SECURITY OF ELECTRICITY SUPPLY

March-May, 2017

Date of Report: March 23, 2017

PUBLIC UTILITIES COMMISSION OF SRI LANKA

A Summary Results

The average inflow to the major hydro reservoirs during the first two weeks of March was about 6.6 GWh. But with the lower rainfall in third week of March, this level has fallen to about 5.6 GWh by the end of the third week of March. However, the energy supply will be sufficient to meet the demand from March -May, 2017, even under simultaneous occurance of below scenarios.

- The inflow levels in April and May are close to the lowest inflow levels received in the respective months in last five years.
- No new plant additions until end of May
- Demand in month May grow by additional 5% due to expiration of Self-Generation scheme.

B Basis of Analysis

			Forecast as per the report on March 16, 2017	Revised Forecast on March 23, 2017	Basis of the forecast
1	Demand growth compared to the previous month (%)	March	4.0%	2.4%	Actual (March 1-21)
		April	-5.1%	-5.1%	2016 data
		May	6.0%	6.0%	2015 data
2	Weekend demand compared to weekdays (%)	Saturday	90%	93%	Actual (March 1-21)
		Sunday	82%	82%	
3	Day time NCRE Contribution (MW)	March	60	60	2014 data and considering recent two 10 MW solar plant additions
		April	70	70	
		May	130	130	
	Peak and Offpeak time NCRE contribution (MW)	March	50	50	
		April	60	60	
		May	120	120	
4	Average inflow to Major Reservoirs(Inflow= Major Hydro Generation- Major Reservoir drawdown) in GWh/day	March	6.6	5.6	Actual (March 1-21)
		April	6.6	5.6	Assuming minimum inflow of March inflow level can be expected in April & May.
		May	6.6	5.6	
5	Minimum daily Major Hydro dispatch requirement (MWh)	March-May	2.4	2.7	Actual (March 1-21)
6	New Thermal Capacity additionas expected (MW)	March	0	0	
		April	0	0	
		May	0	0	

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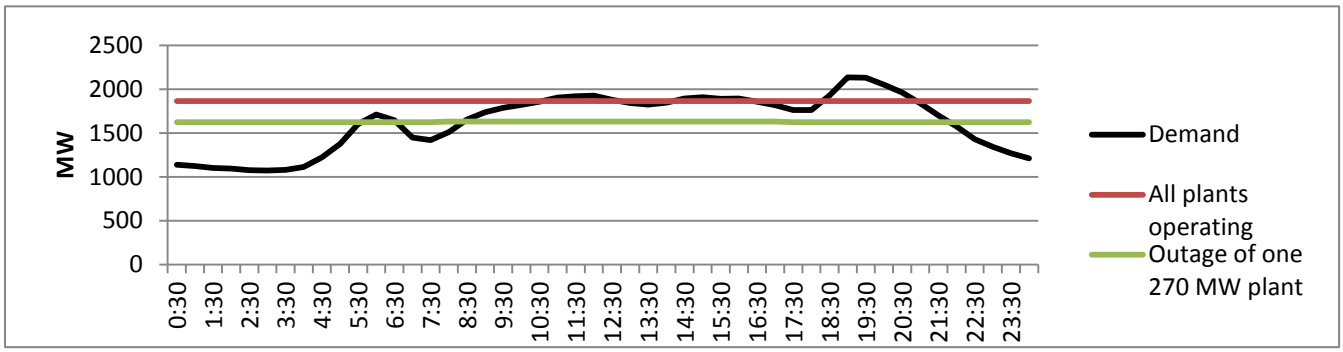
Major Thermal Plant availability (source: CEB)				
	Capacity	March	April	May
LVPS Coal I	270 MW			
LVPS Coal II	271 MW			
LVPS Coal III	272 MW			Week 4
KCCP	165 MW			week 3,4
Westcoast	270 MW		week 4	week 1-3
Sojitz	163 MW			
ACE Emb	100 MW			
KPS GT 7	115 MW			

C Analysis

C-1 Average weekday demand curve and Thermal Plant Availability

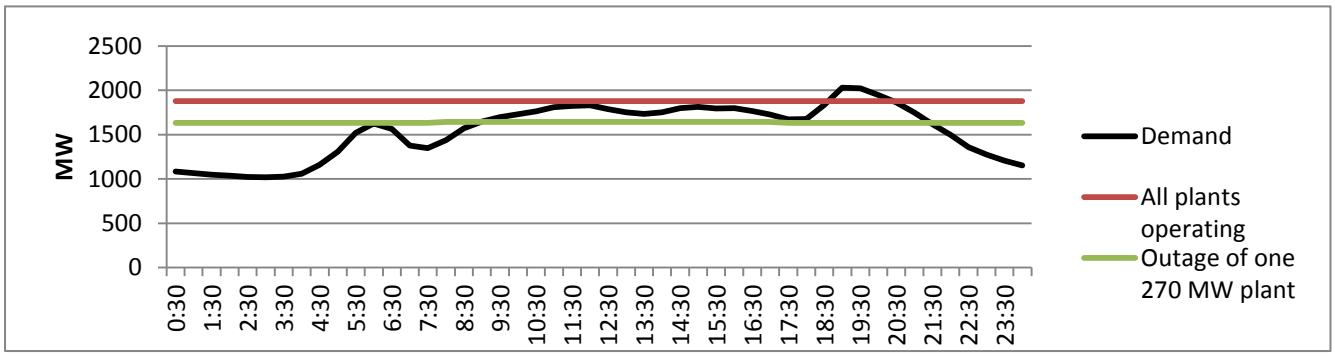
March (Actual Average demand curve of weekdays in March)



Energy Demand	39,085	MWh
Peak Demand	2,137	MW

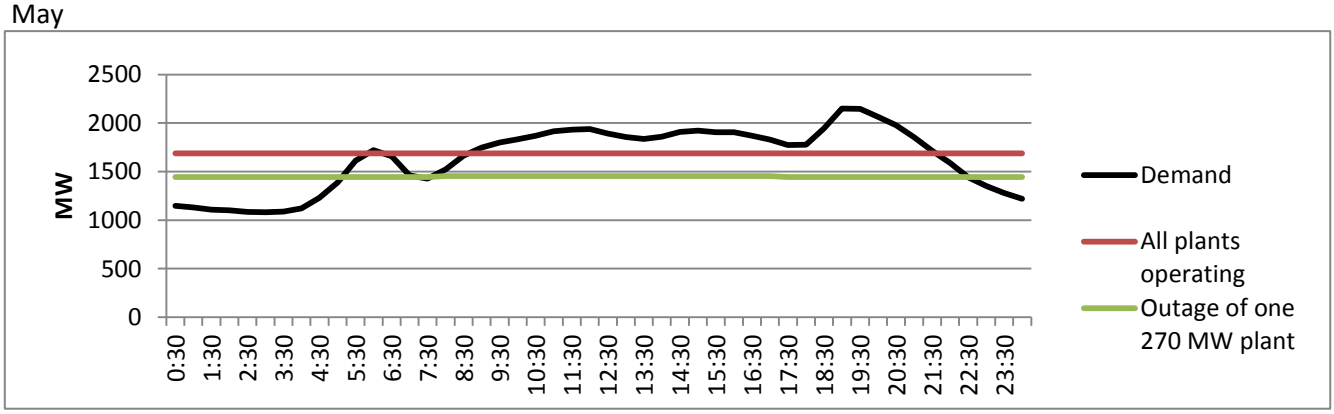
April

Weekday demand curves for April and May are estimated, considering average weekday demand curve in March 2017 and demand growth forecast in B (1)



Energy Demand	37,097	MWh
Peak Demand	2,028	MW

May



Energy Demand	39,318	MWh
Peak Demand	2,150	MW

It can be observed that the thermal plants alone cannot meet the daily demand. Such deficit need to be provided with Hydro generation

C-2 Assesment of Daily hydro energy requirement

Minimum Daily Hydro Dispatch 2,682 MWh (Section B. 5)

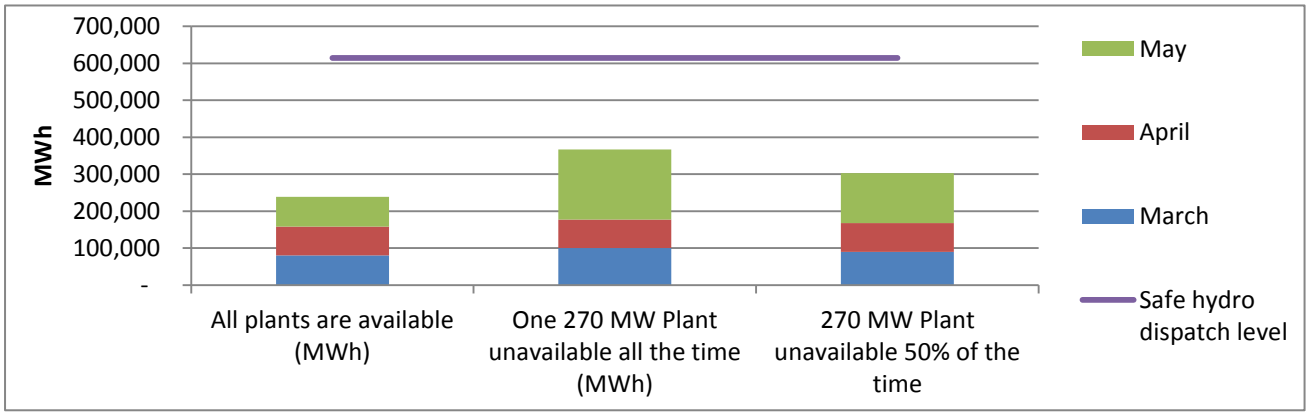
Hydro requirement		All plants are available (MWh)		One 270 MW Plant unavailable all the time (MWh)	
Month	No of days/month	Perday	Per month	Perday	Per month
March	31	2,682	80,461	3,332	99,968
April	30	2,682	77,779	2,682	77,779
May	31	2,686	80,595	6,300	188,990
		Total	238,835	Total	366,738

C-3 Assesment of Daily Hydro Energy Availability

Reservoir Level at March 1, 2017		399,000	MWh
Minimum Safe Reservoir Level		300,000	MWh
Inflow/day	March	5,600	MWh
	April	5,600	MWh
	May	5,600	MWh

Safe daily hydro dispatch level	6,676	MWh
Safe hydro dispatch level for the 3 months	614,200	MWh

C-4 Graphical representation of Hydro energy requirement under different plant availability scenarios and Safe hydro dispatch level (MWh)



C-5 Observations

The energy supply in the country will be sufficient to meet the demand until end of May, even without one 270 MW plant.

C-6 Uncertinities in the above calculation

a Variations in inflow level: The actual inflow in April and May, may become lower than the assumed level of 5.6 GWh

b Variations in demand growth: This analysis is conducted considering the contribution from Self-Generation scheme as a negative demand. However, the scheme expires in April 30, 2017. Hence, demand in month May, may become higher than the assumed growth of 6% compared to month April

D Analaysis of security of energy supply under low inflow levels

Lowest inflow levels received in past 5 yers

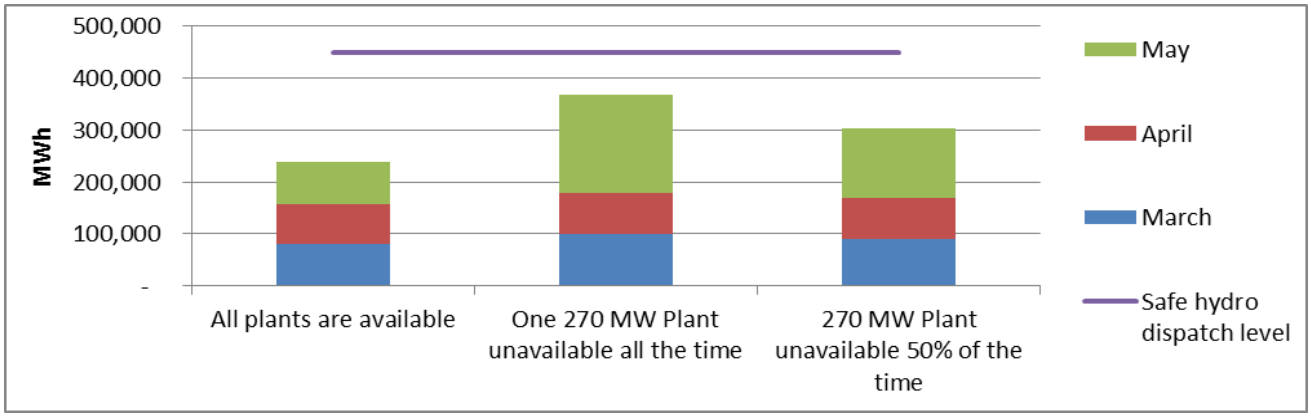
April	4.1	GWh (in 2016)
May	1.7	GWh (in 2012)

D-1 Revised Assesment of Daily Hydro Energy Availability

Reservoir Level at March 1, 2017		399,000	MWh
Minimum Safe Reservoir Level		300,000	MWh
Inflow/day	March	5,600	MWh
	April	4,100	MWh
	May	1,700	MWh

Safe Daily Hydro Dispatch	4,873	MWh
Safe Hydro Dispatch for the 3 months	448,300	MWh

D-2 Revised Graphical representation of Hydro energy requirement (MWh), for low inflow levels



D-3 Observations

Even if the inflow levels in April and May are close to the lowest inflow levels received in respective months in last five years, the energy supply will be sufficient to meet the demand

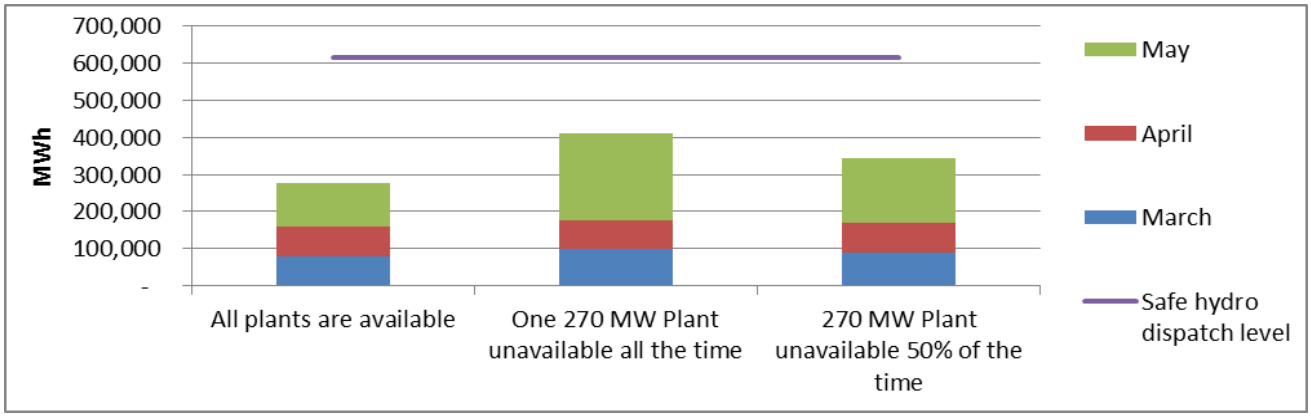
E Analaysis of security of energy supply in case of demand in May grow by additional 5% compared to April due to expiration of Self-Generation scheme

Revised demand growth in May(comapred to April) 11%

E-1 Revised assesment of Daily hydro energy requirement for 11% demand growth in May

Hydro requirement		All plants are available (MWh)		One 270 MW Plant unavailable all the time (MWh)	
Month	No of days/month	Perday	Per month	Perday	Per month
March	31	2,682	80,461	3,332	99,968
April	30	2,682	77,779	2,682	77,779
May	31	3,943	118,301	7,790	233,702
		Total	276,542	Total	411,450

E-2 Revised Graphical representation of Hydro energy requirement (MWh), for high demand growth in May



E-3 Observations

Even if the demand in May increased by additional 5% compared to April, the energy supply will be sufficient to meet the demand

F Analaysis of security of energy supply if both low inflow and high demand in May occurred simultaneously

F-1 Assesment of Daily hydro energy requirement

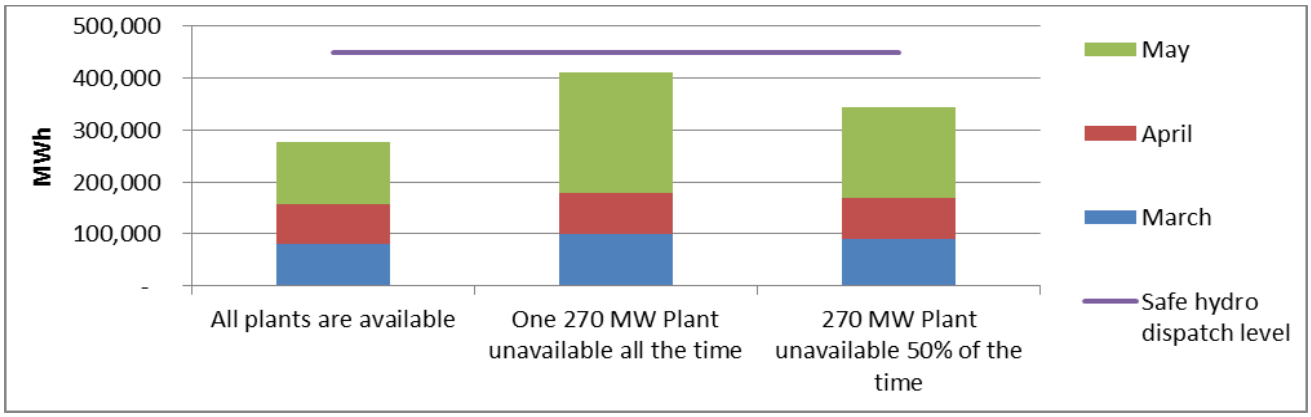
Hydro requirement		All plants are available (MWh)		One 270 MW Plant unavailable all the time (MWh)	
Month	No of days/month	Perday	Per month	Perday	Per month
March	31	2,682	80,461.30	3,332	99,968.43
April	30	2,682	77,779.26	2,682	77,779.26
May	31	3,943	118,301.02	7,790	233,702.11
		Total	276,542	Total	411,450

F-2 Assesment of Daily Hydro Energy Availability

Reservoir Level at March 1, 2017		399,000	MWh
Minimum Safe Reservoir Level		300,000	MWh
Inflow/day	March	5,600	MWh
	April	4,100	MWh
	May	1,700	MWh

Safe daily hydro dispatch level	4,873	MWh
Safe daily hydro dispatch level for the 3 months	448,300	MWh

F-3 Graphical representation of Hydro energy requirement under different plant availability scenarios and Safe hydro dispatch level (MWh)



F-4 Observations

- Even if one 270 MW plant is unavailable during the entire period, hydro requirement is sufficient to meet the demand