August 20, 2006

To,
The Secretary,
MERC
Mumbai

Sub: Prayas Submission on MSEDCL ARR and Tariff Petition for FY 2006-07

Ref.: Public Notice dated July 22, 2006 in the above matter, MERC Case 54 of 2005

Madam,

In response to above public notice, please find enclosed comments / suggestions by Prayas (Energy Group), Pune on the MSEDCL ARR and Tariff Petition for FY 2006-07.

We request the commission to kindly permit us to make a presentation during the public hearing at Pune on 24th August 2006 and to make additional submission, if any.

Yours sincerely,

Shantanu Dixit and Nikit Abhyankar
For, Prayas (Energy Group)

Before the Maharashtra Electricity Regulatory Commission, Mumbai

Comments / Suggestions on the ARR and Tariff Petition by MSEDCL for FY 2006-07

by

Prayas (Energy Group), Pune.

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Contents

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Part I - Introduction and preliminary observations

MSEDCL has submitted the ARR petition after two years and has claimed a tariff increase of about Rs. 7353 Cr. (i.e. increase in average tariff from Rs. 3.20 /unit to Rs. 4.58 /unit) [1]. Moreover, as per MSEDCL the load shedding in the state (2.5 hours to 12 hours) is expected to remain same or rather increase in some months. Before going into the detailed analysis of these projections we wish to highlight some preliminary observations about the ARR process and MSEDCL application.

1. **Non-submission of tariff petition**
   On 28th February 2006 MSEDCL submitted its ARR petition, but without the tariff proposal. This is gross violation of the MERC Tariff Regulations. This becomes more serious considering that during the earlier tariff revision process also MSEB had done the same thing and the MERC had to direct MSEB to submit tariff proposal. Such repeated instances of non-compliance with MERC regulations should be taken seriously as the same vitiates the entire regulatory process and its independence.

2. **Spreadsheet calculations not available on the website**
   MERC Tariff Regulation, S. 8.5 clearly stipulate that licensee has to make available tariff petition and associated calculations, assumptions etc. in downloadable **spreadsheet** format on its website. MSEDCL has failed to do so.

3. **Incomplete information about load shedding (no MW LS data)**
   Though load shedding (LS) is at very high levels and is a serious issue affecting all consumers as well as MSEDCL's viability, the ARR and related data submitted by MSEDCL does not provide information about the MW load shedding under different scenarios, for different groups and for different months and hours. MSEDCL has provided data only about MU (energy) load shedding. Also the computation of LS in different regions under different scenarios is non-transparent. Lack of MW data about

[1] Ref: Approach paper prepared by MERC's consultant, July 2006

load shedding makes it impossible for common man to know what will be the level of load shedding and is it going to increase or decrease.

4. Inconsistent, incomplete and old information

There are several instances in the proposal submitted by MSEDCL where the information submitted is inconsistent, incomplete or old. An example of such instance is the compliance report given from page 171 onwards in the ARR, which is neither updated nor well organized.

5. Repeated non-compliance with MERC directives

On several occasions in the past it has been observed that MSEDCL has failed to comply with directives of MERC. For example, in spite of MERC directives (listed below), MSEDCL has not improved 11 KV metering as shown in section 4 of Part IV of this submission. There are several such instances of non-compliance, and MERC needs to take stringent action against MSEDCL and its staff for the same.

(i) MERC order on single phasing and load shedding dated 4th March 2005
Sec 17.2.2.3 (page 23)
"The energy accounting data and information should be collected on a real time basis across all locations in synchronisation with the system load readings through AMR. It should also be web-enabled, so that it is readily available for analysis. The results of the single phasing implemented by MSEB on this basis will have to be validated by a qualified independent agency before submission to the Commission."

(ii) MERC Order on Load shedding principles and protocol dated 3rd August 2005
Sec 27(j) (page 20)
"Meters capable of recording kW and kVA through remote metering should be installed ***on all 11 kV outgoing feeders****, appropriate wiring (3 phase, 4 wire) should be done, and the MW/MVAR should be recorded on an hourly basis."*
(Emphasis added)

Above are just some of the examples indicating lacunas in the MSEDCL's submissions. *Hence, we urge the Commission to direct MSEDCL that henceforth all tariff and ARR petitions must be filed in time and it should be complete in all respect, with updated, well organized information. Failure to do so should attract proceedings for non-compliance of MERC directives.*

Part II - Annual Revenue Requirement and Expenses Projections

In this section, we submit our analysis of the ARR projections by MSEDCL. The analysis indicates that the ARR projected by MSEDCL is highly inflated and the actual tariff increase justified for FY07 is much less.

1. Main Components of MSEDCL ARR

1.1. Following table indicates the break up of MSEDCL ARR for 2004-05, 2005-06 and 2006-07 into major components.

Cost Head	FY 05	FY 06	FY 07
Power Purchase Cost	10707	12790	17358
MSETCL Transmission Charges	1590	1668	1854
Employee Cost	1361	1456	1565
Investment Related Costs (Depreciation, RoE, Interest etc)	983	895	1405
Income Tax	-	108	161
Other (A&G, R&M, Other financing charges etc)	851	1012	1205
Gross ARR	**15491**	**17932**	**23549**
Previous under-recoveries (true-up)	-	-	1914
Less non tariff income	986	1022	1059
Total ARR from retail tariff	**14505**	**16910**	**24403**

Investment related costs in the above table include costs that depend on the capital investment done by MSEDCL. These include depreciation, interest on long-term debts and Return on Equity (RoE). Income Tax (IT), though shown separately, depends on the profits of the licensee and hence in turn is linked to investments. It is clear from the above table that,

(i) Power purchase expenses and transmission charges constitute to about 82% of Gross ARR of MSEDCL for FY07. This increased power purchase expenses is the main driver for increasing the total ARR.

(ii) Investment Related Costs (Depreciation + RoE + Interest + Income Tax) and employee cost are 7% each of MSEDCL ARR for FY07 and

(iii) Previous under-recoveries (true-up) is 8% of the ARR to be recovered through retail tariff

Hence we should carefully evaluate the reasonableness of power purchase cost, investment related cost, employee cost and previous under-recoveries.

1.2. As indicated in the above table, total ARR of MSEDCL to be recovered from retail tariff in FY07 is Rs 24,403 Cr. The following table indicates actual ARRs and annual sales for 2004-05, 2005-06 and projections for 2006-07.

	FY 05 (Actual)	**FY 06 (Estimate)**	**FY 07[2] (Existing Tariff)**	***FY 07 (Proposed)***
Total sales (MU)	42948	45956	53254	*53254*
Total ARR recovered from retail tariff (Rs Cr)	13992	15509	17050	*24403*
Average realisation (Rs/kWh)	3.26	3.37	3.20	***4.58***
Tariff increase in 2006-07 (Rs Cr)				***7353***

As it is made clear in the approach paper by MERC's consultant, net gap to be recovered through tariff increase in 2006-07 is **7353 Cr**. At present, average realization from MSEDCL consumers stands at 3.20 Rs/kWh, which is proposed to go as high as 4.58 Rs/kWh. In other words, proposed increase in tariff for MSEDCL consumers is **138 paise/kWh** or **43%**.

2. Sales forecast

Energy input requirement and hence the power purchase costs depends on the sales of licensee. Hence projecting sales for future years on realistic assumption is key towards estimation of power purchase cost.

2.1. LT Agricultural consumption

MSEDCL has estimated the norm for unmetered LT Agricultural consumption in FY05 as 1602 hours/year and that in FY06 as 1762 hours/year and has projected the norm for FY07 as 2290 hours/year. MSEDCL has shown such a sharp increase in agricultural consumption norm mainly because of lower load shedding in FY07. The norm admitted by MERC in the tariff order for year 2003-04 was 1300 hours/year. It should be noted here that MERC did not envisage any load shedding in 2003-04.

While estimating the agricultural consumption hours in 2003-04, MERC had applied certain filters on the readings of sample agricultural DTs monitored by

[2] Ref: Approach paper prepared by MERC's consultant, July 2006

then MSEB. If the same filtering criteria as stipulated by the Commission in previous tariff orders (more than 300 days of positive readings and hours of operation between 300 and 3000 hours/year) are applied to sample agricultural DT readings for FY05 and FY06, agricultural consumption norm comes to about 1350 hours/year for FY05 and 1331 hours/year for FY06. This translates to unmetered agricultural consumption of 7168 MU and 7067 MU in FY05 and FY06 respectively. Thus based on the consumption norm for FY 06, since load shedding would continue in FY 07 also, we assume the same consumption norm for FY06 to continue in FY07 i.e. 1331 hours/year. Based on this consumption norm, unmetered LT-Agricultural consumption in FY07 is estimated at 7067 MU as there is no change in the connected load of this category.

MSEDCL has projected the metered LT-agricultural consumption as 1345 MU and 1854 MU for FY05 and FY06 respectively. This makes the consumption norm for metered agricultural connections as 815 hours/hp/year in FY05 and 961 hours/hp/year in FY06. In FY07, MSEDCL projects metered agricultural consumption to shoot as high as 2619 MU which translates to a consumption norm of 1185 hours/year. Due to optional metered tariff before 2002, only lower consumption agricultural consumers had opted for the metered tariff in this period. This made their consumption norm substantially lower than unmetered connections. 2002 onwards, new agricultural connection is given supply only on metered basis. Therefore, one would expect the metered agricultural consumption norm after 2002 to be higher than previous years. However, in no way it could match the unmetered agricultural consumption norm. So, based on prior year consumption, 900 hours/year would be a fairly appropriate consumption norm for projecting metered LT agricultural consumption. This translates to yearly consumption of 1989 MU in FY07. Following table indicates the total agricultural consumption based on sample DT readings filtered by the criteria stipulated by MERC in its previous tariff orders:

	FY 05	**FY 06**	**FY 07 (Projected)**
Unmetered Agri consumption norm based on filtered sample DT readings (hours/hp/year)	1350	1331	1331
Unmetered Agri Consumption based on above consumption norm MU	7168	7067	7067
Metered Agri consumption norm (hours/hp/year)	815	961	900

Metered Agri Consumption MU	1345	1854	1989
Total LT Agri Consumption MU (Realistic estimate)	**8514**	**8922**	**9057**

2.2. Other LT categories

The table below indicates the sales projected by MSEDCL for other LT categories (viz: Domestic, Commercial and LT Industrial).

Category	Consumption in **FY 05** MU	5 year CAGR	Consumption in **FY 06** MU	YoY growth in FY 06	Consumption in **FY 07** MU	YoY growth in FY 07
	(Actual)		(Estimates)		(MSEDCL projections)	
Domestic	7359	2.7%	7829	6.4%	8948	14.3%
Commercial	1922	8.0%	2053	6.8%	2279	11.0%
LT Industry	3793	0.8%	4023	6.1%	4534	12.7%

It is clear form the table that sales growth in FY07 projected by MSEDCL is substantially higher than that in previous years. MSEDCL has attributed this increase to increased availability of power (lower levels of load shedding). Some of the domestic load and most of the LT Industrial load has already shifted due to load shedding. Therefore, though there would be an increase in sales over and above normal sales growth due to reduction in load shedding, such increase would not be as high as projected by MSEDCL. Based on the CAGR and YoY growth while going from FY05 to FY06, we can realistically assume that sales to these LT categories may grow at 10% in FY07. The revised sales projections for LT categories are shown in the following table. We have assumed sales to other LT categories as projected by MSEDCL.

Category	**Sales in FY07 based on realistic assumptions (MU)**	**Growth Rate in FY07**
Domestic	8612	10%
Commercial	2259	10%
LT Industry	4425	10%

2.3. HT Category sales

MSEDCL has assumed that total sales to HT categories in FY07 would grow by 8.8%. Today, most of the HT Industrial, PWW and Railway load is exempted from load shedding. Assuming some "loss of sale" in FY06, we have assumed sales growth for HT categories in line with MSEDCL projections except HT Agriculture. Though HT agricultural consumers were subjected to load shedding in FY06, they have already shifted their load to off-peak hours. Therefore, we have assumed HT Agricultural load to grow at 10% in FY07 based on its growth in previous years. HT Agricultural consumption in FY07 hence becomes 497 MU instead of 542 MU projected by MSEDCL.

2.4. Total sales of MSEDCL

Based on the revised projections detailed above, following table indicates total sales by MSEDCL for three years – FY 05, FY 06 and FY 07.

	FY 05	**FY 06**	**FY 07**
Total sales by MSEDCL (MU)	41507	43524	46831

(Note: Sales for FY 05 and FY 06 are also restated based on revised LT unmetered agricultural consumption norm of 1350 hours/yr and 1331 hours /yr. respectively.)

3. Distribution Loss

3.1. Transmission Loss – effect of MERC Order

MERC has passed an order dated June 28, 2006 on MahaTranco's (MSETCL) ARR. MSEDCL had projected the transmission losses of 6% in FY06 and FY07 while working out its ARR. However, MERC in its order has restated transmission losses as 4.6% and 4.85% for FY06 and FY07 respectively based on the load-flow study done by CPRI. Therefore, we should use the transmission losses as approved by MERC for FY06 and FY07.

3.2. Actual Distribution Loss in FY05 and FY06

MSEDCL in the ARR petition has stated that distribution losses in FY05 and FY06 are 31% and 29% respectively. However, as discussed in earlier sections, MSEDCL has projected the unmetered agricultural sales for these years on a substantially higher consumption norm. Moreover, transmission loss assumed by MSEDCL is 6% for both years – FY05 and FY06. If agricultural consumption is estimated on realistic norms (derived from applying MERC approved filters to sample DT readings) and transmission losses are taken as stipulated by the Commission, distribution losses for FY05 and FY06 are substantially higher than claimed by MSEDCL, which are indicated in the following table.

	FY05	FY06
Total power purchase MU	67154	69731
Transmission losses	6.0%	4.6%
MSEDCL input MU	63124	66523
Total Sales MU (Agri consumption based on MERC filters)	41507	43524
Distribution Loss MU	21617	22999
Distribution Loss %	**34%**	**35%**
Total T&D loss %	**38%**	**38%**

It is clear from the table that actual distribution loss in FY05 and FY06 is **34%** and **35%** respectively. This translates to a total T&D loss of **38.2%** and **37.6%** for FY05 and FY06 respectively.

3.3. Distribution loss in FY 07

MERC has directed MSEDCL (then MSEB) in all previous tariff orders to take serious actions to reduce T&D loss. MERC also stipulated T&D loss targets to be achieved by MSEDCL (then MSEB). In FY 2003-04 MERC had directed integrated MSEB to reduce total T & D losses to around 27%. MSEDCL has projected its distribution losses to be 27% in FY 07. With transmission losses of 4.85%, total T&D loss in FY07 becomes **31%**, which is still way higher than the earlier targets set by the Commission. This demonstrates total lack of accountability of MSEB (MSEDCL).

In this context, we request the Commission not to approve any T&D loss over and above the target set by MERC in its previous tariff order (2003-04) i.e. total T&D loss of **26.87%**. Energy input requirement and power purchase cost should be worked out according to the T&D loss of 26.87%. As MERC has allowed transmission loss of 4.85% in FY07, allowable distribution loss for FY07 thus works out to be only **23.14%**. Any cost due to the distribution loss in excess of 23.14% should not be allowed to be recovered from consumers.

4. Power Purchase Cost

4.1. Energy Input Requirement

The following table indicates total energy input requirement and power purchase cost considering revised sales estimate and allowable distribution loss in FY07.

	MSEDCL Projection	Realistic Estimate
Total sales in FY07 (MU)	53254	46831
Allowable Distribution Loss %	27%	23.14%
MSEDCL's input (MU)	73749	60931
Allowable Transmission Loss %	6.00%	4.85%
Total (MSETCL) Energy Input Requirement MU	**78452**	**64037**
Excess power purchase MU		**14416**

Therefore, we request the Commission to work out ARR on the basis of total (MSETCL) energy input requirement of only 64037 MU in FY07 and disallow the cost towards excess power purchase of 14416 MU. Actual cost of this avoidable power purchase may vary according to the load shape. However, as a conservative estimate, we estimate that the average cost saving on account of this avoidable power purchase will be Rs. 2.4 /kWh), which is just about 10% higher than the average power purchase cost projected by MSEDCL. Thus, power purchase cost of at least 3500 Cr should be disallowed and should not be recovered from consumers. Thus, total justified power purchase cost for FY07 should not be more than 13858 Cr. The actual impact on MSEDCL's revenue on account of this disallowance would be significantly lower due to possible optimization of the power purchase cost as mentioned in the following section.

4.2. Optimisation of power purchase in FY07

4.2.1. MSEDCL has envisaged to purchase 47798 MU from MahaGenco in FY07. MahaGenco, in its ARR, has projected the hydro generation as 3931 MU in FY07 assuming average monsoon year. As the monsoon in FY07 has been better than average, hydro generation in FY07 should increase proportionately. In FY06, owing to good monsoon, net ex-bus hydro generation is estimated at 5464 MU. Therefore, same amount of generation should be expected in FY07. This makes additional 1500 MU available at virtually no marginal cost. Further, it is most likely that a significant chunk of this additional hydro generation would displace costlier peak power purchase. At an average rate of power purchased from traders and RGPPL which is about Rs 4.34 per unit[3], this translates into a cost reduction of Rs 650 Cr.

[3] Ref: Approach paper prepared by MERC consultant, July 2006

4.2.2. While projecting the power purchase cost in the ARR, MSEDCL has projected less power purchase from low cost sources such as MSPGCL and Central Sector stations. However, according to the additional data submitted by MSEDCL (pp 215 to 237 of ARR document), scheduled power purchase from MSPGCL and Central Stations is significantly more than that projected in the ARR. Moreover, power purchase from expensive sources such as traders is lower than that projected in the ARR. Total difference translates to reduction in power purchase cost of at least 800 Cr.

4.2.3. Thus, the total cost saving on account of optimum power purchase measures would be of the order of 1500 - 1800 Cr.

5. Depreciation in 2006-07

MSEDCL has projected total depreciation of Rs. 599 Cr for 2006-07. Average depreciation rate used by MSEDCL comes out to 6.1%. However, the depreciation rates used by MSEDCL are not consistent with the depreciation schedule given in the MERC Tariff Regulations 2005. If we apply the depreciation rates as approved in the Tariff Regulations, total depreciation for FY07 works out to be 359 Cr. as provided by MSEDCL on page 273 of the ARR. Therefore, we request the Commission to approve depreciation in line with Tariff Regulations 2005 and disallow the excess depreciation expenses of Rs. **240 Cr**.

6. Fuel Adjustment Charges disallowed by MERC

Following table shows the Fuel Adjustment Charges (FAC) approved by the Commission for 2004-05 and 2005-06.

Year	FAC Claimed by MSEDCL Rs Cr	FAC allowed by MERC Rs Cr	FAC Disallowed Rs Cr	Excess T&D loss Rs Cr	Total disallowance by MERC Rs Cr
FY 05	1,024	980	44	119	**163**
FY 06	2,503	2,423	80	234	**314**
Total	**3,527**	**3,403**	**124**	**353**	**477**

It is clear from the table that MERC has disallowed the FAC of 477 Cr in 2004-05 and 2005-06 together. While estimating its power purchase cost for FY06 and FY07, MSEDCL has considered total power purchase for these years and has applied its distribution losses uniformly over entire power purchase. This means that FAC disallowed by the Commission in these years is also counted in the total power

purchase cost for FY05 and FY06. This is incorrect as the costs once disallowed by the Commission should not be recounted! Therefore, we request the Commission to disapprove the recounted FAC of 477 Cr.

7. Transmission Charges of MahaTransco

7.1. MSEDCL has projected the transmission charges to be paid to MahaTransco (MSETCL) as 1668 Cr and 1854 Cr for FY06 and FY07 respectively. However, MERC order dated June 28, 2006 has substantially reduced MSETCL's ARR, which is shown in the following table.

	FY 06	**FY 07**
Transmission Charges projected by MSEDCL Rs Cr	1668	1854
MSETCL ARR approved by MERC Rs Cr	1433	1393
Reduction in Transmission Charges Rs Cr	235	461
Total reduction in transmission charges Rs Cr		**697**

Therefore, there should be a reduction in transmission charges of at least **697 Cr** in FY06 and FY07 combined.

7.2. The Commission has passed an order dated June 27, 2006 on transmission tariff framework in the state. According to the methodology stipulated in the order, ARRs of all transmission functions in the State should be pooled together and every transmission system user has to pay its share of transmission charges depending on transmission network usage. As a result of this methodology, it is expected that MSEDCL may not have to bear the entire ARR of MSETCL. This would further lower the transmission charges and MSEDCL's ARR for FY07 should also be reduced accordingly.

8. Previous years' adjustments

MSEDCL has estimated previous year's true up of 1914 Cr (513 Cr for FY05 and 1401 Cr for FY06) to be recovered from consumers in FY07.

8.1. Actual recovery in FY 2005-06

MSEDCL has estimated the actual revenue from sale of power in FY06 as 15509 Cr and has shown a revenue gap of 1401 Cr. In the additional data submitted by MSEDCL, category wise actual monthly revenue for FY06 and FY05 has been given. If we sum up the total revenue recovered in FY06, add the subsidy received by the government in FY06 and add the FAC for FY06 to be recovered later than

March 2006, total revenue is estimated at about 16200 Cr. This implies actual revenue exceeds the estimated revenue by about 700 Cr. Therefore, adjustments for FY06 should be reduced by **700 Cr**.

8.2. Actual recovery in FY 2004-05

MSEDCL has estimated the Total income (revenue from sale of power + non-tariff income) in FY05 as 14978 Cr and has shown a revenue gap of 513 Cr. However, according to the audited Accounts Report for 2004-05 total income is shown as 15121 Cr. This implies actual income exceeds the claimed income by 144 Cr. Therefore, adjustments for FY05 should be reduced by **144 Cr**.

8.3. Interest on working capital for FY06

MSEDCL has projected Interest on Working Capital (IWC) for FY06 as 105 Cr. It has worked out the working capital interest in accordance with the MERC Tariff Regulations 2005. However, according to MERC order dated 13th April 2006, estimations for FY06 should be based on the previous tariff order principles. MERC, in its previous tariff order for MSEB for 2003-04, has estimated working capital as 0.75 * (Current Assets – Current Liabilities). According to the provisional transfer scheme, working capital requirement for FY06 turns out to be negative (current liabilities greater than current assets). Therefore, interest on working capital of **105 Cr** for FY06 should not be allowed to be recovered from consumers.

8.4. Income Tax for FY06

MSEDCL has added income tax of **108 Cr** to its ARR for FY 06. However, as MSEDCL was making losses in FY06, there is no question of paying income tax in FY06 and hence should be disallowed by the Commission.

8.5. Contingency Reserve for FY06

MSEDCL has projected contingency reserve of **45 Cr** for FY06. However, there is no provision for contingency reserve in its previous tariff order. Therefore, it should not be allowed to be passed on to consumers.

Combining all this, we request the Commission to reduce the previous year adjustments by 1102 Cr (700 Cr + 144 Cr + 105 Cr + 108 Cr + 45 Cr).

9. Aggregate Revenue Requirement for FY 07

Following table lists various components of disallowances detailed in earlier sections

Cost Head	Disallowance in FY07 ARR Rs Cr	Basis
Power Purchase Cost	3500	Based on realistic sales forecast, efficient power procurement and restricted Distribution loss
MSETCL Transmission Charges	697	Based on MERC order on MSETCL ARR
Depreciation	240	MERC Tariff Regulations 2005 norms
Interest on working capital FY06	105	Principles specified in applicable tariff order (for FY 04)
FAC disallowed by MERC in FY05 and FY06	477	MERC disallowed FOCA / FAC charges
Recovery from sale of power in FY06 (excess of that claimed by MSEDCL)	700	Updated total revenue recovered for FY 06
Gross earnings in FY05 (excess of that claimed by MSEDCL)	144	Updated total revenue recovered for FY 05
Income Tax for FY06	108	MSEDCL incurred losses in FY 06
Contingency Reserve for FY06	45	Principles specified in applicable tariff order (for FY 04)
Total disallowance in FY07 ARR	**6015**	-
ARR to be recovered from retail tariff (MSEDCL projection) Rs Cr	24403	-
Actual ARR (Realistic estimate) to be recovered from retail tariff Rs Cr	**18388**	-
Sales in FY 07 (MU)	46831	Realistic forecast of agricultural and other consumption
Average realization in FY 07 (Rs/kWh)	**3.93**	-

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It is clear from the above table that,

(i) In total Rs **6015 Cr** should be disallowed from MSEDCL in FY 07. ARR to be recovered from retail tariff in FY07 projected by MSEDCL is 24403 Cr. With this disallowance, ARR to be recovered from retail tariff in FY07 works out to be **18388 Cr**.

(ii) Realistically estimated sales in FY07 are **46831 MU**. Thus, average realization in FY07 comes out to be **3.93 Rs/kWh.**

Therefore, we request the Commission to restrict FY 07 ARR to Rs. 18,388 Cr. and average realization in FY07 to Rs 3.93/kWh only.

Following table compares the average realization for MSEDCL over years:

	2003-04 (MERC)	**2004-05 (Realistic estimates of sales and revenue)**	**2005-06 (Realistic estimates of sales and revenue)**	**2006-07 (MSEDCL projection)**	**2006-07 (Realistic estimate)**
ARR recovered from retail tariff Rs Cr	12174	41507	43524	24403	18388
Total Sales MU	39710	14135	16209	53254	46831
Average Billing Rs/kWh	**3.07**	**3.41**	**3.72**	**4.58**	**3.93**

(Note: Sales and revenue for FY05 and FY06 are restated based on realistic assumptions and information as explained in earlier sections. e.g. Agriculture unmetered norm @ 1350 and 1331 hr./ yr. respectively.)

Actual revenue allowed in FY06 (including recovery of FAC arrears) was about 16200 Cr leading to average tariff (based on restated agricultural consumption) of Rs 3.72 per unit. In light of the analysis presented above, we request the Commission to restrict the tariff hike in FY07 to **1338 Cr** (i.e. total revenue increase of 2179 Cr over FY06 levels). This translates to a hike of **21 paise /kWh** over the actual average billing in FY 06 making average tariff as Rs 3.93 per unit. This implies a tariff hike of about **5.5%** over actual average FY 06 tariff.

Revenue at existing tariff in FY07 projected in the approach paper by MERC's consultant is 17050 Cr. As indicated above, justified ARR to be recovered from retail tariff in FY 07 is 18388 Cr. This implies a tariff increase of **7.8%** as against 43% proposed by MSEDCL.

Part III - Load Shedding Protocol and Tariff Design

This part of the submission contains our observations about the load shedding protocol specified by the Commission and suggestions for the tariff design.

Conceptually, it is the responsibility of MSEDCL (or erstwhile MSEB), Government of Maharashtra and MERC to ensure that electricity consumers in Maharashtra are provided sufficient electricity at reasonable cost. Unfortunately, due to failure of these agencies, Maharashtra is facing a power crisis, wherein large parts of the state are subjected to 12 and at times 16 hours of load shedding. As if this is not enough, consumers are required to pay significantly higher tariff to meet the increased cost of power supply in the state. The tariff increase is a result of significantly increased purchase of high cost power and minimal or no reduction in T & D losses (which are still nearly 38 %, refer section 3.2 of Part II of this submission as against the target of 27% given by MERC for FY 2003-04).

Without going into the causes of this crisis and long term solutions for the same, in this section we make certain suggestions, purely to face the power crisis in the short term (next couple of years), as we believe that planned, transparent strategy to meet the crisis is desirable than unplanned, ad-hoc and non-transparent approach. Further, considering that the current situation is exceptional and hence requires exceptional approach, it is essential that thorough monitoring and periodic review is undertaken to ensure mid-course correction. More ever, the approach adopted for addressing the short term crisis should not become a precedent for long term solutions without adequate analysis and debate.

Any approach to deal with the current situation needs to consider demand –supply gap as well as revenue / tariff increase. These essentially imply decisions regarding load shedding and tariff design for different consumer categories and geographical areas. Though any solution is going to be sub-optimal from one perspective or the other, following principles should be considered while taking decision regarding load shedding and tariff increase.

- Either the tariff or the load shedding should not be too onerous to any particular consumer category or consumers in particular areas
- The tariff impact should be linked to two crucial parameters – T & D loss (or AT & C loss) in particular area and hours of supply (or load shedding)
- Small, poor consumers should be paid special attention in terms of tariff design
- Whenever feasible, choice of buying high cost power or reducing consumption (or load shedding hrs.) should be made available to individual consumers.

In the current context, based on these considerations next section presents some suggestions and comments regarding load shedding and tariff design.

1. Current LS protocol is highly discriminatory and needs to be revised

In the current scenario it is inevitable that significant, planned load shedding is needed to tide over the current crisis, and commission's efforts to bring in transparency in this through load shedding protocol orders are laudable. Also, in the current scenario it is appropriate to link load shedding to performance of the division in terms of AT&C loss (to a certain extent), to balance the revenue and power availability considerations of licensee.

But, the current LS protocol specified by the Commission penalizes certain geographical areas SOLELY because of high incidence of agricultural consumption in that area, even though the performance of particular division is excellent in terms of AT&C losses. For example, the AT&C losses (as per LS protocol order dt. 10th January 2006), in divisions such as Gandhi Bag, Civil lines, and Aurangabad are well above 50%, but being from the urban conglomeration area the load shedding in these areas is only 4 hrs. As against this, divisions such as Kolhapur (R 1), Satara, Sangli, Karad and Ratnagiri, which have DISTRIBUTION AT&C losses below 28% are subjected to load shedding of 11 hrs. and division such as Kolhapur (U), Sangli (U) and Ichalkaranji have distribution AT&C losses of below 20% and are subjected to load shedding of 4.5 hours. Thus, it is clear that the key differentiator in the LS protocol is urban v/s rural regions and AT&C level (i.e. performance of the division) play only a minor part in deciding LS hours.

It is highly undesirable and imprudent to penalize regions just because of high incidence of agricultural load in the region. Hence, the load shedding protocol needs to be revised. The revised LS protocol should be based on following considerations / criterion

i) Load regulation of agriculture should be at the level of feeders rather than geographical areas. Power supply to feeders with predominant agricultural load (say above 75%) should be ensured for 12 hrs. In the context of current demand-supply scenario and financial implications, as well as ground water considerations, it is inevitable to restrict agricultural supply to 12 hrs. But it needs to be ensured that minimum 12 hours of supply is provided to agricultural feeders.

Load shedding to non-agricultural feeders should be on the basis of AT & C loss based LS protocol and division groupings.

The MERC / MSEDCL should publicize widely that when feeder separation is done in any area the load shedding for non-agricultural consumers would reduce drastically. This will help in creating the ground pressure on MSEDCL to complete the feeder seperation scheme early and will also motivate people to cooperate with MSEDCL for laying of feeders etc.

ii) To ensure social justice and equity, in no region peak LS of more than 9 hours should be allowed (and that too in two blocks of say 4.5 hrs. each).

iii) While deciding the LS protocol HT industry and MIDC areas should also be considered[4].

iv) Combined effect of load shedding hours variation on the basis of a) AT&C losses and b) urban and other regions should not be more than 1:3.

v) When the load shedding requirement is less, either due to better availability or lower demand, load shedding should be reduced for areas with more than 6 hrs. load shedding – i.e. priority should be to bring down highest load shedding to 6 hrs. Subsequent reduction in load shedding should be on pro-rata basis for all divisions.

2. Suggestions for tariff design and provisions for reducing LS

As a first step in tariff determination, based on above load shedding principles, power purchase requirement should be worked out (taking into consideration losses and other factors as described in section 4.1 of Part II of this submission). Total revenue requirement based on this power purchase requirement, should be used to arrive at 'Base tariff' for all consumers. While deciding base tariff for all consumers, tariff increase for a) Small (say below 100 units / month), domestic as well as commercial consumers and b) agricultural consumers (as they are subjected to highest load shedding, and considering current tariff), should be limited. Further following guidelines of National Tariff Policy, should be followed

- Tariff (including fixed and variable charges) for consumers below 30 units / month should be about 50 % of the average cost of supply

[4] This is notional inclusion of HT / MIDC areas in the load shedding protocol, for working out the cost of power purchase in the base scenario. As mentioned in subsequent section, these industries could be excluded from load shedding and the additional cost of power purchase to meet increased power purchase cost could be recovered from these consumers in the form of high tariff for increased consumption above say 80 % of last years consumption.

- Tariff should be plus / minus 20 % of average cost of supply for all categories by FY 2010-11.

HT industry /MIDC areas with separate feeders could be excluded from actual load shedding, provided load regulation measures are put in place. For this purpose, such industries should be required to reduce consumption to say 80 % of last year's consumption and any consumption above this should attract heavy tariff, say Rs. 8 / unit. **In this way, individual industry will be able to give individual response, either in terms of reducing consumption or paying the high cost required to meet increased demand**.

After considering the above LS protocol and supply to industries, if additional power is available, then that power could be used to reduce / eliminate load shedding for Group A / B divisions in urban conglomerations. The entire cost of this additional power purchase (including T and distribution ATC losses) should be recovered from consumers in that area (excluding first 100 units / month consumption for all consumers), in the form of a low / zero load shedding surcharge. (i.e. this surcharge will be applicable for all consumption about 100 units / month)

Need to accelerate rural household electrification

It is unfortunate that still a large number of rural households in the state are unelectrified. Heavy charges for new connection and documentation / procedural requirements are few important causes for this. At times inability to get new connection for these reasons leads to theft. To avoid this vicious circle and for social development, in line with Central Government initiatives, MSEDCL should be directed to undertake household electrification at rapid pace. To facilitate this, new connection charges for rural households should be reduced drastically and documentation/procedural requirements should also be simplified. Measures such as load limiter based connections should also be considered.

An indicative analysis of tariff based on above principles (revised load shedding protocol and tariff design) and efficient ARR, shows that the 'Base Tariff', applicable for all consumers will be marginally less than the tariff applicable in FY 06 (including recovery of FAC arrears). Whereas, the tariff for HT and MIDC industries and consumers in urban conglomerations would increase by about 80 paise / unit to 100 paise/ unit. This increase would be on account of purchase of high cost power to reduce load shedding for these consumers.

Part IV - Suggestions for Improving MSEDCL Accountability and Performance

In this part we make a few suggestions for improving the performance and accountability of MSEDCL and its staff.

1. **MSEDCL staff should be held accountable for distribution AT & C loss**

   It is a well-established fact that large number of metering and billing related irregularities are due to connivance of MSEDCL staff. For many years, consumers have paid for the inefficiency and corruption of MSEDCL staff through tariff in different forms such as high tariff, T & D loss (TDL) surcharge or Regulatory Liability Charge (RLC). MSEDCL staff, though responsible for high AT&C loss has not share any burden of such losses. This should not be tolerated henceforth and in order to ensure accountability and performance improvement, it is essential that MSEDCL staff be required to bear a part of the burden due to high AT & C losses. Conversely, MSEDCL staff showing good performance in terms of the low / reducing AT & C loss should also be rewarded. *Hence, in line with Nation Tariff Policy, we urge MERC to direct MSEDCL to submit a scheme for employee incentive and disincentive based on AT & C loss. This incentive and disincentive should be applicable for all employees, starting from the field staff to top management.* Further, if MSEDCL fails to submit such scheme within two months then MERC should specify the same.

2. **MSEDCL staff should be held responsible for non-compliance with MERC orders and regulations**

   Considering the history of non-compliance with MERC directives and regulations, it is essential that MERC initiate action against concerned officials of MSEDCL. Hence, as an indicative exercise we urge the MERC to initiate proceedings under section 142 / 146 of E. Act 2003 against at lest a couple of officials of MSEDCL. This will significantly improve the compliance with MERC directives / orders and will result in increased accountability of MSEDCL. Unless, such stringent measures are adopted it would be futile to blame MSEDCL only on paper.

3. **Public hearings on AT & C loss**

   MSEDCL's losses have reduced only marginally in the last few years and high T & D losses continue to bleed MSEDCL and consumers. Following table shows the T & D losses based on realistic estimate agricultural consumption and MERC target for losses.

	Integrated MSEB T & D Loss (%)
FY 03-04 Target by MERC	26.87%
FY 04-05 Actual	38.2%
FY 05-06 Actual	37.6%
FY 06-07 Projected	31%

(Note: Numbers for FY 04-05, 05-06 and 06-07 are based on realistic estimation of agricultural consumption, in line with methodology adopted by MERC for FY 03-04 order.)

Hence, it is critical that MERC adopts proactive measures to make MSEDCL accountable for losses. For this purpose, we suggest that MERC should hold public hearings at regional headquarters, similar to tariff public hearings, specifically on the issue of distribution losses. Such public hearings should be held after an independent study of distribution losses in the said area. MERC should commission consultants to conduct such studies, which should include, validation of energy audit and distribution loss claims of MSEDCL for the said area, analysis of causes of high distribution losses and measures to reduce the same. Such an approach will empower consumer groups to make MSEDCL accountable for losses and would also put pressure on MSEDCL to reduce losses. Such an approach is also essential considering the quality and reliability of MSEDCL's energy audit reports and would be in line with the National Tariff Policy guideline that SERC's should undertake third party validation of data.

4. Metering and billing inefficiencies

Metering and billing is one of the weakest areas of MSEDCL's operations. The extent of inefficiency in metering could be gauged from the analysis of 11 KV feeder meter data supplied by MSEDCL. First, it is essential to note that MSEDCL submitted this data after lot of delay and persuasion from Prayas. This itself indicates that MSEDCL is not monitoring this crucial information. Even the data made available shows several weaknesses in MSEDCL.

11 kV Feeder Meter Data Analysis

Total number of feeders	8500
No. of feeders for which data is available	6800
No. of feeders where meters are functioning reliably	4800
No. of meters with automatic data download facility	570
No. of meters read with automatic data download	0

Above table clearly shows that MSEDCL has not made a serious attempt to ensure effective metering. This also raises questions about the reliability of the energy audit claims by MSEDCL and highlights the need for third party validation of the same as mentioned earlier. The status of 11 KV metering is a serious matter considering that few years back MSEB / MSEDCL reported to MoP that 100 % metering of 11 KV feeders has been achieved !

MSEDCL's performance in terms of consumer metering is also not too different. For example, in spite of repeated directives from the MERC, average billing is continued and even now around 18 – 20 % bills are issued on the average basis. In case of agricultural consumer meters the scenario is still pathetic and the data cannot be used even for estimating consumption.

Under these circumstances, prudence of very large investment in metering agricultural consumers needs to assessed and priority should be given to improving feeder and DT level meters and Residential, Commercial and Industrial consumer meters. To improve MSEDCL's metering effectiveness and accountability, we urge MERC to direct MSEDCL to

a. Ensure that all feeder meters are working reliably. All feeder meters should have automatic download facility and the same should be used to download and compile this data at regular intervals. This will enhance the reliability of energy audit data on one hand and on the other hand will provide important information about the load characteristics. Further, such an approach is also essential to make MSEDCL accountable for load shedding claims and actual hours of supply.
b. MSEDCL should be asked to undertake time bound program for DT metering.

Any future tariff increase for MSEDCL should be subjected to MSEDCL's performance in terms of feeder and DT metering and the extent of automatic download of data. Also, as stipulated in the National Tariff Policy, it is essential to undertake an independent audit of MSEDCL's billing process and software.

5. Estimation of agricultural consumption

Over 45% of MSEDCL's energy input (agricultural consumption and losses) remains unaccounted in the absence of 100% metering of agricultural consumers. Also considering the metering and billing inefficiency of MSEDCL highlighted above, it is unlikely that MSEDCL will be able to undertake reliable metering and billing of agricultural consumers in the near future. Considering this and the need to improve

accuracy of agricultural consumption, a different approach needs to be adopted. As mentioned in earlier submissions of Prayas on this issue, we once again urge the MERC to direct MSEDCL to undertake scientific sampling for agricultural DT metering in the first phase. The sampling should be based on, not just connected load of the pumps in the region, but also on the basis of water source (well, river, lake etc.), area irrigated and cropping pattern in different regions.

Simultaneously, MSEDCL should be directed to undertake 100 % DT and feeder metering. In order to ensure that MSEDCL takes this directive seriously and makes all out efforts to meter all DTs and institute a system for proper reading and data compilation, MERC should make it clear in this order itself that two years from now, only DT meter readings will be considered for agricultural consumption estimation (i.e. no sample based estimation). Also to prevent data tampering and to increase reliability, MSEDCL should be directed to install all DTs and feeders with automatic download meters and data from all such meters should be downloaded and then compiled.

6. Supply Quality Monitoring

Poor supply and service quality is one of the factors adversely affecting consumer satisfaction (and willingness to pay). In the medium term it is essential to develop a well designed system to monitor various supply and service quality parameters such as voltage levels, interruptions, efficiency of releasing new connections, billing efficiency etc. Several of these parameters are being monitored by MSEDCL in a routine manner as part of its internal performance monitoring system. MSEDCL claims that it is already following a reasonably satisfactory method of monitoring power failures. MSEDCL maintains records of supply interruptions as well as reasons for the same (load shedding, tripping etc.), at 11 KV and above feeders at its substations. A monthly summary of these records is then forwarded to division / circle / zone offices. Also various divisional offices of MSEDCL prepare "Progress Report" and "Consultative Council / Public Grievances Report". As a first step towards monitoring supply and service quality we request the commission to direct MSEDCL to make available to general public these **circle wise quarterly reports namely,**

i) **Interruptions report**
ii) **Progress report, and**
iii) **Consultative Council / Public Grievances report.**

Also, these reports should be put up on MSEDCL's website and this quarterly compilation should be made available to general public at circle office one month after the end of respective quarter.

7. **Need for stringent monitoring of compliance with load shedding protocol and region specific models**

   As mentioned in the first part, MSEDCL has not complied with several directives of MERC. Measures such as load shedding protocol and region specific models have significant financial and social impacts. Hence, it is essential for MERC to closely monitor the implementation of these measures. To this effect, MERC should institute stringent monitoring mechanisms which would include periodic disclosure of critical data through MSEDCL's website and MERC hearings. For example, monthly report of the Pune CII model implementation stipulated in MERC order dated 16th May 2006 should be made available on MSEDCL's website.

8. **Need to ensure timely payments to MSPGCL**

   MSPGCL supplies major part of MSEDCL's power requirement at lower cost that other sources. Therefore, ensuring financial viability of MSPGCL is important. Similar to MERC's approach towards PPA with Wind, Cogeneration and other Renewable Energy projects, MSEDCL should be directed to make arrangements for timely payments to MSPGCL.

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