.6	8.6
T2/21	MW	11.8	10.9	10.9	10.8	10.8	10.8	10.8	10.8	10.8	12.7	15.0	15.0	15.0	15.0	15.0	16.0	16.0	16.1	16.1	16.2	16.2	16.5	16.5	16.2	16.2
	Mvar	5.7	5.3	5.3	5.2	5.2	5.2	5.2	5.2	5.2	6.2	7.3	7.3	7.3	7.3	7.3	7.7	7.7	7.8	7.8	7.8	7.8	8.0	8.0	7.8	7.8
Total	MW	21.1	21.1	21.1	21.6	21.6	21.6	21.6	21.7	21.7	23.9	26.2	28.8	29.7	30.3	30.3	32.8	32.8	33.8	33.8	34.8	34.8	35.1	35.1	33.9	33.9
	Mvar	10.2	10.2	10.2	10.5	10.5	10.5	10.5	10.5	10.5	11.6	12.7	13.9	14.4	14.7	14.7	15.9	15.9	16.4	16.4	16.9	16.9	17.0	17.0	16.4	16.4
Hambantota T1	MW	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.4	3.4	4.0	3.5	3.2	3.2	3.1	3.0	3.1	3.1	3.1	3.1	3.6	4.0	3.9	3.4
	Mvar	1.1	1.2	1.2	1.2	1.2	1.0	1.0	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.3	1.5	1.8	1.1	1.1	1.1	1.1	1.2	1.2	1.1
T2	MW	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.4	3.4	4.0	3.5	3.2	3.2	3.1	3.0	3.1	3.1	3.1	3.1	3.6	4.0	3.9	3.4
	Mvar	1.1	1.2	1.2	1.2	1.2	1.0	1.0	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.3	1.5	1.8	1.1	1.1	1.1	1.1	1.2	1.2	1.1
Total	MW	6.2	6.0	6.0	6.0	6.0	6.0	6.0	6.2	6.2	6.8	6.8	8.0	7.0	6.4	6.4	6.2	6.0	6.2	6.2	6.2	6.2	7.2	8.0	7.8	6.8
	Mvar	2.2	2.4	2.4	2.4	2.4	2.0	2.0	2.2	2.2	2.2	2.2	2.0	2.0	2.0	2.0	2.6	3.0	3.6	2.2	2.2	2.2	2.2	2.4	2.4	2.2

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
Embilipitiya T1	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	10.0	14.0	16.0	16.0	16.0	15.0	13.0	10.0	9.0	9.0	9.0	9.0	9.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0
T2	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	10.0	14.0	16.0	16.0	16.0	15.0	13.0	10.0	9.0	9.0	9.0	9.0	9.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0
Total	MW	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	20.0	28.0	32.0	32.0	32.0	30.0	26.0	20.0	18.0	18.0	18.0	18.0	18.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0	4.0	2.0	2.0	2.0	2.0	2.0	2.0
Matara T1	MW	6.5	6.0	6.0	7.5	7.5	5.0	5.0	5.0	2.5	3.2	6.0	9.5	16.0	17.0	16.5	15.5	13.0	11.0	6.5	6.5	1.5	1.5	1.0
	Mvar	9.0	9.0	9.0	9.0	9.5	9.5	9.5	9.5	8.5	8.5	8.5	9.0	10.0	11.0	11.0	11.5	10.0	8.5	6.5	6.5	6.5	6.5	6.5
T2	MW	6.5	6.0	6.0	7.5	7.5	5.0	5.0	5.0	2.5	3.2	6.0	9.5	16.0	17,0	16.5	15.5	13.0	11.0	6.5	6.5	1.5	1.5	1.0
	Mvar	9.0	9.0	9.0	9.0	9.5	9.5	9.5	9.5	8.5	8.5	8.5	9.0	10.0	11.0	11.0	11.5	10.0	8.5	6.5	6.5	6.5	6.5	6.5
Total	MW	13.0	12.0	12.0	15.0	15.0	10.0	10.0	10.0	5.0	6.4	12.0	19.0	32.0	34.0	33.0	31.0	26.0	22.0	13.0	13.0	3.0	3.0	2.0
	Mvar	18.0	18.0	18.0	18.0	19.0	19.0	19.0	19.0	17.0	17.0	17.0	18.0	20.0	22.0	22.0	23.0	20.0	17.0	13.0	13.0	13.0	13.0	13.0
Balangoda T1	MW	3.6	2.9	2.9	2.9	1.9	1.9	3.3	3.3	3.6	5.4	4.8	6.6	9.4	10.4	10.1	9.7	8.9	6.4	4.4	4.4	3.3	3.0	2.5
	Mvar	3.2	3.2	2.8	2.8	2.6	2.6	2.2	2.2	2.6	2.6	2.1	2.2	2.3	2.7	3.2	3.1	3.1	3.1	2.3	2.3	1.7	1.7	1.7
T2	MW	3.6	2.9	2.9	2.9	1.9	1.9	3.3	3.3	3.6	5.4	4.8	6.6	9.4	10.4	10.1	9.7	8.9	6.4	4.4	4.4	3.3	3.0	2.5
	Mvar	3.2	3.2	2.8	2.8	2.6	2.6	2.2	2.2	2.6	2.6	2.1	2.2	2.3	2.7	3.2	3.1	3.1	3.1	2.3	2.3	1.7	1.7	1.7
Total	MW	7.2	5.8	5.8	5.8	3.8	3.8	6.6	6.6	7.2	10.8	9.6	13.2	18.8	20.8	20.2	19.4	17.8	12.8	8.8	8.8	6.6	6.0	5.0
	Mvar	6.4	6.4	5.6	5.6	5.2	5.2	4.4	4.4	5.2	5.2	4.2	4.4	4.6	5.4	6.4	6.2	6.2	6.2	4.6	4.6	3.4	3.4	3.4
Deniyaya T1	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	6.4	6.4	7.0	7.8	11.8	15.0	15.4	15.0	14.4	14.0	12.0	8.0	8.0	7.5	7.0	6.8
	Mvar	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.1	3.1	3.4	3.8	5.7	7.3	7.5	7.3	7.0	6.8	5.8	3.9	3.9	3.6	3.4	3.3
Galle T1	MW	17.7	17.7	17.4	17.4	17.4	17.4	17.7	17.7	17.2	17.2	15.5	15.5	24.5	24.5	24.0	24.0	23.0	18.7	17.4	17.4	12.5	12.5	12.0
	Mvar	8.6	8.6	8.4	8.4	8.4	8.4	8.6	8.6	8.3	8.3	7.5	7.5	11.9	11.9	11.6	11.6	11.1	9.1	8.4	8.4	6.1	6.1	5.8
T2/21	MW	16.0	16.0	15.5	15.5	15.5	15.5	15.5	15.5	14.2	14.2	16.0	16.0	27.2	27.3	27.2	26.2	25.0	22.1	19.0	19.0	13.0	13.0	12.0
	Mvar	7.7	7.7	7.5	7.5	7.5	7.5	7.5	7.5	6.9	6.9	7.7	7.7	13.2	13.2	13.2	12.7	12.1	10.7	9.2	9.2	6.3	6.3	5.8
Total	MW	33.7	33.7	32.9	32.9	32.9	32.9	33.2	33.2	31.4	31.4	31.5	31.5	51.7	51.8	51.2	50.2	48.0	40.8	36.4	36.4	25.5	25.5	24.0
	Mvar	16.3	16.3	15.9	15.9	15.9	15.9	16.1	16.1	15.2	15.2	15.3	15.3	25.0	25.1	24.8	24.3	23.2	19.8	17.6	17.6	12.4	12.4	11.6
Hambantota T1	MW	3.1	3.0	3.0	3.0	3.1	3.1	3.2	3.2	3.0	3.0	4.0	5.0	6.5	7.0	7.0	7.0	6.5	5.0	4.7	4.7	3.7	3.7	3.7
	Mvar	2.0	1.9	1.9	1.9	1.9	1.9	1.5	1.5	1.2	1.2	1.2	1.2	2.0	2.0	2.0	2.0	2.0	1.5	1.5	1.5	1.2	1.2	1.2
T2	MW	3.1	3.0	3.0	3.0	3.1	3.1	3.2	3.2	3.0	3.0	4.0	5.0	6.5	7.0	7.0	7.0	6.5	5.0	4.7	4.7	3.7	3.7	3.7
	Mvar	2.0	1.9	1.9	1.9	1.9	1.9	1.5	1.5	1.2	1.2	1.2	1.2	2.0	2.0	2.0	2.0	2.0	1.5	1.5	1.5	1.2	1.2	1.2
Total	MW	6.2	6.0	6.0	6.0	6.2	6.2	6.4	6.4	6.0	6.0	8.0	10.0	13.0	14.0	14.0	14.0	13.0	10.0	9.4	9.4	7.4	7.4	7.4
	Mvar	4.0	3.8	3.8	3.8	3.8	3.8	3.0	3.0	2.4	2.4	2.4	2.4	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	2.4	2.4	2.4

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
Ratnapura T1	MW	1.1	1.1	1.1	2.1	2.1	2.1	2.1	2.7	2.7	0.6	0.6	1.0	1.0	0.8	0.8	0.9	0.9	0.9	0.9	1.5	1.5	1.9	2.5	1.4	1.4
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
T2	MW	1.1	1.1	1.1	2.1	2.1	2.1	2.1	2.7	2.7	0.6	0.6	1.0	1.0	0.8	0.8	0.9	0.9	0.9	0.9	1.5	1.5	1.9	2.5	1.4	1.4
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total	MW	2.2	2.2	2.2	4.2	4.2	4.2	4.2	5.4	5.4	1.2	1.2	2.0	2.0	1.6	1.6	1.8	1.8	1.8	1.8	3.0	3.0	3.8	5.0	2.8	2.8
	Mvar	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
N' Eliya T1	MW	6.0	5.9	5.7	5.6	5.6	5.6	5.8	6.3	7.1	8.0	9.2	9.1	8.2	7.7	8.3	9.1	10.0	9.9	9.8	10.3	10.6	10.0	6.9	6.8	6.7
	Mvar	1.2	1.2	1.2	1.1	1.0	2.0	2.1	2.5	2.8	3.5	3.0	3.4	3.2	3.7	3.0	3.0	3.6	3.8	3.9	4.0	4.2	4.0	2.9	2.8	2.7
T2	MW	6.0	5.9	5.7	5.6	5.6	5.6	5.8	6.3	7.1	8.0	9.2	9.1	8.2	7.7	8.3	9.1	10.0	9.9	9.8	10.3	10.6	10.0	6.9	6.8	6.7
	Mvar	1.2	1.2	1.2	1.1	1.0	2.0	2.1	2.5	2.8	3.5	3.0	3.4	3.2	3.7	3.0	3.0	3.6	3.8	3.9	4.0	4.2	4.0	2.9	2.8	2.7
Total	MW	12.0	11.9	11.3	11.2	11.2	11.3	11.6	12.6	14.1	16.0	18.5	18.2	16.3	15.3	16.6	18.3	20.0	19.8	19.5	20.6	21.1	20.0	13.9	13.5	13.3
	Mvar	2.4	2.3	2.4	2.2	2.1	4.0	4.2	4.9	5.5	7.0	6.0	6.8	6.5	7.4	6.0	6.0	7.3	7.6	7.8	8.0	8.3	8.0	5.9	5.5	5.3
Ampara T1	MW	15.0	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	15.9	17.9	18.0	17.8	20.0	15.9	15.0	13.5	15.7	15.0	12.5	16.5	17.5	17.9	13.5	14.0
	Mvar	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.9	2.9	2.3	2.3	3.1	3.5	3.5	3.5	3.5	3.8	3.8	3.5	3.1	4.1	4.1
T2	MW	15.0	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	15.9	17.9	18.0	17.8	20.0	15.9	15.0	13.5	15.7	15.0	12.5	16.5	17.5	17.9	13.5	14.0
	Mvar	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.9	2.9	2.3	2.3	3.1	3.5	3.5	3.5	3.5	3.8	3.8	3.5	3.1	4.1	4.1
Total	MW	30.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	31.8	35.8	36.0	35.6	40.0	31.8	30.0	27.0	31.4	30.0	25.0	28.0	35.0	35.8	27.0	28.0
	Mvar	5.0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	5.8	5.8	4.6	4.6	6.2	7.0	7.0	7.0	7.0	7.6	7.6	7.0	6.2	8.2	8.2
WPS T1	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0	4.0	4.0	3.0	3.0	3.0	4.0	3.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Badulla T1	MW	6.0	6.0	6.0	6.0	8.0	8.0	8.0	8.0	11.0	12.0	12.0	11.0	10.0	10.0	10.0	10.0	10.0	11.0	10.0	11.0	10.0	10.0	10.0	10.0	10.0
	Mvar	2.0	2.0	2.0	2.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	5.0	5.0	5.0	5.0	4.0	4.0	4.0	4.0
T2	MW	6.0	6.0	6.0	6.0	8.0	8.0	8.0	8.0	11.0	12.0	12.0	11.0	10.0	10.0	10.0	10.0	10.0	11.0	10.0	11.0	10.0	10.0	10.0	10.0	10.0
	Mvar	2.0	2.0	2.0	2.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	5.0	5.0	5.0	5.0	4.0	4.0	4.0	4.0
Total	MW	12.0	12.0	12.0	12.0	16.0	16.0	16.0	16.0	22.0	24.0	24.0	22.0	20.0	20.0	20.0	20.0	20.0	22.0	20.0	22.0	20.0	20.0	20.0	20.0	20.0
	Mvar	4.0	4.0	4.0	4.0	4.0	2.0	2.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	8.0	8.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
Ratnapura T1	MW	1.2	1.2	0.6	0.6	0.8	0.8	0.5	0.5	0.7	0.7	0.2	0.2	2.9	3.5	3.6	3.3	3.0	2.0	0.8	0.8	0.5	0.5	1.1
	Mvar	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0	2.0	3.0	3.0	2.0
T2	MW	1.2	1.2	0.6	0.6	0.8	0.8	0.5	0.5	0.7	0.7	0.2	0.2	2.9	3.5	3.6	3.3	3.0	2.0	0.8	0.8	0.5	0.5	1.1
	Mvar	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0	2.0	3.0	3.0	2.0
Total	MW	2.4	2.4	1.2	1.2	1.6	1.6	1.0	1.0	1.4	1.4	0.4	0.4	5.8	7.0	7.2	6.6	6.0	4.0	1.6	1.6	1.0	1.0	2.2
	Mvar	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	4.0	4.0	6.0	6.0	4.0
N'Eliya T1	MW	6.5	6.6	6.8	6.8	6.8	6.8	6.9	6.8	6.9	7.2	7.7	9.4	14.0	13.4	13.0	12.3	11.4	9.9	8.4	7.6	7.2	6.6	6.6
	Mvar	2.7	2.8	2.9	2.9	2.9	2.9	2.8	2.7	2.6	2.6	2.8	3.4	4.0	3.8	3.6	3.3	2.8	2.3	1.8	1.6	1.4	1.2	1.2
T2	MW	6.5	6.6	6.8	6.8	6.8	6.8	6.9	6.8	6.9	7.2	7.7	9.4	14.0	13.4	13.0	12.3	11.4	9.9	8.4	7.6	7.2	6.6	6.6
	Mvar	2.7	2.8	2.9	2.9	2.9	2.9	2.8	2.7	2.6	2.6	2.8	3.4	4.0	3.8	3.6	3.3	2.8	2.3	1.8	1.6	1.4	1.2	1.2
Total	MW	13.0	13.3	13.6	13.7	13.5	13.7	13.7	13.6	13.8	14.3	15.4	18.8	28.0	26.8	26.0	24.7	22.7	19.9	16.8	15.2	14.3	13.3	13.3
	Mvar	5.4	5.6	5.8	5.9	5.8	5.8	5.6	5.4	5.2	5.1	5.7	6.8	8.0	7.7	7.1	6.6	5.5	4.6	3.6	3.1	2.7	2.5	2.5
Ampara T1	MW	14.5	15.0	15.0	16.0	14.0	15.0	15.5	15.0	14.5	17.0	18.0	24.0	29.0	29.4	29.4	29.0	28.4	25.5	22.0	20.0	18.0	17.0	18.0
	Mvar	3.9	3.6	3.8	3.7	3.9	4.0	4.0	4.0	4.0	4.0	3.9	4.2	4.7	4.5	4.5	4.5	4.5	4.0	4.0	3.5	3.2	3.0	3.1
T2	MW	14.5	15.0	15.0	16.0	14.0	15.0	15.5	15.0	14.5	17.0	18.0	24.0	29.0	29.4	29.4	29.0	28.4	25.5	22.0	20.0	18.0	17.0	18.0
	Mvar	3.9	3.6	3.8	3.7	3.9	4.0	4.0	4.0	4.0	4.0	3.9	4.2	4.7	4.5	4.5	4.5	4.5	4.0	4.0	3.5	3.2	3.0	3.1
Total	MW	29.0	30.0	30.0	32.0	28.0	30.0	31.0	30.0	29.0	34.0	36.0	48.0	58.0	58.8	58.8	58.0	56.8	51.0	44.0	40.0	36.0	34.0	36.0
	Mvar	7.8	7.2	7.6	7.4	7.8	8.0	8.0	8.0	8.0	8.0	7.8	8.4	9.4	9.0	9.0	9.0	9.0	8.0	8.0	7.0	6.4	6.0	6.2
WPS T1	MW	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	5.0	10.0	12.0	12.0	11.0	11.0	10.0	8.0	7.0	4.0	2.0	2.0	2.0
	Mvar	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0
Badulla T1	MW	10.0	10.0	10.0	11.0	11.0	11.0	12.0	12.0	15.0	17.0	20.0	22.0	22.0	20.0	18.0	14.0	12.0	10.0	9.0	8.0	8.0	8.0	8.0
	Mvar	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0	5.0	5.0	5.0	4.0	4.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
T2	MW	10.0	10.0	10.0	11.0	11.0	11.0	12.0	12.0	15.0	17.0	20.0	22.0	22.0	20.0	18.0	14.0	12.0	10.0	9.0	8.0	8.0	8.0	8.0
	Mvar	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0	5.0	5.0	5.0	4.0	4.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total	MW	20.0	20.0	20.0	22.0	22.0	22.0	24.0	24.0	30.0	34.0	40.0	44.0	44.0	40.0	36.0	28.0	24.0	20.0	18.0	16.0	16.0	16.0	16.0
	Mvar	8.0	8.0	8.0	8.0	8.0	8.0	8.0	6.0	6.0	8.0	10.0	10.0	10.0	8.0	8.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
Thulhiriya T1	MW	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.5	8.0	8.5	8.0	9.0	8.7	8.7	9.1	9.5	9.5	9.6	9.9	10.0	10.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0
T2	MW	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.5	8.0	8.5	8.0	9.0	8.7	8.7	9.1	9.5	9.5	9.6	9.9	10.0	10.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0
T3	MW	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.5	8.0	8.5	8.0	9.0	8.7	8.7	9.1	9.5	9.5	9.6	9.9	10.0	10.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0
Total	MW	18.0	18.0	18.0	18	18	18	18	18	18	18.0	21.0	22.5	24.0	25.5	24.0	27.0	26.1	26.1	27.3	28.5	28.5	28.8	29.7	30.0	30.0
	Mvar	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	9.0	9.0	9.0	9.0	9.0	12.0	12.0	15.0	15.0	15.0	15.0	15.0	18.0	18.0
Ukuwela T1	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.1	6.4	7.0	8.0	8.0	8.0	8.0	7.0	8.0	8.2	8.2	7.5	8.0	8.2	8.2	8.3	8.4
	Mvar	3.0	3.9	3.9	3.9	3.9	3.9	3.9	4.4	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.6	6.0	6.0	8.0	6.0	6.0	6.0	6.0	5.6
T2	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.1	6.4	7.0	8.0	8.0	8.0	8.0	7.0	8.0	8.2	8.2	7.5	8.0	8.2	8.2	8.3	8.4
	Mvar	3.0	3.9	3.9	3.9	3.9	3.9	3.9	4.4	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.6	6.0	6.0	8.0	6.0	6.0	6.0	6.0	5.6
Total	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	10.2	12.8	14.0	16.0	16.0	16.0	16.0	14.0	16.0	16.4	16.4	15.0	16.0	16.4	16.4	16.6	16.8
	Mvar	6.0	7.8	7.8	7.8	7.8	7.8	7.8	8.8	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	11.2	12.0	12.0	16.0	12.0	12.0	12.0	12.0	11.2
Kiribathkubura T1	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	9.0	9.0	10.0	10.0	15.0	15.0	15.0	14.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
T2	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	9.0	9.0	10.0	10.0	15.0	15.0	15.0	14.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
T3	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	9.0	9.0	10.0	10.0	15.0	15.0	15.0	14.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	MW	24.0	24.0	24.0	24.0	24.0	24.0	24.0	27.0	27.0	30.0	30.0	45.0	45.0	45.0	42.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
kurunagala T1	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	10.0	11.0	12.5	14.0	14.0	12.0	11.0	11.5	13.5	13.5	14.0	14.0	14.0	14.0	14.0	14.0	14.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
T2	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	10.0	11.0	12.5	14.0	14.0	12.0	11.0	11.5	13.5	13.5	14.0	14.0	14.0	14.0	14.0	14.0	14.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total	MW	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	20.0	22.0	25.0	28.0	28.0	24.0	22.0	23.0	27.0	27.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
Thulhiriya T1	MW	10.0	10.0	9.5	9.0	9.0	9.1	9.1	8.9	8.5	8.2	8.7	11.4	15.4	15.7	15.5	15.0	14.0	12.0	10.0	7.5	6.2	5.8	5.5
	Mvar	6.0	6.0	6.0	5.0	5.0	3.0	5.0	5.8	5.9	4.7	5.0	5.0	6.0	6.0	6.0	6.0	5.8	5.0	4.5	4.0	3.8	3.8	3.8
T2	MW	10.0	10.0	9.5	9.0	9.0	9.1	9.1	8.9	8.5	8.2	8.7	11.4	15.4	15.7	15.5	15.0	14.0	12.0	10.0	7.5	6.2	5.8	5.5
	Mvar	6.0	6.0	6.0	5.0	5.0	3.0	5.0	5.8	5.9	4.7	5.0	5.0	6.0	6.0	6.0	6.0	5.8	5.0	4.5	4.0	3.8	3.8	3.8
T3	MW	10.0	10.0	9.5	9.0	9.0	9.1	9.1	8.9	8.5	8.2	8.7	11.4	15.4	15.7	15.5	15.0	14.0	12.0	10.0	7.5	6.2	5.8	5.5
	Mvar	6.0	6.0	6.0	5.0	5.0	3.0	5.0	5.8	5.9	4.7	5.0	5.0	6.0	6.0	6.0	6.0	5.8	5.0	4.5	4.0	3.8	3.8	3.8
Total	MW	30.0	30.0	28.5	27.0	27.0	27.3	27.3	26.7	25.5	24.6	26.1	34.2	46.2	47.1	46.5	45.0	42.0	36.0	30.0	22.5	18.6	17.4	16.5
	Mvar	18.0	18.0	18.0	15.0	15.0	9.0	15.0	17.4	17.7	14.1	15.0	15.0	18.0	18.0	18.0	18.0	17.4	15.0	13.5	12.0	11.4	11.4	11.4
Ukuwela T1	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.5	9.5	12.5	13.5	16.0	16.0	15.5	13.5	11.0	9.0	7.0	6.0	5.0	5.0
	Mvar	6.0	6.4	6.4	6.2	6.2	6.2	6.4	6.5	6.5	5.0	5.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0	4.5	7.5	4.0	4.0	4.0
T2	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.5	9.5	12.5	13.5	16.0	16.0	15.5	13.5	11.0	9.0	7.0	6.0	5.0	5.0
	Mvar	6.0	6.4	6.4	6.2	6.2	6.2	6.4	6.5	6.5	5.0	5.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0	4.5	7.5	4.0	4.0	4.0
Total	MW	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	17.0	19.0	25.0	27.0	32.0	32.0	31.0	27.0	22.0	18.0	14.0	12.0	10.0	10.0
	Mvar	12.0	12.8	12.8	12.4	12.4	12.4	12.8	13.0	13.0	10.0	10.0	12.0	12.0	12.0	12.0	12.0	10.0	10.0	9.0	15.0	8.0	8.0	8.0
Kiribat hkubura T1	MW	14.5	14.0	15.0	16.0	16.0	15.0	15.0	15.0	16.0	15.0	16.0	20.0	24.0	26.0	24.0	24.0	22.0	22.0	14.0	14.0	12.0	12.0	9.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	3.0	4.0	4.0	4.0	3.0	2.5	2.5	0.0	0.0	0.0	0.0	0.0
T2	MW	14.5	14.0	15.0	16.0	16.0	15.0	15.0	15.0	16.0	15.0	16.0	20.0	24.0	26.0	24.0	24.0	22.0	22.0	14.0	14.0	12.0	12.0	9.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	3.0	4.0	4.0	4.0	3.0	2.5	2.5	0.0	0.0	0.0	0.0	0.0
T3	MW	14.5	14.0	15.0	16.0	16.0	15.0	15.0	15.0	16.0	15.0	16.0	20.0	24.0	26.0	24.0	24.0	22.0	22.0	14.0	14.0	12.0	12.0	9.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	3.0	4.0	4.0	4.0	3.0	2.5	2.5	0.0	0.0	0.0	0.0	0.0
Total	MW	43.5	42.0	45.0	48.0	48.0	45.0	45.0	45.0	48.0	45.0	48.0	60.0	72.0	78.0	72.0	72.0	66.0	66.0	42.0	42.0	36.0	36.0	27.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	9.0	12.0	12.0	12.0	9.0	7.5	7.5	0.0	0.0	0.0	0.0	0.0
kurunagala T1	MW	13.0	13.0	13.5	10.5	10.5	10.5	10.5	10.5	11.0	11.0	11.0	14.0	18.0	19.0	22.0	22.0	22.0	15.0	14.5	12.0	10.5	9.0	9.0
	Mvar	1.0	1.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.2	5.2	3.0	3.0	5.2	2.0	2.0	0.0	0.0	0.0	0.0
T2	MW	13.0	13.0	13.5	10.5	10.5	10.5	10.5	10.5	11.0	11.0	11.0	14.0	18.0	19.0	22.0	22.0	22.0	15.0	14.5	12.0	10.5	9.0	9.0
	Mvar	1.0	1.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.2	5.2	3.0	3.0	5.2	2.0	2.0	0.0	0.0	0.0	0.0
Total	MW	26.0	26.0	27.0	21.0	21.0	21.0	21.0	21.0	22.0	22.0	22.0	28.0	36.0	38.0	44.0	44.0	44.0	30.0	29.0	24.0	21.0	18.0	18.0
	Mvar	2.0	2.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	10.4	10.4	6.0	6.0	10.4	4.0	4.0	0.0	0.0	0.0	0.0

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
Anuradhapura T1	MW	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	5.5	6.0	6.2	6.9	7.2	6.6	6.3	6.3	6.3	6.3	6.3	6.6	6.6	6.6	6.6	6.6	6.6
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	1.1	1.1	1.1	1.5	1.5	1.5	1.5	1.5	1.5	1.5
T2	MW	3.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2	3.8	4.2	4.5	4.7	4.7	4.4	4.0	4.0	4.0	4.0	2.3	2.3	2.3	2.2	2.2	2.4	2.4
	Mvar	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.5	0.5	0.5	0.7	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.7	0.7
T3	MW	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.8	2.2	2.4	2.5	2.6	2.4	2.1	2.0	2.0	2.0	2.2	2.2	2.1	2.5	2.5	2.5	2.5
	Mvar	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Total	MW	9.6	9.6	9.3	9.2	9.2	9.2	9.2	9.2	11.1	12.4	13.1	14.1	14.5	13.4	12.4	12.3	12.3	12.3	10.8	11.1	11.0	11.3	11.3	11.5	11.5
	Mvar	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.3	2.3	2.3	3.3	3.1	3.5	3.5	3.5	3.9	3.9	3.9	3.8	3.8	4.0	4.0
N'Anuradahapura T1	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.5	6.0	6.0	6.0	6.0	6.0	5.8	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.8	1.8	1.8	1.8
T2	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.5	6.0	6.0	6.0	6.0	6.0	5.8	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.8	1.8	1.8	1.8
Total	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	11.0	12.0	12.0	12.0	12.0	12.0	11.6	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.6	3.6	3.6	3.6
Athurugiriya T	MW	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.6	2.9	3.0	3.0	3.0	3.2	3.5	3.6	3.5	3.5	4.1	4.1	4.0	4.2	4.2	4.1
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
T2	MW	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.6	2.9	3.0	3.0	3.0	3.2	3.5	3.6	3.5	3.5	4.1	4.1	4.0	4.2	4.2	4.1
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.2	5.8	6.0	6.0	6.0	6.4	7.0	7.2	7.0	7.0	8.2	8.2	8.0	8.4	8.4	8.2
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Habarana T1	MW	8.6	8.6	8.6	8.6	8.6	8.8	8.9	9.3	9.8	10.7	12.2	13.7	13.6	12.8	11.8	11.4	13.4	13.6	13.9	13.6	13.6	13.7	14.3	14.6	14.7
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	2.4	1.0	1.4	1.8	1.9	1.9	2.0	2.3	2.4	2.0
T2	MW	8.6	8.6	8.6	8.6	8.6	8.8	8.9	9.3	9.8	10.7	12.2	13.7	13.6	12.8	11.8	11.4	13.4	13.6	13.9	13.6	13.6	13.7	14.3	14.6	14.7
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	2.4	1.0	1.4	1.8	1.9	1.9	2.0	2.3	2.4	2.0
Total	MW	17.2	17.2	17.2	17.2	17.2	17.6	17.8	18.6	19.6	21.4	24.4	27.4	27.2	25.6	23.6	22.8	26.8	27.2	27.8	27.2	27.2	27.4	28.6	29.2	29.4
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	4.8	2.0	2.8	3.6	3.8	3.8	4.0	4.6	4.8	4.0

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
Anuradhapura T1	MW	3.3	3.3	3.1	3.1	3.3	3.3	3.3	3.3	3.3	3.3	3.6	4.5	5.7	5.7	5.7	5.7	5.4	4.5	4.2	3.6	3.0	3.0	2.2
	Mvar	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0
T2	MW	2.2	2.2	2.2	2.2	2.2	2.4	2.8	2.8	2.8	4.5	5.4	5.8	7.8	8.4	8.0	8.8	7.6	6.4	5.5	4.5	4.0	3.6	3.5
	Mvar	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.7	1.4	1.4	1.4	1.5	1.8	1.7	1.6	1.5	1.1	1.0	0.9	0.6	0.5	0.5
T3	MW	2.1	2.1	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	4.0	4.0	3.9	3.9	3.7	2.8	2.5	2.1	2.8	2.5	2.4
	Mvar	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Total	MW	7.6	7.6	7.8	7.8	8.0	8.2	8.6	8.6	8.6	10.3	11.5	13.0	17.5	18.1	17.6	18.4	16.7	13.7	12.2	10.2	9.8	9.1	8.1
	Mvar	3.1	3.1	3.1	3.1	3.1	3.1	3.3	3.3	3.3	4.0	4.0	4.0	4.1	4.4	4.3	4.2	4.1	2.9	2.8	2.7	2.4	2.3	2.3
N'Anuradahapura T1	MW	6.0	6.0	6.0	8.0	8.0	8.0	8.0	8.0	8.0	6.5	7.0	9.0	14.0	14.0	12.5	12.0	12.0	10.0	8.0	8.0	6.0	6.0	6.0
	Mvar	1.8	1.8	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.5	1.5	2.0	2.0	2.0
T2	MW	6.0	6.0	6.0	8.0	8.0	8.0	8.0	8.0	8.0	6.5	7.0	9.0	14.0	14.0	12.5	12.0	12.0	10.0	8.0	8.0	6.0	6.0	6.0
	Mvar	1.8	1.8	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.5	1.5	2.0	2.0	2.0
Total	MW	12.0	12.0	12.0	16.0	16.0	16.0	16.0	16.0	16.0	13.0	14.0	18.0	28.0	28.0	25.0	24.0	24.0	20.0	16.0	16.0	12.0	12.0	12.0
	Mvar	3.6	3.6	3.6	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0	4.0	4.0
Athurugiriya T	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.8	3.5	3.6	4.4	4.4	4.7	4.5	4.5	4.1	4.2	3.8	3.8	3.2	3.2	2.6
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
T2	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.8	3.5	3.6	4.4	4.4	4.7	4.5	4.5	4.1	4.2	3.8	3.8	3.2	3.2	2.6
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.6	7.0	7.2	8.8	8.8	9.4	9.0	9.0	8.2	8.4	7.6	7.6	6.4	6.4	5.2
	Mvar	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Habarana T1	MW	13.2	12.8	13.2	13.6	14.2	14.0	14.2	12.9	13.3	12.7	13.0	16.5	23.5	24.2	24.6	23.0	22.7	19.8	15.4	13.4	11.6	10.1	9.8
	Mvar	1.0	0.5	1.0	1.5	2.1	2.0	2.1	2.6	1.5	0.8	0.0	2.4	4.0	4.3	4.0	3.5	2.8	2.3	1.0	0.8	0.3	0.0	0.0
T2	MW	13.2	12.8	13.2	13.6	14.2	14.0	14.2	12.9	13.3	12.7	13.0	16.5	23.5	24.2	24.6	23.0	22.7	19.8	15.4	13.4	11.6	10.1	9.8
	Mvar	1.0	0.5	1.0	1.5	2.1	2.0	2.1	2.6	1.5	0.8	0.0	2.4	4.0	4.3	4.0	3.5	2.8	2.3	1.0	0.8	0.3	0.0	0.0
Total	MW	26.4	25.6	26.4	27.2	28.4	28.0	28.4	25.8	26.6	25.4	26.0	33.0	47.0	48.4	49.2	46.0	45.4	39.6	30.8	26.8	23.2	20.2	19.6
	Mvar	2.0	1.0	2.0	3.0	4.2	4.0	4.2	5.2	3.0	1.6	0.0	4.8	8.0	8.6	8.0	7.0	5.6	4.6	2.0	1.6	0.6	0.0	0.0

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5.30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
Vavunia T1	MW	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	3.1	3.1	3.6	3.6	3.6	3.6	3.2	3.2	3.3	3.3	3.4	3.4	3.6	3.6	3.4	3.4
	Mvar	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
T2	MW	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	3.1	3.1	3.6	3.6	3.6	3.6	3.2	3.2	3.3	3.3	3.4	3.4	3.6	3.6	3.4	3.4
	Mvar	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Total	MW	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	6.2	6.2	7.2	7.2	7.2	7.2	6.4	6.4	6.6	6.6	6.8	6.8	7.2	7.2	6.8	6.8
	Mvar	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Trinco T1	MW	9.5	9.5	9.4	9.4	9.4	9.4	9.4	9.4	9.4	10.0	10.5	11.0	10.4	9.5	8.7	8.6	8.1	8.5	8.7	8.9	9.5	9.5	9.5	9.5	9.0
	Mvar	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.2	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.5	2.4	2.4	2.4	2.4	2.4	2.2
T2	MW	11.0	10.8	10.9	10.7	10.0	10.0	10.0	9.2	9.0	9.0	9.0	9.0	9.5	9.0	9.0	9.1	8.8	8.4	8.4	8.8	10.0	9.5	10.5	10.2	9.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.5	1.5	1.5	1.7	1.5	1.7	1.7	1.5	1.5	1.5	1.5	1.5	1.9	2.4	2.4	2.1
Total	MW	20.5	20.3	20.3	20.1	19.4	19.4	19.4	18.6	18.4	19.0	19.5	20.0	19.9	18.5	17.7	17.7	16.9	16.9	17.1	17.7	19.5	19.0	20.0	19.7	18.0
	Mvar	4.0	4.0	4.0	3.9	3.9	3.9	3.9	3.9	4.0	3.5	3.7	3.5	3.7	3.5	3.8	3.8	3.5	3.6	4.0	3.9	3.9	4.3	4.8	4.8	4.3
Valachchena T1	MW	8.9	8.9	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.9	10.3	10.5	10.3	9.9	9.9	9.7	9.7	9.7	9.7	9.9	10.9	10.9	10.9	10.9	10.9
	Mvar	4.3	4.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.8	5.0	5.1	5.0	4.8	4.8	4.7	4.7	4.7	4.7	4.8	5.3	5.3	5.3	5.3	5.3
T2	MW	8.9	8.9	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.9	10.3	10.5	10.3	9.9	9.9	9.7	9.7	9.7	9.7	9.9	10.9	10.9	10.9	10.9	10.9
	Mvar	4.3	4.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.8	5.0	5.1	5.0	4.8	4.8	4.7	4.7	4.7	4.7	4.8	5.3	5.3	5.3	5.3	5.3
Total	MW	17.8	17.8	18.2	18.2	18.2	18.2	18.2	18.2	18.2	19.8	20.6	21.1	20.6	19.8	19.8	19.4	19.4	19.4	19.4	19.8	21.9	21.9	21.9	21.9	21.9
	Mvar	8.6	8.6	8.8	8.8	8.8	8.8	8.8	8.8	8.8	9.6	10.0	10.2	10.0	9.6	9.6	9.4	9.4	9.4	9.4	9.6	10.6	10.6	10.6	10.6	10.6
Biyagama T1	MW	20.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	22.0	23.0	25.0	24.0	25.0	24.0	26.0	28.0	30.0	30.0	30.0	30.0	31.0	32.0	32.0	31.0
	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	11.0	12.0	13.0	15.0	15.0	15.0	15.0	17.0	17.0	17.0	16.0
T2	MW	20.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	22.0	23.0	25.0	24.0	25.0	24.0	26.0	28.0	30.0	30.0	30.0	30.0	31.0	32.0	32.0	31.0
	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	11.0	12.0	13.0	15.0	15.0	15.0	15.0	17.0	17.0	17.0	16.0
Total	MW	40.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	44.0	46.0	50.0	48.0	50.0	48.0	52.0	56.0	60.0	60.0	60.0	60.0	62.0	64.0	64.0	62.0
	Mvar	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	22.0	24.0	26.0	30.0	30.0	30.0	30.0	34.0	34.0	34.0	32.0
Rantabe T1	MW	2.3	2.4	2.4	2.0	2.0	2.0	2.0	2.0	2.0	1.6	1.6	3.0	3.0	2.5	2.5	3.2	3.2	3.3	3.3	3.5	3.5	3.5	3.5	3.3	3.3
	Mvar	1.1	1.2	1.2	1.0	1.0	1.0	1.0	1.0	1.0	0.8	0.8	1.5	1.5	1.2	1.2	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.6	1.6
T2	MW	2.3	2.4	2.4	2.0	2.0	2.0	2.0	2.0	2.0	1.6	1.6	3.0	3.0	2.5	2.5	3.2	3.2	3.3	3.3	3.5	3.5	3.5	3.5	3.3	3.3
	Mvar	1.1	1.2	1.2	1.0	1.0	1.0	1.0	1.0	1.0	0.8	0.8	1.5	1.5	1.2	1.2	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.6	1.6
Total	MW	4.6	4.8	4.8	4.0	4.0	4.0	4.0	4.0	4.0	3.2	3.2	6.0	6.0	5.0	5.0	6.4	6.4	6.6	6.6	7.0	7.0	7.0	7.0	6.6	6.6
	Mvar	2.2	2.3	2.3	1.9	1.9	1.9	1.9	1.9	1.9	1.5	1.5	2.9	2.9	2.4	2.4	3.1	3.1	3.2	3.2	3.4	3.4	3.4	3.4	3.2	3.2

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17.00	17.30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
Vavunia T1	MW	3.2	3.2	3.2	3.2	3.1	3.1	3.3	3.3	3.3	3.3	3.6	4.3	6.6	6.8	6.8	6.4	6.0	5.1	4.5	4.2	4.7	3.3	3.2
	Mvar	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.4	1.4	1.4	1.2	1.1	1.0	0.9	0.8	0.8	0.7	0.6
T2	MW	3.2	3.2	3.2	3.2	3.1	3.1	3.3	3.3	3.3	3.3	3.6	4.3	6.6	6.8	6.8	6.4	6.0	5.1	4.5	4.2	4.7	3.3	3.2
	Mvar	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.4	1.4	1.4	1.2	1.1	1.0	0.9	0.8	0.8	0.7	0.6
Total	MW	6.4	6.4	6.4	6.4	6.2	6.2	6.6	6.6	6.6	6.6	7.2	8.6	13.2	13.6	13.6	12.8	12.0	10.2	9.0	8.4	9.4	6.6	6.4
	Mvar	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.8	2.8	2.8	2.4	2.2	2.0	1.8	1.6	1.7	1.4	1.2
Trinco T1	MW	9.0	9.0	9.0	8.8	9.1	9.2	9.2	9.2	9.2	8.8	9.9	15.0	18.0	17.5	17.5	17.2	16.3	14.9	13.3	12.5	11.2	10.3	10.0
	Mvar	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.8	3.0	3.1	3.1	3.0	3.0	2.9	2.8	2.8	2.5	2.5	2.2
T2	MW	9.5	10.0	10.0	8.5	9.8	8.0	8.0	8.0	8.0	8.4	9.8	10.8	12.0	11.8	11.0	11.0	12.2	12.0	11.7	11.2	11.4	11.5	11.5
	Mvar	2.5	2.5	2.5	2.1	2.5	2.0	2.0	2.0	2.1	2.2	2.2	2.8	2.8	2.4	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Total	MW	18.5	19.0	19.0	17.3	18.9	17.2	17.2	17.2	17.2	17.2	19.7	25.8	30.0	29.3	28.5	28.2	28.5	26.9	25.0	23.7	22.6	21.8	21.5
	Mvar	4.6	4.7	4.7	4.3	4.7	4.3	4.3	4.3	4.4	4.5	4.5	5.6	5.8	5.5	5.9	5.7	5.7	5.6	5.5	5.5	5.2	5.2	4.9
Valachchena T1	MW	10.1	9.7	9.7	9.7	9.7	8.9	9.3	9.3	9.9	9.9	9.9	12.4	12.4	12.4	12.4	12.4	12.4	12.4	10.3	11.4	9.9	9.3	9.7
	Mvar	4.9	4.7	4.7	4.7	4.7	4.3	4.5	4.5	4.8	4.8	4.8	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.5	4.8	4.5	4.7
T2	MW	10.1	9.7	9.7	9.7	9.7	8.9	9.3	9.3	9.9	9.9	9.9	12.4	12.4	12.4	12.4	12.4	12.4	12.4	10.3	11.4	9.9	9.3	9.7
	Mvar	4.9	4.7	4.7	4.7	4.7	4.3	4.5	4.5	4.8	4.8	4.8	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.5	4.8	4.5	4.7
Total	MW	20.2	19.4	19.4	19.4	19.4	17.8	18.6	18.6	19.8	19.8	19.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	20.6	22.7	19.8	18.6	19.4
	Mvar	9.8	9.4	9.4	9.4	9.4	8.6	9.0	9.0	9.6	9.6	9.6	12.0	12.0	12.0	12.0	12.0	12.0	12.0	10.0	11.0	9.6	9.0	9.4
Biyagama T1	MW	32.0	32.0	32.0	31.0	31.0	30.0	32.0	32.0	30.0	30.0	30.0	30.0	34.0	35.0	34.0	34.0	33.0	31.0	30.0	26.0	25.0	22.5	21.0
	Mvar	16.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	16.0	16.0	16.0	15.0	16.0	17.0	17.0	17.0	16.0	16.0	14.0	14.0	12.0	12.0	12.0
T2	MW	32.0	32.0	32.0	31.0	31.0	30.0	32.0	32.0	30.0	30.0	30.0	30.0	34.0	35.0	34.0	34.0	33.0	31.0	30.0	26.0	25.0	22.5	21.0
	Mvar	16.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	16.0	16.0	16.0	15.0	16.0	17.0	17.0	17.0	16.0	16.0	14.0	14.0	12.0	12.0	12.0
Total	MW	64.0	64.0	64.0	62.0	62.0	60.0	64.0	64.0	60.0	60.0	60.0	60.0	68.0	70.0	68.0	68.0	66.0	62.0	60.0	52.0	50.0	45.0	42.0
	Mvar	32.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	32.0	32.0	32.0	30.0	32.0	34.0	34.0	34.0	32.0	32.0	28.0	28.0	24.0	24.0	24.0
Rantabe T1	MW	3.2	3.2	3.2	3.2	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.0	5.6	5.7	5.8	5.8	4.8	4.8	3.7	3.7	2.5	2.5	2.3
	Mvar	1.5	1.5	1.5	1.5	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.9	2.7	2.8	2.8	2.8	2.3	2.3	1.8	1.8	1.2	1.2	1.1
T2	MW	3.2	3.2	3.2	3.2	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.0	5.6	5.7	5.8	5.8	4.8	4.8	3.7	3.7	2.5	2.5	2.3
	Mvar	1.5	1.5	1.5	1.5	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.9	2.7	2.8	2.8	2.8	2.3	2.3	1.8	1.8	1.2	1.2	1.1
Total	MW	6.4	6.4	6.4	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	8.0	11.2	11.4	11.6	11.6	9.6	9.6	7.4	7.4	5.0	5.0	4.6
	Mvar	3.1	3.1	3.1	3.1	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.9	5.4	5.5	5.6	5.6	4.6	4.6	3.6	3.6	2.4	2.4	2.2

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
Sapugas. T1	MW	6.3	6.2	6.0	5.8	5.5	5.5	5.5	5.5	6.0	7.0	7.0	8.0	8.5	8.0	8.0	9.0	10.0	10.5	10.8	11.0	10.0	10.9	10.2	10.0	11.0
	Mvar	7.0	6.8	6.5	6.5	6.3	6.3	6.0	6.0	6.1	6.2	6.3	6.3	6.3	6.5	7.0	8.0	8.2	9.0	9.5	10.0	10.0	10.0	10.0	10.0	10.0
T2	MW	6.7	6.7	6.6	6.6	6.5	6.5	6.5	6.5	6.8	7.0	7.5	8.1	8.3	8.2	8.0	9.1	9.8	10.0	10.5	11.1	10.0	10.8	10.9	10.9	10.8
	Mvar	7.9	7.9	8.0	8.0	8.0	8.0	8.0	8.0	8.9	7.9	7.9	7.9	7.8	7.0	8.0	8.5	9.0	9.5	10.0	10.3	10.5	10.5	10.5	10.5	10.5
T3	MW	6.2	6.2	6.0	6.0	5.8	5.8	5.8	5.8	6.0	6.9	7.0	8.0	8.2	8.8	7.5	8.9	8.0	10.0	10.5	10.9	10.0	10.2	10.2	10.2	10.2
	Mvar	8.0	8.0	8.0	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.0	7.0	7.8	8.0	9.0	9.9	10.0	10.1	10.3	10.0	11.0	10.5	10.5	10.5
Total	MW	19.2	19.1	18.6	18.4	17.8	17.8	17.8	17.8	18.8	20.9	21.5	24.1	25.0	25.0	23.5	27.0	27.8	30.5	31.8	33.0	30.0	31.9	31.3	31.1	32.0
	Mvar	22.9	22.7	22.5	22.4	22.2	22.2	21.9	21.9	22.9	22.0	22.1	21.2	21.1	21.3	23.0	25.5	27.1	28.5	29.6	30.6	30.5	31.5	31.0	31.0	31.0
Kelaniya T1	MW	10.9	10.9	10.4	10.4	10.6	10.6	10.6	10.2	8.5	8.5	9.2	9.2	10.6	10.6	12.2	12.2	11.8	11.8	13.9	13.9	12.8	12.8	14.3	14.3	12.2
	Mvar	5.5	5.5	5.3	5.3	5.5	5.5	3.4	5.1	4.1	4.1	4.7	4.7	5.3	5.3	7.0	7.0	7.0	7.0	8.1	8.1	8.4	8.4	8.2	8.2	8.3
Kotugoda T1	MW	28.0	28.0	26.0	26.0	26.0	26.0	26.0	27.0	27.0	27.0	25.0	25.0	25.0	29.0	29.0	42.0	42.0	43.0	43.0	44.0	44.0	44.0	44.0	44.0	44.0
	Mvar	14.0	14.0	14.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	11.0	11.0	18.0	18.0	20.0	20.0	20.0	20.0	11.0	11.0	11.0	11.0	10.0	10.0
T2	MW	35.0	35.0	30.0	30.0	30.0	27.0	30.0	25.0	25.0	27.0	45.0	45.0	45.0	48.0	48.0	48.0	43.0	43.0	49.0	57.0	57.0	56.0	50.0	40.0	40.0
	Mvar	20.0	20.0	20.0	15.0	15.0	15.0	15.0	15.0	15.0	17.0	20.0	20.0	20.0	23.0	23.0	23.0	23.0	23.0	23.0	6.0	6.0	8.0	8.0	6.0	6.0
Total	MW	63.0	63.0	56.0	56.0	56.0	53.0	53.0	52.0	52.0	54.0	70.0	70.0	70.0	77.0	77.0	90.0	85.0	86.0	92.0	101.0	101.0	100.0	94.0	84.0	84.0
	Mvar	34.0	34.0	34.0	28.0	28.0	28.0	28.0	28.0	28.0	30.0	33.0	31.0	31.0	41.0	41.0	43.0	43.0	43.0	43.0	17.0	17.0	19.0	16.0	16.0	16.0
Bolawatta T1	MW	6.6	7.3	10.0	9.7	9.7	9.7	10.3	10.0	10.0	11.0	11.0	11.0	11.0	11.0	11.0	13.0	13.0	14.0	14.0	14.0	14.0	15.0	15.0	15.0	15.0
	Mvar	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.8	5.8	5.8	5.8	8.5	8.5	8.5	8.5
T2	MW	6.6	7.3	10.0	9.7	9.7	9.7	10.3	10.0	10.0	11.0	11.0	11.0	11.0	11.0	11.0	13.0	13.0	14.0	14.0	14.0	14.0	15.0	15.0	15.0	15.0
	Mvar	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.8	5.8	5.8	5.8	8.5	8.5	8.5	8.5
T3	MW	6.6	7.3	10.0	9.7	9.7	9.7	10.3	10.0	10.0	11.0	11.0	11.0	11.0	11.0	11.0	13.0	13.0	14.0	14.0	14.0	14.0	15.0	15.0	15.0	15.0
	Mvar	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.8	5.8	5.8	5.8	8.5	8.5	8.5	8.5
Total	MW	19.8	21.9	30.0	29.1	29.1	29.1	30.1	30.0	30.0	33.0	33.0	33.0	33.0	33.0	33.0	39.0	39.0	42.0	42.0	42.0	42.0	45.0	45.0	45.0	45.0
	Mvar	12.6	12.6	12.6	12.6	12.6	12.6	12.6	13.5	13.5	15.0	15.0	15.0	15.0	15.0	15.0	18.0	18.0	17.4	17.4	17.4	17.4	25.5	25.5	25.5	25.5
Puttalam T1	MW	7.5	7.5	7.5	7.5	7.5	7.5	7.5	6.0	7.5	9.0	9.5	10.5	10.0	10.0	9.0	9.4	9.4	9.4	8.2	8.2	9.5	9.5	9.5	9.5	9.5
	Mvar	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	5.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0
T2	MW	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.5	7.5	7.5	7.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0
	Mvar	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total	MW	14.5	14.5	14.5	14.5	14.5	14.5	14.5	13.0	14.5	16.0	16.5	17.5	17.0	17.0	16.5	16.9	16.9	16.9	16.2	16.2	17.5	17.5	17.5	17.5	17.5
	Mvar	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0	8.0	9.0	7.0	7.0	7.0	7.0	7.0	7.0	8.0	8.0	8.0	8.0	8.0

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
Sapugas. T1	MW	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	9.0	10.8	14.0	14.0	14.0	13.8	13.0	12.0	11.0	17.0	15.1	14.9	6.5
	Mvar	10.5	10.5	10.8	11.0	11.0	10.3	10.2	10.5	10.5	10.2	8.5	9.0	11.0	11.0	11.0	11.0	10.0	10.0	8.5	11.0	10.0	10.0	10.0
T2	MW	10.9	10.9	11.0	11.0	11.0	11.0	11.0	11.0	10.2	10.2	9.1	11.0	14.2	16.2	14.5	14.0	13.2	12.0	11.0	14.5	16.2	15.8	8.0
	Mvar	10.8	11.0	11.5	12.0	11.0	11.0	11.0	11.5	11.0	10.0	9.5	9.8	11.8	11.5	11.8	12.0	10.2	10.0	8.5	10.8	12.0	11.5	11.0
T3	MW	10.4	10.6	10.6	10.6	10.8	10.9	10.9	10.2	10.0	10.0	10.2	10.2	14.0	14.0	14.0	13.0	13.0	12.0	10.0	17.0	15.0	14.7	8.0
	Mvar	10.8	11.0	11.3	11.5	11.5	11.7	11.7	12.0	11.0	10.5	10.5	10.5	10.8	11.5	11.8	12.0	10.2	10.5	10.5	11.0	10.5	10.5	10.5
Total	MW	32.3	32.5	32.6	32.6	32.8	32.9	32.9	32.2	30.2	30.2	28.3	32.0	42.2	44.2	42.5	40.8	39.2	36.0	32.0	48.5	46.3	45.4	22.5
	Mvar	32.1	32.5	33.6	34.5	33.5	33.0	32.9	34.0	32.5	30.7	28.5	29.3	33.6	34.0	34.6	35.0	30.4	30.5	27.5	32.8	32.5	32.0	31.5
Kelaniya T1	MW	12.2	13.4	13.4	13.5	13.5	14.0	14.0	15.7	15.7	13.5	13.5	15.2	15.2	16.4	16.4	15.8	15.8	13.4	13.4	10.8	10.8	10.8	10.8
	Mvar	8.3	8.9	8.9	8.8	8.8	8.2	8.2	6.8	6.8	8.5	8.5	8.0	8.0	8.4	8.4	8.2	8.2	6.8	6.8	6.1	6.1	5.6	5.6
Kotugoda T1	MW	44.0	45.0	45.0	45.0	55.0	44.0	44.0	40.0	44.0	44.0	43.0	43.0	43.0	43.0	38.0	38.0	35.0	35.0	33.0	33.0	30.0	30.0	28.0
	Mvar	11.0	11.0	11.0	11.0	11.0	11.0	8.0	8.0	15.0	15.0	15.0	15.0	15.0	15.0	13.0	13.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
T2	MW	40.0	55.0	54.0	54.0	46.0	46.0	45.0	30.0	45.0	45.0	45.0	45.0	43.0	43.0	45.0	42.0	42.0	42.0	35.0	35.0	35.0	35.0	36.0
	Mvar	6.0	11.0	11.0	11.0	13.0	13.0	12.0	12.0	11.0	11.0	20.0	20.0	17.0	17.0	17.0	17.0	12.0	12.0	11.0	11.0	11.0	11.0	11.0
Total	MW	84.0	100.0	99.0	99.0	101.0	90.0	89.0	70.0	89.0	89.0	88.0	88.0	86.0	86.0	83.0	80.0	77.0	77.0	68.0	68.0	65.0	65.0	64.0
	Mvar	17.0	22.0	22.0	22.0	24.0	24.0	20.0	20.0	26.0	26.0	35.0	35.0	32.0	32.0	30.0	30.0	22.0	22.0	21.0	21.0	21.0	21.0	21.0
Bolawatta T1	MW	15.0	15.0	15.0	15.0	14.8	14.8	15.1	15.1	13.7	13.7	13.2	13.2	19.0	19.0	18.5	18.5	17.2	17.2	14.7	14.7	11.7	11.7	10.7
	Mvar	8.2	8.2	9.0	9.0	8.5	8.5	8.5	8.5	8.0	8.0	7.5	7.5	9.5	9.5	9.5	9.5	8.0	8.0	7.0	7.0	6.0	6.0	5.5
T2	MW	15.0	15.0	15.0	15.0	14.8	14.8	15.1	15.1	13.7	13.7	13.2	13.2	19.0	19.0	18.5	18.5	17.2	17.2	14.7	14.7	11.7	11.7	10.7
	Mvar	8.2	8.2	9.0	9.0	8.5	8.5	8.5	8.5	8.0	8.0	7.5	7.5	9.5	9.5	9.5	9.5	8.0	8.0	7.0	7.0	6.0	6.0	5.5
T3	MW	15.0	15.0	15.0	15.0	14.8	14.8	15.1	15.1	13.7	13.7	13.2	13.2	19.0	19.0	18.5	18.5	17.2	17.2	14.7	14.7	11.7	11.7	10.7
	Mvar	8.2	8.2	9.0	9.0	8.5	8.5	8.5	8.5	8.0	8.0	7.5	7.5	9.5	9.5	9.5	9.5	8.0	8.0	7.0	7.0	6.0	6.0	5.5
Total	MW	45.0	45.0	45.0	45.0	44.4	44.4	45.3	45.3	41.1	41.1	39.6	39.6	57.0	57.0	55.5	55.5	51.6	51.6	44.1	44.1	35.1	35.1	32.1
	Mvar	24.6	24.6	27.0	27.0	25.5	25.5	25.5	25.5	24.0	24.0	22.5	22.5	28.5	28.5	28.5	28.5	24.0	24.0	21.0	21.0	18.0	18.0	16.5
Puttalam T1	MW	9.5	9.5	9.5	13.0	13.0	13.0	13.0	14.0	14.0	14.0	14.0	18.0	15.0	14.0	13.0	17.0	16.0	15.0	14.0	12.0	11.0	10.0	9.0
	Mvar	5.0	5.0	5.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0	6.0	6.0	5.0	6.0	5.0	5.0	5.0	4.0	4.0	3.0	3.0
T2	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	7.5	7.5	9.0	9.0	8.5	8.5	8.5	8.0	7.0
	Mvar	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total	MW	17.5	17.5	17.5	21.0	21.0	21.0	21.0	22.0	22.0	22.0	22.0	26.0	23.5	22.5	20.5	24.5	25.0	24.0	22.5	20.5	19.5	18.0	16.0
	Mvar	8.0	8.0	8.0	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0	9.0	9.0	8.0	9.0	8.0	8.0	8.0	7.0	7.0	6.0	6.0

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
Madampe T1	MW	8.6	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.8	10.1	11.1	11.8	11.8	11.5	11.0	11.0	12.0	13.0	13.0	10.0	12.0	12.0	12.0	12.0	12.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.5	5.1	5.2	5.5	6.0	6.0	5.5	5.2	5.5	5.5	6.0	6.0	5.2	5.2	5.2	5.2	5.2	7.5
T2	MW	8.6	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.8	10.1	11.1	11.8	11.8	11.5	11.0	11.0	12.0	13.0	13.0	10.0	12.0	12.0	12.0	12.0	12.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.5	5.1	5.2	5.5	6.0	6.0	5.5	5.2	5.5	5.5	6.0	6.0	5.2	5.2	5.2	5.2	5.2	7.5
Total	MW	17.2	16.0	16.0	16.0	16.0	16.0	16.0	16.0	17.6	20.2	22.2	23.6	23.6	23.0	22.0	22.0	24.0	26.0	26.0	20.0	24.0	24.0	24.0	24.0	24.0
	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.2	10.4	11.0	12.0	12.0	11.0	10.4	11.0	11.0	12.0	12.0	10.4	10.4	10.4	10.4	10.4	15.0
Veyangoda T1	MW	8.3	8.3	8.3	8.3	8.3	8.3	8.3	9.0	10.2	11.2	12.8	13.5	13.5	13.5	13.5	14.8	15.6	14.2	14.1	14.2	14.2	14.2	15.2	15.2	15.0
	Mvar	4.7	4.7	4.7	4.7	4.7	4.7	2.7	4.7	5.0	5.2	5.3	5.3	5.3	5.3	6.3	7.5	8.5	8.2	8.2	8.4	8.4	8.0	9.0	9.0	8.3
T2	MW	8.3	8.3	8.3	8.3	8.3	8.3	8.3	9.0	10.2	11.2	12.8	13.5	13.5	13.5	13.5	14.8	15.6	14.2	14.1	14.2	14.2	14.2	15.2	15.2	15.0
	Mvar	4.7	4.7	4.7	4.7	4.7	4.7	2.7	4.7	5.0	5.2	5.3	5.3	5.3	5.3	6.3	7.5	8.5	8.2	8.2	8.4	8.4	8.0	9.0	9.0	8.3
Total	MW	16.6	16.6	16.6	16.6	16.6	16.6	16.6	18.0	20.4	22.4	25.6	27.0	27.0	27.0	27.0	29.6	31.2	28.4	28.2	28.4	28.4	28.4	30.4	30.4	30.0
	Mvar	9.4	9.4	9.4	9.4	9.4	9.4	5.4	9.4	10.0	10.4	10.6	10.6	10.6	10.6	12.6	15.0	17.0	16.4	16.4	16.8	16.8	16.0	18.0	18.0	16.6
Sithawaka T1	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	6.0	6.0	6.0	7.0	6.0	7.0	8.0	8.5	9.0	10.0	10.0	10.0	10.0	10.0	10.0
	Mvar	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
T2	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	6.0	6.0	6.0	7.0	6.0	7.0	8.0	8.5	9.0	10.0	10.0	10.0	10.0	10.0	10.0
	Mvar	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Total	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	12.0	12.0	12.0	14.0	12.0	14.0	16.0	17.0	18.0	20.0	20.0	20.0	20.0	20.0	20.0
	Mvar	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	8.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Pannipitiya T1	MW	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	9.0	10.0	11.0	11.0	11.0	11.0	11.0	11.0	12.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
	Mvar	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	7.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
T2	MW	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	9.0	10.0	11.0	11.0	11.0	11.0	11.0	11.0	12.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
	Mvar	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	7.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Total	MW	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	18.0	20.0	22.0	22.0	22.0	22.0	22.0	22.0	24.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
	Mvar	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	10.0	10.0	10.0	10.0	10.0	14.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Ratmalana T1	MW	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	7.0	7.0	7.0	7.0	13.8	13.8	13.8	13.8	13.8	13.8	12.4	12.4	11.6	11.6
	Mvar	2.3	2.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	4.0	4.0	4.0	4.0	6.0	6.0	6.0	6.0	6.5	6.5	6.5	7.0	7.0	7.0
T2	MW	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	7.0	7.0	7.0	7.0	13.8	13.8	13.8	13.8	13.8	13.8	11.7	11.5	10.9	10.9
	Mvar	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	6.0	6.0	6.0	8.0	8.0	8.5	8.0	8.0
T3	MW	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	7.0	7.0	7.0	7.0	13.8	13.8	13.8	13.8	12.0	12.0	11.2	11.2	11.2	11.2
	Mvar	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	4.0	4.0	4.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0	9.5	9.0	9.0	9.0
Total	MW	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	21.0	21.0	21.0	21.0	41.4	41.4	41.4	41.4	39.6	39.6	35.3	35.1	33.7	33.7
	Mvar	8.9	8.6	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	12.0	12.0	12.0	16.0	18.0	18.0	18.0	18.0	18.5	20.5	24.0	24.5	24.0	24.0

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
Madampe T1	MW	12.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	11.0	11.5	11.5	11.5	15.5	20.0	18.0	18.5	18.0	18.0	16.0	12.0	12.0	11.5	11.5
	Mvar	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	6.0	6.0	6.0	8.0	8.0	10.0	11.0	10.5	10.0	10.0	10.0	6.0	6.0	6.0	6.0
T2	MW	12.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	11.0	11.5	11.5	11.5	15.5	20.0	18.0	18.5	18.0	18.0	16.0	12.0	12.0	11.5	11.5
	Mvar	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	6.0	6.0	6.0	8.0	8.0	10.0	11.0	10.5	10.0	10.0	10.0	6.0	6.0	6.0	6.0
Total	MW	24.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	22.0	23.0	23.0	23.0	31.0	40.0	36.0	37.0	36.0	36.0	32.0	24.0	24.0	23.0	23.0
	Mvar	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	12.0	12.0	12.0	16.0	16.0	20.0	22.0	21.0	20.0	20.0	20.0	12.0	12.0	12.0	12.0
Veyangoda T1	MW	14.3	14.7	14.2	15.4	15.6	15.6	16.0	16.4	14.8	14.8	14.0	17.0	21.0	21.0	20.4	20.1	19.6	16.8	15.4	12.9	11.4	10.3	10.0
	Mvar	8.3	8.7	8.3	9.0	9.0	9.0	9.3	10.0	9.0	8.5	7.0	8.0	8.5	8.5	8.8	7.8	7.8	7.2	6.5	5.8	5.5	5.2	10.0
T2	MW	14.3	14.7	14.2	15.4	15.6	15.6	16.0	16.4	14.8	14.8	14.0	17.0	21.0	21.0	20.4	20.1	19.6	16.8	15.4	12.9	11.4	10.3	10.0
	Mvar	8.3	8.7	8.3	9.0	9.0	9.0	9.3	10.0	9.0	8.5	7.0	8.0	8.5	8.5	8.8	7.8	7.8	7.2	6.5	5.8	5.5	5.2	10.0
Total	MW	28.6	29.4	28.4	30.8	31.2	31.2	32.0	32.8	29.6	29.6	28.0	34.0	42.0	42.0	40.8	40.2	39.2	33.6	30.8	25.8	22.8	20.6	20.0
	Mvar	16.6	17.4	16.6	18.0	18.0	18.0	18.6	20.0	18.0	17.0	14.0	16.0	17.0	17.0	17.6	15.6	15.6	14.4	13.0	11.6	11.0	10.4	20.0
Sithawaka T1	MW	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	9.0	8.0	8.0	8.0	9.0	11.0	12.0	12.0	10.0	10.0	9.0	7.0	6.0	6.0	5.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.0	3.0	3.0	1.5	1.5	2.5
T2	MW	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	9.0	8.0	8.0	8.0	9.0	11.0	12.0	12.0	10.0	10.0	9.0	7.0	6.0	6.0	5.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.0	3.0	3.0	1.5	1.5	2.5
Total	MW	20.0	20.0	20.0	20.0	20.0	20.0	20.0	18.0	18.0	16.0	16.0	16.0	18.0	22.0	24.0	24.0	20.0	20.0	18.0	14.0	12.0	12.0	10.0
	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	8.0	8.0	8.0	8.0	8.0	8.0	7.0	7.0	6.0	6.0	6.0	3.0	3.0	5.0
Pannipitiya T1	MW	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	11.0	14.0	17.0	17.0	17.0	16.0	16.0	15.0	13.0	12.0	12.0	10.0	9.0
	Mvar	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	6.0	5.0	5.0	5.0
T2	MW	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	11.0	14.0	17.0	17.0	17.0	16.0	16.0	15.0	13.0	12.0	12.0	10.0	9.0
	Mvar	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	6.0	5.0	5.0	5.0
Total	MW	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	22.0	28.0	34.0	34.0	34.0	32.0	32.0	30.0	26.0	24.0	24.0	20.0	18.0
	Mvar	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	12.0	12.0	10.0	10.0	10.0
Ratmalana T1	MW	11.6	11.6	11.6	10.7	10.7	10.7	10.7	10.7	10.2	10.0	10.0	9.5	11.0	11.0	11.0	11.0	10.0	9.6	9.0	8.5	8.2	7.0	7.0
	Mvar	7.0	7.0	7.0	6.0	6.0	6.0	6.0	5.8	5.5	5.5	4.2	4.2	5.0	5.0	4.5	4.5	4.2	4.2	4.0	3.8	3.5	3.0	3.0
T2	MW	10.9	10.9	10.9	10.5	10.0	10.0	10.5	10.1	9.6	9.6	8.6	9.0	10.5	10.5	10.5	10.5	10.5	10.0	8.8	8.0	7.6	7.0	6.8
	Mvar	8.0	8.0	8.0	7.0	7.0	7.0	7.0	7.0	7.2	7.2	6.2	6.0	7.0	7.0	6.5	6.2	6.2	6.0	5.8	5.2	5.0	5.0	5.0
T3	MW	11.2	11.2	10.3	10.3	10.3	10.3	10.3	10.0	9.6	9.6	8.8	9.2	10.0	10.0	10.0	10.0	10.0	9.5	8.2	8.0	7.6	7.0	6.3
	Mvar	9.0	9.0	9.0	8.0	8.0	8.0	8.0	7.8	7.5	7.5	8.5	7.8	7.8	7.8	7.8	7.8	7.8	6.8	6.5	6.2	6.0	6.0	6.0
Total	MW	33.7	33.7	32.8	31.5	31.0	31.0	31.5	30.8	29.4	29.2	27.4	27.7	31.5	31.5	31.5	31.5	30.5	29.1	26.0	24.5	23.4	21.0	20.1
	Mvar	24.0	24.0	24.0	21.0	21.0	21.0	21.0	20.6	20.2	20.2	18.9	18.0	19.8	19.8	18.8	18.5	18.2	17.0	16.3	15.2	14.5	14.0	14.0

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4.00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
Panadura T1	MW	7.0	7.0	6.0	6.0	6.0	6.0	5.5	5.5	7.0	7.0	9.0	10.0	10.5	11.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	17.0	17.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
T2	MW	7.0	7.0	6.0	6.0	6.0	6.0	5.5	5.5	7.0	7.0	9.0	10.0	10.5	11.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	17.0	17.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total	MW	14.0	14.0	12.0	12.0	12.0	12.0	11.0	11.0	14.0	14.0	18.0	20.0	21.0	22.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	34.0	34.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Kosgama T1	MW	10.3	9.7	9.7	9.7	9.7	9.7	9.7	9.7	10.6	12.1	13.8	14.8	14.5	15.0	15.0	16.6	16.5	16.5	16.5	17.3	17.0	18.0	17.8	17.8	12.6
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0	7.0	7.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	7.0
T2	MW	10.3	9.7	9.7	9.7	9.7	9.7	9.7	9.7	10.6	12.1	13.8	14.8	14.5	15.0	15:0	16.6	16.5	16.5	16.5	17.3	17.0	18.0	17.8	17.8	12.6
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0	7.0	7.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	7.0
Total	MW	20.6	19.4	19.4	19.4	19.4	19.4	19.4	19.4	21.2	24.2	27.6	29.6	29.0	30.0	30.0	33.2	33.0	33.0	33.0	34.6	34.0	36.0	35.6	35.6	25.2
	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	12.0	12.0	12.0	12.0	14.0	14.0	18.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	14.0
Horana T1	MW	4.0	4.0	4.0	4.0	4.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0	5.0	3.0	2.0	1.0	-1.0	-1.0	-2.0	0.7	0.6	0.7	0.7	0.7	0.8
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.0	4.0	6.0	6.0	5.0	6.0	5.0	5.0	6.0	7.0	7.0	7.0	5.0	5.0
T2	MW	4.0	4.0	4.0	4.0	4.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0	5.0	3.0	2.0	1.0	-1.0	-1.0	-2.0	0.7	0.6	0.7	0.7	0.7	0.8
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.0	4.0	6.0	6.0	5.0	6.0	5.0	5.0	6.0	7.0	7.0	7.0	5.0	5.0
Total	MW	8.0	8.0	8.0	8.0	8.0	4.0	4.0	4.0	4.0	4.0	4.0	10.0	10.0	6.0	4.0	2.0	-2.0	-2.0	-4.0	1.4	1.2	1.4	1.4	1.4	1.6
	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	8.0	8.0	12.0	12.0	10.0	12.0	10.0	10.0	12.0	14.0	14.0	14.0	10.0	10.0
Matugama T1	MW	8.8	8.8	8.8	8.6	8.6	8.3	8.3	8.8	8.8	10.6	10.6	12.8	12.4	11.6	11.3	11.9	11.9	12.7	12.7	12.7	12.8	12.8	12.9	12.8	12.0
	Mvar	5.1	5.1	5.1	5.1	5.1	4.9	4.9	4.8	4.8	4.9	4.9	5.3	1.9	1.6	2.0	2.9	2.9	2.3	2.3	2.3	2.3	2.8	1.2	2.0	2.0
T2	MW	8.8	8.8	8.8	8.6	8.6	8.3	8.3	8.8	8.8	10.6	10.6	12.8	12.4	11.6	11.3	11.9	11.9	12.7	12.7	12.7	12.8	12.8	12.9	12.8	12.0
	Mvar	5.1	5.1	5.1	5.1	5.1	4.9	4.9	4.8	4.8	4.9	4.9	5.3	1.9	1.6	2.0	2.9	2.9	2.3	2.3	2.3	2.3	2.8	1.2	2.0	2.0
T3	MW	8.8	8.8	8.8	8.6	8.6	8.3	8.3	8.8	8.8	10.6	10.6	12.8	12.4	11.6	11.3	11.9	11.9	12.7	12.7	12.7	12.8	12.8	12.9	12.8	12.0
	Mvar	5.1	5.1	5.1	5.1	5.1	4.9	4.9	4.8	4.8	4.9	4.9	5.3	1.9	1.6	2.0	2.9	2.9	2.3	2.3	2.3	2.3	2.8	1.2	2.0	2.0
Total	MW	26.4	26.4	26.4	25.8	25.8	24.9	24.9	26.4	26.4	31.8	31.8	38.4	37.2	34.8	33.9	35.7	35.7	38.1	38.1	38.1	38.4	38.4	38.7	38.4	36.0
	Mvar	15.3	15.3	15.3	15.3	15.3	14.7	14.7	14.4	14.4	14.7	14.7	15.9	5.7	4.8	6.0	8.7	8.7	6.9	6.9	6.9	6.9	8.4	3.6	6.0	6.0

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
Panadura T1	MW	16.0	16.0	16.0	16.0	16.0	16.0	15.0	15.0	15.0	18.0	19.0	19.0	22.0	22.0	22.0	22.0	20.0	14.0	14.0	11.0	11.0	10.0	10.0
	Mvar	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0	1.0	1.0	1.0	1.0	2.0	2.0
T2	MW	16.0	16.0	16.0	16.0	16.0	16.0	15.0	15.0	15.0	18.0	19.0	19.0	22.0	22.0	22.0	22.0	20.0	14.0	14.0	11.0	11.0	10.0	10.0
	Mvar	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0	1.0	1.0	1.0	1.0	2.0	2.0
Total	MW	32.0	32.0	32.0	32.0	32.0	32.0	30.0	30.0	30.0	36.0	38.0	38.0	44.0	44.0	44.0	44.0	40.0	28.0	28.0	22.0	22.0	20.0	20.0
	Mvar	6.0	6.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	8.0	8.0	8.0	8.0	2.0	2.0	2.0	2.0	4.0	4.0
Kosgama T1	MW	12.7	15.8	16.3	16.3	17.3	17.5	17.5	17.5	16.3	15.8	16.2	19.0	23.6	23.8	23.1	22.8	21.6	18.6	16.0	14.3	13.2	11.6	11.1
	Mvar	8.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0	9.0	7.0	7.0	7.0	7.0	6.0	6.0
T2	MW	12.7	15.8	16.3	16.3	17.3	17.5	17.5	17.5	16.3	15.8	16.2	19.0	23.6	23.8	23.1	22.8	21.6	18.6	16.0	14.3	13.2	11.6	11.1
	Mvar	8.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0	9.0	7.0	7.0	7.0	7.0	6.0	6.0
Total	MW	25.4	31.6	32.6	32.6	34.6	35.0	35.0	35.0	32.6	31.6	32.4	38.0	47.2	47.6	46.2	45.6	43.2	37.2	32.0	28.6	26.4	23.2	22.2
	Mvar	16.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	18.0	18.0	18.0	20.0	20.0	20.0	20.0	18.0	14.0	14.0	14.0	14.0	12.0	12.0
Horana T1	MW	0.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	2.0	2.0	-2.0	-2.0	-1.0	0.0	1.0	2.0	3.0	3.0	3.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	7.0	8.0	8.0	8.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
T2	MW	0.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	2.0	2.0	-2.0	-2.0	-1.0	0.0	1.0	2.0	3.0	3.0	3.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	7.0	8.0	8.0	8.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Total	MW	1.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	4.0	4.0	-4.0	-4.0	-2.0	0.0	2.0	4.0	6.0	6.0	6.0
	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	14.0	16.0	16.0	16.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Matugama T1	MW	12.2	12.2	12.0	12.0	12.5	12.5	12.8	12.8	12.0	12.0	12.3	13.2	21.9	22.5	21.1	20.6	20.3	18.4	15.1	11.7	11.7	11.7	8.0
	Mvar	2.2	2.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.0	3.6	3.9	3.5	3.4	3.0	2.5	1.8	0.6	0.6	0.6	0.4	0.2
T2	MW	12.2	12.2	12.0	12.0	12.5	12.5	12.8	12.8	12.0	12.0	12.3	13.2	21.9	22.5	21.1	20.6	20.3	18.4	15.1	11.7	11.7	11.7	8.0
	Mvar	2.2	2.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.0	3.6	3.9	3.5	3.4	3.0	2.5	1.8	0.6	0.6	0.6	0.4	0.2
T3	MW	12.2	12.2	12.0	12.0	12.5	12.5	12.8	12.8	12.0	12.0	12.3	13.2	21.9	22.5	21.1	20.6	20.3	18.4	15.1	11.7	11.7	11.7	8.0
	Mvar	2.2	2.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.0	3.6	3.9	3.5	3.4	3.0	2.5	1.8	0.6	0.6	0.6	0.4	0.2
Total	MW	36.6	36.6	36.0	36.0	37.5	37.5	38.4	38.4	36.0	36.0	36.9	39.6	65.7	67.5	63.3	61.8	60.9	55.2	45.3	35.1	35.1	35.1	24.0
	Mvar	6.6	6.6	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	6.0	10.8	11.7	10.5	10.2	9.0	7.5	5.4	1.8	1.8	1.8	1.2	0.6

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
Kolonnawa T1	MW	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.3	5.3	5.5	5.6	5.8	7.6	9.7	11.0	11.7	12.3	12.7	12.7	12.8	13.0	12.6	12.7
	Mvar	1.8	1.8	1.8	1.7	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1 8	2.0	3.0	4.0	5.6	5.0	6.0	6.0	6.6	6.0	6.8	6.8	6.0
T2	MW	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.3	5.3	5.5	5.6	5.8	7.6	9.7	11.0	11.7	12.3	12.7	12.7	12.8	13.0	12.6	12.7
	Mvar	1.8	1.8	1.8	1.7	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	2.0	3.0	4.0	5.6	5.0	6.0	6.0	6.6	6.0	6.8	6.8	6.0
T3	MW	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.3	5.3	5.5	5.6	5.8	7.6	9.7	11.0	11.7	12.3	12.7	12.7	12.8	13.0	12.6	12.7
	Mvar	1.8	1.8	1.8	1.7	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	2.0	3.0	4.0	5.6	5.0	6.0	6.0	6.6	6.0	6.8	6.8	6.0
Total	MW	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.9	15.9	16.5	16.8	17.4	22.8	29.1	33.0	35.1	36.9	38.1	38.1	38.4	39.0	37.8	38.1
	Mvar	5.4	5.4	5.4	5.1	5.4	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.4	6.0	9.0	12.0	16.8	15.0	18.0	18.0	19.8	18.0	20.4	20.4	18.0
T4	MW	10.4	10.4	10.4	10.4	10.4	10.5	10.5	10.7	10.7	10.8	11.0	11.0	11.3	11.7	12.0	13.4	15.4	16.7	17.0	17.5	18.1	18.2	18.1	18.3	18.7
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	7.2	9.0	9.7	10.0	10.0	10.9	10.0	11.1	10.5	10.0
T5	MW	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.8	10.8	10.4	10.6	10.7	11.5	11.4	11.8	11.9	14.8	16.1	16.4	16.9	17.4	17.4	17.5	17.6	17.2
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.9	8.6	9.2	9.0	9.0	10.0	10.4	10.0	10.5	10.1
Total	MW	20.5	20.5	20.5	20.5	20.5	20.6	20.6	21.5	21.5	21.2	21.6	21.7	22.8	23.1	23.8	25.3	30.2	32.8	33.4	34.4	35.5	35.6	35.6	35.9	35.9
	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	14.1	17.6	18.9	19.0	19.0	20.9	20.4	21.1	21.0	20.1
S.Jpura T1	MW	10.5	10.0	9.6	9.4	9.5	10.2	9.4	11.8	13.8	18.3	19.7	18.0	18.4	18.9	19.8	20.1	16.3	15.7	15.7	18.8	19.1	18.2	16.2	13.6	10.0
	Mvar	7.2	7.3	7.2	6.9	6.9	6.8	6.7	6.8	6.8	6.7	7.0	6.9	6.7	6.9	7.4	8.9	10.4	11.7	12.2	12.5	12.8	10.5	12.0	12.0	11.7
T2	MW	10.5	10.0	9.6	9.4	9.5	10.2	9.4	11.8	13.8	18.3	19.7	18.0	18.4	18.9	19.8	20.1	16.3	15.7	15.7	18.8	19.1	18.2	16.2	13.6	10.0
	Mvar	7.2	7.3	7.2	6.9	6.9	6.8	6.7	6.8	6.8	6.7	7.0	6.9	6.7	6.9	7.4	8.9	10.4	11.7	12.2	12.5	12.8	10.5	12.0	12.0	11.7
Total	MW	21.0	20.0	19.2	18.8	19.0	20.4	23.8	23.6	27.6	36.6	39.4	36.0	36.8	37.8	39.6	40.2	32.6	31.4	31.4	37.6	38.2	36.4	32.4	27.2	20.0
	Mvar	14.4	14.6	14.4	13.8	13.8	13.6	13.4	13.6	13.6	13.4	14.0	13.8	13.4	13.8	14.8	17.8	20.8	23.4	24.4	25.0	25.6	21.0	24.0	24.0	23.4
Hav Town-A T1	MW	5.8	5.6	5.6	5.5	5.3	5.3	5.2	5.1	5.2	5.4	5.7	5.8	5.9	6.7	8.0	11.6	14.0	16.2	17.5	18.7	18.7	18.7	18.7	18.7	18.7
	Mvar	2.8	1.7	1.7	1.7	1.5	1.5	1.4	1.4	1.4	1.5	1.6	1.5	1.5	1.9	2.7	4.5	5.5	6.5	7.0	7.4	7.3	7.2	7.4	7.8	7.7
T2	MW	2.7	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.8	2.8	3.1	3.8	4.8	5.8	6.4	6.8	7.2	7.1	7.2	7.0	7.1	7.0
	Mvar	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.8	2.3	2.8	3.0	3.4	3.6	3.5	3.5	3.5	3.5	3.5	3.5
Total	MW	8.5	8.2	8.2	8.1	7.8	7.8	7.7	7.6	7.7	8.0	8.4	8.6	8.7	9.8	11.8	16.4	19.8	22.6	24.3	25.9	25.8	25.9	25.7	25.8	25.7
	Mvar	4.1	2.9	2.9	2.9	2.7	2.7	2.6	2.6	2.6	2.7	2.8	2.7	2.7	3.7	5.0	7.3	8.5	9.9	10.6	10.9	10.8	10.7	10.9	11.3	11.2
Maradhana-I T1	MW	3.0	2.9	2.9	2.8	2.8	2.8	2.8	2.8	3.1	3.2	3.2	3.3	3.5	4.4	5.7	7.2	8.4	9.1	9.5	9.7	9.7	9.4	9.7	9.7	9.5
	Mvar	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.5	2.6	2.6	3.2	3.6	4.0	4.1	4.3	4.4	4.2	4.3	4.2	4.2
T2	MW	4.5	4.3	4.4	4.4	4.3	4.2	4.2	4.2	4.2	4.4	4.5	4.7	4.8	5.7	7.0	9.4	11.8	13.2	13.3	13.8	13.6	13.4	13.6	13.7	13.7
	Mvar	1.8	1.8	1.8	1.8	1.8	1.6	1.6	1.6	1.6	1.6	1.6	1.8	1.8	2.2	2.3	4.0	4.8	5.4	5.6	5.8	5.8	5.8	5.7	5.9	5.8
Total	MW	7.5	7.2	7.3	7.2	7.1	7.0	7.0	7.0	7.3	7.6	7.7	8.0	8.3	10.1	12.7	16.6	20.2	22.3	22.8	23.5	23.3	22.8	23.3	23.4	23.2
	Mvar	3.1	3.0	3.0	3.0	3.0	2.8	2.8	2.8	2.9	2.9	2.9	3.1	3.3	4.8	4.9	7.2	8.4	9.4	9.7	10.1	10.2	10.0	10.0	10.1	10.0

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16.30	17.00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
Kolonnawa T1	MW	12.5	12.7	12.7	12.8	12.6	12.3	11.6	11.5	9.1	8.7	8.7	8.6	8.5	8.3	8.0	8.8	8.5	8.2	6.3	6.3	5.7	5.7	5.4
	Mvar	6.0	6.2	6.7	6.0	6.0	6.0	6.0	5.0	4.7	4.6	4.4	4.3	4.2	4.1	3.9	3.8	3.5	3.1	2.4	2.4	2.1	2.1	2.1
T2	MW	12.5	12.7	12.7	12.8	12.6	12.3	11.6	11.5	9.1	8.7	8.7	8.6	8.5	8.3	8.0	8.8	8.5	8.2	6.3	6.3	5.7	5.7	5.4
	Mvar	6.0	6.2	6.7	6.0	6.0	6.0	6.0	5.0	4.7	4.6	4.4	4.3	4.2	4.1	3.9	3.8	3.5	3.1	2.4	2.4	2.1	2.1	2.1
T3	MW	12.5	12.7	12.7	12.8	12.6	12.3	11.6	11.5	9.1	8.7	8.7	8.6	8.5	8.3	8.0	8.8	8.5	8.2	6.3	6.3	5.7	5.7	5.4
	Mvar	6.0	6.2	6.7	6.0	6.0	6.0	6.0	5.0	4.7	4.6	4.4	4.3	4.2	4.1	3.9	3.8	3.5	3.1	2.4	2.4	2.1	2.1	2.1
Total	MW	37.5	38.1	38.1	38.4	37.8	36.9	34.8	34.5	27.3	26.1	26.1	25.8	25.5	24.9	24.0	26.4	25.5	24.6	18.9	18.9	17.1	17.1	16.2
	Mvar	18.0	18.6	20.1	18.0	18.0	18.0	18.0	15.0	14.1	13.8	13.2	12.9	12.6	12.3	11.7	11.4	10.5	9.3	7.2	7.2	6.3	6.3	6.3
T4	MW	18.3	18.7	18.1	18.1	18.1	17.8	17.8	17.1	16.6	15.4	15.1	14.3	18.9	18.0	18.4	17.1	16.8	16.2	15.4	12.9	11.9	11.8	11.8
	Mvar	11.0	11.2	11.0	11.0	10.0	10.0	10.0	10.0	10.0	9.2	9.3	10.5	10.9	10.8	10.4	10.1	9.6	9.1	8.1	6.7	6.7	6.2	6.2
T5	MW	16.7	16.9	16.2	17.5	17.5	17.5	17.2	17.2	16.5	15.9	14.8	14.7	16.6	17.3	17.3	16.8	16.5	16.1	15.6	14.8	12.5	12.5	11.3
	Mvar	10.0	10.0	10.0	10.7	10.0	10.0	10.0	10.0	10.0	9.5	8.7	8.9	10.1	10.4	10.3	10.0	9.6	9.2	8.5	7.8	6.4	6.4	5.9
Total	MW	35.0	35.6	34.3	35.6	35.6	35.3	35.0	34.3	33.1	31.3	29.9	29.0	35.5	35.3	35.7	33.9	33.3	32.3	31.0	27.7	24.4	24.3	23.1
	Mvar	21.0	21.2	21.0	21.7	20.0	20.0	20.0	20.0	20.0	18.7	18.0	19.4	21.0	21.2	20.7	20.1	19.2	18.3	16.6	14.5	13.1	12.6	12.1
S.Jpura T1	MW	9.9	9.5	9.4	9.7	11.1	12.1	12.0	16.3	18.9	19.7	17.8	18.0	19.2	20.0	19.8	18.3	15.7	18.8	19.6	18.2	17.1	14.7	12.3
	Mvar	12.0	12.7	13.1	13.2	12.9	10.6	12.5	12.5	10.8	10.8	10.8	11.6	11.6	12.1	11.6	10.8	10.8	10.1	9.6	9.0	8.5	8.0	8.0
T2	MW	9.9	9.5	9.4	9.7	11.1	12.1	12.0	16.3	18.9	19.7	17.8	18.0	19.2	20.0	19.8	18.3	15.7	18.8	19.6	18.2	17.1	14.7	12.3
	Mvar	12.0	12.7	13.1	13.2	12.9	10.6	12.5	12.5	10.8	10.8	10.8	11.6	11.6	12.1	11.6	10.8	10.8	10.1	9.6	9.0	8.5	8.0	8.0
Total	MW	19.8	19.0	18.8	19.4	22.2	24.2	24.0	32.6	37.8	39.4	35.6	36.0	38.4	40.0	39.6	36.6	31.4	37.6	39.2	36.4	34.2	29.4	24.6
	Mvar	24.0	25.4	26.2	26.4	25.8	21.2	25.0	25.0	21.6	21.6	21.6	23.2	23.2	24.2	23.2	21.6	21.6	20.2	19.2	18.0	17.0	16.0	16.0
Havelock Town-A T1	MW	18.7	18.7	19.0	19.3	18.8	18.2	17.2	15.8	14.1	12.9	12.9	12.0	11.4	10.3	9.4	8.9	8.5	8.1	7.6	7.0	6.6	6.5	6.0
	Mvar	8.0	8.0	8.0	8.0	8.0	7.5	7.2	6.8	6.0	5.5	5.2	5.0	4.7	4.0	3.6	3.4	3.1	2.8	2.5	2.2	2.1	2.2	2.2
T2	MW	6.9	7.0	7.2	7.3	7.3	7.0	6.5	5.9	5.6	4.9	4.6	4.7	4.6	4.5	4.4	4.1	4.0	3.8	3.7	3.5	3.3	3.1	3.1
	Mvar	3.5	3.5	3.6	3.6	3.6	3.5	3.3	3.0	2.8	2.5	2.4	2.3	2.2	2.2	2.1	1.9	1.8	1.7	1.6	1.6	1.4	1.4	1.4
Total	MW	25.6	25.7	26.2	26.6	26.1	25.2	23.7	21.7	19.7	17.8	17.5	16.7	16.0	14.8	13.8	13.0	12.5	11.9	11.3	10.5	9.9	9.6	9.1
	Mvar	11.5	11.5	11.6	11.6	11.6	11.0	10.5	9.8	8.8	8.0	7.6	7.3	6.9	6.2	5.7	5.3	4.9	4.5	4.1	3.8	3.5	3.6	3.6
Maradhana-I T1	MW	9.6	9.7	9.8	9.5	9.5	9.5	9.3	9.0	8.3	7.2	6.7	6.2	5.7	5.4	5.1	4.8	4.4	4.3	4.2	3.0	3.7	3.4	3.2
	Mvar	4.3	4.4	4.4	4.4	4.3	4.3	4.3	4.2	3.7	3.4	3.2	2.8	2.5	2.4	2.4	2.3	2.0	1.9	1.8	1.7	1.6	1.5	1.4
T2	MW	13.4	13.4	13.7	13.6	13.9	13.8	13.4	12.4	11.2	10.0	9.1	8.5	8.2	7.7	7.2	6.8	6.4	6.1	6.0	5.7	5.3	5.1	4.9
	Mvar	5.8	5.7	5.7	5.7	5.8	5.6	5.6	5.3	4.8	4.0	4.0	3.8	3.6	3.5	3.3	3.1	3.0	2.8	2.8	2.5	2.3	2.1	2.1
Total	MW	23.0	23.1	23.5	23.1	23.4	23.3	22.7	21.4	19.5	17.2	15.8	14.7	13.9	13.1	12.3	11.6	10.8	10.4	10.2	8.7	9.0	8.5	8.1
	Mvar	10.1	10.1	10.1	10.1	10.1	9.9	9.9	9.5	8.5	7.4	7.2	6.6	6.1	5.9	5.7	5.4	5.0	4.7	4.6	4.2	3.9	3.6	3.5

Time		0:30	1.00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12.00	12:30
Dehiwala T1	MW	10.0	10.0	10.0	7.0	7.0	7.0	7.0	10.0	10.0	7.0	7.0	10.0	10.0	7.0	7.0	11.0	11.0	7.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0
	Mvar	8.0	7.5	7.5	3.0	3.0	3.0	3.0	5.0	5.0	2.0	2.0	4.0	4.0	2.0	2.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
T2	MW	10.0	10.0	10.0	7.0	7.0	7.0	7.0	10.0	10.0	7.0	7.0	10.0	10.0	7.0	7.0	11.0	11.0	7.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0
	Mvar	8.0	7.5	7.5	3.0	3.0	3.0	3.0	5.0	5.0	2.0	2.0	4.0	4.0	2.0	2.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total	MW	20.0	20.0	20.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	20.0	20.0	14.0	14.0	22.0	22.0	14.0	14.0	24.0	24.0	14.0	14.0	14.0	14.0
	Mvar	16.0	15.0	15.0	6.0	6.0	6.0	6.0	10.0	10.0	4.0	4.0	8.0	8.0	4.0	4.0	0.0	0.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Kollupitiya-E T1	MW	4.2	4.0	4.0	3.9	3.9	3.9	3.9	4.0	4.3	4.3	4.6	4.6	5.5	6.0	6.8	9.6	11.0	11.8	11.8	11.8	11.0	11.2	11.2	11.2	11.2
	Mvar	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.8	2.8	3.0	3.0	3.2	3.8	4.5	6.8	8.0	8.5	9.0	9.5	9.0	9.2	9.0	9.2	9.5
T2	MW	6.0	6.0	6.0	5.8	5.8	5.8	5.6	5.6	5.6	5.6	5.6	6.0	6.6	8.0	8.8	13.0	14.8	15.8	16.2	17.0	17.0	17.2	17.2	17.0	16.8
	Mvar	2.5	2.5	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.5	3.0	3.5	4.2	4.0	8.0	9.0	9.5	10.0	9.5	9.8	10.0	10.0	9.8
T3	MW	6.0	6.0	6.0	5.8	5.8	5.5	5.5	5.4	5.4	5.5	5.5	5.8	6.3	7.0	8.0	12.0	15.0	16.5	17.6	17.8	18.0	18.2	18.2	18.0	18.0
	Mvar	2.5	2.5	2.3	2.3	2.3	2.2	2.0	2.0	2.0	2.1	2.1	2.1	2.9	3.2	4.2	7.5	8.0	11.4	11.8	11.2	12.0	12.4	12.4	12.0	12.0
Total	MW	16.2	16.0	16.0	15.5	15.5	15.2	15.0	15.0	15.3	15.4	15.7	16.4	18.4	21.0	23.6	34.6	40.8	44.1	45.6	46.6	46.0	46.6	46.6	46.2	46.0
	Mvar	7.5	7.5	7.2	7.1	7.1	7.0	6.7	6.7	7.0	7.1	7.3	7.6	9.1	10.5	12.9	18.3	24.0	28.9	30.3	30.7	30.5	31.4	31.4	31.2	31.3
Fort-F T1	MW	6.2	6.4	5.8	5.0	5.0	5.0	5.0	5.0	5.0	5.5	6.0	6.4	7.8	9.0	10.5	13.0	15.2	16.2	16.2	17.8	17.8	17.8	17.8	17.8	17.8
	Mvar	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.7	0.8	0.8	1.2	2.3	3.2	4.0	4.8	5.6	6.0	6.0	6.0	6.0	6.0	6.0
T2	MW	7.5	7.2	7.0	7.0	6.8	6.8	6.8	6.8	6.8	7.0	7.5	8.0	8.8	10.0	12.2	15.8	17.2	18.4	18.8	19.5	19.5	19.6	19.6	19.6	19.6
	Mvar	3.2	3.1	3.0	2.9	2.8	2.8	2.8	2.8	2.8	3.0	3.8	4.8	4.8	4.8	7.2	8.2	11.4	13.8	14.8	14.5	14.5	14.2	14.2	14.2	14.2
Total	MW	13.7	13.6	12.8	12.0	11.8	11.8	11.8	11.8	11.8	12.5	13.5	14.4	16.6	19.0	22.7	28.8	32.4	34.6	35.0	37.3	37.3	37.4	37.4	37.4	37.4
	Mvar	3.7	3.5	3.4	3.2	3.1	3.1	3.1	3.1	3.1	3.5	4.5	5.6	5.6	6.0	9.5	11.4	15.4	18.6	20.4	20.5	20.5	20.2	20.2	20.2	20.2
SUB C T1	MW	7.5	7.5	7.5	7.4	7.3	7.3	7.3	7.4	7.8	8.5	9.1	9.9	10.0	9.8	10.0	10.4	11.3	11.0	11.9	12.3	12.3	12.5	12.1	12.5	12.2
	Mvar	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	4.0	4.6	5.3	5.5	5.7	5.7	5.8	5.8	6.0	5.8	5.7
T2	MW	7.5	7.5	7.5	7.4	7.3	7.3	7.3	7.4	7.8	8.5	9.1	9.9	10.0	9.8	10.0	10.4	11.3	11.0	11.9	12.3	12.3	12.5	12.1	12.5	12.2
	Mvar	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	4.0	4.6	5.3	5.5	5.7	5.7	5.8	5.8	6.0	5.8	5.7
T3	MW	7.5	7.5	7.5	7.4	7.3	7.3	7.3	7.4	7.8	8.5	9.1	9.9	10.0	9.8	10.0	10.4	11.3	11.0	11.9	12.3	12.3	12.5	12.1	12.5	12.2
	Mvar	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	4.0	4.6	5.3	5.5	5.7	5.7	5.8	5.8	6.0	5.8	5.7
Total	MW	22.5	22.6	22.5	22.1	22.0	21.9	21.8	22.2	23.4	25.5	27.4	29.6	30.0	29.3	29.9	31.2	33.9	33.0	35.7	36.9	36.8	37.5	36.4	37.4	36.5
	Mvar	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	12.0	13.8	15.9	16.5	17.1	17.1	17.4	17.4	18.0	17.4	17.1
SUB H T1	MW	8.0	8.0	8.2	7.7	7.7	7.7	7.1	7.1	7.1	7.8	7.7	8.4	7.1	7.2	7.6	8.4	8.6	8.9	9.4	9.8	10.0	11.0	10.0	9.0	9.3
	Mvar	4.0	4.0	4.1	3.9	3.9	3.9	3.6	3.6	3.6	3.9	3.9	4.2	3.6	3.6	3.8	4.2	4.3	4.5	4.7	4.9	5.0	5.5	5.0	4.9	4.7
T2	MW	6.3	6.1	6.1	5.8	5.8	5.8	5.5	5.5	5.5	5.9	5.9	6.3	6.0	6.0	6.6	7.8	8.1	8.4	8.7	9.2	8.8	9.0	8.0	8.0	7.4
	Mvar	3.2	3.1	3.1	2.9	2.9	2.9	2.8	2.8	2.8	3.0	3.0	3.2	3.0	3.0	3.3	3.9	4.1	4.2	4.4	4.6	4.4	4.5	4.0	4.1	3.7
Total	MW	14.3	14.1	14.3	13.5	13.5	13.5	12.6	12.6	12.6	13.7	13.6	14.7	13.1	13.2	14.2	16.2	16.7	17.3	18.1	19.0	18.8	20.0	18.0	17.0	16.7
	Mvar	7.2	7.1	7.2	6.8	6.8	6.8	6.3	6.3	6.3	6.9	6.8	7.4	6.6	6.6	7.1	8.1	8.4	8.7	9.1	9.5	9.4	10.0	9.0	9.0	8.4
KELANI (C+H)	MW	36.8	36.7	36.8	35.6	35.5	35.4	34.4	34.8	36.0	39.2	41.0	44.3	43.1	42.5	44.1	47.4	50.6	50.3	53.8	55.9	55.6	57.5	54.4	54.4	53.2
	Mvar	18.3	18.2	18.3	17.9	17.9	17.9	17.4	17.4	17.4	18.0	17.9	18.5	17.7	17.7	19.1	21.9	24.3	25.2	26.2	26.6	26.8	27.4	27.0	26.4	25.5

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21.30	22:00	22:30	23:00	23:30	0:00
Dehiwala T1	MW	7.0	7.0	14.0	14.0	9.0	9.0	12.0	12.0	11.0	11.0	17.0	17.0	11.0	11.0	18.0	18.0	18.0	18.0	18.0	11.0	11.0	11.0	11.0
	Mvar	2.0	2.0	4.0	4.0	0.0	0.0	1.0	1.0	7.0	7.0	3.0	3.0	9.0	9.0	9.0	9.0	9.0	9.0	7.0	7.0	8.0	8.0	8.0
T2	MW	7.0	7.0	14.0	14.0	9.0	9.0	12.0	12.0	11.0	11.0	17.0	17.0	11.0	11.0	18.0	18.0	18.0	18.0	18.0	11.0	11.0	11.0	11.0
	Mvar	2.0	2.0	4.0	4.0	0.0	0.0	1.0	1.0	7.0	7.0	3.0	3.0	9.0	9.0	9.0	9.0	9.0	9.0	7.0	7.0	8.0	8.0	8.0
Total	MW	14.0	14.0	28.0	28.0	18.0	18.0	24.0	24.0	22.0	22.0	34.0	34.0	22.0	22.0	36.0	36.0	36.0	36.0	36.0	22.0	22.0	22.0	22.0
	Mvar	4.0	4.0	8.0	8.0	0.0	0.0	2.0	2.0	14.0	14.0	6.0	6.0	18.0	18.0	18.0	18.0	18.0	18.0	14.0	14.0	16.0	16.0	16.0
Kollupitiya-E T1	MW	12.2	12.0	12.1	12.2	12.2	12.2	12.0	12.8	10.2	10.0	8.0	8.0	8.0	8.9	7.0	7.0	6.8	6.5	6.0	6.0	6.0	6.0	5.2
	Mvar	9.0	9.0	9.2	9.0	9.0	9.2	9.0	8.8	7.5	7.0	5.8	5.3	5.6	5.5	4.9	4.8	4.5	4.2	4.0	4.0	4.0	4.0	3.2
T2	MW	16.8	16.8	17.0	17.0	17.0	17.0	17.0	17.0	15.0	14.7	12.0	11.0	10.0	10.0	8.6	8.2	8.2	7.5	7.3	7.0	7.0	7.0	4.0
	Mvar	9.8	9.8	9.8	10.0	10.0	9.8	9.8	9.5	8.5	8.8	6.0	5.3	5.0	4.3	4.0	4.0	3.8	3.5	3.0	3.0	3.0	2.8	2.8
T3	MW	17.8	17.8	18.0	18.0	18.0	17.8	17.5	15.0	16.0	12.0	11.8	11.7	10.0	9.8	9.0	8.8	8.5	8.0	7.8	7.5	7.0	6.8	6.8
	Mvar	12.2	12.2	12.5	12.5	12.5	12.5	12.4	12.2	10.0	9.0	7.2	7.0	6.8	6.0	5.2	5.0	4.8	4.5	4.2	3.8	3.5	3.7	3.0
Total	MW	46.8	46.6	47.1	47.2	47.2	47.0	46.5	44.8	41.2	36.7	31.8	30.7	28.0	28.7	24.6	24.0	23.5	22.0	21.1	20.5	20.0	19.8	16.0
	Mvar	31.0	31.0	31.5	31.5	31.5	31.5	31.2	30.5	26.0	24.8	19.0	17.6	17.4	15.8	14.1	13.8	13.1	12.2	11.2	10.8	10.5	10.5	9.0
Fort-F T1	MW	17.8	17.8	17.8	17.8	17.8	17.8	17.0	16.5	15.0	14.0	12.0	11.0	10.0	9.8	10.0	9.5	8.0	7.8	7.6	6.8	6.5	6.5	6.4
	Mvar	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	8.0	6.0	4.0	3.0	2.2	1.8	2.0	2.0	2.0	1.8	1.2	1.2	1.2	1.2	1.2
T2	MW	19.6	19.6	19.6	19.6	19.8	19.0	17.5	16.0	15.0	14.0	12.8	11.8	10.8	11.0	10.5	9.5	9.0	8.2	8.0	8.0	7.8	7.8	7.8
	Mvar	14.2	14.2	14.2	14.2	14.2	13.0	12.0	10.5	9.2	8.0	7.5	7.4	5.5	6.0	5.5	5.0	4.5	3.8	3.7	3.5	3.5	3.2	3.2
Total	MW	37.4	37.4	37.4	37.4	37.6	36.8	34.5	32.5	30.0	28.0	24.8	22.8	20.8	20.8	20.5	19.0	17.0	16.0	15.6	14.8	14.3	14.3	14.2
	Mvar	20.2	20.2	20.2	20.2	20.2	19.0	18.0	17.5	17.2	14.0	11.5	10.4	7.7	7.8	7.5	7.0	6.5	5.6	4.9	4.7	4.7	4.4	4.4
SUB C T1	MW	11.9	12.0	12.1	12.0	12.5	11.9	12.1	11.9	11.7	11.2	11.3	12.8	16.0	16.2	15.8	15.4	14.8	13.0	11.9	10.2	9.2	8.7	8.5
	Mvar	5.8	6.0	6.0	6.0	6.0	6.0	6.0	5.8	5.5	5.3	5.0	5.3	5.7	5.2	5.2	5.0	5.0	5.0	5.0	4.8	4.5	4.3	4.1
T2	MW	11.9	12.0	12.1	12.0	12.5	11.9	12.1	11.9	11.7	11.2	11.3	12.8	16.0	16.2	15.8	15.4	14.8	13.0	11.9	10.2	9.2	8.7	8.5
	Mvar	5.8	6.0	6.0	6.0	6.0	6.0	6.0	5.8	5.5	5.3	5.0	5.3	5.7	5.2	5.2	5.0	5.0	5.0	5.0	4.8	4.5	4.3	4.1
T3	MW	11.9	12.0	12.1	12.0	12.5	11.9	12.1	11.9	11.7	11.2	11.3	12.8	16.0	16.2	15.8	15.4	14.8	13.0	11.9	10.2	9.2	8.7	8.5
	Mvar	5.8	6.0	6.0	6.0	6.0	6.0	6.0	5.8	5.5	5.3	5.0	5.3	5.7	5.2	5.2	5.0	5.0	5.0	5.0	4.8	4.5	4.3	4.1
Total	MW	35.7	36.0	36.3	36.1	37.5	35.8	36.4	35.6	35.2	33.6	33.9	38.4	48.0	48.5	47.5	46.2	44.3	39.1	35.6	30.7	27.6	26.1	25.5
	Mvar	17.4	18.0	18.0	18.0	18.0	18.0	18.0	17.4	16.5	15.9	15.0	15.9	17.1	15.6	15.6	15.0	15.0	15.0	15.0	14.4	13.5	12.9	12.3
SUB H T1	MW	9.6	9.6	9.5	9.5	9.3	9.3	9.1	8.1	8.7	8.5	8.2	10.3	9.8	10.2	9.3	9.2	9.1	9.0	8.9	8.6	8.3	7.9	7.3
	Mvar	4.8	4.8	4.8	4.8	4.7	4.7	4.6	4.1	4.4	4.3	4.1	5.2	4.9	5.1	4.7	4.6	4.6	4.5	4.5	4.3	4.2	4.0	3.7
T2	MW	7.7	7.4	7.2	6.9	6.6	6.4	6.1	5.8	5.6	5.4	5.3	6.0	6.0	6.0	6.0	5.8	5.7	5.5	5.1	5.2	4.7	4.7	4.6
	Mvar	3.9	3.7	3.6	3.5	3.3	3.2	3.1	2.9	2.8	2.7	2.7	3.0	3.0	3.0	3.0	2.9	2.9	2.8	2.6	2.6	2.4	2.4	2.3
Total	MW	17.3	17.0	16.7	16.4	15.9	15.7	15.2	13.9	14.3	13.9	13.5	16.3	15.8	16.2	15.3	15.0	14.8	14.5	14.0	13.8	13.0	12.6	11.9
	Mvar	8.7	8.5	8.4	8.2	8.0	7.9	7.6	7.0	7.2	7.0	6.8	8.2	7.9	8.1	7.7	7.5	7.4	7.3	7.0	6.9	6.5	6.3	6.0
KELANI(C+H)	MW	53.0	53.0	53.0	52.5	53.4	51.5	51.6	49.5	49.5	47.5	47.4	54.7	63.8	64.7	62.8	61.2	59.1	53.6	49.6	44.5	40.6	38.7	37.4
	Mvar	26.1	26.5	26.4	26.2	26.0	25.9	25.6	24.4	23.7	22.9	21.8	24.1	25.0	23.7	23.3	22.5	22.4	22.3	22.0	21.3	20.0	19.2	18.3

Active power (P) and Reactive Power (Q) Generation

Time 13/08/08		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12 00	12:30
Victoria 01	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	50.0	69.0	68.0	68.0	68.0	68.0	68.0	68.0	69.0	69.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	10.0	26.0	30.0	31.0	21.0	20.0	21.0	20.0	20.0	21.0
Victoria 02	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	63.0	62.0	62.0	62.0	62.0	62.0	62.0	63.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	25.0	25.0	25.0	23.0	25.0	24.0	23.0	25.0
Victoria 03	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70.0	70.0	69.0	69.0	69.0	70.0	69.0	70.0	70.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	35.0	30.0	22.0	20.0	21.0	20.0	20.0	20.0
Rande. 01	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.0	36.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	7.0
Rande. 02	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	11.0	10.0	11.0	11.0	16.0	4.0	4.0	6.0	6.0	22.0	20.0	20.0	20.0	20.0	20.0
Rantembe 01	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rantembe 02	MW	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
	Mvar	2.0	2.0	2.0	0.0	1.0	1.0	1.0	1.0	2.0	2.0	3.0	2.0	2.0	2.0	2.0	7.0	9.0	12.0	12.0	12.0	11.0	12.0	11.0	8.0	8.0
Kotmale 01	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	50.0	65.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	45.0	46.0
Kotmale 02	MW	45.0	45.0	42.0	44.0	40.0	40.0	42.0	46.0	50.0	52.0	45.0	42.0	40.0	45.0	42.0	42.0	42.0	40.0	36.0	34.0	40.0	40.0	30.0	20.0	20.0
	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	15.0	15.0	30.0	30.0	40.0	40.0	45.0	45.0	44.0	40.0	35.0	40.0
Kotmale 03	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	35.0	35.0	40.0	45.0	45.0	30.0	30.0	40.0	30.0	20.0	30.0	30.0	40.0	10.0	10.0	10.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	5.0	10.0	10.0	10.0	10.0	15.0	30.0	30.0	40.0	40.0	40.0	40.0	40.0	40.0	36.0	40.0
Ukuwela 01	MW	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2
	Mvar	2.0	2.0	1.0	1.0	1.0	1.0	1.0	2.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	7.0	4.0	4.0	4.0	3.0	3.0	3.0	4.0	3.0
Ukuwela 02	MW	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
	Mvar	2.0	1.0	1.0	1.0	1.0	2.0	2.0	3.0	4.0	4.0	5.0	4.0	4.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0	7.0	4.0	4.0	5.0	4.0
Bowatenna	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	4.0	4.0	5.0	5.0	5.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
Victoria 01	MW	69.0	60.0	60.0	60.0	70.0	70.0	60.0	40.0	30.0	15.0	15.0	40.0	40.0	60.0	60.0	42.0	35.0	44.0	20.0	30.0	30.0	35.0	45.0
	Mvar	20.0	20.0	20.0	20.0	21.0	20.0	20.0	19.0	15.0	10.0	6.0	9.0	20.0	25.0	24.0	20.0	17.0	20.0	15.0	15.0	13.0	15.0	12.0
Victoria 02	MW	62.0	55.0	60.0	63.0	69.0	69.0	60.0	45.0	30.0	24.0	23.0	40.0	45.0	59.0	60.0	50.0	32.0	40.0	33.0	63.0	21.0	0.0	0.0
	Mvar	22.0	20.0	21.0	24.0	25.0	24.0	22.0	20.0	16.0	12.0	9.0	10.0	21.0	26.0	25.0	21.0	18.0	20.0	16.0	17.0	15.0	0.0	0.0
Victoria 03	MW	70.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	60.0	60.0	50.0	30.0	16.0	16.0	0.0	0.0	0.0	0.0
	Mvar	20.0	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.0	21.0	20.0	17.0	15.0	15.0	11.0	0.0	0.0	0.0	0.0
Rande. 01	MW	46.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	36.0	36.0
	Mvar	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	10.0	10.0	8.0	6.0	8.0	6.0	7.0	6.0	8.0	8.0
Rande.02	MW	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	36.0	36.0
	Mvar	18.0	18.0	18.0	20.0	20.0	20.0	19.0	18.0	15.0	10.0	9.0	12.0	10.0	22.0	21.0	18.0	16.0	16.0	15.0	9.0	8.0	8.0	0.0
Rantembe 01	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	8.0	8.0	3.0	3.0	3.0	2.0	2.0	4.0	0.0	8.0
Rantembe 02	MW	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	15.0	15.0	0.0	0.0	0.0	0.0	0.0	15.0
	Mvar	8.0	9.0	10.0	10.0	11.0	11.0	10.0	10.0	9.0	7.0	10.0	10.0	8.0	8.0	7.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	8.0
Kotmale 01	MW	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
	Mvar	46.0	45.0	45.0	45.0	45.0	45.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Kotmale 02	MW	20.0	32.0	44.0	43.0	42.0	26.0	30.0	30.0	35.0	40.0	37.0	35.0	50.0	35.0	35.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	40.0	40.0	40.0	40.0	44.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0
Kotmale 03	MW	10.0	10.0	30.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	10.0	20.0	65.0	15.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0
Ukuwela 01	MW	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.4
	Mvar	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	5.0	8.0	8.0	7.0	5.0	6.0	3.0	1.0	1.0	2.0	2.0	2.0
Ukuwela 02	MW	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
	Mvar	3.0	3.0	3.0	3.0	4.0	4.0	4.0	3.0	2.0	2.0	3.0	5.0	7.0	7.0	7.0	4.0	3.0	2.0	1.0	1.0	1.0	1.0	1.0
Bowatenna	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	6.0	8.0	12.0	12.0	12.0	11.0	10.0	9.0	7.0	6.0	5.0	5.0	5.0

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
N' Lax. 01	MW	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	20.0	45.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	30.0	10.0
	Mvar	11.0	10.0	11.0	2.0	1.0	1.0	1.0	0.0	0.0	1.0	4.0	11.0	13.0	13.0	15.0	20.0	29.0	22.0	23.0	23.0	21.0	22.0	20.0	12.0	6.0
N'Lax. 02	MW	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	20.0	45.0	50.0	50.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	12.0	10.0	10.0	6.0	3.0	3.0	3.0	3.0	3.0	4.0	2.0	11.0	10.0	10.0	21.0	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Polpitiya 01	MW	33.6	37.0	36.0	37.0	37.5	37.5	35.0	34.0	35.0	37.0	33.0	33.4	34.5	33.0	36.2	37.5	37.2	38.1	37.1	38.0	37.8	38.0	38.1	38.1	37.9
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	6.0	6.0	6.0	6.0	6.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Polpitiya 02	MW	4.7	5.0	5.6	5.0	5.5	5.0	5.0	5.0	5.0	5.1	33.0	34.2	34.7	34.2	35.1	37.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	6.0	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
O'Lax 01	MW	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	8.0	8.0	8.0	8.0	8.0	8.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.0	1.5	1.5	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
O'Lax 02	MW	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	8.0	8.0	8.0	8.0	8.0	8.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
O'Lax 03	MW	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	8.0	8.0	8.0	8.0	8.0	8.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.0	1.5	0.5	1.5	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
O'Lax 04	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	12.0	12.0	12.0	12.0	12.0	12.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
	Mvar	2.0	2.0	1.5	1.5	1.5	2.0	2.5	2.5	2.5	2.5	2.5	1.5	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
O'Lax 05	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	12.5	12.5	12.0	12.0	12.0	12.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
	Mvar	2.0	2.0	1.5	1.5	1.5	2.0	2.5	2.5	2.5	2.5	2.5	1.5	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Canyon 01	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon 02	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	29.0
WPS 01	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	10.0	10.0	9.0	8.0	8.0	10.0	10.0	10.0	10.0	8.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WPS 02	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
N' Lax. 01	MW	10.0	10.0	50.0	50.0	50.0	50.0	50.0	50.0	30.0	30.0	30.0	40.0	40.0	50.0	50.0	45.0	45.0	20.0	15.0	10.0	10.0	10.0	10.0
	Mvar	7.0	6.0	8.0	8.0	10.0	8.0	9.0	7.0	6.0	5.0	2.0	10.0	20.0	20.0	16.0	13.0	11.0	6.0	10.0	2.0	2.0	2.0	2.0
N' Lax. 02	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0	40.0	40.0	50.0	50.0	45.0	45.0	20.0	15.0	10.0	10.0	10.0	10.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	15.0	15.0	10.0	15.0	16.0	13.0	12.0	9.0	13.0	11.0	5.0	5.0	5.0	5.0
Polpitiya 01	MW	37.7	37.6	34.6	36.5	36.2	36.6	35.1	34.7	5.2	5.3	5.2	4.4	5.0	5.2	5.0	32.9	32.1	5.1	5.0	5.1	5.0	4.9	4.8
	Mvar	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	8.0	6.0	6.0
Polpitiya 02	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	5.3	5.2	37.5	37.7	37.8	37.8	35.3	34.4	38.1	36.1	34.8	32.8	35.7	36.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	5.0	5.0	5.0	10.0	10.0	10.0	12.0	12.0	12.0	12.0	12.0	10.0	8.0	8.0
O'Lax 01	MW	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	8.0	8.0	8.0	6.0	6.0	4.0	2.0	2.0	2.0	2.0	2.0
	Mvar	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
O'Lax 02	MW	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	8.0	8.0	8.0	6.0	6.0	4.0	2.0	2.0	2.0	2.0	2.0
	Mvar	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
O'Lax 03	MW	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	8.0	8.0	8.0	6.0	6.0	4.0	2.0	2.0	2.0	2.0	2.0
	Mvar	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
O'Lax 04	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	12.0	12.0	12.0	8.0	8.0	4.0	4.0	4.0	4.0	4.0	4.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
O'Lax 05	MW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Canyon 01	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	20.0	20.0	24.0	24.0	24.0	24.0	15.0	15.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	4.0	4.0	2.0	2.0	1.0	1.0	1.0	1.0	0.0	0.0
Canyon 02	MW	10.0	29.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	20.0	20.0	23.0	23.0	23.0	23.0	15.0	15.0	15.0	0.0
	Mvar	8.0	8.0	8.0	8.0	8.0	8.0	8.0	6.0	4.0	2.0	2.0	2.0	8.0	8.0	8.0	5.0	4.0	2.0	1.0	1.0	1.0	2.0	0.0
WPS 01	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.0	20.0	20.0	20.0	25.0	25.0	25.0	25.0	15.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	5.0	5.0	4.0	4.0	6.0	6.0	6.0	6.0	7.0	0.0	0.0	0.0
WPS 02	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	23.0	23.0	23.0	23.0	15.0	15.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	0.0	0.0

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
Samanalawewa 01	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	60.0	30.0	30.0	30.0	30.0	40.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0	18.0	17.0	15.0	17.0	16.0	16.0
Samanalawewa 02	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	30.0	30.0	12.0	30.0	30.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	6.0	5.0	7.0	6.0	4.0
Kukule 01	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	6.0	7.0	7.0	7.0	6.0	7.0	3.0
Kukule 02	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kps - Gt 04	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	9.0	9.0	9.0	9.0	6.0	9.0	9.0	11.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Kps - Gt 05	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	9.0	9.0	9.0	9.0	10.0	9.0	9.0	11.0	10.0	9.0	9.0	10.0	10.0	10.0	10.0
Kps - Gt 08 [JBIC]	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.0	109.0	109.0	109.0	109.0	109.0	110.0	108.0	67.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	36.0	60.0	59.0	66.0	64.0	65.0	68.0	67.0	0.0
KPS JBIC (STEAM)	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sapu 01	MW	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
	Mvar	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	5.0	5.0	5.0	5.0	8.0	8.0	8.0	8.0	7.0	8.0	8.0	8.0	8.0	7.0
Sapu 02	MW	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.5	14.5	14.5	15.0	15.0	15.0	15.0
	Mvar	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	8.0	9.0	10.0	10.0	10.0	9.0	9.0	10.0	9.0	9.0	8.0
Sapu 03	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sapu 04	MW	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
	Mvar	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	8.0	9.0	10.0	10.0	10.0	9.0	9.0	10.0	9.0	8.0	9.0
Sapu 05	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sapu 06	MW	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.0	8.0	8.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.0	4.0	4.0

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22 00	22:30	23:00	23 30	0:00
Samanalawewa 01	MW	12.0	13.0	30.0	30.0	30.0	30.0	12.0	12.0	12.0	12.0	12.0	30.0	60.0	60.0	40.0	40.0	30.0	12.0	0.0	0.0	0.0	0.0	0.0
	Mvar	13.0	15.0	13.0	13.0	13.0	13.0	16.0	15.0	13.0	10.0	12.0	11.0	16.0	17.0	17.0	15.0	12.0	10.0	0.0	0.0	0.0	0.0	0.0
Samanalawewa 02	MW	30.0	11.0	11.0	11.0	12.0	11.0	12.0	12.0	12.0	12.0	30.0	30.0	60.0	60.0	40.0	40.0	30.0	18.0	0.0	0.0	0.0	0.0	0.0
	Mvar	3.0	3.0	3.0	4.0	2.0	3.0	4.0	4.0	0.0	0.0	7.0	7.0	15.0	15.0	14.0	12.0	8.0	5.0	0.0	0.0	0.0	0.0	0.0
Kukule 01	MW	30.0	30.0	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	0.0	0.0	0.0	0.0
	Mvar	4.0	4.0	5.0	5.0	6.0	4.0	4.0	2.0	-1.0	-3.0	-3.0	1.0	6.0	7.0	3.0	2.0	0.0	-2.0	-5.0	0.0	0.0	0.0	0.0
Kukule 02	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kps - Gt 04	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	9.0	9.0	9.0	10.0	10.0	9.0	8.0	8.0	7.0	7.0	6.0	8.0	10.0	10.0	10.0	9.0	7.0	7.0	8.0	8.0	8.0	5.0	5.0
Kps - Gt 05	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	8.0	8.0	8.0	9.0	9.0	9.0	8.0	8.0	6.0	6.0	6.0	8.0	10.0	9.0	8.0	7.0	6.0	6.0	7.0	7.0	7.0	5.0	5.0
Kps - Gt 08 [JBIC]	MW	20	110	108.0	108	110	108	101	101	108	108	108	107	108	108	108	108	108	107	109	109	109	109	108
	Mvar	3.0	9.0	52.0	56.0	54.0	55.0	49.0	43.0	34.0	16.0	5.0	18.0	52.0	51.0	48.0	39.0	30.0	24.0	13.0	8.0	13.0	13.0	12.0
KPS JBIC (STEAM)	MW	0.0	0.0	0.0	0.0	0.0	0.0	48.0	47.0	52.0	57.0	57.0	57.0	57.0	57.0	57.0	58.0	57.0	57.0	58.0	58.0	58.0	58.0	58 0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	-10.0	15.0	12.0	6.0	-7.0	6.0	21.0	21.0	18.0	15.0	11.0	8.0	5.0	-6.0	6.0	2.0	2.0
Sapu 01	MW	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
	Mvar	7.0	7.0	7.0	7.0	7.0	7.0	6.0	6.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0	4.0	3.0	4.0	5.0	5.0	5.0	5.0	5.0
Sapu 02	MW	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
	Mvar	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.0	7.0	7.0	7.0	8.0	7.0	6.0	6.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0
Sapu 03	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sapu 04	MW	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
	Mvar	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.0	6.0	6.0	7.0	8.0	7.0	6.0	5.0	4.0	3.0	4.0	5.0	5.0	5.0	5.0	5.0
Sapu 05	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 0	0.0	0.0	0.0	0.0	0.0
	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sapu 06	MW	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5	9.0	9.0	9 0	9.0	9.0	9.0	9.0	9.0
	Mvar	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
Sapu 07	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Sapu 08	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Sapu 09	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Sapu 10	MW	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.0	8.0	8.0	8.0	8.0	7.5	7.5	7.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Sapu 11	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	8.5
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Sapu 12	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Mvar	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Asia Power	MW	48.5	48.5	48.5	48.5	48.5	48.5	48.5	48.5	48.5	48.5	48.5	48.5	48.3	48.3	48.3	48.3	42.1	42.1	42.1	41.9	41.6	47.4	47.4	41.4	42.4
	Mvar	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	3.0	3.0	4.0	4.0	6.0	17.0	21.0	21.0	21.0	21.0	21.0	22.0	23.0	22.0	20.0
Lakdanavi	MW	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
	Mvar	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Barge	MW	60.5	60.5	60.4	60.6	60.6	60.5	60.4	60.5	60.6	60.5	60.5	60.4	60.5	60.6	60.4	60.4	60.7	60.0	60.3	60.7	60.5	60.5	60.5	60.6	60.4
	Mvar	11.9	12.3	10.8	11.0	10.5	9.6	9.6	9.6	10.4	10.2	11.6	16.4	19.6	19.0	35.0	18.8	19.8	21.1	40.6	37.7	39.4	39.6	39.5	37.5	38.5
AES - CCY	MW	151	150	151	150	150	151	140	140	140	140	162	162	162	161	162	162	163	163	162	162	162	162	162	162	162
	Mvar	27.0	26.0	25.0	28.0	25.0	24.0	25.0	24.0	25.0	27.0	29.0	29.0	31.0	32.0	32.0	67.0	79.0	80.0	76.0	83.0	84.0	85.0	85.0	86.0	87.0
ACE - Matara	MW	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	19.6	24.4	18.4	18.4	18.3	18.3	18.3	18.3	18.2	18.2
	Mvar	0.6	0.4	0.4	0.1	0.3	2.4	1.5	1.4	1.5	1.7	1.8	1.7	1.8	1.3	1.4	1.3	2.5	0.2	1.9	0.8	0.5	0.4	0.1	0.0	0.8
ACE - Horana	MW	24.0	24.1	24.1	24.1	24.0	24.1	24.2	24.0	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.0	24.0	24.0	11.8	24.0	24.0	24.0	24.0	24.1
	Mvar	-3.4	-3.6	-4.0	-3.9	-3.9	-3.6	-3.4	-3.5	-3.4	-3.4	-3.5	-3.4	-3.4	-3.5	-3.5	-3.8	-2.0	0.0	0.0	2.0	-2.3	-2.7	-2.7	0.2	0.3
Heladhanavi-Putalam	MW	83.2	83.3	83.2	83.4	83.4	83.3	83.3	83.3	83.1	83.2	83.3	83.5	83.4	83.5	83.3	83.2	83.4	83.5	83.4	83.3	83.1	83.0	83.1	83.0	83.2
	Mvar	16.5	16.7	14.8	14.7	14.6	14.6	14.6	14.4	14.7	14.7	14.8	14.7	14.7	21.1	21.2	18.8	18.4	21.5	22.4	24.3	24.3	24.3	31.4	30.5	29.4
ACE - Embilipitiya	MW	95.5	95.6	96.2	90.3	89.9	89.3	89.4	95.0	95.2	95.1	95.0	95.1	94.8	87.3	86.9	87.0	87.1	87.5	87.5	87.3	86.9	86.3	86.7	86.9	85.4
	Mvar	-11.3	-11.2	-11.2	-6.9	-6.7	-6.6	-6.7	-6.6	-6.8	-6.7	-6.7	-4.4	5.0	4.0	3.3	5.2	4.9	-2.1	-2.5	-1.3	4.4	3.9	4.0	4.8	3.1

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00
Sapu 07	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Sapu 08	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Sapu 09	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Sapu 10	MW	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
	Mvar	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Sapu 11	MW	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Sapu 12	MW	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Asia Power	MW	47.1	47.1	47.2	46.7	47.0	47.0	43.0	43.3	47.3	47.3	47.3	47.3	47.8	47.8	47.8	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9
	Mvar	19.0	18.0	18.0	20.0	18.0	20.0	20.0	18.0	14.0	14.0	15.0	20.0	22.0	18.0	16.0	16.0	14.0	19.0	18.0	17.0	19.0	19.0	19.0
Lakdanavi	MW	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	0.0	0.0	0.0
	Mvar	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0	0.0	0.0
Barge	MW	60.3	60.5	60.4	60.4	60.6	60.4	60.3	60.4	60.3	60.4	60.6	60.4	60.4	60.2	60.5	60.4	60.4	60.5	60.1	60.4	60.3	60.3	60.2
	Mvar	37.6	37.5	37.7	39.3	38.3	39.5	38.4	38.6	28.0	26.6	22.8	23.4	26.1	38.4	37.8	38.2	29.1	30.9	29.7	23.1	25.3	23.7	23.2
AES-CCY	MW	162	161	161	162	162	162	162	161	162	162	162	162	163	162	163	163	162	161	105	105	61	61	61
	Mvar	83.0	84.0	82.0	83.0	84.0	89.0	85.0	82.0	83.0	82.0	72.0	76.0	74.0	73.0	69.0	67.0	67.0	70.0	60.0	44.0	0.0	0.0	0.0
ACE - Matara	MW	18.2	18.2	18.2	18.2	18.2	18.2	23.8	24.3	24.2	24.2	24.3	24.2	24.3	24.3	24.3	24.3	24.3	24.2	24.4	24.3	24.3	24.4	24.4
	Mvar	0.6	0.5	0.9	1.3	1.0	1.0	0.3	4.8	0.4	0.6	0.6	1.5	0.8	0.6	0.1	1.0	0.1	0.5	1.4	0.7	0.1	0.1	1.0
ACE - Horana	MW	24.0	23.4	24.1	24.0	24.0	24.0	23.9	23.9	23.9	24.0	24.1	24.0	24.0	24.0	24.0	24.1	24.1	24.1	24.1	24.1	24.0	24.0	24.0
	Mvar	0.8	2.1	0.9	0.7	1.4	1.7	0.8	0.7	-0.9	-4.2	-5.0	-5.8	-5.1	-3.8	-3.4	-4.1	-4.3	-4.3	-4.2	-5.7	-5.7	-5.8	-5.8
Heladhanavi-Putalam	MW	83.1	83.1	83.2	83.2	83.0	83.0	83.2	83.2	82.9	83.2	83.3	83.2	83.3	83.4	83.4	83.1	83.3	83.1	83.4	83.3	83.4	83.4	68.7
	Mvar	27.9	29.4	27.0	27.0	26.6	27.0	26.7	26.9	26.9	26.9	19.0	19.1	16.8	18.7	26.6	26.6	26.6	26.6	23.9	16.6	14.4	12.4	13.8
ACE - Embilipitiya	MW	85.3	83.7	84.6	84.2	84.5	84.7	78.5	79.0	78.8	79.2	79.1	80.0	84.7	93.1	92.7	93.4	92.9	95.6	95.7	71.3	70.9	72.1	72.2
	Mvar	6.8	7.2	6.4	6.9	7.1	7.8	7.5	5.6	4.9	5.8	7.8	9.1	10.4	16.6	16.4	15.0	16.0	17.0	16.0	-2.6	-2.4	-2.1	-2.5

Reactive Power Generation (Capacitor Banks)

Time		0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9.30	10:00	10:30	11:00	11:30	12:00	12:30
Galle SVC	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Galle-Caps	Mvar	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Anuradhapura	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Habarana	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Kotugoda	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	20.0
Kiribatkumbura	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Kurunegala	Mvar	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Matugama	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.0	10.0	10.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Panadura	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Puttalama	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pannipitiya	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	Mvar	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	65.0	65.0	70.0	85.0	95.0	95.0	95.0	95.0	120.0	120.0	120.0	120.0	115.0

Time		13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23 30	0 00
Galle SVC	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 0	0.0	0.0	0.0
Caps	Mvar	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Anuradhapura	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Habarana	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Kotugoda	Mvar	20.0	20.0	20.0	20.0	20.0	25.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
Kiribatkumbura	Mvar	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	15.0	15.0	15.0	15.0	5.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	10 0
Kurunegala	Mvar	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Matugama	Mvar	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Panadura	Mvar	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Puttalama	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pannipitiya	Mvar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	Mvar	115.0	115.0	115.0	115.0	115.0	120.0	105.0	105.0	105.0	105.0	95.0	95.0	90.0	90.0	80.0	85.0	85.0	85.0	85.0	75.0	75.0	75.0	70.0