

BEFORE THE KERALA STATE ELECTRICITY REGULATORY COMMISSION

IN THE MATTER OF: Proposal to introduce power restriction to all HT&EHT consumers including Bulk Supply to other Licensees and LT consumers of the State.

PETITIONER: Kerala State Electricity Board
Vydyuthi Bhavanam, Pattom,
Thiruvananthapuram - 695 004

The petitioner named above respectfully submits as under:

1. The power situation in the State has become most critical due to the combined impact of the following reasons.
 - (a) Unanticipated increase in power consumption
 - (b) High cost of power purchase not matched by tariff
 - (c) Below normal availability from CGS
 - (d) Non availability of power in the short-term market
 - (e) Highly volatile power market
 - (f) Rise in energy demand in the neighboring states
 - (g) Board's critical financial position
2. Due to the above factors, KSEB find it difficult to meet the emerging power demand in the State and looking various options to reduce the energy demand by introducing power cut, load shedding, power restrictions etc in the coming months of April and May-2010. However, considering the SSLC and other public examination scheduled during the month of March-2010, KSEB not proposed any load shedding or power restrictions during the month of March-2010.
3. Inorder to appraise the situation with major consumers, KSEB had a discussion with the representatives of the HT&EHT consumer, LT industrial consumers and other bulk consumers on 20th March-2010. The industrial consumers in general agrees for power restrictions instead of powercut. They also agreed to charge the excess consumption at the actual cost of additional power purchase based on marginal cost principles. Considering the alarming power situation clubbed with the critical financial position of the Board, the meeting recommended to approach the Hon'ble Commission to get approval for imposing load shedding and power restrictions with effect from 1st April-2010.

- A detailed appraisal on the emerging power situation in the State is given below.

Review of Electricity Demand

- The energy demand and peak demand in the State has shown an exorbitant increase during this year when compared to last year. During the past, the average annual increase in energy and peak demand was about 7%. But, this year the energy demand had increased by about 15% and the peak demand by about 10 to 24% over last year. This trend may likely to continue in the coming months of April and May-2010.
- A comparison of the increase in energy and peak demand in the State since August-2009 is given below.

Table-1. Comparison of Energy Demand (MU per day)

Month	2008-09	2009-10	% of increase	Remarks	
Aug	39.65	45.48	14.70	Actual	
Sep	40.85	45.67	11.79		
Oct	41.00	46.83	14.23		
Nov	42.24	46.64	10.40		
Dec	42.22	48.44	14.72		
Jan	42.07	48.35	14.94		
Feb	44.64	51.47	15.28		
Mar (up to 18th)	46.90	53.50	14.08		
April	48.27	54.06	12.00		Anticipated
May	48.00	53.76	12.00		

Table-2 Comparison of Peak Demand (MW)

Month	2008-09	2009-10	% of increase	Remarks	
Aug	2236.64	2775.00	24.07	Actual	
Sep	2453.20	2809.00	14.50		
Oct	2457.34	2867.00	16.67		
Nov	2377.10	2911.00	22.46		
Dec	2547.01	2868.00	12.60		
Jan	2357.18	2965.00	25.79		
Feb	2433.76	2920.00	19.98		
Mar (up to 18th)	2764.70	2998.00	8.44		
April	2799.00	3022.92	8.00		Anticipated
May	2852.00	3080.16	8.00		

- With the present trend of increase in energy and peak demand, the average demand expected during April and May -2010 is about 54.00 MU per day and peak demand is 3080 MW respectively. With the present availability of energy and its cost from the available sources including

hydel, allocation from CGS, liquid fuel stations, power traders and energy exchange, it may be difficult to meet the emerging power demand without causing huge additional financial liability on KSEB. The energy availability from different sources is discussed below.

Review of Energy availability

(a) Hydel

8. The total storage in the KSEB reservoirs as on 22-03-2010 is 1867.22 MU only, which is about 46% of the total storage capacity. But, the storage position of Idukki, the major reservoir contributing 52% of the storage facility is only 38.6%. KSEB has to conserve atleast 550 MU as on 1st of June-2010 to meet any contingency likely to arise due to delay in onset of monsoon in the State. The average summer inflow received during this year is about 2.2 MU per day only. With this trend, the average summer flow expected from 22nd March to 31st May-2010 is about 154 MU. Considering all these, the average generation possible from hydel plants is about 21.0 MU per day till the end of May-2010.
9. Considering the scheduled maintenance and limited storage facility in the run-off-the river and medium storage plants (except Idukki, Sabarigiri, Idamalayar and Sholayar) the peak availability from hydel sources including the Kuttiadi Addl Exten-100 (MW) (which is scheduled to start commercial operation by end of March-2010) is about 1600 MW only.

(b) Allocation from CGS

10. The present average energy availability from CGS at Kerala periphery (excluding PGCIL losses) is about 19.5MU per day against the previous year availability of 22 MU per day and the average power availability at about 850 MW. The average cost of energy from CGS including wheeling charge is Rs 2.10 per unit only. i.e, the average cost of power purchase from CGS is about Rs 4.21 crore per day.

(c) Summary of the energy demand and availability

11. The total energy availability from hydel and CGS for the month of April and May-10 is about 40.50 MU per day and the power availability to meet the peak demand from Hydel and CGS is about 2450 MW. The summary of the energy demand, availability from hydel, CGS and the balance to be procured from high cost sources including Liquid Fuel Stations, energy exchanges and traders are given below.

Table-3. Anticipated Demand and Availability for the month of April and May-2010

Anticipated Demand	(MU)	54.00
Availability		
(a) Hydel	(MU)	21.00
(b) CGS at KSEB periphery	(MU)	19.50
(c) Balance to be met from Liquid fuel stations , traders, Power Exchange	(MU)	13.50

12. In order to meet the anticipated electricity demand for the month of April and May-2010, KSEB has to procure about 13.50 MU per day (and also 630MW) from liquid fuel stations, energy exchange, traders etc.

(d) Energy availability and cost of power from Liquid Fuel stations.

13. The average energy availability and variable cost of liquid fuel stations in the State is given below.

Table-4. Energy availability and cost of energy from liquid fuel stations

Station	Capacity available	Energy availability	Average variable cost	Daily power purchase cost (if schedule as per availability)
	(MW)	(MU per day)	(Rs/unit)	(Rs.Cr per day)
RGCCPP- Kayamkulam	170	3.96	7.48	2.96
BSES	157	3.65	7.37	2.69
KPCL	13	0.30	7.88	0.24
BDPP	80	1.00	7.53	0.75
KDPP	90	1.50	7.22	1.08
Total	510	10.42		7.73

Based on the present variable cost, the average power purchase cost to procure 10.42 MU from liquid fuel stations would be about Rs 7.73 crore per day (Rs 232 crore per month).

14. It may be noted that, the price of liquid fuels in the international market is showing an increasing trend. Also, with recent hike in excise duty on petroleum fuels in the Central Government Budget for 2010-11, the price of LSHS and Naphtha is likely to increase by another Rs 1000 per metric tone and this may cause an additional increase in the variable cost by 20 paise per unit. The rate of BSES noted above is based on the weighted average cost fuel including old stock. The variable cost based on present fuel cost is about Rs 8.10 per unit.
15. Considering the high cost of energy from liquid fuel stations, during the period up to March-2010, KSEB tried to limit the schedule from liquid fuel stations to the level of 6 to 6.50 MU per day and substituted the

balance with comparatively cheaper energy then available from energy exchange, traders etc. However, with the emerging power demand and rise in the price of energy in the short-term market including energy exchanges and traders, there is remote possibility to get energy at cheaper rates to replace the high cost energy from liquid fuel stations. The details are discussed below.

(e) Possibility of energy procurement from Energy Exchange, traders etc.

16. As stated earlier, due to the exorbitant price of liquid fuel stations, KSEB has been exploring the possibility of purchasing energy through Energy Exchange, traders, UI etc. Till March-2010, KSEB was able to procure energy through traders and exchange at a rate much less than the cost of liquid fuel stations.
17. During the period from Aug-09 to Feb-10, KSEB was able to procure about 3.35 MU per day from traders, energy exchange, UI etc at an average rate of Rs 3.50 per unit, i.e, about half the cost of energy from liquid fuel stations. Further, for the month of March-2010, KSEB had issued LOI for firm purchase of about 200MW at an average rate of about Rs 4.12 per unit. However, due to exorbitant price hike in the short-term market, M/s Reliance has backed out from the contract for supplying 98MW of RTC power at an average rate of Rs 4.18 per unit for the month of March-2010 by paying a penalty of Rs 1.00/unit . Aggravating the situation further, M/s LANCO trader also backed out from the contract of supplying 29MW of 19:00 hour during this month paying compensation of Rs 1.00 per unit. This has resulted KSEB to schedule power from BSES plant also to meet the emerging power demand of the State. The likely financial impact of scheduling power from costly thermal sources including liquid fuel stations, traders, energy exchanges etc are for the month of March-2010 is given below.

Table-5. Additional financial liability for procuring power from thermal sources (other than CGS) for the month of March-2010

Sl No	Source	Approved by KSERC			Actuals			Addl Liability	
		Qunatity	Variable Cost		Qunatity	Variable Cost		Excess quantity (MU)	Amount (Rs.Cr)
		(MU)	(Rs/ kWh)	Amount (Rs.Cr)	(MU)	(Rs/ kWh)	Amount (Rs.Cr)		
1	RGCCPP- Kayamkulam	93.00	4.75	44.18	120.90	7.48	90.43	27.90	46.26
2	BSES- Kochi	89.90	4.75	42.70	32.00	7.37	23.58	-57.90	-19.12
3	KPCL	11.55	4.85	5.60	7.50	7.88	5.91	-4.05	0.31
4	BDPP	15.50	4.85	7.52	36.89	7.53	27.78	21.39	20.26
5	KDPP	37.20	4.85	18.04	46.50	7.22	33.57	9.30	15.53
6	Power Exchange	0.00	0.00	0.00	13.50	7.60	10.26	13.50	10.26
7	Traders	0.00	0.00	0.00	81.70	5.50	44.94	81.70	44.94
	Total	247.15		118.04	338.99		236.47	91.84	118.43

18. At present, the price in the energy exchange has shoot up more than Rs 8.00 per unit. It is expected that, when the summer got intensified in the Northern Region, the price of energy exchange is likely to go up further. During April and May last year, the average rate of energy transacted through IEX was Rs 10.10 and the same through PXIL was Rs 10.18 per unit. During certain days, the price was as high as Rs 14.90 per unit. Since there is no ceiling on the clearing price of energy transacted through energy exchange, the prices are likely to increase further during this year with increase in energy demand.
19. As per the Budget 2010-11, the Central Government has proposed to impose 10% service tax on transaction through Electricity Exchanges. This may lead to further increase in prices of electricity procured through energy exchanges.
20. Considering the excessive variable cost of liquid fuel stations and increase in the trend of energy price through energy exchanges, KSEB has invited tenders for the purchase of 100MW of RTC power (0:00 hours to 24:00 hours) for the month of April-2010. But the offers received was totally discouraging and most of the traders offered only a nominal quantum of less than 10MW and the rates offered were much higher than the present price of liquid fuel stations. The rate of the lowest offer at KSEB periphery was Rs 7.34 per unit for RTC power and Rs 7.11 per unit for 19:00 hours duration (excluding peak). KSEB has issued LOI to the lowest trader, but due to the daily increase in the price of energy in the short term market, the trader is not entering into contract with KSEB.

Options available to meet the emerging power situations in the months of April and May-2010.

21. Considering the increasing trend of energy demand and the exorbitant price hike of liquid fuels and energy prices in the short term markets and resulting additional financial liability and critical financial position of the Board, KSEB has to limit the energy consumption by 6.50 MU to 7 MU per day, so that in addition to hydel and CGS, the additional procurement from liquid fuel stations, traders and exchange can be limited to about 7MU per day. The options left before KSEB to reduce the energy consumption are :
 - (a) Impose power cut to the tune of 3 hours per day during day time and ½ hour cyclic load shedding during evening peak hours.
 - (b) Procure the high cost energy from all available sources including liquid fuel stations, traders and exchange and to supply to the consumers at the cost of KSEB. But the present financial position of the Board do not allow this.

- (c) Impose power restrictions including load shedding so that, KSEB can limit the energy procurement from costly sources to the limited extent and as done during 2008-09, KSEB shall procure and supply energy to those consumers who require power over restriction at the actual cost of additional purchase on marginal cost principles.
22. As stated earlier, KSEB had a discussion with the representatives of the HT&EHT consumers and LT industrial consumers on 20th March-2010 where an appraisal of the emerging power crisis in the State was done. The industrial consumers in general agrees for power restrictions along with load shedding instead of powercut. They also agreed to charge the excess consumption at the actual cost of additional power purchase based on marginal cost principles. Hence, out of the above options given under para 20 (a),(b) and (c), KSEB recommends for power restriction to all LT, HT & EHT consumers as detailed below to reduce the energy consumption for the month of April and May-2010.
23. If 25% restriction is imposed on all HT&EHT consumers including Bulk supply to licensees, the average reduction in energy sale would be 2.79 MU per day and corresponding reduction at consumption end would be 3.04 MU per day. The details are given below.

Table-6. Expected reduction in energy consumption by imposing 25% restriction

Category	Annual Consumption (MU)	Restriction proposed	Expected reduction in sale (MU/day)	Expected reduction in consumption (MU/day)
HT-I Industrial	1485	25%	1.02	1.13
HT-II	119	25%	0.08	0.09
HT-III	10	25%	0.01	0.01
HT-IV	723	25%	0.50	0.55
EHT-I	354	25%	0.24	0.26
EHT-II	804	25%	0.55	0.58
Bulk supply		25%	0.00	
11 kV	90	25%	0.06	0.07
66 kV	38	25%	0.03	0.03
110kV	289	25%	0.20	0.21
Railway traction	168	25%	0.12	0.12
Total	4080		2.79	3.04

24. Further as was done during 2008-09, KSEB recommends to impose restriction on domestic consumers to limit the monthly consumption by 200 units and there will be net reduction of 1.27 MU per day by this. It may be noted that, out of the total 78.5lakhs consumers, about 2.55 lakhs domestic consumers only affected with the proposed restriction on domestic category. The details are given below.

Table-7. Expected reduction by restricting domestic consumption by 200 units per month

Category	Number of consumers	Cumulative	Annual Consumption	Cumulative	Restriction proposed	Expected energy reduction per day	Expected energy reduction at consumption end
	(Nos)	(Nos)	(MU)	(MU)		(MU/day)	(MU/day)
Domestic							
0-40	3102251	3102251	954	954	No restriction		
41-80	2489655	5591906	1893	2847			
81-120	1099532	6691438	1448	4295			
121-150	541912	7233350	932	5227			
151-200	365202	7598552	841	6068			
201-300	192418	7790970	586	6654	Restriction on consumption above 200 units per month	0.34	0.41
301-500	51050	7842020	261	6916		0.38	0.46
Above 500	11781	7853800	148	7064		0.33	0.40
Sub total	7853800		7064			1.05	1.27

25. Further, KSEB recommends to introduce 25% restriction on all LT consumers including LT-II, LT-IV Industrial, LT-VI (A), VI(B), VI(C), LT-VII (A), LT-VII (B) and LT-VII(C), as was done during 2008-09. The LT-V (agriculture), LT-VI(D) Orphanages etc and Public lighting etc may be exempted from power restriction. The expected reduction in energy consumption by imposing restriction to these categories is about 2.56 MU per day. The details are given below.

Table-8. Expected reduction by imposing 25% restriction on LT consumers

Category	Number of consumers	Annual Consumption	Restriction proposed	Expected reduction in sale	Expected reduction in consumption
	(Nos)	(MU)		(MU/day)	(MU/day)
LT-II	716	6.69	25%	0.00	0.01
LT-IV Industrial	124364	1211.00	25%	0.83	1.00
LT-V Agriculture	442693	250.00		Nil	
LT-VI (A)	127569	149.63	25%	0.10	0.12
LT-VI (B)	79974	235.80	25%	0.16	0.19
LT- VI (C)	32213	128.81	25%	0.09	0.11
LT- VI(D)	1629	2.40		Nil	
LT-VII (A)	449431	861.50	25%	0.59	0.71
LT-VII (B)	743116	425.94	25%	0.29	0.35
LT- VII (C)	3270	81.93	25%	0.06	0.07
Public Lighting	2729	325.00		Nil	
Total		3678.70		2.12	2.56

26. Thus with the introduction of 25% restriction on all HT&EHT consumers including Bulk supply to licensees, restricting domestic consumption by 200 units per month and 25% restriction on LT-II, LT-IV industrial, LT- VI (A), VI(B), VI(C), VII(A), VII(B) and VII(C) categories, the energy consumption in the state can be reduced by 6.87 MU per day. The details are given below.

Table-9. Expected reduction in energy consumption by imposing load shedding and power restrictions

Sl No	Particulars	Expected reduction in sale	Expected reduction in consumption
		(MU/day)	(MU/day)
(i)	By imposing 20% restriction on HT&EHT consumers including licensees	2.79	3.04
(ii)	By restricting domestic consumption by 200 units per month	1.05	1.27
(iii)	By imposing 20% restriction on other LT consumers (including LT-II, LT-IV, LT-VI(A), LT-VI(B), LT-VI (C), LT-VII (A), LT-VII(B) and LT-VII (C)	2.12	2.56
	Total	5.97	6.87

27. At the expected cost of energy purchase at an average rate of Rs 7.50 per unit, the net reduction in power purchase cost by reducing the consumption by 6.87 MU per day would be Rs 5.15 crore per day. But, KSEB would have a revenue loss of about 2.37 crore per day due to not supplying 5.97 MU per day by imposing power restriction to the consumers. Thus the net reduction in financial liability by imposing power restriction would be about Rs 2.78 crore per day, i.e, Rs 83.40 crore per month due to imposing 25% restriction to all HT&EHT consumers, restricting domestic consumption by 200 units per month and also by imposing 25% restriction on LT-II, LT-IV, LT-VI(A), LT-VI(B), LT-VI (C), LT-VII (A), LT-VII(B) and LT-VII (C) consumers.
28. As was done during the year 2008-09, the consumers are allowed to consume energy over the restriction, but the excess consumption may be allowed to charge at actual cost of additional power purchase necessitated on account of such excess consumption based on marginal cost principles. It is further requested that, the T&D loss on account of such excess consumption may also please be passed on to the consumers. The exact T&D loss at different voltage levels is not available. However, for arriving the rate of excess consumption at different voltage levels, the loss at EHT side (66kV and above) may be taken as 6%, HT side (11 kV) at 10% and LT side as 20%.
29. Hence, considering the emerging increase in power demand and also due to the exorbitant price of energy from liquid fuel stations, energy exchange and traders and resulting additional financial liability on KSEB, it is recommended to impose following restrictions to reduce the power consumption during the month of April and May-2010 or till the power position improves.
- (i) Impose a restriction of 25% on energy consumption to all HT&EHT consumers including bulk consumers.

- (ii) Restrict the consumption of domestic consumers by 200 units per month.
- (iii) Impose 25% restriction on LT-II, LT-IV industrial, LT- VI (A), VI(B), VI(C), VII(A), VII(B) and VII(C) categories of consumers.
- (iv) Allow the consumers to consume energy over restriction, but the excess consumption shall be allowed to charge at actual cost of additional power purchase based on marginal cost principles including T&D losses. The indicative T&D loss for arriving the rate of excess consumption may be adopted as 6% at EHT side, 10% at HT side and 20% at LT side.

Prayer

Considering the emerging increase in power demand , exorbitant price hike of energy from liquid fuel stations, energy exchange and traders and resulting additional liability on generation and power purchase, KSEB recommends to introduce following measures to restrict the electricity demand in the State of Kerala for the month of April and May-2010 or till power position improves.

- (i) A restriction 25% on energy consumption may be imposed on all HT&EHT consumers including bulk supply to other licensees.
- (ii) The consumption of the domestic consumers may be restricted to 200 units per month. The domestic consumers with monthly consumption upto 200 units may be exempted from power restriction.
- (iii) Impose a restriction of 25% on LT-II, LT-IV industrial, LT- VI (A), VI(B), VI(C), VII(A), VII(B) and VII(C) categories of consumers. LT-V agriculture, LT-VI(D) orphanages etc, public lighting etc may be exempted from power restrictions.
- (iv) All the consumers may be allowed to consume energy over restriction, but the excess consumption may be charged at the actual cost of additional power purchase based on marginal cost principles including T&D loss. The indicative T&D loss for arriving the rate of excess consumption may be adopted as 6% at EHT side, 10% at HT side and 20% at LT side.
- (v) The above measures may be approved for introduction with effect from 1-04-2010.

CHAIRMAN
KSEB