

Before the  
**MAHARASHTRA ELECTRICITY REGULATORY COMMISSION**  
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**Case Nos. 77 of 2008 and 78 of 2008**

In the matter of  
**Petition of MSEDCL for revision of the Principles and Protocols of Load Shedding hours in  
the State of Maharashtra**  
[Case No. 77 of 2008]  
and  
**MSEDCL Petition for revision of the Principles and Protocols of Load Shedding hours in the  
State of Maharashtra to be implemented from September 2, 2008 on a temporary basis.**  
[Case No. 78 of 2008]

Shri A. Velayutham, Member  
Shri S. B. Kulkarni, Member

**ORDER**

**Dated: November 28, 2008**

The Maharashtra State Electricity Distribution Company Limited (MSEDCL) submitted a Petition under affidavit before the Commission on September 11, 2008, seeking revision of the Principles and Protocols of Load Shedding hours (PPLS) in the State of Maharashtra, which was numbered as Case No. 77 of 2008.

2. MSEDCL, under its Petition in Case No. 77 of 2008, prayed as under:
  - *“Examine the concerns expressed by the Petitioner for a favourable dispensation and consider their submissions with reference to the Commission’s Order dated 2nd September, 2008.*
  - *Condone any inadvertent omissions / errors / shortcomings and permit MSEDCL to add/change/modify / alter this filing and make further omissions as may be required at a future date.”*
3. MSEDCL also submitted another Petition under affidavit before the Commission on the same day, i.e., September 11, 2008, seeking revision of the load shedding hours in the State of Maharashtra to be implemented from September 2, 2008 on a temporary basis, which was numbered as Case No. 78 of 2008.



4. MSEDCL, under its Petition in Case No. 78 of 2008, prayed as under:
- “Examine the concerns expressed by the Petitioner for a favourable dispensation,
  - Approve the Revised Protocol of Load Shedding as submitted above (Circular No.20) which is in operation from 2nd September, 2008.
  - Condone any inadvertent omissions / errors / shortcomings and permit MSEDCL to add/change/modify / alter this filing and make further omissions as may be required at a future date.”
5. MSEDCL, in its Petition in Case No. 77 of 2008, submitted as under:
- (i) MSEDCL is presently facing an unprecedented power crisis, due to rise in demand, inconsistent generation from Ratnagiri Gas and Power Private Limited (RGPPL), restriction on usage of Koyna water, much lower than normal rainfall, lower generation availability from Maharashtra State Power Generation Company Limited (MSPGCL)/Central Power Sector Units (CPSUs) plants due to planned overhauls of MSPGCL/CPSU plants, etc.
  - (ii) Load Shedding of the order of 4000 MW to 5900 MW (90 -110 MU/day) including distress Extra High Voltage (EHV) load shedding and Under Frequency Relay (UFR) operation has been implemented in the month of July and August 2008, to restrict overdrawal from National grid.
  - (iii) During the first week of July 2008, due to delayed rains and reduction in availability from RGPPL and MSPGCL/CPSUs, the gap between demand and supply had increased leading to heavy EHV openings, causing unrest. MSEDCL undertook distress load shedding in addition to planned load shedding, to meet the shortfall and restrict over-drawal from the National grid.
  - (iv) MSEDCL had filed the Petition dated August 5, 2008 in Case No. 57 of 2008 in the matter of seeking increase in load shedding hours in MSEDCL licence area as a temporary measure. MSEDCL withdrew the Petition during the hearing on August 20, 2008, with liberty to file a fresh Petition along with the additional information.
  - (v) The Commission, in its Order in Case No.57 of 2008 dated September 2, 2008 has sought additional information from MSEDCL, which has been complied as under:

**a) Compliance with the load shedding protocol specified by the Commission**

The Commission vide its Orders dated February 20, 2007 and April 23, 2007 had approved the Principles and Protocol for Load Shedding (PPLS). Thereafter, MSEDCL had to revise the PPLS due to various uncontrollable factors as stated above. The revisions in the load shedding protocol done by MSEDCL are given in Table No. 1 and Table No. 2 below, for which Circular No.s 10 to 20 were issued on various dates:.



**Table 1: Principles and Protocols (from May 2008 to July 2008)**

(hours of load shedding per day)

Date	A	B	C	D
<b>Urban &amp; industrial Agglomeration</b>				
13.05.08 (Circular No. 10)	3.00	3.45	4.30	5.15
09.07.08 (Circular No. 11)	3.45	4.30	5.15	6.00
20.07.08 (Circular No. 12)	4.45	5.30	6.15	7.00
24.07.08 (Circular No. 13)	5.45	6.30	7.15	8.00
<b>Other region</b>				
13.05.08	5.00	5.30	6.00	6.30
09.07.08	6.00	6.30	7.00	7.30
20.07.08	7.00	7.30	8.00	8.30
24.07.08	8.00	8.30	9.00	9.30
<b>Ag dominated</b>				
13.05.08	11.00	11.30	12.00	12.00
09.07.08	12.00	12.00	12.00	12.00
20.07.08	13.00	13.00	13.00	13.00
24.07.08	14.00	14.00	14.00	14.00
<b>Industrial Staggering Hours</b>				
13.05, 09.07 & 20.07.08	16 hours/ week excluding express feeders for Cont. Process Industries			
24.07.08	40 hours/ week excluding express feeders for Cont. Process Industries			
25.07.08	34 hours/ week excluding express feeders for Cont. Process Industries			

MSEDCL vide Circular No. 18 dated August 13, 2008 implemented PPLS in six groups in accordance with Commission's Tariff Order dated June 20, 2008, as given below:



**Table 2: Principles and Protocols (August to September 2008)**

(hours of load shedding per day)

Date	A	B	C	D	E	F
<b>Other Regions</b>						
13.08.08 (Cir. 18)	3.45	4.30	5.15	6.00	6.45	7.30
27.08.08 (Cir. 19)	4.45	5.30	6.15	7.00	7.45	8.30
02.09.08 (Cir.20)	5.45	6.30	7.15	8.00	8.30	8.30
<b>Ag Dominated Regions</b>						
13.08.08 (Cir. 18)	12.00	12.00	12.00	12.00	12.00	12.00
27.08.08 (Cir.19)	13.00	13.00	13.00	13.00	13.00	13.00
02.09.08 (Cir.20)	14.00	14.00	14.00	14.00	14.00	14.00
<b>Industrial Staggering</b>						
13.08.08 (Cir.18)	16 hours/ week excluding express feeders for Cont. Process Industries					
27.08.08 (Cir.19)	16 hours/ week excluding express feeders for Cont. Process Industries					
02.09.08 (Cir.20)	Staggering to MIDC Industrial area of 34.00 hours per week					
	3- phase availability to schemes 7 hours.( Single phasing & Ag feeder separation)					
	10% power cut for all Government offices, streetlights, Municipal Corporations, shopping malls and IT Industries					
	No power supply to hoardings in MSEDCL area.					
	Non-Continuous process Industries on Express feeders to observe 24 Hours per week staggering.					
	Continuous process Industries on Express feeders to reduce their consumption by 10 % using captive or by following economy measures.					

MSEDCL submitted that apart from the primary reasons of prevailing supply and demand gap, the specific reasons for additional planned load shedding in July/August 2008 are briefly as under:

- (a) Steep periodic increase in demand (seasonal agricultural requirements due to lower rainfall)
- (b) Forced outage due to breakdowns in MSPGCL/CPSUs/RGPPL Stations



- (c) Planned outages for routine maintenance including Renovation and Modernisation (R&M) and Life Extension Programmes by MSPGCL and CPSUs
- (d) Restrictions on usage of water (Koyna Hydro Generation is limited to the extent of 67.5 TMC).
- (e) Restriction on availability of Gas (Uran Gas Turbine Project)
- (f) Frequency Correction Factor (For eg. If the frequency drops down from 49.5 Hz to 48.5 Hz, the online capacity (OLC) of the generators reduces, resulting into additional shortfall for the distribution utility).

Moreover, the load relief from feeders under planned load shedding is varying with the seasonal changes as well as with time factor. As such, considering the dynamic nature of the system, Maharashtra State Load Despatch Centre (MSLDC) has instructed for load shedding at EHV level, even when the demand-supply gap might be lower than expected gap as per load shedding (LS) protocol.

Further, MSEDCL submitted that it is bound to take action as per oral and standing instructions of State Load Despatch Centre (SLDC)/Regional Load Despatch Centre (RLDC) under Section 33 of the Electricity Act, 2003 (EA 2003) to take all necessary and emergency measures to reduce over-drawal and maintain grid security. Therefore, because of the dynamic situation of mismatch between generation and load, whenever there is over-drawal forcing SLDC/RLDC to open EHV lines and thereby avert threat to grid security despite broadly observing the load shedding protocol, MSEDCL has to urgently enhance/adjust load shedding to maintain grid security as per instructions of RLDC/SLDC.

Any load shedding programme is dynamic in nature and as such will undergo changes in view of system conditions. The system stability being of paramount importance, at times heavy load shedding is resorted to by opening EHV lines at EHV sub-stations, which are controlled by the Maharashtra State Electricity Transmission Company Limited (MSETCL) and is being carried out under directions of SLDC, Kalwa. In order to reduce the difficulties of common consumers, even the schedule of opening these EHV lines is worked out meticulously (rotational programme of 21 groups of EHV lines, all over Maharashtra) and is implemented during emergencies.

The primary reasons for this emergency load shedding, i.e., opening of EHV lines are as under:

- (a) Low generation in MSPGCL and higher demand due to lower rainfall and increased agricultural and other consumer demand
- (b) Restriction of transmission corridor
- (c) Over drawal by the other constituents causing low frequency



- (d) Lower availability of bilateral power as compared to contracted power
- (e) Low generation in the region/State
- (f) Tripping of major transmission lines/Units

***(b) and (c) Day-wise demand and Unit-wise supply for past periods till present***

The demand-supply position in the State for the months from April – August over the last few years, viz., FY 2005-06 to FY 2008-09, is tabulated as under:

**Table 3: Comparative Statement of Demand, Availability and Shortfall in MW**

Month & year	Morning Peak			Evening Peak		
	Demand	Availability	Shortfall	Demand	Availability	Shortfall
<b>2005-06</b>						
<b>April 2005</b>	11751	8168	3583	12838	9153	3685
<b>May 2005</b>	11330	8357	2973	12987	9372	3615
<b>June 2005</b>	11111	8667	2444	12731	8865	3866
<b>July 2005</b>	10093	7459	2634	10909	8694	2215
<b>August 2005</b>	9951	7720	2231	11049	8578	2471
<b>2006-07</b>						
<b>April 2006</b>	13439	9308	4131	13484	9811	3673
<b>May 2006</b>	12740	8821	3919	13344	9912	3432
<b>June 2006</b>	11787	8848	2939	12032	9774	2258
<b>July 2006</b>	10135	7876	2259	11181	8993	2188
<b>August 2006</b>	10565	8736	1829	11545	10342	1203
<b>2007-08</b>						
<b>April 2007</b>	15324	8521	6803	15347	9834	5513
<b>May 2007</b>	13853	8966	4887	14819	10177	4642
<b>June 2007</b>	11832	8935	2897	12658	9037	3621
<b>July 2007</b>	11060	8104	2956	12791	8689	4102
<b>August 2007</b>	11563	8825	2738	13075	9598	3477
<b>2008-09</b>						
<b>April 2008</b>	13651	9680	3971	14859	10087	4772
<b>May 2008</b>	13116	10207	2909	14192	10297	3895
<b>June 2008</b>	12670	9336	3334	14210	10165	4045
<b>July 2008</b>	14013	8125	5888	14625	8668	5957
<b>August 2008</b>	13039	8533	4506	13823	9175	4648



It is apparent from the above table, that the capacity addition has not taken place in line with demand growth resulting in higher shortfall as compared to the same month of previous years.

**d) Actual supply in this financial year, and reasons for non-procurement**

The summary of energy required for the period from April 2008 to August 2008 as per MSEDCL's APR Petition, as approved in the APR Order, and actual energy received, is tabulated in the table below:

**Table 4: Comparison of Energy Availability in MU**

Energy Availability for FY 2008-09 as per Petition, Order and Actuals						
Energy Availability	April-08	May-08	June-08	July-08	August-08	Total
<b>Petition</b>	7114	7114	7114	7114	7114	35570
<b>Approved</b>	7402	7630	7715	7376	7257	37380
<b>Actual</b>	6656	6967	6074	5896	5272	30865
<b>Diff b/w petition &amp; actual</b>	458	146	1040	1218	1842	4704
<b>Diff b/w approved &amp; actual</b>	746	663	1641	1480	1985	6515

The major reasons for lower availability of power are forced outages of MSPGCL Stations, planned overhauls, lower availability from Central Generating Stations (CGS), inconsistent generation from RGPPL, and reduced over-drawal by MSEDCL.

**e) Justification for load shedding undertaken on specific days**

The instances where load shedding had to be carried out more than planned schedule (ranging from 3700 to 6000 MW) for the period from June 2008 to August 2008 are tabulated as under:

**Table 5: Instances of Higher Load Shedding (June to August 2008)**

Date	Morning Peak			Evening Peak		
	Availability	Load Shedding	Demand	Availability	Load Shedding	Demand
	MW	MW	MW	MW	MW	MW
2-Jun-08				10165	4045	14210
21-Jun-08				9368	3770	13138
22-Jun-08				9361	3952	13313
24-Jun-08				9484	3967	13451
5-Jul-08	7551	4062	11613			



Date	Morning Peak			Evening Peak		
	Availability	Load Shedding	Demand	Availability	Load Shedding	Demand
	MW	MW	MW	MW	MW	MW
8-Jul-08	7489	4107	11596			
9-Jul-08	7622	4167	11789	9081	4010	13091
13-Jul-08				9161	4231	13392
14-Jul-08	8381	4183	12564	9448	4216	13664
15-Jul-08	8728	4158	12886	9238	4981	14219
17-Jul-08				9127	4508	13635
18-Jul-08	7909	4480	12389	8930	4277	13207
19-Jul-08	8265	5108	13373	8737	4954	13691
20-Jul-08	8798	4683	13481	9300	4177	13477
21-Jul-08	8685	4369	13054	9463	4100	13563
22-Jul-08	7862	5286	13148	9375	4734	14109
23-Jul-08	8125	5888	14013	8668	5957	14625
23-Aug-08				9479	4055	13534
24-Aug-08	8533	4506	13039			
25-Aug-08	7990	4431	12421			
26-Aug-08	7793	4070	11863			
27-Aug-08	8278	4334	12612			
28-Aug-08	7655	4845	12500	9175	4648	13823
29-Aug-08	8188	4028	12216	9156	4160	13316
30-Aug-08	8326	4742	13068			

The reasons for higher demand – supply gap and unplanned load shedding/EHV openings are:

- (i) The State has not received expected rainfall and also, due to the delay in monsoon, the requirement of power was at an all time high, as compared to normal monsoon season. After August 13, 2008, average rainfall in Maharashtra State reduced and MSEDCL's demand increased suddenly from 10000 to 13500 MW and consequently, shortfall increased up to 4400 MW, that too at low frequency. Hence, the existing protocol was insufficient to mitigate the demand-supply gap, which resulted in EHV opening.
- (ii) RGPPL generation is inconsistent and varies from 0 MW to 600 MW against net capacity of 2150 MW (maximum availability till date is approximately 1200 MW). The net quantum of power supplied to MSEDCL by RGPPL from April to August 2008 is approximately 2200 MU.



- (iii) The demand has risen by 1800 MW as compared to the same period in the previous year.
- (iv) Withdrawal of major MSPGCL Units for capital/annual overhaul resulting in lower availability by about 1600 MW.
- (v) The limitation on the use of water from Koyna has also contributed to the increase in the gap, as already 18.622 TMC water has been utilised till August 31, 2008 against the yearly allocated quota/availability of 67.5 TMC.
- (vi) Further, the national grid is operating continuously at low frequency and no substantial power is available from National grid.

***f) Justification for the occasions of underdrawal by MSEDCL***

MSEDCL submitted the details of instances of under-drawal by MSEDCL at the time of EHV openings and UFR operation for the months of July 2008 and August 2008.

***g) Steps taken to enforce the load shedding protocol***

MSEDCL submitted that there have been instances of EHV openings and as a result load shedding had to be increased for a temporary period. The steps taken by MSEDCL to enforce/regulate the load shedding protocol are as follows:

- (i) The meeting of Divisional Commissioners, Police authorities, MSEDCL and MSETCL authorities was held on July 23, 2008 at Mantralaya under the Chairmanship of Hon. Chief Secretary, GoM and the following decisions were taken at Government level:
  - 10% power cut as compared to last year for all Government offices, Municipal Corporations/Municipalities/IT Industries/High tension consumers.
  - 20% power cut as compared to last year for Malls, Hoardings and street lights.
- (ii) In addition to above, MSEDCL issued Circular No. 20 dated August 30, 2008 as an emergency measure in order to control EHV openings. The additional salient features of the LS plan were:
  - 24 hours/week staggering day for non-continuous process industries connected on express feeders
  - 10% reduction in consumption for continuous process industries on express feeders
  - No power supply to hoardings in MSEDCL area.

After implementation of Circular No.13 dated July 24, 2008, there were no instances of EHV opening from July 25 to August 3, 2008. Similarly, after issue of Circular No.20 dated August 30, 2008, which was implemented from September 2, 2008, there have been no instances of EHV openings till the date of submission of Petition.

***h) Steps taken by MSEDCL for arresting non-compliance of load shedding protocol and efforts taken to give advance information to consumers regarding the load shedding undertaken by MSEDCL***



- (i) Every effort is being made to procure traded power from the grid. However, not much bilateral power is available in the National grid. MSEDCL also procures power from costly sources such as Kawas and Gandhar (RLNG), even at Rs.10.60 per unit.
- (ii) MSEDCL also tries to purchase costly un-requisitioned power from various power stations in the country to the maximum extent possible.
- (iii) MSEDCL also tries to procure power from the power exchanges, but is unable to do so due to higher rates.
- (iv) MSEDCL has also entered into various PPAs/LOIs with Generating Companies/Traders and has also undertaken competitive bidding process under Case-I and Case-II.

Further, MSEDCL has supported Zero Load Shedding (ZLS) Model in various parts of the State.

- (i) Similar to Pune, the other ZLS Models approved by the Commission are prevailing in the town/city of Baramati, Thane, Mulund, Bhandup and Vashi.
- (ii) In this scheme, the Interim Franchisee can approach MSEDCL and the Commission with such type of proposals to eliminate load shedding in the selected area. MSEDCL, on behalf of the Interim Franchisee, purchases the power and recovers the cost by way of levy called 'Reliability Charge'.
- (iii) The total requirement to mitigate load shedding as per the prevailing LS protocol from September 2, 2008 in Thane, Bhandup, Mulund, Navi Mumbai and Pune is 7.64 MU/day (~637 MW for 12 hours). In case the Interim Franchisee is not in a position to procure 100% power, the proportionate power received from the Interim Franchisee is supplied to the consumers of these areas and proportionately load shedding is reduced. The same was discussed and agreed in the meeting in Mantralaya on August 25, 2008 with Consumer Representatives.

MSEDCL submitted that whenever there is revision in the load shedding protocol, the same is informed to all Zones/Circles/Divisions and then these offices publish the detailed feeder-wise programme in their respective local newspapers and also display the same on the notice boards of these offices.

6. MSEDCL, in its Petition in Case No. 78 of 2008, submitted as under:

- (i) Load Shedding of the order of 4000 MW to 5900 MW (90 -110 MU/day including distress EHV load shedding and UFR operations) was being implemented in the month of July and August 2008. Also, UFR operations and EHV openings to restrict over-drawal from National grid were taking place round the clock, in the month of July and August 2008.



(ii) During the first week of July 2008, due to delayed rains and reduction in availability from RGPPL and MSPGCL/CPSUs, gap between demand and supply had increased leading to heavy EHV openings, causing unrest.

(iii) In order to control the EHV openings, planned load shedding hours had to be increased as a temporary measure. Daily EHV openings undertaken during the month of July 2008, August 2008 and September 2008 have been annexed along with the Petition.

(iv) The above situation in the State has led to severe discontent among the public due to frequent interruptions of power supply. MSEDCL's staff is facing public wrath and are being targeted by the public, whenever there is power interruption due to EHV openings. There have been many instances of mass attack, morchas, stone pelting, manhandling and abuse of MSEDCL's staff and the installations/property of MSEDCL have also been damaged.

(v) Despite various efforts put in by MSEDCL to meet the demand in the State, the growth in supply has not been sufficient to cater to the rising demand.

MSEDCL's further submissions on demand-supply position and reasons for higher load shedding are identical to the submissions made in Case No. 77 of 2008, and have not been reproduced here.

7. The Commission, vide its Notice dated September 15, 2008, scheduled a combined hearing in the matter on September 29, 2008 in respect of both the above matters, as the issues under the Petitions are identical, and directed MSEDCL to serve a copy of their Petitions along with accompaniments to the four authorised Consumer Representatives. Further, the Commission vide its letter to the Maharashtra State Load Despatch Centre (MSLDC) dated September 24, 2008, sought month-wise hourly data of demand, supply, gap, load shedding, grid frequency, etc., for the period from April 1, 2008 to September 15, 2008.

8. MSLDC, vide its letter dated September 25, 2008, submitted the month-wise hourly data for the period from April, 2008 to September 15, 2008 with the following particulars:

- (i) MSPGCL Total Generation
- (ii) Central Sector share (including bilateral for State)
- (iii) Central Sector receipt (including bilateral for State)
- (iv) Unscheduled Interchange
- (v) RGPPL generation
- (vi) TPCL Exchange
- (vii) MSEDCL load shedding details
  - a. Planned Load shedding
  - b. EHV Opening
  - c. Emergency EHV
  - d. Industrial Staggering



- (viii) MSEDCL Demand (including Load shedding)
- (ix) Grid Frequency

9. Shri Ponrathnam, as an intervenor in Case Nos. 77 and 78 of 2008 submitted vide his Application dated September 29, 2008, that under the EA 2003, it is the prime duty of the Distribution Licensee to provide uninterrupted power supply. He added that load shedding has not been specified under the EA 2003/Indian Electricity Rules, 1956/Electricity (Supply) Act, 1948/MERC Regulations. In the Tariff Orders, the Commission has categorically allowed MSEDCL to purchase expensive power from any source, in order to mitigate load shedding, and hence, the question of load shedding does not arise.

10. During the hearing held in the matter on September 29, 2008 at 15:00 hours in the Commission's office, Shri Vikas Singh, Senior Advocate, appeared for MSEDCL. Three authorised Consumer Representatives, viz., Prayas, Mumbai Grahak Panchayat, and Vidarbha Industries Association were also present during the hearing.

11. At the hearing, Shri Vikas Singh filed an additional affidavit. The Commission enquired regarding the intention of MSEDCL in filing additional affidavit at the last minute. Counsel stated that the additional affidavit contains additional information to assist the Commission in taking its decision.

12. Shri Vikas Singh submitted that MSEDCL is bound by the directives of SLDC and RLDC to undertake EHV opening; otherwise the grid will collapse due to demand-supply mismatch. The EHV opening results in additional hours of load shedding.

13. Shri. Vikas Singh submitted that there are two broad situations, which would result in the load shedding protocol not being followed, viz.,

- (a) Default on the part of MSEDCL, which would have to be dealt with differently
- (b) No default on the part of MSEDCL, yet, MSEDCL is unable to follow the load shedding protocol. Such a situation could arise under the following circumstances, viz.,
  - a. Improper implementation of the load shedding protocol, i.e., not shedding load of the desired quantum at the scheduled time for the specified region, or shedding higher or lower quantum;
  - b. Reduction in availability of supply, over which MSEDCL has no control, but is a default being passed on to the consumer through MSEDCL;
  - c. Default on the part of transmission licensee, which is a sister concern or constraints in the transmission corridor, over which MSEDCL has no control, and the erstwhile MSEB is responsible;
  - d. MSEDCL has not reduced the distribution losses to the extent specified by the Commission, and MSEDCL actually increases the loss.



14. The Commission opined that MSETCL should not be considered as sister concern but a separate transmission company, and MSEDCL has to adhere to its responsibility as a distribution licensee. The Commission enquired whether MSEDCL has raised the issue with MSLDC for justification for EHV opening or MSEDCL simply undertakes EHV opening whenever directed by SLDC.

15. The Commission further observed that these are all general problems, and the Commission is well aware of the issues involved. The first Petition under Section 23 of the EA 2003 in the context of load shedding was filed in the year 2004 by MSEDCL. From that time onwards, the demand-supply issues have been addressed. The Commission, through its various Orders on the subject over the last three years, has made it amply clear regarding the reasons for the load shedding and the methods to address the same. The Commission asked MSEDCL to give its reasons for not implementing the load shedding protocol approved by the Commission.

16. MSEDCL Counsel submitted that on Page 13 of the Commission's Tariff Order in Case 72 of 2008 dated June 20, 2008, the Commission visualised total availability of 90206 MU, comprising 51376 MU from MSPGCL, 22213 MU from CGS, 977 MU from Sardar Sarovar Project, 12851 MU from RGPPL, and 2789 MU from other sources. The Commission has also considered a certain month-wise availability. The Commission observed that the projections are based on the information submitted by MSEDCL. MSEDCL Counsel submitted that the Commission has unilaterally taken higher availability as compared to the availability projected by MSEDCL in its Petition, without giving any justification for the same.

17. MSEDCL Counsel submitted that in the month of April 2008, the power purchase quantum approved by the Commission was 7402 MU, whereas only 6801 MU was available. Similarly, in May 2008, approved power purchase quantum was 7630 MU against actual availability of 7312 MU, which indicates a shortfall of 8% and 4.6 % in April and May 2008, respectively. For the month of June 2008, 7715 MU of power purchase was approved against actual availability of 6404 MU, which is a shortfall of 17.3%. Similarly shortfall of 14.64% and 19.14% has been observed in July and August 2008. Shri. Vikas Singh stated that the availability of power is beyond MSEDCL's control, since MSEDCL has no control over the lower generation by the generators, including MSPGCL.

18. In summary, over the five-month period from April to August 2008, MSPGCL has given only 19232 MU as compared to approved quantum of 21406 MU, CGS have given 8605 MU as compared to approved quantum of 9255 MU, Sardar Sarovar has given 271 MU as compared to approved quantum of 407 MU, and RGPPL has given only 2185 MU as compared to approved quantum of 5354 MU, which is itself a shortfall of around 40%. On the other hand, MSEDCL has procured 2362 MU from other sources, which is more than double the quantum of 1162 MU approved by the Commission.



19. The Commission opined that it is the responsibility of the distribution licensee to take up the issue with the Generation Company for ensuring the availability of committed power. The Commission enquired regarding the reasons for shortfall in the generation capacity of MSPGCL. MSEDCL Counsel submitted that it has to be seen whether the Generating Company could have increased power generation, and they may have justifiable reasons for the lower generation. MSEDCL Counsel added that Chhattisgarh State is not releasing adequate water, because of which Sipat Plant is generating only upto 50% of its capacity. Further, MSEDCL had projected total availability of 35569 MU for the period from April to August 2008 in its APR Petition, whereas the Commission has, without any tangible basis, assumed an availability of 37410 MU for the same period. If the availability as projected by MSEDCL had been accepted by the Commission, the average shortfall per day would have only been to the tune of 505 MW; whereas on the assumption of availability by the Commission, the actual shortfall comes to 1302.47 MW per day. This extra 800 MW shortfall cannot in any manner be attributable to MSEDCL. Study of the projected availability of power for the period from April to August 2008 vis-à-vis the actual availability for the same period will reveal that while power availability on which MSEDCL had no control has gone down, the efforts of MSEDCL to arrange power from other sources has resulted in almost double the quantum of power purchase in the same period.

20. The Commission observed that MSEDCL has to propose the load shedding matrix for different scenarios of demand-supply gap, and should not deviate from the matrix, when the actual demand-supply gap is at the identified levels. Further, MSEDCL should inform the consumers well in advance regarding the changes in the local schedule of load shedding, enabling the consumers to plan their consumption.

21. MSEDCL Counsel submitted that the total demand of the State is increasing by 1800 MW annually, whereas the generation has not been improved by even 1 MW over the last three years. The Commission directed MSEDCL to submit the details of demand increase in the State over the last few years to substantiate this argument. Shri Vikas Singh stated that if the demand is 14000 MW and supply is 10000 MW, the gap works out to 4000 MW, and MSEDCL can manage additional shortfall in supply of around 200 to 300 MW within the same load shedding protocol, but if the additional supply shortfall is around 2000 MW, then MSEDCL has no choice but to approach the Commission for seeking approval for the revised load shedding protocol.

22. Shri. Vikas Singh submitted that MSEDCL has made every effort for short-term power purchase through trader on day ahead or firm basis. Shri. Singh stated that MSEDCL has also floated a tender for procuring 500 MW firm power on round the clock (RTC) basis for the period from 1.4.2008 to 31.3.2009, but on the last date of submission, only one offer was submitted that too for 125 MW from 1<sup>st</sup> March 08 to 30<sup>th</sup> September 09 and 749 MW for the period from 1<sup>st</sup> October 2008 to 31<sup>st</sup> March 2009. Similarly, another tender for purchase of 600 MW during the period from Oct 08 to May 09 was floated by MSEDCL, but on the due date, MSEDCL has received only one



offer from Reliance Energy Trading Ltd. for only 23 to 27 MW during 00:00 hrs. to 09:00 hrs, at Rs.7.80 per kWh.

23. MSEDCL Counsel submitted that the Operative Order in Case No. 72 of 2007 dated May 31, 2008 is applicable for Generation Company as well as for MSEDCL, and as far as MSEDCL is concerned, if the Generating Company is not able to generate power despite its best efforts, then there is little that MSPGCL and the Commission can do. Shri. Singh stated that if the load shedding protocol has not been implemented due to MSEDCL's default, then definitely MSEDCL is liable and appropriate action may be taken against MSEDCL under the provisions of the EA 2003. However, some of the factors such as failure of RGPPL generation, are beyond the control of MSEDCL

24. The Commission enquired of MSEDCL whether due notices regarding the changes to the load shedding schedule had been published in the newspapers. Shri Singh submitted that the load shedding schedules are published in the newspapers. The Commission enquired whether the schedules published in the newspaper are based on the load shedding protocol approved by the Commission or based on the load shedding Circulars of MSEDCL, which are not approved by the Commission. MSEDCL Counsel submitted that the published load shedding schedules are in accordance with the load shedding Circulars issued by MSEDCL. Shri Singh submitted that the details of the Circulars issued by MSEDCL and the changes made therein, are before the Commission. Further, MSEDCL is seeking approval of Circular No. 20 dated August 20, 2008 implemented from September 2, 2008. MSEDCL Counsel added that MSEDCL hopes that no further increase in load shedding hours would be required, and after improvement in the availability of short-term power, MSEDCL would revive the protocol. Thus, the proposed load shedding protocol could be considered as the worst-case scenario. Unfortunately, the demand is increasing constantly, but no generation capacity has been added in the State in the last three-four years. Shri Singh also submitted that for instance, load shedding protocol may be for 4 hours, and in case directed by SLDC, MSEDCL undertakes additional EHV opening, in which case, MSEDCL has to increase load shedding from 4 to 6 hours. On the other hand, if the timing of load shedding in a particular area is from 6:00 a.m. to 12:00 noon, and if the availability is improved due to the dynamic nature of demand and availability, MSEDCL starts shedding load only from 08:00 a.m. rather than 06:00 a.m. The consumers are aggrieved since they have planned their activities considering that power cut will be from 06:00 a.m., but power cut starts at 08:00 a.m.

25. The Commission directed MSEDCL to submit all data regarding actual load shedding hours undertaken by MSEDCL and deviation from the load shedding protocol approved by the Commission. Shri Singh submitted that MSEDCL has never violated the load shedding protocol and in some instances of violations, action has been taken on its engineers. Moreover, since the EHV openings have been undertaken on the basis of SLDC's instructions, SLDC should also be sent a notice and asked to verify whether MSEDCL's submissions are correct.



26. The Commission enquired whether MSEDCL is following the load shedding protocol approved by the Commission, and if not followed, the reasons thereof. The Commission observed that it will take a view in the matter based on the information submitted by MSEDCL and MSLDC. Shri. Singh submitted that MSEDCL was also keen that the Commission verifies the data submitted by MSEDCL with data obtained from sources like MSLDC, before taking any view in the matter.

27. Shri Singh submitted that the load shedding protocol is based on certain assumptions of supply availability. MSEDCL Counsel added that there is no guarantee that the load shedding protocol will be followed, as the system is dynamic. Shri. Singh submitted that MSEDCL's projections of supply availability are based on the projected availability of the generating Stations as submitted by the generating Stations, and if the generating Stations default in their commitments, then MSEDCL is also forced to deviate from the load shedding protocol. The Commission observed that at the time of the APR Petition, the power purchase requirement has been assessed on annual and monthly basis. The Commission has also approved the load shedding protocol submitted by MSEDCL for a demand-supply gap of around 4500 MW.

28. MSEDCL Counsel submitted that if the Commission so desires, MSEDCL will follow the approved load shedding protocol, without bothering about grid security. The Commission directed MSEDCL Counsel to argue the case in a logical manner, rather than make threatening statements. The Commission further observed that grid security is the responsibility of SLDC, and the distribution licensee has to follow the SLDC's directions. The Commission added that the load shedding protocol is a regulated action and the protocol has been approved after assessing the availability of power supply.

29. MSEDCL Counsel stated that if grid frequency is at 49.5 Hz or operating at 49 Hz and demand –supply gap is more than 4500 MW, the grid security is in danger, irrespective of whether it is attributable to MSEDCL or some other entity that is not following a load shedding protocol.

30. The Commission enquired of MSEDCL regarding whether there were instances when MSEDCL is undertaking distress load shedding, while at the same time, MSEDCL is under-drawing from its share of CGS power. MSEDCL Counsel stated that even if MSEDCL was under-drawing from its share of CGS share, MSEDCL has to obey the directives of SLDC. There are circumstances when MSEDCL is unable to draw its full schedule because of lower frequency.

31. The Commission enquired whether MSEDCL has approached SLDC and sought justification for instructions issued by SLDC, which are forcing MSEDCL to under-draw from its share of CGS. The Commission observed that it is the responsibility of the distribution licensee to take up the issue of reduced availability with the Generation Company.



32. Shri. Singh stated that the incidences of the last three months are not going to be repeated in the near future, as things are going to improve. MSEDCL Counsel submitted that MSEDCL is making all efforts to procure power from different sources and has floated tenders for sourcing the power. However, only one offer for around 150 MW was received from Jindal. The agreement entered into with Jindal had a provision that in case Jindal desires to terminate the Agreement, it may do so after giving one month's notice and payment of Rs. 23 crore as penalty. Unfortunately, due to the prevailing high rates for power procurement, Jindal has preferred to terminate the Agreement and has paid the penalty of Rs. 23 crore. As a result, even this quantum of power purchase is not available to MSEDCL.

33. The Commission enquired of MSEDCL about the reasons for having such a termination clause, especially when MSEDCL was in dire need of the power. MSEDCL Counsel submitted that the compensation was considered punitive and it was not anticipated that Jindal will pay the same for terminating the Agreement. The Commission observed that in view of the shortages faced by MSEDCL, no amount of money can compensate MSEDCL for non-availability of power. MSEDCL Counsel submitted that this clause has been removed from all future Contracts signed by MSEDCL.

34. The Commission enquired whether the load shedding protocol was being modified by MSEDCL on a daily basis or weekly basis. Shri. Singh submitted that MSEDCL is doing everything transparently. MSEDCL Counsel stated that MSEDCL has submitted all the details in the revised Petition regarding disciplinary action taken against the officers for violation of the load shedding protocol, outages of generating stations in the month of April, May, June, July and August 2008, status of RGPPL, details of actual power purchase for the period from April to August 2008, and restriction on utilisation of Koyna water. Further, MSEDCL Counsel stated that MSEDCL has also submitted the copy of the direction given by SLDC on July 23, 2008 for opening of feeders from 220/132 kV sub-station, in order to control heavy over-drawal at low frequency. The Commission observed that the direction given by SLDC was only for one day, i.e, July 23, 2008. MSEDCL Counsel stated that MSEDCL has submitted the power availability and demand for each hour during the period under consideration, as well as the copy of the load shedding Circulars issued by MSEDCL from time to time.

35. Shri. R B Goenka of Vidarbha Industries Association, submitted that though MSEDCL has claimed that it is following the load shedding protocol approved by the Commission, the protocol is being modified every week. Shri Goenka enquired whether weekly Circulars are to be treated as a protocol. Further, Shri Goenka submitted that the Commission has approved the load shedding protocol for a demand-supply gap of 4500 MW, which amounts to 118 MU as projected by MSEDCL in their earlier petition. Shri Goenka submitted that even though the shortfall has remained stable at around 4000 to 5000 MW, hours of load shedding have been doubled. Whether load shedding is being followed equitably or not is a question, because MSEDCL has said that they have taken disciplinary action against some of their officers for not following the protocol. Further,



Shri Goenka pointed out that as per the Annexure IV of the revised Petition in Case No. 77 of 2008, MSEDCL has claimed that shortfall was in the range of 54 MU to 97 MU, whereas MSEDCL is seeking load relief of 120 MU to meet the same shortfall, through its revised load shedding protocol.

36. Shri Goenka added that the industrial consumers were facing hurdles in planning their work, as the protocol is being changed every week. Shri Goenka submitted that regarding the problem of Koyana water, MSEDCL has never approached the Government to increase the quota of water as this constraint was in force earlier also. Shri Goenka submitted that weekly modification to the protocol is not acceptable to industry and the consumers, and further requested the Commission to issue an Order, which should be a long-term Order so at least industry and other consumers may plan their activities.

37. Shri. Ashok Pendse of Mumbai Grahak Panchayat, stated that it is the responsibility of the distribution licensee to project demand and availability of power, and SLDC's function is to ensure grid security. MSEDCL cannot escape by saying that it followed the instructions of SLDC. MSEDCL's argument is that the demand keeps varying because of various factors like shortfall in rain, increase in agricultural consumption, etc. MSEDCL has cited that one of the reasons for increase in load shedding is tripping of Under Frequency Relay (UFR). After examination of Annexure 2 of the Petition, it is observed that UFR tripping occurred on 366 occasions in the month of April 2008, on 45 occasions in May 2008, on 88 occasions in June 2008, on 172 occasions in July 2008, and on 114 occasions in August 2008. Thus, if UFR tripping was the criteria, then load shedding hours should have been highest in the month of April. On the contrary, load shedding undertaken by MSEDCL in April 2008 was lower than that undertaken in the month of April last year.

38. Shri Pendse stated that the level of highest demand-supply gap should not be used to determine the load shedding protocol for the entire year, and the protocol should factor in the number of hours for which the peak demand-supply gap is prevalent. Further, Shri. Pendse suggested that different levels of load shedding protocol should be specified for different levels of demand-supply gap, as the demand-supply gap is varying.

39. As regards MSEDCL's contention that it has been providing regular information to the consumers regarding changes in the load shedding schedule, the same is far from the truth. When the Consumer Representatives can come together and ensure that the actual demand-supply gap and load shedding in zero load shedding areas is published in local newspapers on a daily basis with the co-operation of the leading newspapers, then MSEDCL should be able to undertake the same for the State as a whole. Further, the Commission should reject MSEDCL's Petition seeking approval for changes in the load shedding protocol.



40. Shri. Shantanu Dixit of Prayas, stated that the Commission had approved higher availability of power in the months of May and June 2008. It is also observed that MSEDCL, in its Petition, has considered availability of 7100 MU, whereas the Commission has considered 7300 MU and 7200 MU, which is a difference of only 100 MU to 200 MU, whereas MSEDCL is claiming that this difference in projection is as large as 800 MW. Further, in its APR petition, MSEDCL had projected uniform availability of 7149 MU every month for the period from April to December. Anybody who is familiar with power sector planning would accept that this is not a rational way of projecting the availability. MSEDCL, in its revised Petition, has stated the power purchase quantum in the month of August 2008 as 5867 MU, whereas on Page 6 of the original Petition, the same figure has been mentioned as 5272 MU, which is a difference of 600 MU and a variation of more than 10%. Shri Dixit stated that in the entire 500 page submission, there is no mention of the reason for this difference of 600 MU. MSEDCL should have been insisting on a far superior and scientifically projected demand-supply scenario, because this is the same Utility, which has made a statement before the Honourable Appellate Tribunal for Electricity (ATE) that demand forecasting is not a subject matter with which the Commission should deal with.

41. Shri Goenka added that MSEDCL has sought approval for the load shedding protocol to give load relief of 120 MU per day, which amounts to 18000 MU, if one considers a five-month period.

42. Shri Shantanu Dixit submitted that the need for higher level of load shedding arises either when there is decrease in supply or there is a fundamental increase in demand. The analysis of the data shows that shortfall in supply is 21%, 20% and 27% for the three crucial months of June, July and August, respectively. Further analysis shows that reduction in generation from MSPGCL's thermal plants is largely responsible for the increase in load shedding. Every year, there are planned outages during the monsoon period, the coal gets wet due to the rains, and the coal received is of poor quality, so one fails to understand the reason for such drastic decrease in generation by MSPGCL. The generation from relatively newer Stations like Chandrapur is much lower than expected, which could be a contributing factor. Also, the actual generation from RGPPL is only around 300 MW on an average, as compared to the projected level of 1000 MW. Thus, there is no doubt that the generation failure is resulting in increasing the demand-supply gap. The projected load relief of 120 MU per day amounts to load shedding of 5000 MW for 24 hours. Considering a realistic scenario, load shedding will be around 1000 MW during 3 hours in the night, during the remaining 3 hours in the night, load shedding may be around 2000 MW, because even at midnight, MSEDCL has to carry out some load shedding. However, for remaining 18 hours, load shedding of 6500 MW will have to be undertaken, only then will we get a load relief of 120 MU. In other words, only if the projected load shedding requirement is around 6500 MW for 18 hours every day, does one need to plan for load relief of 120 MU per day.



43. Extending the logic, the proposed load shedding plan is justified only when either the demand increases by 2000 MW, leading to demand-supply gap of 6500 MW, or when there is a generation shortfall of 2000 MW, leading to demand-supply gap of 6500 MW. Shri. Dixit submitted that unless MSEDCL gives justification for the increase in demand-supply gap by 2000 MW, the Commission should not approve the load shedding protocol. Secondly, because the entire load shedding protocol was approved after public hearings held in several cities, if the Commission desires to consider this higher level of load shedding, then public hearings in all 6 locations in the State are essential, because this is not a topic where only Consumer Representatives should be making a submission. The third important issue is that the Commission needs to start some process to evaluate the performance of MSPGCL. Why is the generation far lesser than the projection? Moreover, there is always a question mark about whether load shedding is being done as per the instructions issued from Head Office.

44. Shri N. Ponrathnam, an Intervenor, reiterated his written submissions during the hearing.

45. Shri. Vikas Singh submitted that almost 35% to 40% of the total demand is agricultural demand. In the protocol approved by the Commission, load shedding for agricultural dominated regions ranged between 10 to 12 hours, which has been increased to uniform 14 hours for all Groups. At higher levels of load shedding, Other Regions also have to bear certain extra burden, because the load shedding for agriculture dominated regions cannot be increased to 18 hours. As regards the data error highlighted by Prayas, MSEDCL Counsel admitted that there may be an error, and submitted that the data given in the original Petition may be ignored, and the validated data has been submitted vide the revised Petition.

46. The Commission observed that both the Petitions filed by MSEDCL, in Case No. 77 of 2008 and Case No. 78 of 2008, appear to have identical prayers and enquired whether MSEDCL is pressing for the relief sought under both Petitions. MSEDCL Counsel submitted that the prayers in Case No. 78 of 2008 will not be pressed, since the prayers are the same in both the Petitions. While MSEDCL's prayers are not very clear, a close reading of the prayers reveal that Case No. 77 of 2008 has been filed to seek condonation for the non-compliance with the load shedding protocol approved by the Commission, whereas Case No. 78 of 2008 has been filed to seek the Commission's approval for the load shedding protocol for the prospective period.

47. The Commission observed that the main contentions were that MSEDCL has not followed the load shedding protocol approved by the Commission. The Commission would verify the data submitted in this Petition vis-à-vis the data submitted in the APR Petition. The Commission directed MSEDCL to submit the break-up of the load relief of 120 MU sought by MEDCL in two days time, and further directed MSEDCL to submit various options for different levels of demand-supply gap within ten (10) days of the hearing.



48. Further, during the hearing, MSEDCL submitted its Revised Petition in Case No.77 of 2008 dated September 29, 2008 to the Commission. MSEDCL's prayers in the revised Petition are identical to the earlier Petition in Case No.77 of 2008. In its Revised Petition in Case No. 77 of 2008 dated September 29, 2008, MSEDCL reiterated most of the submissions made in the original Petition and submitted certain additional data. The additional submissions made by MSEDCL in the revised Petition are given below:

**a) Compliance with MERC's Orders on load shedding**

In order to restrict distress load shedding and anticipating shortfall of 6500 to 7000 MW in the summer months of May and June 2007, MSEDCL filed a Petition on April 12, 2007, before the Commission (Case No. 5 of 2007), which was, however, summarily rejected by the Commission vide its Order dated April 23, 2007. In the first week of May 2007, there were pre-monsoon rains in some parts of Maharashtra as well as improvement in availability, and hence, no instances of EHV opening in the month of May 2007. Accordingly, MSEDCL revised its Load Shedding protocol as given below by reducing Load Shedding hours, which Protocol continued up to July 8, 2008 without any deviations.

**Table 6: Load Shedding Protocol followed by MSEDCL (May 2007 to July 2008)**

Period	Groups	Urban & Industrial Agglomeration	Other Region	Ag. Dominated
23/5/2007 to 8/7/2008	A	3.00	5.00	10.50
	B	3.15	5.50	11.00
	C	4.30	6.00	11.50
	D	5.15	6.50	12.00

In response to the Commission's queries during the hearing on May 8, 2008 on MSEDCL's APR Petition, MSEDCL proposed a revised load shedding protocol with only two major consumer categories and six Distribution & Collection Loss (DCL) Groups. The Commission approved this protocol vide its Operative Order dated May 31, 2008 and detailed Order dated June 20, 2008 in Case 72 of 2007, as shown in the Table below:

**Table 7: Load Shedding Protocol approved by the Commission (Tariff Order dated May 31, 2008 in Case No. 72 of 2007)**

Group	Other Region		Agriculture Dominated	
	%Distribution Collection Losses	LS hrs.	%Distribution Collection Losses	LS hrs.
A	0% to 18%	2.75	0% to 21%	10.00



Group	Other Region		Agriculture Dominated	
	%Distribution Collection Losses	LS hrs.	%Distribution Collection Losses	LS hrs.
B	>18% to 26%	3.50	>21% to 29%	10.50
C	>26% to 34%	4.25	>29% to 37%	11.00
D	>34% to 42%	5.00	>37% to 45%	11.50
E	>42% to 50%	5.75	>45% to 53%	12.00
F	Above 50%	6.50	Above 53%	12.00

The change in actual load shedding through Circulars issued in July and August 2008 was to mitigate the emergency situation, considering the ever changing situation in terms of demand and supply on account of above-mentioned reasons. MSEDCL revised the load shedding protocol on 12 occasions for the said purpose, by issuing Circular No.s 11 of 2008 to 22 of 2008. However, in most of the Circulars, the changes made were very nominal except for Circular No. 18 dated August 13, 2008. Circular No.18 of 2008 is broadly based on the directions issued by the Commission in its Order dated June 20, 2008, and the six Groups were created as per the directives of the Commission.

As far as the load shedding protocol for the agricultural sector is concerned, the differential hours between category A to F have been done away with, once it was decided to increase the load shedding beyond 12 hours, on the premise that any load shedding beyond 12 hours has to be uniform for all agricultural dominated regions, as availability of power to the farmers for the balance hours is the minimum that should be made available considering the overall constraints of MSEDCL.

Considering the powers of the Commission to give dispensation in emergency situations for maintaining efficient supply and securing the equitable distribution of electricity under Section 23 of EA 2003, and the Orders of Hon'ble Supreme Court in a matter, which was carried from Bombay High Court, Nagpur Bench, on the issue of Load Shedding, the protocol for Load Shedding containing the directions as to how Load Shedding is to be administered across the State is being decided and formulated by the Commission. From the day of inception, i.e., June 5, 2005, MSEDCL is reeling under shortage of electricity. It is the earnest endeavour of MSEDCL to follow the Load Shedding protocol approved by the Commission, however, due to the dynamic nature of demand and supply in the State, which can suddenly increase or decrease on account of various reasons, MSEDCL has to manage the emergency situation as per its wisdom and that is why the Hon'ble Supreme Court has held that issue of Load Shedding is to be decided in consultation with the Commission and not in concurrence with the Commission.



## b) Generation at Uran GTPS

MSEDCL submitted that the actual receipt of gas at Uran GTPS is far lower than the requirement of gas, resulting in loss of generation, as given in the Table below:

**Table 8: Generation at Uran GTPS**

Generation at G.T.P.S. Uran			
Year	Gen.(MU)	Gas cons. (MMSCMD)	Gen. loss due to less gas (MU)
2004-05	4115.169	2.601	2436
2005-06	3777.492	2.464	3124
2006-07	4027.886	2.564	3111
2007-08	3729.974	2.381	3362
2008-09 (Apr-Aug)	1873.715	2.841	1230
Note: 1) Requirement of gas is 4.7 MMSCMD. 2) Contractual quantity - 3.5 MMSCMD. 3) Actual receipt is ranging between 3.381 to 2.841 MMSCMD.			

## c) Extra High Voltage (EHV) Opening/Distress Load Shedding

Section 27 and Section 31 of the EA 2003 envisage establishment of RLDC and SLDC. The actual directions given by RLDC and SLDC during the months of July and August 2008 for grid security have been annexed along with the revised Petition.

To explain the point in issue pertaining to dealing with emergency situations, which at times is not consistent with the Load Shedding protocol issued by the Commission, following example may be noted. Suppose that while considering the various sources from which MSEDCL would procure energy for the purposes of distribution, the Commission has come to a conclusion that 10,000MW of electricity is available for distribution against the requirement of 14,000MW of electricity to satisfy the entire consumer base of the State of Maharashtra falling under MSEDCL licence area. In such circumstances, after considering the genuineness of MSEDCL's claim and after complying with the procedure provided under the Act, the Commission would provide for a Load Shedding protocol of say 4,000MW for MSEDCL's licence area. Now, say out of the 10,000 MW of supply envisaged by MSEDCL, 2,000MW was to come from RGPPL. Today, if RGPPL fails to give 2,000MW on account of turbine failure or some technical snag, there would be an additional shortfall of 2,000MW. So, the availability of electricity at the hands of MSEDCL suddenly gets reduced to 8,000MW for which, MSEDCL will have to take some measures to tackle the emergency situation, otherwise there is possibility of grid collapse. As a consequence of this entire episode, the system or the grid gets overloaded because it has now to carry an additional burden of 2,000MW, which was not scheduled, and in such circumstances, State Load Despatch Centre and Regional



Load Despatch Centre in exercise of their statutory powers and whose directions are binding on the Licensee direct the Licensee to bring down their load to the extent of overload, which in this case would be 2,000 MW. The shedding of extra load under these circumstances, so as to maintain grid security and safety, is commonly understood as Extra-High Voltage Opening or Distress Load Shedding.

#### Working Of Extra High Voltage Opening

The Commission, even in this hour of crisis (i.e. EHV opening) has set up a system whereby no area is discriminated against, i.e., the licence area of MSEDCL has been bifurcated into 21 groups. Say, in accordance with the directions of SLDC and RLDC, if Group 'A' has been subjected to scheduled power cut of two hours, then after two hours it shifts to Group 'B' and then Group 'C' and then Group 'D' and this round robin system is followed continuously. This is done to ensure that the load shedding is not repeated to any Group on a given day. In cases of temporary EHV openings, MSEDCL reverts to the protocol as soon as possible, but in cases where MSEDCL is of the view that the problem is going to continue, MSEDCL increases the number of hours proportionately in accordance with broad principles specified by the Commission, and within few days of the said increase, MSEDCL approaches the Commission for modification of the existing Load Shedding protocol. The Commission has all the powers at this stage to verify MSEDCL's claim for modification of the Load Shedding protocol or to reject MSEDCL's claim or to pass such orders as it deems fit in given circumstances.

#### **d) Supply Availability – Actual vs. Approved**

MSEDCL submitted that the actual availability of power from different sources was lower than the quantum approved by the Commission in the Tariff Order, as given in the Tables below:

**Table 9: Comparison of actual power availability with projected availability**

Sl.	Power Purchased	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Total Actual Units Purchased
1	Power Purchase Quantum approved by the Commission in MU	7402.00	7630.00	7745.00	7376.00	7257.00	37410.00
2	Actual Power Purchased quantum received in MU	6801.97	7312.38	6404.38	6296.30	5867.78	32682.81
3	Short fall in MU	600.03	317.62	1340.62	1079.70	1389.22	4727.19
4	Short fall in %	8.11%	4.16%	17.31%	14.64%	19.14%	12.70%
5	Short Fall (Avg.) in MW	833.38	426.91	1861.98	1451.21	1867.23	1302.47



**Table 10: Comparison of source-wise actual power availability with projected availability**

FY 2008-09 and actual received for the last 5 months approx.							Translated in Daily MW ( Avg.)		
Sr. No.	Source	Power Purchase Quantum approved by the Commission	Actual Power Purchased	% to total Power Purchase Quantum	Indicative Average for Five Months	Shortfall	Actual Power Purchased	Indicative Average for Five Months	Shortfall
		FY 2008-09	April 2008 - August 2008				April 2008- August 2008		
		MU	MU	%	MU	MU	MW	MW	MW
1	MSPGCL	51376.00	19232.52	37.43	21406.667	2174.147	5272	5868	596
2	Central Generating Station	22213.00	8605.9	38.74	9255.417	649.517	2359	2537	178
3	Sardar Sarover	977.00	271.71	27.81	407.08	135.373	74	112	37
4	RGPPPL	12851.00	2185.81	17.01	5354.58	3168.773	599	1468	869
5	Other Sources	2789.00	2362.67	84.71	1162.08	-1200.587	648	319	-329
		90206.00	32658.61	36.20	37585.824	4927.223	8952	10304	1351

MSEDCL added that the reasons for lower availability could be better explained by the generating companies.

**e) Efforts taken to mitigate the supply shortfall**

MSEDCL was facing shortfall throughout the day and load shedding was being done for all the 24 hours. It is difficult to detail specific measures taken for making good the shortfall on hourly basis, but there were efforts made by MSEDCL to procure power from the market on short-term basis. MSEDCL was facing shortfall in the range of 40 to 70 MU every day on an average, whereas it received power upto 3 MU only. Thus, there was huge shortfall of power available through traders in MU terms, which explains why the load shedding has taken place to such an extent.

MSEDCL has taken substantial efforts for purchasing power in the short-term, on 'day ahead' basis, and on long term basis. Further, MSEDCL expects supply availability from the following sources: MSPGCL 5,200 MW, RGPPPL 1,200 MW, Central Sector Share 2,600 MW, Gas 600 MW and Hydro 1200 – 1400 MW (at peak). If this power generation is available, MSEDCL could have implemented the Load Shedding protocol specified by the Commission.

MSEDCL also submitted that it has taken action against the employees of MSEDCL who have violated the Load shedding protocol. MSEDCL has also reduced distribution losses in its licensee area to 21%, and is taking steps to further reduce the distribution losses.

**f. Occasions of under-drawal by MSEDCL and the reasons thereof:**

MSEDCL submitted the instances of under-drawal for the period from June to September 26, 2008 as under:



**Table 11: Summary of hours of over-drawal and under-drawal by MSEDCL**

Month	No. of OD hours	No. of UD hours	Total Hours
Jun-08	410	310	720
Jul-08	585	159	744
Aug-08	652	92	744
<b>Upto September 2008</b>	<b>340</b>	<b>284</b>	<b>624</b>
<b>Total</b>	<b>1987</b>	<b>845</b>	<b>2832</b>

The year-wise total Power Purchase (including short-term) is as follows:

**Table 12: Summary of Power purchase quantum and cost in last few years**

Year	Units	Amount
2005-06	69,731 MU	12,790 Crore
2006-07	75,436 MU	16,276 Crore
2007-08 (Provisional)	78,951 MU	16,597 Crore
2008-09 (upto Aug 08) (Provisional)	31,450 MU	6,895 Crore

49. MSEDCL, vide its letter dated October 1, 2008, submitted the detailed break-up of load relief of 120 MU to be obtained through Planned Load shedding. MSEDCL submitted that there were almost round the clock EHV openings for 22 days in July 2008 and for 10 days in August 2008. The total load shedding including distress load shedding carried out in July 2008 in the second fortnight was around 70 to 110 MU and up to 88 MU in August 2008. Considering the anticipated increase in agricultural demand from October 2008, the load shedding protocol for expected relief of 120 MU has been submitted in the Petition.

**Table 13: Average Load Profile in MW of MSEDCL (Sheddable and Non-Sheddable)**

Group	Ag. Dominated	Other region	Separate Ag. feeders	Single phasing	Total Sheddable	EHV Industriail ( No. Staggering)	Express HV Industriail ( No. Staggering)	MIDC/Industries having one day Staggering	Water works	Utility (Express feeders of hospitals, court, etc.)	Total Non-Sheddable	Grand Total
A	24.00	564.00	8.00	34.00	631.00	80.00	168.00	308.00	52.00	54.00	661.00	1291.00
B	307.00	817.00	34.00	97.00	1256.00	381.00	213.00	421.00	45.00	6.00	1065.00	2390.00
C	617.00	954.00	138.00	309.00	2018.00	846.00	443.00	405.00	48.00	6.00	1746.00	3764.00
D	656.00	1274.00	173.00	152.00	2256.00	248.00	165.00	251.00	38.00	4.00	707.00	2963.00
E	810.00	423.00	150.00	251.00	1634.00	56.21	106.93	95.72	27.60	3.81	290.00	1924.00
F	1191.00	474.00	164.40	465.00	2295.00	48.90	125.32	248.49	42.98	1.82	468.00	2762.00
<b>Total</b>	<b>3606.00</b>	<b>4506.00</b>	<b>668.00</b>	<b>1309.00</b>	<b>10089.00</b>	<b>1659.00</b>	<b>1221.00</b>	<b>1728.00</b>	<b>253.00</b>	<b>75.00</b>	<b>4936.00</b>	<b>15026.00</b>



- The load relief from feeder under planned load shedding is based on average load of the feeders.

MSEDCL submitted that the expected load relief from the load shedding plan submitted in the petition is 120 MU/day, as given below:

**Table 14: Load relief projected by MSEDCL under proposed Load Shedding Protocol**

Other region	Ag. Dominated	Load Management			Industrial Stagg.		Total
		Single Phasing	Single phasing Load Management	Ag. Feeder Separation	MIDC Ind.	Express feeder for non-cont. process	
MU	MU	MU	MU	MU	MU	MU	MU
33.29	50.48	9.16	10.47	11.34	4.44	1.25	120.43

MSEDCL added that the load relief obtained from 10 % reduction of consumption in respect of continuous process industries on express feeder cannot be assessed on daily basis, hence, it is not included in the above table of Load Relief. MSEDCL stated that total average load is dynamic in nature. The quantum given in the load-shedding plan depends upon the average load of the feeder. Also following issues should be taken into consideration:

- The load shedding is carried out on 11 kV/22 kV feeders (Approximately 7000 feeders)
- The load-shedding programme is implemented on rotational basis. The actual load shedding quantum at particular time interval is decided by considering the load on the feeder at that time when the feeder was in working condition (i.e., No load shedding).
- The quantum of load shedding carried out by sub-stations is reported to the EHV Nodal Sub-stations and the EHV Nodal sub-stations informs the Load Management Cell at Kalwa and ALDC, Ambazari regarding the load shedding carried out by their area. Finally, Kalwa Load Despatch Centre consolidates the load shedding quantum for the State, which is incorporated in the Daily System Report.
- The data of approximately 7000 feeders is consolidated every day and reported to Load dispatch Centre after midnight. The voluminous data in various forms is processed for Daily System Report early next morning.
- MSLDC uploads Daily System Report (DSR) on its website “[www.mahasldc.in](http://www.mahasldc.in)” and the same is also uploaded on MSEDCL’s website, viz., “[www.mahadiscom.in](http://www.mahadiscom.in)”
  - The total load shedding quantum is reported manually, and correctness of quantum depends upon the correct reporting of the concerned operators at various sub-stations.



- The load relief obtained from load shedding protocol varies with seasonal changes and time of the day.

e.g. Load relief of 4500 MW is obtained in the summer and winter season. The load relief obtained in rainy season is lesser than in summer/winter seasons. In rainy season there is around 50 % of load on agricultural feeders and about 90 % load on urban feeders. Hence, for same load shedding hours, the relief in rainy season is about 3000 MW, which would be 4500 MW in Summer/Winter season.

Also, as the load shedding protocol is based on the average load of the feeders, the load relief obtained during various hours of the day will vary.

The total load relief of load shedding plan 120 MU includes

- (i) 83.77 MU from Other Region & Agricultural Dominated Regions
- (ii) 30.97 MU from load management schemes (single phasing and Ag. feeder separation )
- (iii) 4.44 MU from MIDC weekly off, 10 % load management Reduction by Express feeder (Cont. & Non- cont. Process Industries)

The above relief is subject to the following:

- (a) The Reporting of load shedding in Other Regions & Agricultural Dominated Regions is correct and MSEDCL gets load relief of 80 to 90 % when there is full load shedding.
- (b) The actual load relief obtained from load management schemes is lower than expected because of the time at which the schemes are implemented or improper implementation of schemes as load management schemes are still to be 100% completed. Thus, MSEDCL get load relief of only 60 to 70 % of anticipated load relief from load management schemes.
- (c) There is no mechanism for assessing the load relief of 4.44 MU through staggering. However, because of staggering, there is an indirect load relief to the system.

Further, if frequency drops below certain levels, the online capacity (OLC) of the generator reduces, resulting in additional shortfall for the distribution utility. If the low frequency condition persists for reasonable period, the unit generation reduces by 3 to 5% of its full load capacity. By considering the above aspects, the actual load relief obtained from load shedding plan is about 70 to 80% of the expected load relief.

The variation in peak demand and load shedding for the period from July 08 to Sept.08 is as under:



**Table 15: Variation in peak demand and load shedding from July to Sept 2008**

Month	Variation in peak demand	Variation in load shedding
July 08	11366 -14625 MW	3142 to 5957 MW
Aug.08	9258—13823 MW	1245 to 4648 MW
Sept.08	9452 -13512 MW	548 to 3821 MW

MSEDCL submitted that the load shedding plan has to be designed considering the anticipated maximum shortfall, to ensure system security keeping in view the dynamics of the system. In real-time, if the shortfall is less than anticipated then the load shedding is withdrawn in a phased manner.

The expected load relief from Circular No.20 dated August 30, 2008, which was implemented from September 2, 2008 is as under:

- (i) From Agricultural consumers including agricultural dominated Area, single phasing, and feeder separation = 81.45 MU/day
- (ii) From Other Region = 33.29 MU/day
- (iii) Load relief from additional staggering to industrial area (16 to 34 hrs/week)  
Additional staggering = 34 – 16 = 18 Hrs/week.  
Effective Additional staggering/day = 18/7 = 2.57 hrs/day.
- (iv) Load Relief from one day staggering to express feeders for non-continuous process industries:  
Effective Load shedding/day = 24/7 = 3.43 hrs/day

Average load (MW)	Effective LS Hours/day	Load Relief (MWh)	Load Relief (MU/day)
365	3.43	1251	1.25

- (v) Total Expected Load Relief = 81.45 + 33.29 + 4.44 + 1.25 = 120.43 MU/day

However, the actual load relief obtained from load shedding plan is about 70 to 80% of the expected load relief.

50. MSEDCL, vide its letter dated October 10, 2008, submitted the various options of planned load shedding for different levels of demand-supply gap, and the copies of the paper cuttings of the load shedding schedules published in the news papers, and prayed as under:

- *“Consider the various options proposed in the said petition and permit MSEDCL to operate on option III presently.*
- *Permit MSEDCL to vary the Load Shedding protocol as per the variation in gap between Availability & Demand by informing about the modification in protocol to MERC.*



- *Condone any inadvertent omissions/errors/shortcomings and permit MSEDCL to add/change/ modify/ alter this filing and make further omissions as may be required at a future date.”*

51. In its submission dated October 10, 2008, MSEDCL submitted as under:

Any load shedding program is dynamic in nature and as such, needs to undergo changes in view of system conditions. The system stability being of paramount importance, various options for load shedding are essential. The load shedding plan has been designed considering the anticipated maximum shortfall and system security, keeping in view the dynamics of system. In real-time, if the shortfall between demand and availability is lesser than anticipated shortfall, then the load shedding is withdrawn in a phased manner.

MSEDCL submitted that the load shedding matrix for different levels of shortfall have been prepared based on the following assumptions:

- i) The anticipated load profile for the period from Oct 2008 to Dec 2008 and the Distribution and Collection losses (DCL) for the period from July 2007 to June 2008 have been considered.
- ii) The planned Load Relief is computed at the normal frequency of 50 Hz.
- iii) While computing the load relief, the average load on feeders has been considered. However, the practical load relief is lower than the expected load relief because of the varying load on the feeder at the time tripping is done. From experience, it is observed that the practical load relief obtained is about 80% of expected load relief. The options for 80% load relief are being submitted.

The total expected Load Relief from these options is detailed in the table below:

**Table 16: Expected Load Relief from different Options (MU and MW)**

Scenarios	As per Plan	Practical (80%)	Practical (80%)	Shortfall Range
	MU	MU	MW	MW
Option -I	99.17	79.336	3306	3000-3600
Option -II	110.33	88.264	3678	3600-3900
Option -III	120.81	96.648	4027	3900-4500
Option -IV	128.69	102.952	4290	4200-4600
Option -V	138.58	110.864	4619	4500-5000



MSEDCL submitted that out of the above five different options, Option III will be suitable at present, giving total load relief of 120.81 MU and practical load relief of 96.648 MU. Further, MSEDCL proposed to introduce a new category for load shedding protocol, viz., Div. Comm. H.Q. and Mumbai, Thane, in view of the law and order problems in Divisional Commissioner Head Quarter cities (Navi Mumbai, Pune, Nagpur, Aurangabad, Amravati and Nasik) and in Bhandup, Mulund, and Thane areas. MSEDCL proposed to have lower load shedding protocol for this category compared to the 'other regions' category. MSEDCL requested the Commission to formulate additional interim tariff to above category based on the principles of Reliability Charge for Zero Load Shedding.

Under Option III, MSEDCL proposed the load shedding hours for Divisional Commissioner Head Quarter cities ranging from 3 to 5 hours, for Other Regions from 5 to 7 hours, and for Agriculture Dominated Area for 14 hours, along with 7 hours availability of three phase supply to single phasing schemes and separate Agricultural Feeders, 32 hours per week staggering to MIDC and equivalent regions, 10 % reduction (by running their captive generation or One day staggering off) for Non-continuous industrial consumers on Express feeders, no load regulation or staggering for continuous process industries connected on express feeders, and staggering for 32 hours per week to other consumers on Express feeders.

52. The Commission, vide its letter dated October 20, 2008, sought clarification from MSLDC regarding the interpretation of the terms, 'Planned Load Shedding', 'EHV opening' and 'Emergency EHV opening'. The Commission also enquired from MSLDC whether MSEDCL is undertaking planned load shedding at EHV level. MSLDC vide its letter dated October 22, 2008 submitted the interpretation of the terms, 'Planned Load Shedding', 'EHV opening' and 'Emergency EHV opening' as under:

- (a) **Planned Load Shedding:** This is also known as Planned Load relief (PLR). It is load relief in MW calculated on hourly basis and obtained as per MSEDCL's load shedding plan prepared as per directives of the Commission's load shedding protocol. Load shedding is implemented by MSEDCL at distribution level only.
- (b) **EHV Opening:** - The load relief obtained by opening of only 11kV/22kV/33kV feeders from EHV sub-station, as per the contingency plan prepared by MSEDCL. This is implemented to arrest declining trend of frequency and over drawal from central grid. It is implemented after complete implementation of the PLR and when availability to MSEDCL is not sufficient to meet the real time demand.
- (c) **Emergency EHV or Emergency Load Shedding:** This is distress type of contingency plan carried out when actions under (a) & (b) above are inadequate as well as system is under emergency conditions. Such load relief is obtained by opening of 100kV/132kV feeders from EHV sub-station. It is implemented to arrest decay in system frequency



below 49.0 Hz and to maintain the grid discipline as per State Grid Code (SGC) and Indian Electricity Grid Code (IEGC).

Further, MSLDC clarified that MSEDCL is not undertaking Planned Load Shedding at EHV level.

53. Having heard the Parties and after considering the material placed on record, the Commission is of the view as under:

54. Before proceeding to the facts of the present Case, it is necessary to set out the background against which the present Case has come about. The Commission, in its Tariff Order for MSEDCL in Case No. 72 of 2007 (Operative Order dated May 31, 2008 and detailed Order dated June 20, 2008), modified the load shedding protocol by accepting MSEDCL's proposal in this regard. The revised load shedding protocol was to be implemented from June 1, 2008. The Commission approved ceiling hours of load shedding for different divisions grouped under the approved load shedding matrix for a demand-supply gap of around 4500 MW. However, MSEDCL continued to cite force-majeure conditions as the reason for non-compliance with the Commission's Order. Subsequently, MSEDCL filed a Petition before the Commission seeking approval for increase in load shedding hours as a temporary measure (Case 57 of 2008). At the hearing held in the matter on August 20, 2008, MSEDCL submitted that the load shedding protocol is being implemented in accordance with the Commission's Tariff Order (Case No. 72 of 2007) with effect from August 11, 2008. During the hearing, MSEDCL requested the Commission to allow MSEDCL to withdraw the said Petition with liberty to file a fresh petition along with the additional information, which was permitted by the Commission vide its Order dated September 2, 2008 in Case No. 57 of 2008.

55. MSEDCL, under its fresh Petition (Case No. 77 of 2008), submitted that the revised Principles and Protocols of Load Shedding (PPLS) approved by the Commission in its Operative Order dated May 31, 2008 and detailed Order dated June 20, 2008 in Case No. 72 of 2007 had not been implemented due to various uncontrollable factors such as sudden rise in demand, much lower than normal rainfall, and lower availability of generation capacity resulting in additional shortfall leading to increase in load shedding and EHV openings. It should be understood that the load shedding protocol has two aspects, viz., the load shedding matrix detailing the number of Groups (grouped on the basis of Distribution and Collection Loss) and the number of Regions, viz., 'Other Regions', and 'Agricultural Dominated Regions' in the protocol approved by the Commission. MSEDCL has repeatedly submitted that it had to revise the load shedding protocol and increase the hours of load shedding due to the increase in the demand-supply gap, and in order to ensure grid stability. However, MSEDCL has nowhere explained why the revised load shedding protocol, which was designed to provide load relief of around 4500 MW as per MSEDCL's own proposal, was not implemented from June 1, 2008, such that it covered only 2 Regions and 6 Groupings. Further, the Commission's analysis of the data obtained from MSLDC regarding demand, supply, load shedding,



grid frequency, and over-drawal and under-drawal vis-à-vis MSEDCL's share of CGS power has been elaborated subsequently, which clearly reveal that there is no substance in MSEDCL's claims.

56. The revisions in the load shedding protocol done by MSEDCL are as follows, for which Circular No. 10 to 18 were issued on various dates.

**Table 17: Principles and Protocols (from May 08 to July 08) – hours of load shedding for different regions and Groups**

Date	A	B	C	D
<b>Urban &amp; industrial Agglomeration</b>				
13.05.08	3.00	3.45	4.30	5.15
09.07.08	3.45	4.30	5.15	6.00
20.07.08	4.45	5.30	6.15	7.00
<b>24.07.08</b>	<b>5.45</b>	<b>6.30</b>	<b>7.15</b>	<b>8.00</b>
<b>Other region</b>				
13.05.08	5.00	5.30	6.00	6.30
09.07.08	6.00	6.30	7.00	7.30
20.07.08	7.00	7.30	8.00	8.30
<b>24.07.08</b>	<b>8.00</b>	<b>8.30</b>	<b>9.00</b>	<b>9.30</b>
<b>Ag dominated</b>				
13.05.08	11.00	11.30	12.00	12.00
09.07.08	12.00	12.00	12.00	12.00
20.07.08	13.00	13.00	13.00	13.00
<b>24.07.08</b>	<b>14.00</b>	<b>14.00</b>	<b>14.00</b>	<b>14.00</b>
<b>Industrial Staggering Hours</b>				
13.05, 09.07 & 20.07.08	16 hours/ week excluding express feeders for Cont. Process Industries			
24.07.08	40 hours/ week excluding express feeders for Cont. Process Industries			
25.07.08	34 hours/ week excluding express feeders for Cont. Process Industries			

57. MSEDCL submitted that it had, vide Circular No. 18 dated August 13, 2008, implemented PPLS in six Groups in accordance with the Commission's Tariff Order dated June 20, 2008. The various Circulars issued by MSEDCL in August and September 2008 and the comparison of load shedding hours in these Circulars vis-à-vis the load shedding hours stipulated in the Commission's Tariff Order dated May 31, 2008, is given in the Table below:



**Table 18: Principles and Protocols (August to September 08) – hours of load shedding for different regions and Groups**

Date	A	B	C	D	E	F
<b>Other Regions</b>						
<b>Tariff Order</b>	<b>2.45</b>	<b>3.30</b>	<b>4.15</b>	<b>5.00</b>	<b>5.45</b>	<b>6.30</b>
13.08.08 (Cir. 18)	3.45	4.30	5.15	6.00	6.45	7.30
27.08.08 (Cir. 19)	4.45	5.30	6.15	7.00	7.45	8.30
<b>02.09.08 (Cir.20)</b>	<b>5.45</b>	<b>6.30</b>	<b>7.15</b>	<b>8.00</b>	<b>8.30</b>	<b>8.30</b>
<b>AG Dominated Regions</b>						
<b>Tariff Order</b>	<b>10.00</b>	<b>10.30</b>	<b>11.00</b>	<b>11.30</b>	<b>12.00</b>	<b>12.00</b>
13.08.08 (Cir. 18)	12.00	12.00	12.00	12.00	12.00	12.00
27.08.08 (Cir. 19)	13.00	13.00	13.00	13.00	13.00	13.00
<b>02.09.08 (Cir.20)</b>	<b>14.00</b>	<b>14.00</b>	<b>14.00</b>	<b>14.00</b>	<b>14.00</b>	<b>14.00</b>
<b>Industrial Staggering</b>						
<b>Tariff Order</b>	16 hours/ week excluding express feeders					
13.08.08 (Cir. 18)	16 hours/ week excluding express feeders for Cont. Process Industries					
27.08.08 (Cir. 19)	16 hours/ week excluding express feeders for Cont. Process Industries					
<b>02.09.08 (Cir.20)</b>	Staggering to MIDC Industrial area is 34.00 hours per week					
	3- phase availability to schemes 7 hours.( Single phasing & Ag feeder separation)					
	10% power cut to all Government offices, streetlights, Municipal Corporations, shopping malls and IT Industries					
	No power supply to hoardings in MSEDCL area.					
	Non-Continuous process Industries on Express feeders to observe 24 Hours per week staggering.					
	Continuous process Industries on Express feeders to reduce their consumption by 10 % using captive or by following economy measures.					



## Analysis and Ruling

58. In this Section, the Commission has analysed each of the contentions of MSEDCL and verified the same based on data obtained from MSLDC and MSEDCL, as detailed below.

59. MSEDCL, in its revised Petition, has admitted that it has revised the load shedding protocol on 12 occasions, i.e., from Circular No.11 of 2008 to Circular No.22 of 2008, without the prior approval of the Commission for the changes to the protocol, even though the protocols adopted by MSEDCL were not in accordance with the Commission's Order dated May 31, 2008 and June 20, 2008, especially since the Commission had approved MSEDCL's own proposal to create six Groups based on different distribution and collection losses, and two Regions, viz., Other Regions and Agricultural Dominated Regions, and the ceiling hours of load shedding was specified for a demand-supply gap of around 4500 MW.

60. MSEDCL has also contended that in most of the Circulars, the changes made were very nominal except for Circular No.18 dated August 13, 2008, and that the Circular No.18 of 2008 was broadly based on the directions issued by the Commission's Tariff Order dated June 20, 2008 and six Groups were created as per the directives of the Commission. As summarized in the above Tables, the changes made to the load shedding protocol through the various Circulars are far from nominal, and the hours of load shedding have been increased steadily by around 1 hour per day, at the time of each modification to the load shedding protocol. Further, as indicated in earlier Tables, even after implementing the matrix of six Groups and two Regions, MSEDCL has been steadily increasing the hours of load shedding to all Groups and Regions. A comparison of the load shedding protocol approved by the Commission in its Tariff Order and that imposed by MSEDCL vide its Circular No.20 implemented from September 2, 2008, clearly reveals that the hours of load shedding being undertaken is far higher than that approved by the Commission:

**Table 19: Comparison of load shedding hours**

Date	A	B	C	D	E	F
<b>Other Regions</b>						
Tariff Order	2.45	3.30	4.15	5.00	5.45	6.30
02.09.08 (Cir.20)	5.45	6.30	7.15	8.00	8.30	8.30
<b>AG Dominated Regions</b>						
Tariff Order	10.00	10.30	11.00	11.30	12.00	12.00
02.09.08 (Cir.20)	14.00	14.00	14.00	14.00	14.00	14.00



Date	A	B	C	D	E	F
<b>Industrial Staggering</b>						
Tariff Order	16 hours/ week excluding express feeders for Cont. Process Industries					
02.09.08 (Cir.20)	Staggering to MIDC Industrial area is 34.00 hours per week					
	3- phase availability to schemes 7 hours.( Single phasing & Ag feeder separation)					
	10% power cut to all Government offices, streetlights, Municipal Corporations, shopping malls and IT Industries					
	No power supply to hoardings in MSEDCL area.					
	Non-Continuous process Industries on Express feeders to observe 24 Hours per week staggering.					
	Continuous process Industries on Express feeders to reduce their consumption by 10 % using captive or by following economy measures.					

61. As seen from the above Table, the actual load shedding protocol being followed is leading to additional load shedding of around 3 hours for five Groups under Other Regions (with only F Group having an increase of 2 hours), while the increase in load shedding is ranging from 2 hours to 4 hours for Agricultural dominated regions. In both regions, the increase in load shedding is higher for the more efficient regions, while the increase in load shedding for less efficient regions having higher DCL has been lower in comparison, which is illogical. It should be noted that the Commission approved the ceiling hours of load shedding for different divisions grouped under the approved load shedding matrix for a demand-supply gap of around 4500 MW, as proposed by MSEDCL.

62. However, MSEDCL, vide its Circular No. 20 dated August 30, 2008 (w.e.f. September 2, 2008), which states that the protocol is applicable for a demand-supply gap in the range of 4000-5000 MW, has implemented a much higher level of load shedding. Further, the range of 1000 MW considered by MSEDCL is also contrary to MSEDCL's submissions that the system is frequently under stress, and needs to be tweaked repeatedly. If the load relief achieved by a particular load shedding protocol varies by around 1000 MW, the corollary would be that the protocol is not required to be modified for change in the load relief required, by around 1000 MW.

63. Further, in the load shedding Circulars issued by MSEDCL, the planned load shedding protocol in case there is lower demand – supply gap is not specified, and only the sequence in which the relief will be given is specified. The theoretical explanation given for withdrawal of load shedding would be difficult to interpret by the field staff in the absence of explicit Tables specifying the hours of load shedding for different levels of demand-supply gap.



64. The Commission obtained the hourly data of demand, supply from different sources, planned load shedding, EHV opening, emergency EHV, grid frequency, etc., for the period from April 1, 2008 to September 15, 2008, from SLDC. The Commission has analysed the SLDC hourly data to try and assess whether there is any justification for modifications undertaken by MSEDCL to the load shedding protocol, without the approval of the Commission.

65. The analysis has been presented in the Table below in a summarised form for each month during this period, by showing the number of hours out of the total hours in that month, for which the particular scenario was prevalent. The interpretation of the summary Table and the inferences that can be drawn have been elaborated after the summary Table below.

**Table 20: Analysis of the load shedding with different parameters (numbers indicate hours out of total hours in month and numbers in brackets indicate % occurrence):**

Sl.	Parameters	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Upto 15 Sep-08
A	Demand-Supply Gap > 4500 MW	7/720 (0.97%)	0/744 (0.00%)	0/720 (0.00%)	67/744 (9.01%)	23/744 (3.09%)	0/360 (0.00%)
B	Demand-supply gap < = 4500 MW	711/72 (98.75%)	744/744 (100.00%)	720/720 (100.00%)	677/744 (90.99%)	721/744 (96.91%)	360/360 (100.00%)
C	Demand-supply gap > 4000 MW	52/720 (7.22%)	5/744 (0.67%)	1/720 (0.14%)	151/744 (20.30%)	81/744 (10.89%)	1/360 (0.28%)
D	Demand-supply gap > 3500 MW	169/720 (23.47%)	31/744 (4.17%)	15/720 (2.08%)	260/744 (34.95%)	161/744 (21.64%)	12/360 (3.33%)
E	Zero load shedding (total LS incl planned, EHV, emergency EHV, etc.)	0/720 (0%)	0/744 (0%)	0/720 (0%)	0/744 (0%)	0/744 (0%)	0/360 (0%)
F	Freq < 49 Hz & demand-supply gap > 4500 MW	4/720 (0.56%)	0/744 (0.00%)	0/720 (0.00%)	12/744 (1.61%)	5/744 (0.67%)	0/360 (0.00%)



Sl.	Parameters	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Upto 15 Sep-08
G	Frequency < 48.8 Hz	45/720 (6.25%)	0/744 (0%)	0/720 (0%)	1/744 (0.14%)	0/744 (0%)	2/360 (0.56%)
H	EHV opening	61/720 (8.47%)	5/744 (0.67%)	2/720 (0.28%)	345/744 (46.37%)	135/744 (18.15%)	21/360 (5.83%)
I	Emergency EHV	0/720 (0%)	0/744 (0%)	0/720 (0%)	73/744 (9.81%)	0/744 (0%)	0/360 (0%)
Case 1	Freq > 49.5 Hz, and Load Shedding < 4500 MW, and Underdrawal from CGS	46/720 (6.39%)	146/744 (19.62%)	156/720 (21.67%)	35/744 (4.70%)	42/744 (5.65%)	24/360 (6.67%)
Case 2	Freq > 49.5 Hz, and Load Shedding > 3500 MW, and Underdrawal from CGS	3/720 (0.42%)	3/744 (0.40%)	0/720 (0.00%)	6/744 (0.81%)	2/744 (0.27%)	0/360 (0.00%)
Case 3	Freq > 49.5 Hz, and Load Shedding < 3500 MW, and Underdrawal from CGS	43/720 (5.97%)	142/744 (19.09%)	156/720 (21.67%)	29/744 (3.90%)	40/744 (5.38%)	24/360 (6.67%)
Case 4	Freq > 49.5 Hz, and Load Shedding > 0, and Underdrawal from CGS	46/720 (6.39%)	146/744 (19.62%)	156/720 (21.67%)	35/744 (4.70%)	42/744 (5.65%)	24/360 (6.67%)
Case 5	Freq > 49.0 Hz, and Load Shedding > 0, and Underdrawal	229/720 (31.81%)	334/744 (44.89%)	284/720 (39.44%)	144/744 (19.35%)	91/744 (12.23%)	136/360 (37.78%)



Sl.	Parameters	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Upto 15 Sep-08
	from CGS						
Case 6	Either EHV Opening or Emergency EHV	61/720 (8.47%)	5/744 (0.67%)	2/720 (0.28%)	418/744 (56.18%)	135/744 (18.15%)	21/360 (5.83%)
Case 7	Freq > 49.5 Hz, and Load Shedding < 4500 MW, and EHV	1/720 (0.14%)	0/744 (0.00%)	0/720 (0.00%)	29/744 (3.90%)	1/744 (0.13%)	0/360 (0.00%)
Case 8	Freq > 49.5 Hz, and Load Shedding < 3500 MW, and EHV	0/720 (0.00%)	0/744 (0.00%)	0/720 (0.00%)	19/744 (2.55%)	0/744 (0.00%)	0/360 (0.00%)
Case 9	Freq >= 49.0 Hz, and EHV	13/720 (1.81%)	5/744 (0.67%)	1/720 (0.14%)	299/744 (40.19%)	116/744 (15.59%)	13/360 (3.61%)
Case 10	Planned Load Shedding < 4500 MW and EHV	54/720 (7.50%)	5/744 (0.67%)	2/720 (0.28%)	278/744 (37.37%)	113/744 (15.19%)	21/360 (5.83%)
Case 11	Planned Load Shedding < 4500 MW and EHV , frequency > 49.0 Hz	8/720 (1.11%)	5/744 (0.67%)	1/720 (0.28%)	239/744 (32.12%)	96/744 (12.90%)	12/360 (3.33%)
Case 12	Freq > 49.5 Hz, and Load Shedding < 4500 MW, and Emergency EHV	0/720 (0.00%)	0/744 (0.00%)	0/720 (0.00%)	0/744 (0.00%)	0/744 (0.00%)	0/360 (0.00%)
Case 13	Freq > 49.0 Hz, and Load Shedding <	0/720 (0.00%)	0/744 (0.00%)	0/720 (0.00%)	16/744 (2.15%)	0/744 (0.00%)	0/360 (0.00%)



Sl.	Parameters	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Upto 15 Sep-08
	4500 MW, and Emergency EHV						
Case 14	Freq > 49.5 Hz, and Load Shedding < 3500 MW, and Emergency EHV	0/720 (0.00%)	0/744 (0.00%)	0/720 (0.00%)	0/744 (0.00%)	0/744 (0.00%)	0/360 (0.00%)
Case 15	Freq > 49 Hz, and Load Shedding < 3500 MW, Underdrawal, and EHV	0/720 (0.00%)	2/744 (0.27%)	0/720 (0.00%)	6/744 (0.81%)	1/744 (0.13%)	2/360 (0.56%)

66. The above analysis reveals the following:

- a. The demand-supply gap has exceeded 4500 MW for only 97 hours over the period from April 1, 2008 to September 15, 2008 (with July 2008 recording the maximum occurrences of 67 hours), which comprises only 2.4 % of the total hours during this period. In other words, the load shedding protocol approved by the Commission should have been sufficient to manage the demand-supply gap for 97.6% of the time, except for certain exceptional circumstances. In fact, the situation during the usual peak months of April and May 2008 was very good and there were only 7 such hours in April 2008 and no such instance of demand-supply gap exceeding 4500 MW in May 2008.
- b. MSEDCL has undertaken Emergency EHV opening only for 73 instances in the month of July 2008, and there are no other incidences of emergency EHV during the period from April 1, 2008 to September 15, 2008, which amounts to around 10% of the total hours in July 2008 and only 2% of the total hours during the period from April 1, 2008 to September 15, 2008.
- c. As regards other EHV openings at 11/22/33 kV, MSEDCL has undertaken the same for around 569 hours during the period from April 1, 2008 to September 15, 2008, which amounts to around 14% of the total hours during this period.



- d. Overall, if EHV and Emergency EHV occurrences are considered together, the percentage occurrence amounts to 16% of the total hours during the period from April 1, 2008 to September 15, 2008.
- e. There are 6 instances in July 2008, 3 each in April and May 2008, and 2 instances in August 2008, when the frequency was above 49.5 Hz, and load shedding is above 3500 MW, yet MSEDCL has underdrawn from its CGS share. This is illogical, as MSEDCL should not undertake load shedding, when power is available, and there is no constraint of grid frequency.
- f. There are 46 instances in April 2008, 146 instances in May 2008, 156 instances in June 2008, 35 instances in July 2008, 42 instances in August 2008 and 24 instances upto September 15, 2008 (total 449 instances) where the frequency is above 49.5, yet MSEDCL has under-drawn from its share of CGS share, while at the same time undertaking load shedding in the State. This amounts to 11% of the total hours during the period from April 1, 2008 to September 15, 2008. In this situation, MSEDCL should have drawn its CGS share and have reduced its quantum of load shedding, especially when the grid frequency was higher than 49.5 Hz. Moreover, even by underdrawal from CGS, MSEDCL would have not earned significant revenue from Unscheduled Interchange (UI) Charges for this period, since the frequency was higher than 49.5 Hz.
- g. Similarly, if the instances where grid frequency is above 49 Hz, load shedding has been undertaken, yet MSEDCL has under-drawn from its share of CGS are considered, then the picture is worse; there are 229 such instances in April 2008, 334 instances in May 2008, 284 instances in June 2008, 144 instances in July 2008, 91 instances in August 2008, and 136 instances till September 15, 2008. In other words, MSEDCL has underdrawn from its share of CGS, while at the same time undertaking load shedding in the State, despite there being no concerns of grid frequency, for around 30% of the hours during the period from April 1, 2008 to September 15, 2008.
- h. As regards instances when the grid could be stated to be in critical condition, i.e., when the frequency is less than 49 Hz and demand-supply gap is more than 4500 MW, there are only 4 such instances in April 2008, 12 instances in July 2008 and 5 instances in August 2008, resulting in a total of 21 instances over the period from April 1, 2008 to September 15, 2008, which amounts to only 0.5% of the total hours during this period. Despite this, MSEDCL has undertaken emergency EHV opening and the load shedding protocol has not been followed.
- i. In the context of MSEDCL's claims that it had to undertake emergency EHV on several occasions and had to hence, increase the hours of load shedding, there were 16 instances during the period from April 1, 2008 to September 15, 2008 (all instances occurred in July 2008) when the frequency was above 49 Hz and the demand-supply gap was less than 4500 MW, yet MSEDCL undertook emergency EHV opening. This is illogical and contrary to MSEDCL's contentions regarding incidences and cause of emergency EHV openings.
- j. There are several instances where MSEDCL has undertaken EHV opening, even though the grid frequency was above 49 Hz. There are around 447 such instances during the period from April



- 1, 2008 to September 15, 2008, with the maximum instances occurring in July 2008 (299 instances) and August 2008 (116 instances).
- k. It is observed that on July 20, 2008 at 07:00 hours, there is an EHV opening of 345 MW, emergency EHV opening of 337 MW, and Load Shedding of 3541 MW, whereas the grid frequency was well placed at 49.50 Hz. Such instances of EHV opening and emergency EHV opening, when the demand-supply gap was only around 3500 MW and frequency was 49.50 Hz, indicates the lack of any systematic planning. Moreover, MSEDCL has claimed that it undertakes EHV and emergency EHV openings based on the instructions of SLDC/RLDC, however, documentary evidence has been submitted by MSEDCL for only three such instructions from SLDC, none of which are for the date in question. MSEDCL has not submitted any documentary evidence for instructions from RLDC or standing instructions from SLDC, despite contending that MSEDCL has to comply with such instructions on account of grid security. It appears that MSLDC has given such instructions only on three days during the period under consideration. Moreover, MSEDCL was advised during the hearing that even if MSLDC gives such instructions, MSEDCL should seek justification from MSLDC for the same, rather than blindly following the same.
- l. There are only 48 instances in the period from April 1, 2008 to September 15, 2008 (45 in April, 1 in July, and 2 upto September 15, 2008) when frequency was lower than 48.80 Hz, which shows that the critical conditions cited by MSEDCL have existed for only very few instances, and do not justify the wholesale changes made by MSEDCL to the load shedding protocol as well as the incidences of EHV opening and emergency EHV undertaken by MSEDCL.

67. MSEDCL's submissions regarding the zero load shedding models in Pune, Thane, Bhandup, and Mulund, have not been addressed here, and will be addressed in separate Petitions pending before the Commission in this context.

68. MSEDCL has submitted that after August 13, 2008, average rainfall in Maharashtra reduced and MSEDCL's demand increased suddenly from 10,000 MW to 13,500 MW and shortfall increased up to 4400 MW, that too at low frequency. Therefore, the existing protocol was insufficient to mitigate the demand-supply gap, which resulted in EHV opening. Analysis of the hourly data shows that the demand-supply gap was above 4500 MW only for 23 hours in August out of the total 744 hours in the month, and there were no such instances in September 2008. Despite this, MSEDCL has undertaken EHV openings for 135 hours in August 2008 and 21 hours in September 2008, even though the load shedding protocol approved by the Commission is for a demand-supply gap of 4500 MW.

69. MSEDCL's submission that the Commission has bifurcated MSEDCL's licence area into 21 Groups to ensure that the EHV openings are undertaken in rotation, is incorrect. The Commission has not created any such Groups. The documentary evidence submitted by MSEDCL in this regard



reveal that this is a document prepared by MSEDCL in the year 2006 (ref:LM/W-II/2403 dated March 24, 2006), which has been sent to MSLDC.

70. MSEDCL has also submitted that the load relief is computed at the normal grid frequency of 50 Hz. This has been a constant advice from the Commission to MSEDCL, and the load shedding protocol approved by the Commission is also designed for grid frequency of 50 Hz. This ensures that there is enough flexibility to MSEDCL, and it can meet a higher demand with the same supply availability, till such time as the grid frequency reaches 49 Hz. At present, the System Frequency Response Parameter (SFRP) [also known as Power Number] of the combined national grid (excluding Southern Region [SR] Grid), to which MSEDCL is connected, would be around 2400 MW. In other words, the frequency will drop by 1 Hz for increase in load by around 2400 MW, with the same supply availability. However, MSEDCL alone may not be able to utilise the entire flexibility in the grid, since the other constituents will also be over-drawing vis-à-vis their share of CGS power. The Commission estimates that MSEDCL may have flexibility to meet additional load of around 400 MW to 500 MW, through this mechanism.

71. MSEDCL, in its load shedding Circular No. 20 implemented w.e.f September 2, 2008, has stated that there is a 10% power cut (load regulation) for all Government offices, streetlights, Municipal Corporations, shopping malls and IT Industries, whereas the Commission's Tariff Order does not specify any extra power cut to these entities. However, MSEDCL has neither submitted any evidence that the above load regulation has been implemented, nor has it considered any load relief from these measures. Moreover, MSEDCL has always submitted earlier that it cannot implement load shedding or load regulation for such consumer categories, who are connected on mixed feeders. MSEDCL's submissions in this regard in the present matter and as stated in the load shedding Circulars are thus, inconsistent. In case MSEDCL wishes to implement the above measures, the load relief from the same may be assessed and reflected in reduced load shedding for other categories and regions in the State.

72. MSEDCL, in its load shedding Circular No. 20 implemented w.e.f September 2, 2008, has stated that industrial staggering has been increased to 34 hours per week in three time slots, and has also mentioned that the supply available during 22:00 hrs to 01:00 hrs and 03:00 to 06:00 hrs should be used for lighting purpose only. This effectively means that a total of 40 hours of industrial staggering is being proposed, as above mentioned 6 hrs during night time will be available only for lighting purpose to the industry. This is as compared to 16 hours of load shedding considered by the Commission in its Order. Given that the demand-supply gap has not increased beyond 4500 MW, there is no justification for the increase in staggered load shedding or any load regulation imposed by MSEDCL for such consumer categories.



73. MSEDCL, in its load shedding Circular No. 20 implemented w.e.f September 2, 2008, has also stated that Non-Continuous process Industries connected on express feeders have to observe 24 hours/week staggering, whereas the Commission's Order clearly states that there would be no load shedding on express feeders irrespective of the nature of industry (Continuous or Non-Continuous).

74. Moreover, MSEDCL's contentions in different proceedings before the Commission have been totally divergent. MSEDCL's submissions and the Commission's ruling in the Order dated September 12, 2008 in Case No. 44 of 2008 in the matter of Clarificatory Petition filed by MSEDCL on the Order issued by the Commission in Case No. 72 of 2007 on MSEDCL's APR Petition for FY 2007-08 and Tariff Petition for FY 2008-09, have been reproduced below:

**1. "Applicability of HT-I (Continuous Industry)**

*In the Tariff Order, the Commission has specified that "only HT industries connected on express feeder and demanding continuous supply will be deemed as HT continuous industry and given continuous supply, while all other HT industrial consumers will be deemed as HT non-continuous industry."**(emphasis added)***

**MSEDCL Submission**

*MSEDCL submitted that due to the removal of ASC and the reduction in the tariff differential between continuous and non-continuous industries, many industries may shift from HT-I continuous to HT-I non-continuous, which would adversely affect MSEDCL consumer mix and revenue. Moreover, express feeders are linked to zero load shedding and load shedding cannot be optional. Hence, MSEDCL requested the Commission that:*

- a) the clause "demanding continuous supply" may please be removed from the definition of HT-I (Continuous Industry);*
- b) Existing Consumers categorized under HT-I Continuous as on April 1 2008 should be continued under same category;*
- c) HT-I (Continuous) tariff category should be applicable to all industries connected on express feeder irrespective of whether they are continuous or non-continuous process industries.*

**Commission's Ruling and Clarification**

*The Commission is of the view that MSEDCL should not ignore the benefits of load relief that could be achieved, in case certain HT-I continuous industries, who are presently not subjected to load shedding, voluntarily agree to one day staggering like other industries located in MIDC areas. Hence, the HT industrial consumer connected on express feeder should be given the option to select between continuous and non –continuous type of supply, and there is no justification for removing the clause "demanding continuous supply" from the definition of HT-I continuous category. However, **it is clarified that the consumer getting supply on express feeder may exercise his choice between continuous and non-***



*continuous supply only once in the year, within the first month after issue of the Tariff Order for the relevant tariff period. In the present instance, the consumer may be given one month time from the date of issue of this Order for exercising his choice. In case such choice is not exercised within the specified period, then the existing categorisation will be continued.”*

The above extract of the Commission’s Clarificatory Order in Case No. 44 of 2008 clearly reveals MSEDCL’s admission that the load shedding cannot be done for consumers connected on express feeders, irrespective of whether the process is non-continuous or continuous. The Commission had ruled in the Clarificatory Order that the treatment of the consumer as non-continuous for the purpose of staggered load shedding is dependent on the option being exercised by the consumer, and MSEDCL cannot unilaterally enforce load shedding on these consumers, while at the same time requiring them to pay the higher tariff applicable for continuous process industries. Such non-continuous process industries connected on express feeders have to be considered in the same manner as continuous process industries connected on express feeders. If such non-continuous industrial consumers convey in writing to MSEDCL in the manner specified above, that they wish to be subjected to the staggered day of load shedding and be considered under non-continuous category for the purposes of tariff, it would provide some load relief to MSEDCL

75. MSEDCL, in its Circular No. 20 implemented w.e.f September 2, 2008, has also stated that Continuous process Industries on Express feeders have to reduce their consumption by 10 % using captive or by following economy measures. This is in accordance with the directives given in the Commission’s Order dated February 20, 2007 in Case 78 of 2006, which are still operative, wherein the above load regulation is applicable in case the load shedding for agriculture dominated regions exceeds 12 hours, which in turn is to be undertaken only when the demand-supply gap exceeds 4500 MW. As detailed earlier, the demand-supply gap has exceeded 4500 MW on very few occasions; yet, MSEDCL has undertaken load shedding for agricultural dominated regions for over 12 hours, and in turn has sought to impose the load regulation on continuous process industries.

76. MSEDCL, in its Circular No. 20 implemented w.e.f. September 2, 2008, has also stated that there will be no power supply to hoardings in its licence area. MSEDCL has neither submitted any evidence that the above load regulation has been implemented, nor has it considered any load relief from these measures.

77. As discussed above, MSEDCL has revised the load shedding protocol on 12 occasions, with load shedding at higher levels than that approved by the Commission, from Circular No.11 of 2008 to Circular No.22 of 2008, without the prior approval of the Commission. Further, the earlier load shedding protocol approved by the Commission (Commission’s Orders in Case No. 78 of 2006 dated February 20, 2007, and Case Nos. 81 of 2006 and 5 of 2007 dated April 23, 2007) was applicable only till May 31, 2008. The Commission, through its Tariff Order in Case No. 72 of 2007



(Operative Order dated May 31, 2008 and detailed Order dated June 20, 2008) has modified the load shedding protocol based on MSEDCL's proposal in this regard, without any changes to MSEDCL's proposal. The Commission approved the ceiling hours of load shedding for different divisions grouped under the approved load shedding matrix for a demand-supply gap of around 4500 MW. However, MSEDCL did not implement the revised load shedding protocol approved in Case No. 72 of 2007 with effect from June 1, 2008, and has cited certain force-majeure conditions as the reason for this non-compliance. MSEDCL has submitted that it revised the load shedding protocol without obtaining the prior approval of the Commission due to various uncontrollable factors such as sudden rise in demand, much lower than normal rainfall, and lower availability of generation capacity, resulting in additional shortfall, leading to increase in load shedding and EHV openings. However, MSEDCL has not submitted any justification for the delayed implementation of the load shedding matrix of 2 Regions and 6 DCL Groups. Even when this matrix was implemented, the load shedding hours were significantly higher than that approved by the Commission for a demand-supply gap of around 4500 MW, in accordance with MSEDCL's own proposal in this regard. The Commission's observations regarding each of these uncontrollable factors cited by MSEDCL are as under :

a. Steep periodic increase in demand (seasonal agricultural requirements due to lesser rains)

It is observed that the demand-supply gap has increased above 4500 MW for only 67 hours in July and 23 hours in August, out of the total 744 hours in the month, and there were no such occasions upto September 15, 2008. However, despite this, MSEDCL has increased the load shedding hours for agricultural dominated regions from the approved range of 10 to 12 hours as per the Commission's Order dated June 20, 2008 to 14 hours as per Circular No. 20 w.e.f. September 2, 2008.

b. Reduced availability of generation capacity due to forced outages and planned outages in Stations of MSPGCL/CPSUs/RGPPL

The reduction in availability due to planned outages of MSPGCL and CGS Stations was known in advance, and has been factored in by the Commission while projecting the available generation capacity and hence, the power purchase quantum. As regards power available from RGPPL, in its APR Petition, MSEDCL had considered average Plant Load Factor (PLF) of 65% on the total installed capacity of RGPPL available to MSEDCL (2042.5 MW), while the Commission in its APR Order, has considered the PLF as 74%, based on the CEA targets. Thus, at the time of submission of the APR Petition, MSEDCL too had envisaged that the entire generating capacity of RGPPL would be available in FY 2008-09. MSEDCL should ensure that the projections submitted to the Commission are realistic and are backed up by relevant documentary evidence. As regards the forced outages at all Stations, while it is accepted that MSEDCL as a distribution licensee may not have much control over such occurrences, MSEDCL should enforce the clauses of its Power Purchase Agreements in such cases. MSEDCL cannot take the stand that it is helpless when the generators do not deliver the agreed quantum of energy.



Further, MSEDCL's submission that if MSEDCL's projections of monthly power purchase had been accepted, then the reduction in actual availability vis-à-vis the projected availability would have been lower, and hence, MSEDCL is not responsible for this additional shortfall, has no merit as discussed below:

- i. In its APR Petition, MSEDCL had not considered any seasonality in the available power purchase quantum (refer Table 4 on Page 7 of this Order), and had simply taken the average monthly power purchase quantum by dividing the annual quantum by 12, whereas, the Commission considered the seasonality in sales and hence, power purchase quantum required. This clearly shows that MSEDCL's projections of monthly power purchase quantum are unscientific and cannot be relied upon by MSEDCL to compute the deviation between actual and projected quantum.
- ii. Even if MSEDCL's projections of monthly power purchase quantum are to be accepted as realistic, the fact remains that MSEDCL had nowhere projected demand-supply gap more than 12 hours in its APR Petition, and had stated that for the projected power purchase quantum, the demand-supply gap would not exceed 4500 MW, and had accordingly sought approval for the load shedding protocol.

c. Restrictions on usage of Koyna water

It is well known that there is a restriction on usage of water at Koyna for power generation, and water availability is limited to 67.5 TMC annually. However, this restriction was considered in the planning stages itself, and Koyna generation has accordingly been projected. The Commission had also incentivised generation from Koyna during peak hours, by specifying higher peak tariffs. The problem has arisen now because of the additional generation at Koyna during the first five months of the year, as a result of which, the water availability for the remaining part of the year stands proportionately reduced. The Commission fails to understand the reasons for over-utilisation of Koyna water during this period, since the demand-supply gap had exceeded 4500 MW only for 23 hours in August, out of the total 744 hours in the month, and there were no such occasions upto September 15, 2008, and the same cannot be cited as a reason for undertaking higher load shedding in future.

d. Restriction of availability of Gas (Uran Gas Turbine Project)

MSEDCL has submitted that the generation from Uran GTPS has been lower due to reduced gas availability. However, in reality, the availability of gas for generation of power at Uran GTPS has been higher as compared to previous years, as shown in the Table below. More importantly, it should be noted that the Commission, in its APR Order for MSEDCL in Case No. 72 of 2007 dated June 20, 2008, has considered 1592.88 MU of generation from Uran GTPS over the period from April to August 2008. Thus, the actual generation from the Station over the same period is actually higher than the quantum considered by the Commission in the APR Order. Hence, MSEDCL cannot cite this as a reason for having to undertake higher load shedding.



**Table 21: Generation at GTPS Uran**

<b>Generation at G.T.P.S. Uran</b>			
<b>Year</b>	<b>Gen.(MU)</b>	<b>Gas cons. (MMSCMD)</b>	<b>Gen. loss due to less gas (MU)</b>
2004-05	4115.169	2.601	2436
2005-06	3777.492	2.464	3124
2006-07	4027.886	2.564	3111
2007-08	3729.974	2.381	3362
2008-09(Apr-Aug)	1873.715	2.841	1230

e. Transmission Corridor Constraints

MSEDCL has submitted that the constraints in the transmission corridor have also contributed to reduced availability of power and hence, increase in the demand-supply gap. However, MSEDCL has not given any details regarding on which corridor/link is the transmission constraint. With the availability of both HVDC poles and improved generation level in the Western part of the State compared to earlier periods, the transmission corridor availability may not be a constraint. However, MSEDCL should furnish quantified source-wise power, which even though contracted by it, was unable to be brought to the State due to the transmission corridor constraints specifying the corridors. It may not be appropriate to draw a conclusion without data and facts.

f. Frequency Correction Factor

MSEDCL has submitted that if the frequency drops down from 49.5 Hz to 48.5 Hz, the online capacity (OLC) of the generators reduce, resulting into additional shortfall for the distribution utility. Though the statement is correct as far as generation OLC is concerned, the load being primarily inductive, the demand will also reduce proportionately. Thus, the argument of additional shortfall on this account cannot be sustained.

g. Increase in installed generation capacity

MSEDCL has submitted that though the demand has been increasing annually by around 1800 MW, not a single MW of generation capacity has been added in the last three-four years. This contention is factually incorrect as MSPGCL has declared commissioning of 500 MW of generation capacity (250 MW at new Paras and 250 MW at new Parli) over the last one year, which are yet not generating to full capacity. MSEDCL had itself proposed in its APR Petition that both these new Units of 250 MW would be available for the entire FY 2008-09 at 80% PLF, which has been accepted by the Commission in its APR Order in Case No. 72 of 2007 dated June 20, 2008.



78. Most importantly, all the reasons cited by MSEDCL above relate to lower supply availability, and will have meaning only if the actual demand-supply gap has exceeded 4500 MW, causing MSEDCL to undertake additional load shedding. However, the data shows that the demand-supply gap has exceeded 4500 MW on very few occasions during the period under consideration, and hence, MSEDCL's contentions in this regard have no merit.

79. As regards adherence to the load shedding protocol approved by the Commission, MSEDCL has been using the terms Load Shedding Protocol, when it actually means Load Shedding Schedule. It needs to be clarified that the Commission only approves the load shedding protocol, wherein the ceiling hours of load shedding for specific Regions and Groups is stipulated, for a particular level of demand-supply gap. Based on this approved protocol, as per current procedure followed by MSEDCL, it issues corresponding Load Shedding Circulars to its field offices. The field offices in turn, prepare the Load Shedding Schedule, which specifies the exact hours of load shedding in the local hours, the duration, etc., and which needs to be publicized adequately through local media and through Divisional offices of MSEDCL. It is upto MSEDCL to implement the Commission's Order through its administrative machinery. The above analysis clearly reveals that MSEDCL itself has not complied with the load shedding protocol approved by the Commission, since its Load Shedding Circulars have not been in accordance with the matrix specified by the Commission and the hours of load shedding have also been higher than that permitted by the Commission (even though MSEDCL's Circulars incorrectly claim to be in accordance with the load shedding protocol approved by the Commission). Further, deviations have occurred because the field officers have not adhered to the stipulated Load Shedding Schedule, for which MSEDCL claims to have taken disciplinary action. Hence, these two levels of non-compliance have to be seen distinctly and should not be used interchangeably.

80. MSEDCL's main defence for the non-compliance with the load shedding protocol approved by the Commission is that the system is dynamic and hence, there is no guarantee that any load shedding protocol can be adhered to. In the Commission's view, the situation as presented by MSEDCL is too dynamic for operating any system. Since the analysis of the hourly data reveals that there is no merit in MSEDCL's contentions, the Commission rejects this argument of MSEDCL.

81. Deviations arising out of grid operation requirements may be required only by the State Load Despatch Centre/Regional Load Despatch Centre in exigent situations, but planned load shedding should be undertaken in accordance with principles approved in the Commission's Tariff Order in Case 72 of 2007 dated June 20, 2008. It is been observed that MSEDCL has not complied with the LS protocol approved by the Commission even when the system frequency was above 49 Hz and there was no threat to grid security.



82. The frequent change in the load shedding protocol has resulted in chaos. For any load shedding protocol to achieve stability, it has to be in force for a reasonable duration, and weekly or daily changes to the protocol will usually lead to chaos and poor implementation in the field. Moreover, the load relief given by MSEDCL due to lower requirement of MSEDCL (since the load shedding protocol results in a higher load relief, which is not required for most of the time) is such that consumers are unable to plan their activities, resulting in loss to the consumers as well as MSEDCL.

83. The Commission has observed that MSEDCL has modified the load shedding protocol whenever demand-supply gap has exceeded 4500 MW and resulted in distress load shedding in the licensee area, even for a few hours, and has not analysed whether the duration of the higher gap is for an extended period or is just a spike in the system due to supply shortages, which would be expected to be rectified shortly. There is no justification for the frequent changes to the load shedding protocol undertaken by MSEDCL, that too resulting in load shedding hours far higher than that approved by the Commission. MSEDCL has submitted that after the revision in the load shedding protocol with higher hours of load shedding, the incidences of EHV and Emergency EHV have been reduced or eliminated. However, MSEDCL appears to have based its revised load shedding protocol purely in accordance with the peak demand-supply gap, without any consideration for the duration of this peak gap. The Commission has directed MSEDCL several times in the past that the protocol has to be designed by keeping in mind the load duration curve, i.e., the duration for which any particular load exists. Such analysis would clearly reveal whether the increase in gap is sustained or merely a spike due to certain force majeure circumstances. If MSEDCL's rationale is extended further, it could lead to a situation wherein the load shedding protocol requires load shedding of 16 to 18 hours, in order to ensure that there are no EHV openings at all.

84. In its latest submission dated October 10, 2008, MSEDCL has requested the Commission to approve the load shedding protocol proposed under Option III, which proposes to create a new Category for load shedding, viz., and Divisional Commissioner Head Quarter cities, having lower load shedding as compared to Other Regions and Agricultural dominated regions. Option III proposes the load shedding hours for Divisional Commissioner Head Quarter cities ranging from 3 to 5 hours, depending on the distribution and collection losses, for Other Regions in the range of 5 to 7 hours, and 14 hours for Agricultural Dominated regions, along with 7 hours availability of three-phase supply to areas covered under single phasing schemes and separate agricultural feeders, 32 hours per week staggering for MIDC and equivalent feeders, 10% load reduction for non-continuous industrial consumers on Express feeders (by running their captive generation or One day staggering off), no load reduction for continuous process industries connected on express feeders, and staggered load shedding of 32 hours per week for other consumers on express feeders. The Commission does not find any merit in approving the load shedding protocol proposed under Option III by MSEDCL for the following reasons:



- a) The hourly data obtained from MSLDC does not justify any revision to the load shedding protocol already approved by the Commission, for reasons elaborated earlier in this Order. The ceiling hours of load shedding will also remain as approved by the Commission in its APR Order dated May 31, 2008 (Operative Order) and detailed Order dated June 20, 2008.
- b) As regards MSEDCL's projections of load relief of around 120 MU for an average demand-supply gap of around 4027 MW, the same is not consistent with data and proposals submitted by MSEDCL in the past. In the present Petition itself, MSEDCL has admitted that it has undertaken load shedding of 90-110 MU per day to achieve a load relief of 4000 to 5900 MW. Analysis of data submitted by MSEDCL shows that during the period from June 2008 to August 2008, the load shedding has exceeded 100 MU only on one day, i.e., July 23, 2008. The average load shedding was 43.76 MU in June 2008, 59 MU in July 2008 and 54 MU in August 2008. In earlier Proposals too, the relationship between MW and MU has been similar. Since this relationship cannot change, desired load relief of 120 MU amounts to a demand-supply gap of around 6500 MW. MSEDCL has made a totally new submission this time, stating that the effective load relief obtained by MSEDCL from any load shedding protocol is only around 80% of the planned load relief. The Commission fails to understand the basis and rationale for this argument, when MSEDCL has been able to get the desired load relief without any reduction over the last three years, since the load shedding protocols have been in place. The Commission hence, rejects MSEDCL's contention that the effective load relief is only 80% of the planned load relief. Since the theory that only 80% effective load relief is obtained by MSEDCL has been rejected by the Commission, 120 MU of load relief per day amounts to average demand-supply gap of 5030 MW throughout the day. Since the load and hence, demand-supply gap varies throughout the day, it is obvious that during peak hours, MSEDCL has projected the demand-supply at around 6500 MW, though it has not explicitly said so in its Petition. No justification has been provided for this projection by MSEDCL, and the Commission finds no merit in this submission of MSEDCL.
- c) MSEDCL, in response to queries of the Commission during the hearing on the APR Petition, has itself proposed the new load shedding protocol with only two major consumer categories, viz., Other Regions and Agricultural Dominated regions, under six DCL groups, and had merged the Urban and Industrial Agglomerations with the Other Regions. If MSEDCL's latest proposal is accepted, it would amount to reverting to the earlier dispensation, which is not justified. The rationale submitted by MSEDCL for this proposal, i.e., law and order problems due to unrest in these areas, and hence, lower load shedding being proposed, is not tenable, as this may encourage all regions to adopt the same strategy, leading to further unrest in the State.
- d) All along, MSEDCL has been maintaining that the minimum hours of three-phase supply for agricultural dominated areas, even for single-phase regions and feeder separated areas, would be 8 hours per day. However, under Option III, MSEDCL has proposed only 7 hours



of three-phase supply for such regions, even though the available data does not indicate any need for increasing the load shedding hours.

- e) MSEDCL has proposed 10% load regulation without detailing as to how this 10% load regulation will be implemented, i.e., the benchmark consumption against which the current month's consumption will be compared – whether average monthly consumption of the last year or corresponding month of previous year, the billing cycle from which this load regulation will become effective, treatment of new connections, etc., since the industrial consumers have to plan their consumption accordingly. Merely specifying a load regulation target is not sufficient.
- f) MSEDCL is differentiating between non-continuous and continuous category consumers, even in cases where both are connected through express feeders, irrespective of whether such consumer has opted for non-continuous supply. As elaborated earlier, such discrimination is improper and not justified in view of the Commission's Orders in this regard.

85. MSEDCL has also requested the Commission to formulate additional Interim tariff for the Divisional Commissioner Headquarter cities based on the principles of Reliability Charge for zero Load shedding. The Commission rejects this request of MSEDCL, since such reliefs, which amount to differential tariff determination, cannot be sought through a Petition of this nature, as MSEDCL would be well aware.

86. In summary, the Commission rejects MSEDCL's prayers made under Case No. 77 of 2008 and Case No. 78 of 2008, on account of the following reasons:

- a) The demand-supply gap has exceeded 4500 MW for only 97 hours over the period from April 1, 2008 to September 15, 2008, which comprises only 2.4 % of the total hours during this period. Hence, the load shedding protocol approved by the Commission was sufficient to mitigate the demand-supply gap, with very few exceptions.
- b) There are several instances (around 11% of the total hours during the period from April 1, 2008 to September 15, 2008) wherein MSEDCL has under-drawn from its share of CGS power, while at the same time undertaking load shedding in the State. MSEDCL should have drawn its full share under such circumstances, and reduced the load shedding being undertaken.
- c) The justification of critical grid conditions requiring MSEDCL to undertake additional load shedding also has no merit, since there are only 21 instances, amounting to 0.5% of the total hours during the period from April 1, 2008 to September 15, 2008, when the grid could be stated to be in critical condition, i.e., when the frequency was less than 49 Hz and demand-supply gap was more than 4500 MW.
- d) There are around 447 instances where MSEDCL has undertaken EHV opening, even though the grid frequency was above 49 Hz.



- e) Documentary evidence of instructions from SLDC has been submitted for only three occasions of EHV opening, even though MSEDCL has undertaken EHV opening on several occasions.
- f) All the reasons given by MSEDCL, viz., lower generation from MSPGCL, restriction of gas and waster usage, steep periodic rise in demand, etc., relate to lower supply availability, and will have meaning only if the actual demand-supply gap has exceeded 4500 MW, causing MSEDCL to undertake additional load shedding.

87. Further, the Commission rules that the load shedding protocol approved by the Commission vide its Operative Order dated May 31, 2008 and detailed Tariff Order dated June 20, 2008, in Case 72 of 2007, will continue to be in force for a demand-supply gap of around 4500 MW, since MSEDCL has not been able to produce any evidence of the demand-supply gap being projected to reach levels of 6500 MW. Further, in view of the concerns expressed by the stakeholders, MSEDCL is advised to undertake EHV and emergency EHV opening, only when directed by RLDC/SLDC and when the grid security is at risk. However, EHV Opening and UFR operations in the MSEDCL system at the time of underdrawal by MSEDCL may have to be taken up with the RLDC/SLDC.

88. In view of MSEDCL’s submissions regarding the dynamic nature of the grid, the Commission rules that in case the demand-supply gap continues to prevail at levels higher than 4500 MW for extended periods of time, and does not look likely to reduce in the near future, then MSEDCL may undertake higher levels of load shedding corresponding to the higher levels of demand-supply gap, as specified in this Order. In such circumstances, once the demand-supply situation comes back to normal levels, MSEDCL should revert to the earlier load shedding protocol with lower hours of load shedding. For convenience, the Commission approves the following load shedding matrices for different levels of demand-supply gap, which have been taken from MSEDCL’s proposal in this regard in Case No. 72 of 2007, since the Commission does not find any rationale for deviating from these simulations. MSEDCL is directed to operate strictly within the limits defined under the different scenarios.

**Table 22: Approved Scenarios of Load Shedding for different levels of demand-supply gap**

Scenario	Group	Other Region	Agricultural Dominated	MIDC & equivalent having a staggering day	Industries connected on Express feeders	Load relief in MW	Load Relief in MU
I	A	1.15	6.30	16 hrs/week	Nil	2500-3200 MW	72.02
	B	2.00	7.00				
	C	2.45	7.30				
	D	3.30	8.00				
	E	4.15	8.30				
	F	5.00	9.00				



Scenario	Group	Other Region	Agricultural Dominated	MIDC & equivalent having a staggering day	Industries connected on Express feeders	Load relief in MW	Load Relief in MU
II	A	1.45	7.30	16 hrs/week	Nil	3200-3700 MW	78.17
	B	2.30	8.00				
	C	3.15	8.30				
	D	4.00	9.00				
	E	4.30	9.30				
	F	5.30	10.00				
III	A	2.00	8.30	16 hrs/week	Nil	3700-4200 MW	83.13
	B	2.45	9.00				
	C	3.30	9.30				
	D	4.15	10.00				
	E	5.00	10.30				
	F	5.45	11.00				
IV Existing approved load shedding protocol	A	2.45	10.00	16 hrs/week	Nil	4200-4600 MW	92.99
	B	3.30	10.30				
	C	4.15	11.00				
	D	5.00	11.30				
	E	5.45	12.00				
	F	6.30	12.00				
V	A	3.15	11.00	24 hrs/week	Nil	4600-5000 MW	101.71
	B	4.00	11.30				
	C	4.45	12.00				
	D	5.30	12.30				
	E	6.15	13.00				
	F	7.00	13.00				
VI	A	3.45	12.00	24 hrs/week	24 hrs/week	5000-5600 MW	109.43
	B	4.30	12.30				
	C	5.15	13.00				
	D	6.00	13.30				
	E	6.45	14.00				
	F	7.30	14.00				




With the above observations, ruling and directions, the Commission disposes of the Petitions filed by MSEDCL in Case No. 77 of 2008 and Case No. 78 of 2008.

Sd/-  
(S. B. Kulkarni)  
Member

Sd/-  
(A. Velayutham)  
Member



  
(Prafulla S Varhade)  
Secretary, MERC

**List of persons who attended the hearing on 29.9.2008**

- 1) Shri. Shantanu Dixit – Prayas
- 2) Smt. Ashwini – Prayas
- 3) Shri. K.J. Sirsikar – MSEDCL
- 4) Shri. K.M. Wane – C.E. (L.M.)
- 5) Shri. V.D. Pande – MSEDCL
- 6) Shri. V.B. Dharurkar – BFL, PUNE
- 7) Shri. D.S. Kulkarni – BFL, PUNE
- 8) Shri. J.Y. Kharade – Menon & Menon Co.
- 9) Shri. S.B. Shingade - Menon & Menon Co.
- 10) Shri. P.S. Nirmale – MSEDCL
- 11) Shri. G.S. Trimukhe – MSEDCL
- 12) Shri. Dilip S. Dhumbre – MSEDCL
- 13) Shri. R.G. Sonawane – MSEDCL
- 14) Shri. R.B. Goenka – VIA
- 15) Shri. Ravi Prakash – Advocate
- 16) Shri. Vikas Singh – Sr. Advocate
- 17) Shri. Abhishek Khare – Advocate
- 18) Shri. Rahul Sinha – Advocate
- 19) Shri. Mohan Paudhakar – V.SA. Energy Dept.
- 20) Shri. Dias – Individual
- 21) Shri. N. Ponrathnam – Intervener
- 22) Shri. R.U. Kharangale – AGM, L&T
- 23) Shri. A.M. Parkar – Asstt. Manager – L&T
- 24) Shri. A.L. Wani – Ex. Engineer, L.M. Section
- 25) Shri. J.D. Kulkarni – DGM – TP
- 26) Shri. A. Charan – MD – TPTCL
- 27) Shri. Ashok Pendse - MGP

