

The Secretary
Maharashtra Electricity Regulatory Commission
World Trade Centre
Centre No.1, 13th Fl,
Cuffe Parade, Mumbai - 400005

SUB : Petition for approval of Aggregate Revenue Requirement for Financial Years 2004-05, 2005-06 and 2006-07 and Petition for approval of proposed regulatory mechanism for treatment of revenue gap for Financial Years 2004-05, 2005-06 and **Proposal for Tariff Revision for FY 2006-07** in accordance with Part VII (Section 61 to Section 65) of the Electricity Act 2003, Maharashtra Electricity Regulatory Commission (Terms and conditions of Tariff) Regulations, 2005 and Maharashtra Electricity Regulatory Commission (Conduct of Business) Regulations, 2004.

Ref : Additional Information sought during Technical Validation

Respected Madam,

This is with reference to our above Petition filed before Hon'ble Commission regarding the subject matter.

As directed by the Commission during the Technical Validation session held on 8th November 2006, we file herewith the **Additional Information** enclosed as Annexure to this letter along with affidavit for kind consideration of the Honourable Commission.

Thanking you,

Yours truly,

Managing Director
MPECS Ltd., Shirampur

Encl : Annexure (Additional Information)

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07

1



Form III
[See Regulation 41(a)]
**BEFORE THE MAHARASHTRA ELECTRICITY REGULATORY
COMMISSION, MUMBAI**

Filing No.
Case No.
(To be filled by the
Office)

IN THE MATTER OF

Petition for approval of Aggregate Revenue Requirement for Financial Years 2004-05, 2005-06 and 2006-07 and Petition for approval of proposed regulatory mechanism for treatment of revenue gap for Financial Years 2004-05, 2005-06 and Proposal for Tariff Revision for FY 2006-07 in accordance with Part VII (Section 61 to Section 65) of the Electricity Act 2003, Maharashtra Electricity Regulatory Commission (Terms and conditions of Tariff) Regulations, 2005 and Maharashtra Electricity Regulatory Commission (Conduct of Business) Regulations, 2004.

AND

IN THE MATTER OF

**The Mula Pravara Electric Co-operative Society Limited (MPECS), Shrirampur -
413 709, Dist. Ahmednagar, Maharashtra**

Affidavit verifying the Petition/ reply/application

I, Vijaykumar son of Nathuprasad Pandit aged 54 years residing at Shrirampur do solemnly affirm and say as follows:

1. I am the petitioner / Managing Director, authorised representative of the MPECS Ltd, Shrirampur and am duly authorised and competent to make this affidavit.



2. The statements made in paragraphs 1 of the petition are true to my knowledge and belief and statements made in paragraphs 1 are based on information and I believe them to be true.

3. I say that there are no proceedings pending in any court of law/ tribunal or arbitrator or any other authority, wherein the Petitioners are a party and where issues arising and /or reliefs sought are identical or similar to the issues arising in the matter pending before the Commission.

Solemnly affirm at Shrirampur on this 21st day of November 2006 that the contents of the above affidavit are true to my knowledge, no part of it is false and nothing material has been concealed therefrom.

(Sd/-)
Identified before me

(Signature)

Shrirampur
Dated 21st November, 2006

Sd/-
Managing Director



ANNEXURE : ADDITIONAL INFORMATION

As directed by the Hon'ble Commission during the Technical Validation session held on November 8, 2006, we are pleased to submit this **Additional Information** based on following:

- Updated actual performance and financial/account related information for FY2005-06 based on audited financial statement for FY2005-06 as against earlier information, which was based on actual data for 8 month (April 2005 to November 2005) and projections for remaining 4 months (December 2005 to March 2006).
- In addition, impact of Hon'ble Commission's Tariff Order dated September 20, 2006 in case of MSEDCL ARR/Tariff Petition for FY2006-07 has also been covered for the purpose of this Additional Information, as directed by Hon'ble Commission.

This **Additional Information** is organized into the following three main parts, which are further divided into Sections as follows:

Part A	<i>Annual Revenue Requirement (ARR) for FY2004-05, FY2005-06 and FY2006-07</i>
Section 1	Background and objectives
Section 2	Consumer category-wise sales projections
Section 3	Energy audit and energy balance
Section 4	Projection of power purchase expenses
Section 5	Projection of operating and financial expenses
Section 6	Summary of revenue expenses and Aggregate Revenue Requirement (ARR)
Section 7	Projection of revenue at existing tariffs
Section 8	Projection of Net Revenue Requirement (NRR) and revenue gap
Appendix-1	Mapping with audited financial statements
Part B	<i>Revenue gap for FY 2004-05, FY2005-06 and FY 2006-07</i>
Part C	<i>Appendix covering detailed Forms related to the ARR Petition and Tariff Petition covering financial, accounting and revenue information for FY2004-05 (PY), FY2005-06 (CY) and FY2006-07 (EY)</i>



INDEX FOR ADDITIONAL INFORMATION

1. Background and objectives.....	13
1.1 About MPECS	13
1.2 Rural Electrification.....	14
1.3 Procedural History.....	17
1.4 GOM GR dated August 24, 2004 and Comments/Response on it... 18	
1.5 Hon'ble Commission's Order dt. 16-12-2005 and other Regulatory Developments	19
1.6 Issues being considered in the filing of the ARR / Tariff Petition:.. 21	
2. Consumer Category-wise Sales Projections.....	25
2.1 Sales Projection Methodology.....	25
2.2 Domestic Consumer (LDI).....	28
2.3 Non Domestic LDII (Commercial Consumer).....	29
2.4 General Motive Power Consumer (LTP-G).....	30
2.5 Public Water Works	32
2.6 LT Agriculture (LT-AG) Flat rate tariff.....	34
2.7 LT Agriculture (LT-AG) Metered tariff.....	36
2.8 Public Street Lighting	37
2.9 HT Industrial and others (HTP II).....	38
2.10 H.T. Public Water Works (PWW)	40
2.11 HT Agriculture (HT-AG).....	42
2.12 Summary of Sales.....	43
3. Energy audit and Energy Balance.....	46
3.1 Scope of Energy Audit Study.....	46
3.2 Approach and Methodology for loss assessment	46
3.3 Data analysis and Findings.....	55
3.4 Sub Division wise energy sale and Loss estimation.....	58
3.5 Energy Balance	58
4. Projections of Power purchase expenses.....	65
4.1 Power Purchase Expenses for FY 2004-05.....	66
4.2 Power Purchase Expenses for FY 2005-06.....	67



4.3	<i>Projection of Power Purchase Expenses for FY 2006-07.....</i>	68
4.4	<i>Key Regulatory Issues to be Addressed as regards Power Purchase</i>	71
5.	Projection of Operating, Financial and Other Expenses	75
5.1	<i>Repairs & maintenance charges</i>	75
5.2	<i>Administration & General charges</i>	78
5.3	<i>Employee expenses.....</i>	80
5.4	<i>Other expenses</i>	83
5.5	<i>Depreciation.....</i>	86
5.6	<i>Interest and finance charges:.....</i>	88
5.7	<i>For projecting capital expenditure</i>	92
5.8	<i>Income tax</i>	94
5.9	<i>Summary of revenue expenses excluding power purchase expense</i>	94
6.	Summary of Revenue Expenses and Aggregate Revenue Requirement.....	97
6.1	<i>Summary of revenue expenses and ARR of MPECS</i>	97
6.2	<i>Projecting the Capital Base.....</i>	97
6.3	<i>Computation of Reasonable Return</i>	99
6.4	<i>Projecting ARR</i>	100
7.	Projection of Revenue at Existing Tariff	102
7.1	<i>Revenue from tariffs and charges</i>	102
7.2	<i>Non-tariff income.....</i>	108
8.	Projection of Net Revenue Requirement and Revenue Gap	112
8.1	<i>Summary of ARR, NRR and Revenue Gap for PY, CY and EY.....</i>	112
8.2	<i>Revenue subsidy</i>	113
9.	Revenue Gap and Mechanisms to bridge Revenue Gap	122
9.1	<i>Revenue gap at existing tariff.....</i>	122
9.2	<i>Mechanism for bridging the Revenue GAP for FY04-05 and FY05-06</i>	122
9.3	<i>Mechanism for bridging the Revenue GAP for FY 2006-07</i>	126
9.4	<i>Summary of Proposed Tariff Schedule</i>	133



List of Tables

Table 2-1 Profile of Consumers during FY 2004-05	26
Table 2-2 Consumer category wise energy sale in MU	28
Table 2-3 Detail information regarding Domestic Consumer Category	29
Table 2-4 Detail information regarding Commercial Consumer Category	30
Table 2-5 Detail information regarding Industrial Consumer Category	31
Table 2-6: Sub category wise number of consumer under LT PWW category	32
Table 2-7: Consumer category wise PWW connected load	33
Table 2-8 Detail information regarding PWW Consumer Category	33
Table 2-9 Detail information regarding LT Agricultural Category	36
Table 2-10 Detail information regarding Public Street lighting Category	38
Table 2-11 Detail information regarding HT Industrial Consumer Category	39
Table 2-12: Sub category wise number of consumer under LT PWW category	40
Table 2-13: Consumer category wise PWW connected load	41
Table 2-14 Energy Consumption of H.T P.W.W category in MU	42
Table 2-15 Detail information regarding H.T. PWW Consumer Category.....	42
Table 2-16 Detail information regarding HT Agricultural Consumer Category	43
Table 2-17 Summary of Consumer Category wise Sale	43
Table 3-1 MPECS Consumer mix during FY 2004-05	46
Table 3-2 Average connected load and percentage load sampled during FY 2004-05.....	49
Table 3-3 Percentage agricultural load sampled	49
Table 3-4 Frequency Distribution of Hr of operation per day	50
Table 3-5 Cumulative Frequency distribution of Hr of Operation	52
Table 3-6 Categorization of LT Ag reading	55
Table 3-7 Agricultural connected load and consumption norm for FY 2004-05	55
Table 3-8 Consumption Norm during FY 2004-05.....	57
Table 3-9 Agricultural Connected load and consumption norm during FY 2005-06	57
Table 3-10 Consumption Norm during first half of FY 2005-06	58
Table 3-11 Monthwise Energy Balance for FY 2004-05	60
Table 3-12 Summary of Energy Balance for FY2004-05	60
Table 3-13 Energy Balance for first half of FY 2005-06	61
Table 3-14 Energy Balance for FY 2005-06	61
Table 3-15 Energy Balance for FY 2006-07	62
Table 3-16 Consumer Category wise sales Energy Input and Losses in MU	62
Table 4-1: Energy balance for FY 04-05, FY 05-06 and FY 06-07.....	65
Table 4-2 Component of Power Purchase Cost during FY 2004-05	66
Table 4-3 Component-wise cost of power purchase during FY 2005-06	68
Table 4-4 Component of Power Purchase Cost during FY 2006-07	69
Table 4-5 Comparison of Power Purchase expenses of MSEB vis-à-vis. other licensees during FY 2004-05	70
Table 5-1 Key comparative O&M expense ratios for FY 2004-05	76
Table 5-2 R&M expenses of MPECS over the PY, CY and EY	76
Table 5-3 Ratios pertaining to R&M expenses of MPECS over the PY, CY and EY.....	77
Table 5-4 Key comparative ratios of MPECS vis-à-vis Other Licensees for FY 2004-05	78
Table 5-5 A&G expenses of MPECS over the PY, CY and EY.....	79



Table 5-6 A&G expenses of MPECS over the PY, CY and EY.....	79
Table 5-7 Key comparative ratios of Employee expenses for FY 2004-05	80
Table 5-8 No. of Employees of MPECS over the PY, CY and EY	81
Table 5-9 Employee expenses of MPECS over the PY, CY and EY.....	81
Table 5-10 Comparison of Key ratios of Employee expenses over the PY, CY and EY .	82
Table 5-11 Other expenses of MPECS over the PY, CY and EY	85
Table 5-12 Other expenses of MPECS over the PY, CY and EY	86
Table 5-13 Key comparative ratios for Depreciation for FY 2004-05.....	87
Table 5-14 Key ratios of MPECS over the PY, CY and EY	87
Table 5-15 Interest expenses of MPECS over the PY, CY and EY.....	90
Table 5-16 Interest on working capital for PY, CY and EY	92
Table 5-17 Capital Work in Progress (CWIP) over the PY.....	93
Table 5-18 Capital Work in Progress (CWIP) over the CY	93
Table 5-19 Capital Work in Progress (CWIP) over the EY	94
Table 5-20 Summary of revenue expenses excluding power purchase expense	94
Table 6-1 Summary of revenue expenses of MPECS over the PY, CY and EY.....	97
Table 6-2 Computation of Capital Base for the PY, CY and EY	98
Table 6-3 Computation of Reasonable Return for the PY, CY and EY.....	100
Table 6-4 Summary of revenue expenses and ARR for the PY, CY and EY.....	100
Table 7-1 Consumer category wise revenue generation for FY 2004-05	103
Table 7-2 Consumer category wise per unit revenue realisation for FY 2004-05.....	103
Table 7-3 Consumer category wise revenue generation for FY 2005-06	104
Table 7-4 Consumer category wise per unit revenue realisation for FY 2005-06.....	106
Table 7-5 Consumer category wise revenue generation at Existing tariff for FY 2006-07	107
Table 7-6 Consumer category wise per unit revenue realisation for FY 2006-07.....	107
Table 7-7 Comparative key ratios of MPECS v/s Other Licensees	109
Table 7-8 Non-tariff income of MPECS over the PY, CY and EY	109
Table 7-9 Non-tariff income of MPECS over the PY, CY and EY	110
Table 8-1 Annual Revenue Requirement and Revenue Gap (For the EY at existing and revised tariffs)	112
Table 8-2 ARR, NRR and Revenue Gap of MPECS for the PY, CY and EY (at existing	114
Table 9-1 Annual Revenue Requirement and Revenue Gap	122

List of Charts

Chart 3-1: Consumer category wise break-up of connected load in kW for FY 2004-05.47

List of Figures

Figure 3-1: Frequency Distribution chart of Hour of agricultural consumption per day ..52

Figure 3-2: Frequency Distribution chart of Hour of agricultural consumption per day ..53



Abbreviations

<i>Abbreviation</i>	<i>Full form</i>
A&G	Administration & General
AG	Agriculture
APDRP	Accelerated Power Development and Reform Program
ARR	Annual Revenue Requirement
CAGR	Compounded Annual Growth Rate
CY	Current Year (i.e. Financial Year 2005-06)
DPC	Delayed Payment Charges
DTC	Distribution Transforming Centre
EA 2003	Electricity Act, 2003
EHV	Extra High Voltage
ERC Act	Electricity Regulatory Commissions Act, 1998
EY	Ensuing Year (i.e. Financial Year 2006-07)
FC	Fixed Cost
FOCA	Fuel and Other Cost Adjustment Charges
FY	Financial Year
GFA	Gross Fixed Assets
GOM	Government of Maharashtra
GR	Government Resolution
HP	Horse Power
HT	High Tension
INR	Indian Rupees
kW	Kilo Watt
kVA	Kilo Volt Ampere
kWh	Kilo Watt Hour
MU	Million Units
LDC	Load Dispatch Centre
LT	Low Tension
LTPG	Low Tension Motive Power Group
MERC	Maharashtra Electricity Regulatory Commission
MPECS	Mula Pravara Electric Co-operative Society Limited
MSEB	Maharashtra State Electricity Board and/or its successor entities
MW	Mega Watt



Abbreviation	Full form
NFA	Net Fixed Assets
PD	Permanently Disconnected
PF	Power Factor
PLF	Plant Load Factor
PWW	Public Water Works
PY	Previous Year (i.e. Financial Year 2004-05)
R&M	Repairs and Maintenance
REC	Rural Electrification Corporation, New Delhi
RESC	Rural Electric Supply Co-operative
REL	Reliance Energy (earlier BSES)
ROR	Rate of Return
RPO	Renewable Purchase Obligation
RR	Reasonable Return
Rs.	Rupees
Rs. / Unit	Rupees per Unit
Rs. / kWh	Rupees per kilowatt hours
S/S	Sub-station
SEB	State Electricity Board
SERC	State Electricity Regulatory Commission
Society	The Mula Pravara Electric Co-operative Society Limited
Sq. kms.	Square kilometres
T&D	Transmission & Distribution
TOD	Time-of-Day
VC	Variable Cost



PART A: Annual Revenue Requirement (ARR) for FY 2004-05, FY 2005-06 and FY 2006-07



SECTION 1: Background & Objectives



1. Background and objectives

1.1 About MPECS

The Mula Pravara Electric Co-operative Society Limited, Shrirampur (MPECS) was established in 1969, as one of the five pilot co-operative societies established in India as a rural electric co-operative. It distributes electricity in 183 villages spread over five talukas in the Ahmednagar district. Its consumer base spans around 1.45 lakh consumers having sanctioned load of around 207 MW and MPECS receives power from Maharashtra State Electricity Board (MSEB) at 33 kV and 11kV interface points.

The genesis for establishing an rural electric co-operative lies in a proposal for distribution of electrical energy on a co-operative pattern with active participation of the people, which was conceived and subsequently sponsored by US Agency for International Development (USAID) in collaboration of National Rural Electric Co-operative Association (NRECA), USA in the year 1969-70. Accordingly, the Government of India decided to establish five pilot rural electrical co-operative societies initially on trial basis in the country through funding support from Rural Electrification Corporation Ltd., (REC) New Delhi.

Initially MPECS was provided with a 20 year licence under the Indian Electricity Act 1910 by the Government of Maharashtra on January 28, 1971. Further, this licence was extended for a period of 20 years i.e. upto 2011 by the Government of Maharashtra vide GR dated May 21, 1999.

In order to bring such licence in line with the current provisions of the Electricity Act 2003, the Hon'ble Commission vide its letter dated June 28 2004 called for the licence for the purposes of alteration / modification. MPECS has submitted a copy of its existing licence issued under the Indian Electricity Act 1910 by way of compliance with the above directive of the Hon'ble Commission. In addition, as directed by Hon'ble Commission, MPECS through its letter dated 1st October 2005, has furnished its comments on the Draft Distribution License Conditions (General Conditions and Special Conditions) to be applicable for MPECS, which is under active consideration of Hon'ble Commission.



With a brief background of MPECS, in the subsequent para 1.2, the relevant provisions pertaining to rural electrification have been elaborated.

1.2 Rural Electrification

The Electricity Act 2003 (EA 2003) encourages rural electrification and supply management through cooperative societies, user associations and local bodies in order to achieve the socio-economic objectives of the state.

1. Under Section 5 of the EA, 2003 Govt. of India (GoI) are to formulate a National Policy, in consultation with the State Governments and the State Commissions, for rural electrification and for bulk power purchase and local distribution management in rural areas through Panchayat Institutions, users' associations, cooperative societies, NGOs or franchisees.
2. In order to improve self-sufficiency and long term sustainability of rural supply at cheaper costs, etc., Section 4 of the Act envisages a National Policy permitting establishment of stand alone systems (including those based on renewable and other non-conventional sources of energy) for rural areas.
3. In order to expand the coverage of rural electrification and supply at a faster pace, the 8th proviso to Section 14 of the Act exempts from the requirement of a licence persons intending to generate and distribute electricity in rural areas notified by the GOM. Similarly, MERC is provided with powers under Section 13 of the Act to exempt any local authority, Panchayat Institution, users' association, co-operative societies, NGOs or franchisees from licensing requirements, in public interest and on recommendations of GOM in accordance with the National Policy formulated under Section 5. Moreover, under the 7th proviso to Section 14, licensees can undertake distribution through other persons, who do not require a licence.
4. While the EA 2003 has put in place enabling framework for 'rural electrification' the National Electricity Policy notified during Feb 2005 by Central Government has emphasized clearly a need for 'rural electrification' and provided road map of sustainable operations for rural electrification and rural power supply schemes.
5. The relevant extracts of 'National Electricity Policy' pertaining to 'rural electrification' is as under:



5.1.2 *Reliable rural electrification system will aim at creating the following:*

- *Rural Electrification Distribution Backbone (REDB) with at least one 33/11 kV (or 66/11 kV) substation in every Block and more if required as per load, networked and connected appropriately to the state transmission system*
- *Emanating from REDB would be supply feeders and one distribution transformer at least in every village settlement.*
- *Household Electrification from distribution transformer to connect every household on demand.*
- *Wherever above is not feasible (it is neither cost effective nor the optimal solution to provide grid connectivity) decentralized distributed generation facilities together with local distribution network would be provided so that every household gets access to electricity. This would be done either through conventional or non-conventional methods of electricity generation whichever is more suitable and economical.*
- *Development of infrastructure would also cater for requirement of agriculture & other economic activities including irrigation pump sets, small and medium industries, khadi and village industries, cold chain and social services like health and education.*

6. MPECS, as pioneering 'rural electric co-operative' has already undertaken several of above initiatives and created infrastructure for rural electricity distribution, which forms a role model for other utilities/licensees to follow. As outlined under subsequent paragraphs, Hon'ble Commission has also recognized that MPECS operations are far efficient and superior in comparison with MSEB in a comparable distribution circles as regards several key performance parameters and service parameters such as distribution losses, collection efficiency, average billing rates, consumer receivables, operation and maintenance costs and distribution transformer failure rates.
7. However, in order to ensure long term sustainability of operations, it is critical that some form of support through direct subsidy mechanism by government or differential bulk supply arrangements is available for rural electricity supply on account of adverse consumer mix (with predominant agriculture and domestic consumption) and hence, limited revenue earning capacity of the rural distribution licensees. As outlined in subsequent paragraphs, Hon'ble Commission has also



recognized this need in its recommendations to GOM regarding viability of MPECS and its continuation as 'distribution licensee'.

8. The National Electricity Policy also clearly recognizes this requirement of subsidizing rural electricity supply. The relevant extracts of the National Electricity Policy are as under:

5.1.5 Targeted expansion in access to electricity for rural households in the desired timeframe can be achieved if the distribution licensees recover at least the cost of electricity and related O&M expenses from consumers, except for lifeline support to households below the poverty line who would need to be adequately subsidized. Subsidies should be properly targeted at the intended beneficiaries in the most efficient manner. Government recognizes the need for providing necessary capital subsidy and soft long-term debt finances for investment in rural electrification as this would reduce the cost of supply in rural areas. Adequate funds would need to be made available for the same through the Plan process. Also commensurate organizational support would need to be created for timely implementation. The Central Government would assist the State Governments in achieving this.

9. Further, Central Government has published National Policy for 'Rural Electrification and management of local distribution and bulk purchase of power in rural areas' on August 23, 2006.. The relevant extract of the said policy as regards 'bulk power purchase' by such 'rural electric utility / co-operative are as under:

"Bulk purchase of power:-

9.13 Persons exempt under Section 13 may procure power from the existing licensee of the area or from any other source.

9.14 Where such persons purchase power from the licensee of the area, they would be treated as a separate category by the Appropriate Commission for the determination of the Bulk Purchase Price ("BPP") to be paid by them to the licensees.



In such cases the tariff for retail sale to the consumers in the area of such persons would be as determined for the licensee by the Appropriate Commission.

9.15 If not determined competitively, the BPP should be set on a normative basis based on representative consumer mix and should not vary on a case-to-case basis. The BPP set alongwith margins prescribed for the local distribution enterprise should be such that consumers tariff is maintained at the same level. This BPP would be fully factored into the submissions of the State Utilities to the State Electricity Regulatory Commissions for their revenue requirements.

10. It is submitted that, Hon'ble Commissions recommendations, GR by GOM and the Petition of MPECS for determination of Tariff and approval of ARR need to be viewed in this context.

1.3 Procedural History

1.3.1 MERC: Detailed Note on findings and recommendations on the viability of MPECS

In accordance with the High Court (Nagpur Bench) Order in the matter of writ petition: 3399/2000, GOM solicited advice from MERC to examine a) whether MPECS' operations are efficient comparable to MSEB distribution circle b) advice on preparation of time bound action plan for turn around of MPECS c) determination of parameters and formula for viable bulk rate of purchase and advise GOM accordingly. In this context, MERC has provided its advice and recommendations on the issues raised by the GOM in their 'detailed note on the findings & recommendations on the viability of MPECS'. Essentially, MERC's recommendations include following:

- a. The Commission finds that MPECS operations are more efficient than MSEB in comparable distribution areas on key performance and service parameters such as distribution losses, collection efficiency, average billing rates, consumer receivables, operation and maintenance costs and distribution transformer failure rates;



- b. The Commission is of the view that a time bound improvement program is essential for sustained viability of operations of MPECS.
- c. The Commission is also of the view that, in the present economic context, the rural power supply would require some form of continuous assistance. Further, the Commission recommended that GOM may consider provision of capital subsidy which would enable MPECS achieve self-sufficiency and long term sustainability of its operations;

In its detailed note, under '*Section A7: Key Recommendations*' in *Para 7.8*, the MERC on the basis of its analysis and findings had considered in detail the following three Options:

- a. Option 1: MPECS to continue as licensee with transparent direct subsidy arrangements
- b. Option 2: MPECS continue as licensee with Creation of "Regulatory Asset"
- c. Option 3: MPECS as Management Contractor/ Franchisee

Upon evaluation MERC has recommended Option-3 as most preferable and tenable alternative, however, it has also suggested GOM to examine the feasibility of this recommended alternative considering, in particular, legal provisions. MERC also stated that the performance of MPECS has been better than that of MSEB on several parameters – losses, collection efficiency and other service parameters.

1.4 GOM GR dated August 24, 2004 and Comments/Response on it

Further, based on the report and advice forwarded by MERC, the GOM has decided vide its GR dated August 24, 2004 to allow MPECS to continue its operations as a Licensee and directed MPECS to approach MERC for determination of 'tariff' to be charged by MPECS to its consumers.

The salient features of GOM decision communicated vide its GR dated August 24, 2004 include –

- a) MPECS has been allowed to continue its operations as 'Distribution Licensee'.
- b) In order to improve its operations further, the MPECS will have to adhere to the time bound action plan as per key recommendations given by MERC and GOM shall



extend requisite subsidy support till such time turn-around in operations of MPECS is achieved.

- c) The quantum of required revenue subsidy support is estimated to be around Rs 72 Crore per annum which GOM shall provide to MSEB directly.
- d) In order to enable MPECS undertake time bound action plan as recommended by MERC and to undertake rural electrification works and other capital expenditure schemes, the GOM shall extend capital subsidy support to MPECS of around Rs 4 Crore per annum.
- e) MSEB shall treat the past arrears from MPECS as 'Regulatory asset' in its books and not to charge any further interest on the past arrears henceforth. MSEB shall recover the said regulatory asset from MPECS upon turnaround of operations of MPECS.

MPECS wishes to humbly submit that the decision of GOM to continue operations of MPECS as distribution licensee is very important for MPECS. At the same time, MPECS recognizes that the proposed mechanism together with the conditions outlined under the said GR entails several regulatory issues that would require approval of the Hon'ble Commission and would have significant influence on the long term viability and operations of MPECS.

Accordingly, MERC invited comments of stakeholders in respect of the said GR by GOM and MPECS filed its comments before Hon'ble Commission for its kind consideration.

1.5 Hon'ble Commission's Order dt. 16-12-2005 and other Regulatory Developments

Further, MPECS notes that the Hon'ble Commission, upon inviting comments from the stakeholders and upon detailed deliberations in respect of said GR (in the matter of Case 33 of 2005) through its Order dated 16th December 2005 has acknowledged and validated all aspects the said GR as regards continuation of MPECS as distribution licensee except 'regarding creation of Regulatory Asset' pertaining to past power purchase dues and has advised the State Government (GOM) to expedite the process to remedy the said GR. In



this respect, the Hon'ble Commission under clause 21 of the said Order has ruled as under:

'In the above circumstances, the Commission is of the view that the functions of the Commission under sub-sections (1) and (2) of section 86 of the Act are distinct and the GOM-GR would not be operative as regards creation of 'regulatory asset'. (Ref. Clause 21 of MERC Order dt. 16.12.2005)

'The Commission hereby advises the State Government to expedite the process to remedy the said GOM-GR as submitted by Shri P. B. Patil, Deputy Secretary, in view of the above observations of the Commission.' (Ref. Clause 22 of MERC Order dt. 16.12.2005).

While GOM is yet to issue its remedied GR as regards treatment of past power purchase dues, MPECS continues to be a 'Distribution Licensee' and being a 'deemed licensee' as per provisions of the Electricity Act 2003, is required to comply with various provisions of EA 2003 and regulations thereof, including filing of petition for the approval of the annual revenue requirement and determination of tariff.

Accordingly, MPECS has filed its petition for approval of Annual Revenue Requirement (ARR) for FY2003-04, FY2004-05 and FY2005-06 and its proposal for regulatory treatment of revenue gaps in the respective years including Petition for revision in Retail Supply Tariff (RST) and Bulk Supply Tariff (BST) for FY2005-06 on 13th June 2005 before Hon'ble Commission. MPECS understands that Hon'ble Commission has initiated process of review and approval of the same.

Further, as directed by Hon'ble Commission, MPECS has also filed Petition for approval of Schedule of Miscellaneous and Other Charges for Financial Year 2005-06 in accordance with Part VI (Section 45 to Section 47) of the Electricity Act 2003, Regulation no. 18 of MERC (Electricity Supply Code and Other Condition of Supply) Regulations, 2005, which is under kind perusal of the Hon'ble Commission.

In addition, Hon'ble Commission through its Order dated 20th December 2005 has deferred requirement to file Multi Year Tariff (MYT) application by one year for all distribution licensees with Maharashtra, thereby deferring applicability of first control



period to FY08 to FY10 and also directed licensees to file ARR/Tariff application for FY07.

Accordingly, MPECS has proceeded to develop this Petition in accordance with the applicable provisions of the EA2003 and in line with the regulations outlined by Hon'ble Commission for the purpose of filing of ARR Petition, expected revenue from tariff and charges and determination of tariff, keeping in view long term sustainability of operation of MPECS as 'distribution licensee'.

Further, as directed by the Commission during the Technical Validation session held on November 8, 2006, we are pleased to submit this **Additional Information** based on following:

- Updated actual performance and financial/account related information for FY2005-06 based on audited financial statement for FY2005-06 as against earlier information, which was based on actual data for 8 month (April 2005 to November 2005) and projections for remaining 4 months (December 2005 to March 2006).
- In addition, projections for FY2006-07 have been updated to include actual performance for six months (April 2006 to September 2006) and projections for remaining period of six months (October 2006 to March 2007).

1.6 Issues being considered in the filing of the ARR / Tariff Petition:

MPECS believes that commenting on the quantum of subsidy requirement, loss reduction trajectory and investment plans would require detailed analysis which has been dealt with in detail as a part of this Petition. The said GR has thrown up several regulatory issues, which would require approval and clear directive from Hon'ble Commission in order to ensure regulatory clarity and regulatory certainty to the sector and in the interest of long term sustainability of operations from MPECS perspective.

The key regulatory issues that need to be addressed include:



- a) Retail Supply Tariff (RST) determination for MPECS (principle of statewide uniform RST or differential RST)
- b) Bulk Supply tariff applicable to MPCES (long term and short term)
- c) Quantification of revenue subsidy requirement and manner of compensation
- d) Quantification of capital subsidy requirement and manner of compensation
- e) Performance Targets
- f) Recovery of 'Regulatory Asset'.

MPECS has extensively dealt with above issues in its earlier submission of ARR/Tariff Petition for Fy2003-04, Fy2004-05 and FY2005-06, which was under active consideration of the Hon'ble Commission. However, the Hon'ble Commission had not passed any suitable Orders in respect of the issues raised above.

Subsequent to earlier submission of MPECS for ARR and Tariff Petition for FY04, FY05 and FY06, significant regulatory developments have taken place, which need to be taken into consideration while dealing with ARR/Tariff Petition for above referred annual periods as well as for the ensuing year 2006-07. Thus, in this ARR/Tariff Petition, MPECS has strived to take into consideration following regulatory developments that have significant bearing on its ARR/Tariff Petition not only for ensuing year but also on its earlier submission.

- a. Hon'ble Commission has notified MERC (Terms and Conditions for Tariff) Regulations 2005 on 25th August 2005.
- b. Central Government has notified National Tariff Policy (NTP) on 6th January 2006 as per requirement under Section 3 of EA 2003.
- c. Central Government has issued Draft National Policy for Rural Electrification and for bulk purchase of power and management of local distribution in rural areas as per requirement under Section 4 and Section 5 of EA 2003.
- d. Hon'ble Commission has issued its Order dated 16th December 2005 in the matter of Case 33 of 2005 regarding continuation of MPECS as distribution licensee and has addressed therein, the issues related to GR issued by GOM on 24th August 2004.



- e. Earlier submission was based on audited/actual results for Fy2003-04 and actual information available for part period of FY2004-05. However, further to earlier submission, financial information and audited account statements for FY2004-05 are available and actual operating performance upto Dec 2005 (i.e. 9 months of Fy2005-06) is available.

Accordingly, this petition for approval of the Annual Revenue Requirement (ARR) for financial years FY 2004-05 (PY), FY 2005-06 (CY) and FY 2006-07 (EY) and Petition for approval of the proposed regulatory mechanism for treatment of revenue gap for financial years FY 2004-05 (PY), FY 2005-06 (CY) and Proposal for Tariff Revision for FY 2006-07 (EY) has been filed before the Hon'ble Commission in accordance with Part VII (Section 61 to Section 65) of the Electricity Act 2003, Maharashtra Electricity Regulatory Commission (Terms and conditions of Tariff) Regulations, 2005 and Maharashtra Electricity Regulatory Commission (Conduct of Business) Regulations, 2004.

The objective of this Petition is to seek approval for ARR of MPECS for FY2004-05, FY2005-06 and FY2006-07 and to seek approval for proposed regulatory mechanism for treatment of revenue gap of FY2004-05 and FY2005-06 and revision tariff for FY2006-07. However, it is pleaded that the Hon'ble Commission may take into consideration above regulatory issues and may address the same while approving the said Petition. Each of the above issues is elaborated in detail under various Sections as a part of this Petition. The following Chapters of Part A of the Petition elaborate in great detail the workings of MPECS in order to arrive at the projected numbers for the CY and EY.



Section 2: Consumer Category-wise Sales Projections



2. Consumer Category-wise Sales Projections

In this section, we have discussed consumer category wise actual energy sales (historical performance up to FY 2004-05), projection of energy sales and methodology used for sales projection. Actual sales data up to FY 2004-05 and of FY 2005-06 has been considered. Based on projection methodology discussed below, total energy sales and energy requirement has been projected for FY 2006-07. Further, as directed by the Commission during the Technical Validation session held on November 8, 2006, we are pleased to submit this **Additional Information** based on following:

- Updated actual performance and financial/account related information for FY2005-06 based on audited financial statement for FY2005-06 as against earlier information, which was based on actual data for 8 month (April 2005 to November 2005) and projections for remaining 4 months (December 2005 to March 2006).

As discussed in the earlier section, MPECS is a rural electric distribution licensee having predominantly agricultural pump set load. The consumer categories are classified in terms of

Voltage Level (High Tension and Low Tension consumers)

- Low Tension Consumer Categories
 - Domestic (LD-1)
 - Non Domestic (LD-2 Commercial)
 - LT General Motive Power (LTP-G)
 - LT Agriculture LTP-AG/ LTP-AG (HP)
 - Street lights
 - Public Water Works
- HT Consumer Categories
 - HT Industrial (HTP-II)
 - HT PWW (HTP-IV)
 - HT Agriculture (HTP-VII)

2.1 Sales Projection Methodology

As discussed above various consumer categories have been classified on the basis of supply voltage levels as LT & HT consumers. Consumer categories are further classified



on basis of tariff chargeable as metered / Flat rate (unmetered) tariff consumers. In case of metered consumers projections are made for parameters like number of consumers, connected load and specific energy consumption (SEC) on the basis of actual data available (for FY 2004-05 and FY2005-06. Projections of parameters during FY 2006-07, are discussed under each consumer category separately.

Almost 70% of MPECS load comprises agriculture consumer load. Out of total connected load of 195 MW, agriculture connected load comprises of 134 MW (179260 HP). Significant part of agriculture load, 171549 HP out of 179260 HP is unmetered as is the case in most of SEBs and MSEB as well. Hence, historical basis of sales corresponding unmetered agriculture consumption cannot be taken as a basis for projecting sales for agriculture consumption. Instead a detailed Energy Audit exercise has been undertaken since FY 2002-03 till date with sample size of agriculture consumption increasing over the period. The Section 3 of this petition covers in detail energy audit and assessment of agriculture consumption for FY 2004-05 and FY 2005-06. Other parameters like number of consumers and connected load are projected on basis of growth rate and proposed plan for addition in the number of consumer connections.

Table 2-1 Profile of Consumers during FY 2004-05

Consumer Category	No. of consumers		Connected Load		Energy Sales	
	(No.)	%	(kVA/HP)	%	(MU)	%
LT Category						
Domestic (LD-1)	79787	58.49%	22903	9.56%	40.66	11.06%
Non-domestic (LD-2)	9665	7.09%	5206	2.17%	9.97	2.71%
General Motive Power (LTP-G)*	2117	1.55%	20563	8.58%	10.66	2.90%
Public Water Works*	388	0.28%	2203	0.92%	3.38	0.92%
Agriculture Consumers (metered)*	901	0.66%	3424	1.43%	1.03	0.28%
Agriculture Consumers (un-metered)*	43336	31.77%	171549	71.62%	261.29	71.08%
Public Street Lighting*	146	0.11%	744	0.31%	2.46	0.67%
Temporary					0.01	
Sub-total (LT)	136341	99.95%	226592	94.60%	329.47	89.63%
HT Category						
HTP-II (Industrial, others)**	33	0.02%	7972	3.33%	30.74	8.36%
HTP-IV (PWW-others)*	4	0.00%	685	0.29%	1.66	0.45%
HTP-VII(Agriculture)*	28	0.02%	4287	1.79%	5.73	1.56%
Sub-total (HT)	65	0.05%	12943	5.40%	38.13	10.37%
TOTAL (LT + HT)	136406	100.00%	239535	100.00%	367.60	100.00%

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 26



Source: MPECS

* Connected load in HP

** Connected load in kVA



Following table shows consumer category wise growth rate observed in energy sale in MU.

Table 2-2 Consumer category wise energy sale in MU

Consumer Category & Consumption Slab	n-4	n-3	n-2	n-1	n	5 Year CAGR
	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	
HT Category						
HTP-II (Industrial, others)	34.2	30.9	29.8	30.7	28.3	-4.6%
HTP-IV (PWW-others)	0.0	0.0	1.4	1.7	1.6	NA
HTP-VII(Agriculture)			6.8	5.7	7.1	NA
LT Category						
Domestic (LD-1)	40.5	40.0	42.2	40.7	40.3	-0.1%
Non-domestic (LD-2)	8.6	9.6	10.0	10.0	9.8	3.3%
General Motive Power (LTP-G)	9.8	11.1	10.6	10.7	11.5	3.9%
Public Water Works	3.4	3.4	4.4	3.4	3.5	1.2%
Agriculture Consumers*			288.8457	262.32	303.01	NA
Public Street Lighting	2.6	2.2	2.3	2.5	2.2	-3.2%
Temporary				0.01	0.01	NA
Total			396.3642	367.5874	407.4266	

note : * assessment of agriculture consumption for fy03-04 onwards is based on energy audit studies

Source: MPECS

Following section elaborates the basis for projection of number of consumers, sales and connected load for each consumer category and assumption thereof, for number of consumer, connected load and consumption for FY 2005-06 and FY 2006-07.

2.2 Domestic Consumer (LDI)

2.2.1 Projection of Number of Consumers

Domestic consumer category is largest category in terms of number of consumers. MPECS has 79,787 consumers in domestic category in year 2004-05. Around 3900 consumers have been added during FY 2005-06. Annual growth rate of **3.64%** is observed over six year period from FY **1998-99** to FY 2005-06. Based on historic data (1998-99 onward) and annual growth rate total number of domestic consumers are projected to be around 86,773 consumers during FY 2006-07.



2.2.2 Projection of Sales

During FY 2005-06, actual energy sale was 40.34 MU.

Energy requirement for FY 2006-07 is projected on basis of projected number of consumers and specific energy consumption per consumer. Specific energy consumption per consumer is varying between 501 kWh/consumer during FY 2000-01 to 541 kWh/consumer during FY 2003-04 and reduced to 510 kWh/consumer (FY2004-05) and 482 kWh/consumer (FY2005-06). A reducing trend as observed in past two years may be attributed to increase in number of hours of load shedding during this period. Further, it has been projected by MSEDCL during recent submission before Hon'ble Commission and as ruled by Hon'ble Commission that this load shedding may continue for a while during FY2006-07 as well. Accordingly, Specific energy consumption of 483 kWh/consumer has been projected for FY 2006-07. Annual energy requirement of 41.95 MU has been projected for FY 2006-07. Table 2.3 indicates detail information regarding domestic consumer category.

Table 2-3 Detail information regarding Domestic Consumer Category

	FY03-04	PY FY04-05	CY FY05-06	EY FY06-07
Particulars	Actual	Actual	Actual	Proj.
No of Consumers	77959	79787	83773	86773
Specific Consumption (kWh/consumer)	541	510	482	483
Sales in (MU)	42.20	40.66	40.34	41.95

Source: MPECS

2.3 Non Domestic LDII (Commercial Consumer)

2.3.1 Projection of Number of Consumers

MPECS had 9,665 consumers in the Non-domestic category during FY 2004-05. During FY 2005-06, the number of consumers in the Non-domestic category increased to 9868. On the basis of the historic growth trend, around 200 consumers are envisaged to be added to commercial category. Accordingly, number of consumers in this category for FY 2006-07 have been projected to be around 10,068.

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07



2.3.2 Projection of Sales

During FY 2004-05, 9.97 MU of energy is sold to the commercial consumer category. During FY 2005-06 energy consumption of this category amounted to 9.78 MU.

Energy requirement for FY 2006-07 is projected on basis of number of consumers and specific energy consumption per consumer. Specific energy consumption per consumer is varying between 776 kWh/consumer during FY 2000-01 to 1071 kWh/consumer during FY 2003-04 and reduced to 1032 kWh/consumer (FY2004-05) and 991 kWh/consumer (FY2005-06). A reducing trend as observed in past two years may be attributed to increase in number of hours of load shedding during this period. Further, it has been projected by MSEDCL during recent submission before Hon'ble Commission and as ruled by Hon'ble Commission that this load shedding may continue for a while during FY2006-07 as well. Accordingly, Specific energy consumption of 1010 kWh/consumer has been projected for FY 2006-07. Accordingly, annual energy requirement of 10.17 MU is projected for FY 2006-07 for the commercial consumer category.

Table 2-4 Detail information regarding Commercial Consumer Category

	FY03-04	PY FY04-05	CY FY05-06	EY FY06-07
Particulars	Actual	Actual	Actual	Proj.
No of Consumers	9367	9665	9868	10068
Specific Consumption (kWh/consumer)	1071	1032	991	1010
Sales in (MU)	10.03	9.97	9.78	10.17

Source: MPECS

2.4 General Motive Power Consumer (LTP-G)

2.4.1 Projection of Number of Consumers

General motive power (LTP-G) i.e. LT industrial is one of cross subsidizing consumer category of MPECS. Number of consumers and connected load in this category has



shown an increasing trend for the previous years. Detailed information on connected load during previous years is provided in Table 2.5. During FY 2005-06, MPECS has 2244 consumers in this category. On the basis of the historic growth trend, around 100 consumers are envisaged to be added to LT industrial category. Accordingly, number of consumers in this category for FY 2006-07 have been projected to be around 2,344.

2.4.2 Projection of Connected Load

Connected load under this category has exhibited a rising trend from 19918 HP during FY2003-04 to 20563 HP during FY2004-05. The connected load for FY 2005-06 is 22,225 HP. Further, based on the trend analysis, the projected load for FY 2006-07 is at 23,225 HP.

2.4.3 Projection of Sales

Industries located in distribution area of MPECS are typical agro based industries. Operation pattern of such industries is seasonal and plant and machineries are operated for limited period of time. Specific energy consumption per connected load (kWh/HP) in this category has exhibited negative trend due to declining industrial production as also consumption in this category is greatly affected due to severe load shedding imposed. Specific energy consumption per connected load has declined from 672 kWh/HP during FY 1997-98 to 533 kWh/HP during FY2003-04 and to 518 kWh/HP during FY 2004-05. Based on trend analysis projected specific energy consumption for FY 2006-07 is 514 kWh/HP and energy requirement of 11.93 MU is projected for FY 2006-07.

Table 2-5 Detail information regarding Industrial Consumer Category

	FY03-04	PY FY04-05	CY FY05-06	EY FY06-07
Particulars	Actual	Actual	Actual	Proj.
No of Consumers	2084	2117	2244	2344
Connected Load, HP	19918	20563	22225	23225
Specific Consumption (kWh/HP)	533	518	516	514
Sales in (MU)	10.62	10.66	11.45	11.91



Source: MPECS

2.5 Public Water Works

Public Water Works consumer category is one of cross subsidized consumer category.

PWW consumers comprises of further sub-categories as specified below:

- Rural PWW
 - C class Municipality
 - Gram panchayat
- Urban PWW

Out of above, 'Rural Gram Panchayat' forms major sub category of consumers within LT PWW category in term of number of consumer as well as energy requirement.

2.5.1 Projection of Number of Consumers

The number of consumers under Urban PWW and 'C' class municipal councils has remained steady over the period at 57 and 20 respectively. However, number of consumers connections under the 'Gram Panchayat' in this category has increased from 311 during Fy2004-05 to 320 during FY2005-06. Accordingly, for the ensuing year, FY2006-07 it is envisaged that, number of consumer under this category shall remain to be 398 comprising Urban PWW (57), C-class municipalities (20) and Gram Panchayat (320). Table below indicate category wise number of consumers.

Table 2-6: Sub category wise number of consumer under LT PWW category

Public Water Works	FY 2004-05	FY2005-06	FY 2006-07
Number of Consumers	Actual	Actual	Projected
Urban PWW	57	57	57
Rural PWW		0	0
- "C " class Municipalities	20	20	20
- Gram Panchayat	311	320	320
Total * (excluding disconnected load)	388	398	398

Source: MPECS



2.5.2 Projection of Connected load

As discussed above connected load under Gram panchayat category forms major part of connected load under this category. Connected load for urban water supply and C class Municipal Corporation amounts to less than 10% of total connected load. Connected load under this category has increased from 1494 HP during FY 1997-98 to 2203 HP during FY 2004-05. Connected load during FY 2005-06 has increased by around 20 HP on account of 9 consumers added under GramPanchayat during this period. As no consumer is envisaged to be added during FY2006-07, connected load of 2223 HP is projected for FY 2006-07. Table below indicated consumer category wise connected load excluding disconnected consumers.

Table 2-7: Consumer category wise PWW connected load

Public Water Works	FY 2004-05	FY2005-06	FY 2006-07
Connected Load (HP)	Actual	Actual	Projected
Urban PWW	181	178	178
Rural PWW			
- "C " class Municipalities	200	196	196
- Gram Panchayat	1823	1849	1849
Total	2203	2223	2223

Source: MPECS

2.5.3 Projection of Sales

During FY 2004-05 energy sales under PWW category was 4.38 MU. During FY 2005-06 energy consumption of this category has been reported as 3.53 MU.

Based on historic specific energy consumption pattern per connected load, specific energy consumption of 1585 kWh/HP/annum has been projected for FY 2006-07. Energy requirement of 3.53 MU has been projected with connected load of 2223 HP during FY 2006-07

Table 2-8 Detail information regarding PWW Consumer Category

Particulars	FY04-05	FY 05-06	FY 06-07
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Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 33



	Actual	Actual	Projected
No of Consumer	388	398	398
Connected Load (HP)	2203	2223	2223
Sales in (MU)	3.38	3.53	3.53

Source: MPECS

2.6LT Agriculture (LT-AG) Flat rate tariff

2.6.1 Projection of Number of Consumers

In terms of number of consumers, agricultural consumer category forms second largest category after Domestic consumer category. Number of consumers in this category has increasing trend and number of consumer have increased from 42,820 during FY2003-04 to 43,769 during FY 2004-05.

Providing supply to new agricultural pump connections has been constrained due to several factors, such as requirement of laying new distribution network or capacity constraint of distribution transformer etc.

In certain cases, new agricultural connections for whom distribution poles and network are not available in proximity, electrical supply connections is provided by laying temporary overhead cable of appropriate size (cable connection). Such connections are regularized later after appropriate distribution network is laid. During FY 2004-05, MPECS has 804 consumers under such 'temporary cable connection' category.

As regards, time limit for providing supply to new consumer connections, MPECS notes that Honourable Commission has now notified the regulation for 'Supply Code' and 'Standard of Performance'. MPECS would need to comply with the regulations, however MPECS also notes that MPECS being rural distribution co-operative, its operations, resources and infrastructure cannot be compared against distribution licensees in urban areas. Hence, applicability of certain conditions under Supply Code and Standard of Performance Regulations and enforcement thereof needs to be viewed in that perspective. The Section 58 of Electricity Act 2003, enables the Commission to specify different Standard for a particular class of licensee. MPECS intends to separately approach the

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 34



Commission in this matter. In view of above, provisioning of supply to agriculture consumers and reduction in the pending connections may not be strictly in line with the time limits specified under Standard of Performance Regulations and constrained by the availability of resources. During FY2006-07, MPECS proposes to bring down pending list of agriculture connections from 1670 by way release of additional new connections by 718. Until then, MPECS requests Hon'ble Commission to kindly permit to undertake release of new connections as per proposed plan.

During FY 2005-06, total numbers of consumers under the LT-AG category were 47,353, out of which 43,557 consumers are under regular connections, 453 consumers under temporary cable connection and 3,343 of PD consumers.

During FY2006-07, additional 718 number of new agricultural connection out of 1670 pending connections are proposed to be released during FY 2006-07. Consumer connections to be released during FY 2006-07 are proposed to be billed under metered tariff category. However, as outlined above, while new connections would be released under meter connection and some of the existing temporary cable connections be regularised, it is envisaged that, there would also be requirement for release of additional temporary cable connections due to paucity of other resources to augment the LT network.

2.6.2 Projection of Connected load

Agriculture connected load forms largest component of LT consumers connected load. MPECS had 171,549 HP connected load during FY 2004-05 out of which 2262 HP load is of temporary cable connection. During FY2005-06 the connected load is 171179 HP including temporary cable connection of 501 HP.

Connected load per consumer (HP / consumer) is 3.93, 3.96 and 3.97 during FY 2004-05, FY 2005-06 and FY 2006-07 respectively. Connected load for FY 2006-07 is projected on basis of 3 year average norm of 3.96 HP/consumer and number of consumers. Connected load of 173,829 HP is projected for FY 2006-07.



2.6.3 Projection of Sales

Availability and reliability of supply from MSEDCL has been more constrained over the past two years on account of load shedding imposed. However, power consumption during FY2005-06 mainly on account of agriculture load has increased significantly due increased irrigation requirement arising due to very good monsoon and assured water availability. Hence, while projecting the energy requirement for FY 2006-07, the supply of electricity has been assumed in an unconstrained situation as was prevalent during FY 2005-06 and based on 12-monthly moving average consumption norm as derived from energy audit studies, as elaborated later under Chapter-3. Based on agricultural feeder audit discussed in subsequent Chapter-3, consumption norm for un-metered LT agriculture category has been estimated as 1535 kWh/HP/annum for FY 2004-05 and 1742 kWh/HP/annum for FY2005-06 respectively. Based on above assessed consumption norm, energy units consumption of 261.29 MU and 298.79 MU has been estimated for FY 2004-05 and FY2005-06 respectively.

For providing continuous and reliable power supply to consumers, consumption norm based on 12-monthly moving average has been projected for FY 2006-07. Accordingly, consumption norm of 1767 kWh/HP/annum is assessed for FY 2006-07. As discussed above, connected load of 173,829 HP and 307.16 MU energy requirements is projected for FY 2006-07.

Table 2-9 Detail information regarding LT Agricultural Category

Particulars	FY04-05	FY 05-06	FY 06-07
	Actual	Actual	Projected
Connected Load (HP)	171549	171179	173829
Sales in (MU)	261.29	298.79	307.16

Source: MPECS

2.7LT Agriculture (LT-AG) Metered tariff

Metered agricultural consumer comprises very small percentage of total connected load.



2.7.1 Projection of Number of Consumers

During FY 2004-05, there were 901 consumers under metered category tariff. As all new connections are envisaged to be released as metered connections and conversion of some of the existing un-metered into metered connections, there are around 1614 consumers under metered category for FY 2005-06. For FY 2006-07, total number of metered connections are envisaged to be increased to 2114 consumers (including new consumers) that are proposed to be added during EY.

2.7.2 Projection of Connected load

During FY 2004-05, there was 3424 HP connected load under metered category tariff. During 2005-06, the same has increased to 7030 HP. During ensuing year, it is envisaged that connected load of under metered LT-agriculture consumers shall be around 8780 HP.

2.7.3 Projection of Sales

During FY 2004-05, the energy consumption reported under this category amounts to only 1.03 MU, which may be attributed to metering taking place during second half of the FY 2004-05. On account of significant increase in metered connected load from 3424 HP (FY2004-05) to 7030 HP (FY2005-06), there is significant growth in metered agriculture consumption during FY2005-06 to 4.22 MU. Further, based on this trend the energy consumption for ensuing year FY2006-07 has been projected as 5.27 MU based on total metered connected load of 8780 HP.

2.8 Public Street Lighting

2.8.1 Projection of Number of Consumers

Number of consumer connections in public street lighting category has been steady or shown marginal growth over the period. Number of consumer connection has increased from 291 during FY2003-04 to 298 during FY 2004-05 and remained steady during

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 37



FY2005-06. Hence, 298 number of consumer connections under this category have been projected for FY 2006-07 as well.

2.8.2 Projection of Connected Load

Connected load in this category also indicate marginal growth trend along with increase in number of consumer connections. Connected load have increased from 737 kW during FY2003-04 to 744 kW during FY 2004-05. Connected load during FY 2005-06 is 759 kW. Accordingly, Connected load of 759 kW is estimated for FY 2006-07.

2.8.3 Projection of Sales

Historic sales (MU) data for Public street lighting category is provided under Table 2.10. During FY 2005-06 energy consumption of this category is 2.24 MU. As no additional consumer connection is envisaged under this category during FY2006-07, the energy consumption of 2.24 MU has been projected for FY2006-07 similar to consumption as projected for Fy2005-06.

Table 2-10 Detail information regarding Public Street lighting Category

	FY04-05	FY 05-06	FY 06-07
Particulars	Actual	Actual	Projected
No of Consumers	291	298	298
Connected Load (kW)	744	759	759
Specific consumption (units/kW)	3311	3085	3085
Sales in (MU)	2.46	2.24	2.24

Source: MPECS

2.9 HT Industrial and others (HTP II)

HT Industrial consumer category is third largest category in terms of energy sale in MU after LT Agriculture and Domestic consumer category.



2.9.1 Projection of Number of Consumers

As discussed in earlier part of this section energy consumption trend of all HT consumers is declining. Energy sale to HTP II category has reduced from 47.42 MU during FY 1997-98 to 29.83 MU during FY 2003-04. Number of consumers has also reduced to 33 during FY2003-04 from level of 50 during Fy2001-02. One of the reasons for reduction in number of consumers is rationalization of consumers billed under HT PWW category. During FY2005-06, only two consumers were added to this category resulting in total number of consumers under this category to 35. However, existing consumers have significantly reduced their contract demand on account of weathering market conditions for their products and thereby reduced their contract demand. It is envisaged that, while number of consumers under this category remain same, the contract demand would remain same if not reduced further by existing industrial consumers. Accordingly, total number of consumers for the ensuing year, have been projected to remain at level of 35.

2.9.2 Projection of Connected load

Contract demand for the category during 2004-05 was 7972 kVA. As outlined above, existing consumers have reduced their contract demand thereby resulting in total contract demand under this category as 7323 kVA during the FY2005-06. Thus, it is projected that contract demand for ensuing year (FY2006-07) shall be 7323 kVA.

2.9.3 Projection of Sales

Energy sales during FY 2005-06 as recorded is 28.30 MU. Projection of sales for FY 2006-07 has been made on basis of projected contract demand and derived load diversity factor. The load diversity factor of 42.9%, 44.02% and 45.5% has been observed for FY 2003-04, FY 2004-05 and FY 2005-06 respectively. Based on historic consumption trend load diversity factor of 46.6% is considered for projecting energy requirement during FY 2006-07. Based on projected contract demand and assessed load diversity factor, energy requirement of 29.62 MU has been projected for FY 2006-07.

Table 2-11 Detail information regarding HT Industrial Consumer Category

	FY04-05	FY 05-06	FY 06-07
Particulars	Actual	Actual	Projected

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 39



	FY04-05	FY 05-06	FY 06-07
Particulars	Actual	Actual	Projected
No of Consumers	33	35	35
Contract Demand (kVA)	7972	7323	7323
Derived load diversity factor (%)	44.02%	45.51%	46.64%
Sales in (MU)	30.74	28.30	29.62

Source: MPECS

2.10 H.T. Public Water Works (PWW)

H.T. PWW consumer category is smallest consumer category in terms of number of consumer as well as connected load. H.T. PWW consumer category comprises of following sub-categories:

- Rural PWW
 - C class Municipality
 - Rural Gram panchayat
- Urban PWW
 - B class Municipality

During FY 2004-05 only 4 consumers were billed under H.T. PWW category. Two consumers were billed under rural Gram panchayat category and one consumer each under C class Municipality and Urban PWW. Growth potential of this category is also limited.

2.10.1 Projection of Number of Consumers

As discussed above 4 consumers were billed during FY 2004-05 as well as during FY 2005-06 H.T.PWW consumer connection requires long term planning. However, it is envisaged that one consumer would be added under C-class municipality HTP-PWW consumer category during 2006-07.

Table 2-12: Sub category wise number of consumer under LT PWW category

Public Water Works	FY 2004-05	2005-06	FY 2006-07
Number of Consumers	Actual	Actual	Projected

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 40



Public Water Works	FY 2004-05	2005-06	FY 2006-07
Number of Consumers	Actual	Actual	Projected
Urban PWW	1	1	1
Rural PWW			
- "C " class Municipalities	1	1	2
- Gram Panchayat	2	2	2
Total	4	4	5

Source: MPECS

2.10.2 Projection of Connected load

As indicated above, only one consumer connected has been envisaged to be added under C-class municipality HTP-PWW during FY2006-07.

Table 2-13: Consumer category wise PWW connected load

Public Water Works	FY 2004-05	2005-06	FY 2006-07
Connected Load in HP	Actual	Actual	Projected
Urban PWW	280	280	280
Rural PWW			
- "C " class Municipalities	90	90	165
- Gram Panchayat	315	315	315
Total	685	685	760

Source: MPECS

2.10.3 Projection of Sales

Projection of sales is based on actual unit sold during FY 2004-05 (1.66 MU) and during FY 2005-06 (1.64 MU). Further, total annual consumption under this category for FY 2006-07 has been projected as 2.00 MU based on consumption pattern of previous years and considering that additional consumer connection of 75 kW would added during FY2006-07, under this category.



Table 2-14 Energy Consumption of H.T P.W.W category in MU

Public Water Works	FY 2004-05	FY 2005-06	FY 2006-07
Sales in MU	Actual	Actual	Projected
Urban PWW	0.85	0.82	0.96
Rural PWW			
- "C " class Municipalities	0.42	0.44	0.63
- Gram Panchayat	0.40	0.38	0.41
Total	1.66	1.64	2.00

Source: MPECS

The following table summarizes the number of consumes, connected load and sales for the HT PWW category during the PY, CY and EY.

Table 2-15 Detail information regarding H.T. PWW Consumer Category

Particulars	PY 04-05	CY 05-06	EY 06-07
	Actual	Provisional	Estimate
No of Consumer	4	4	5
Connected Load (HP)	685	685	760
Sales in (MU)	1.66	1.64	2.00

Source: MPECS

2.11 HT Agriculture (HT-AG)

2.11.1 Projection of Number of Consumers

Number of consumers and connected load has shown declining trend under HT Agriculture category. During FY 2004-05 there were 52 consumers out of which 28 consumers are still connected and 24 consumers are permanently disconnected. Out of 28 numbers of connected consumers almost all the consumers have now been converted into metered tariff category over the period during Fy2004-05 and Fy2005-06. There has been no change in the number of consumers under this category during FY2005-06. Hence, it is envisaged that number of consumers under this category shall remain to be 28 during ensuing year (FY2006-07). Energy meters have been installed for consumers, which were billed under flat rate tariff earlier. However, during FY2005-06 these consumers have

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 42



been billed as per metered tariff, and the same is proposed to be continued during FY 2006-07 as well.

2.11.2 Projection of Connected load

During FY 2004-05, total connected load of 4287 HP has been reported under this category. During FY 2005-06 connected load covered under metered tariff category has increased to 4670 HP. As discussed above all consumers under HT Agriculture category will be billed under metered tariff category from FY 2006-07. Accordingly, total of 4670 HP of connected load has been projected for FY 2006-07 under this category.

2.11.3 Projection of Sales

Projection of sales is based on actual unit sold during FY 2004-05 (5.73 MU) and during FY 2005-06 (7.15 MU). Further, total annual consumption under this category for FY2006-07 has been projected as 7.33 MU based on consumption pattern of previous years.

Table 2-16 Detail information regarding HT Agricultural Consumer Category

	PY 04-05	CY 05-06	EY 06-07
Particulars	Actual	Provisional	Estimate
No of Consumer	28	28	28
Connected Load (HP)	4,287	4,670	4,670
Sales in (MU)	5.73	7.15	7.33

Source: MPECS

2.12 Summary of Sales

The summary of sales for each consumer category for FY 2004-05, FY 2005-06 and FY 2006-07 has been provided under Table 2.17 below.

Table 2-17 Summary of Consumer Category wise Sale

Sale in Million Units	Previous Year	Current Year	Ensuing Year
	FY2004-05	FY2005-06	FY2006-07
Category	Actual	Actual	Projection
LT Category			
Domestic (LD-1)	40.66	40.34	41.95

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 43



Sale in Million Units	Previous Year	Current Year	Ensuing Year
	FY2004-05	FY2005-06	FY2006-07
Category	Actual	Actual	Projection
Non-domestic (LD-2)	9.97	9.78	10.17
General Motive Power (LTP-G)	10.66	11.45	11.91
Public Water Works	3.38	3.53	3.53
Agriculture Consumers (metered)	1.03	4.22	5.27
Agriculture Consumers (un-metered)	261.29	298.79	307.16
Public Street Lighting	2.46	2.24	2.24
Temporary	0.01	0.01	0.01
Sub-total (LT)	329.47	370.36	382.24
HT Category			
HTP-II (Industrial, others)	30.74	28.30	29.62
HTP-IV (PWW-others)	1.66	1.64	2.00
HTP-VII(Agriculture)	5.73	7.15	7.33
Sub-total (HT)	38.13	37.09	38.95
TOTAL (LT + HT)	367.60	407.45	421.19

Source: MPECS

Sale to LT consumer category during the FY 2005-06 is 370.36 MU, a significant increase from 329.47 MU as reported during FY 2004-05, mainly arising due to rise in agriculture demand. For FY 2006-07, LT sales of 382.24 MU are projected.

HT consumption is projected to remain in close range at 38.13, 37.09 and 38.95 MU during FY 2004-05, FY 2005-06 and FY 2006-07 respectively. Total sales of 367.60 MU, 407.45 MU and 421.19 MU is estimated for the PY, CY and EY respectively.



Section 3: Energy Audit and Energy Balance



3. Energy audit and Energy Balance

3.1 Scope of Energy Audit Study

Following section covers elaborate discussion on energy audit analysis, assessment of unmetered consumption, feeder wise energy accounting and estimation of losses at various voltage levels. Energy audit pertains to FY 2004-05 and FY 2005-06. Unmetered consumption is one of major hurdle in accurate estimation of distribution losses. Accuracy of loss estimation is further limited by availability of data and staggered input and consumer meter reading. The Honourable Commission has outlined certain guidelines and principles for energy audit studies in the context of MSEB. Energy audit study and analysis is conducted in line with guideline provided therein.

3.2 Approach and Methodology for loss assessment

3.2.1 Consumer Mix of MPECS

MPECS distribution network can be described as typical rural distribution network with predominant agricultural pump set connection load. During FY 2004-05 total consumer connected load of MPECS was 190 MW out of which agriculture and domestic load comprised over 80% of total connected load. Unmetered L.T. agricultural consumer category comprises of 71.07% of total load. MPECS had 43,336 un-metered LT agricultural consumers as on March 2005.

Table 3-1 MPECS Consumer mix during FY 2004-05

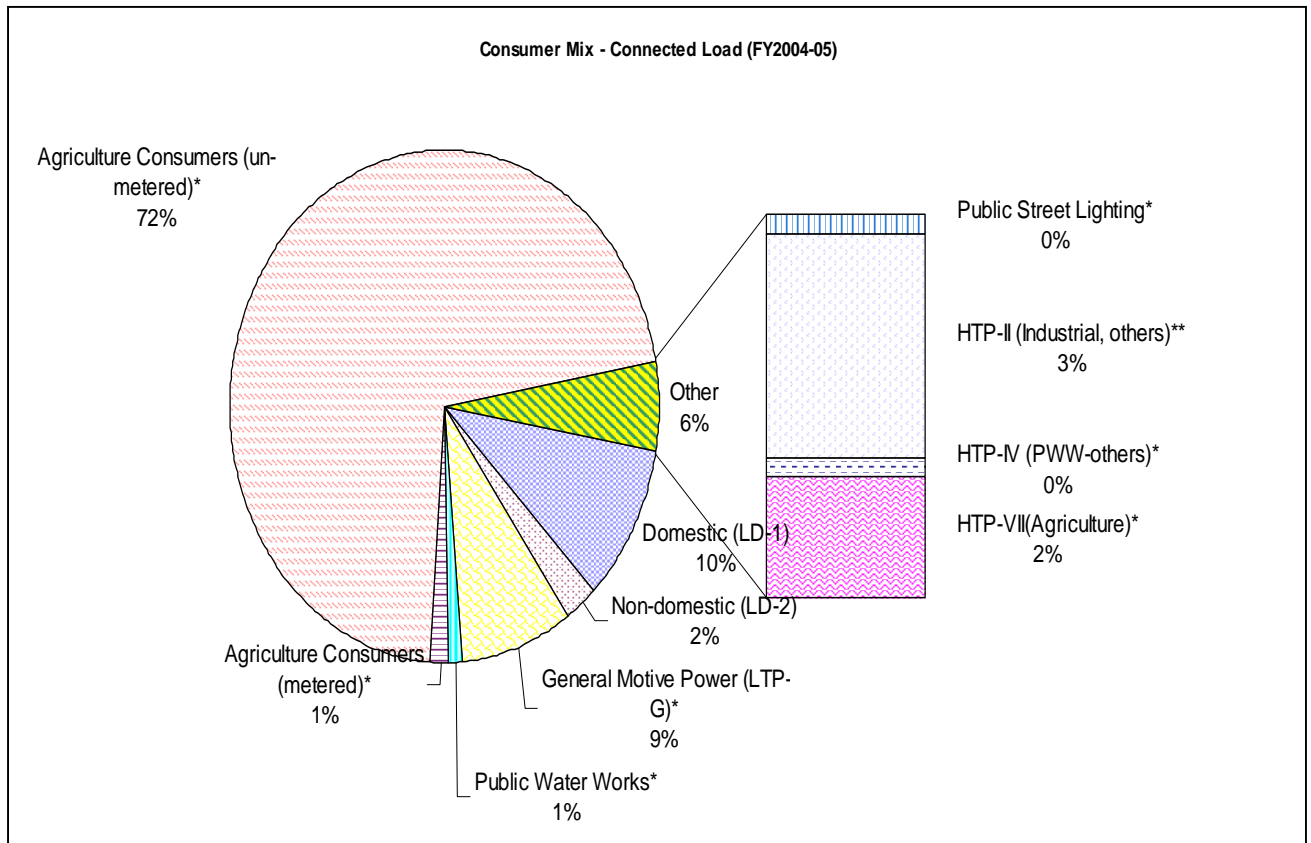
Sr.No.	Consumer Category	No of Consumers	Connected Load in KW	% Distribution
	LT Category			
1	Domestic (LD-1)	79787	22903	9.56%
2	Non-domestic (LD-2)	9665	5206	2.17%
3	General Motive Power (LTP-G)*	2117	20563	8.58%
4	Public Water Works*	388	2203	0.92%
5	Agriculture Consumers (metered)*	901	3424	1.43%
6	Agriculture Consumers (un-metered)*	43336	171549	71.62%
7	Public Street Lighting*	146	744	0.31%



Sr.No.	Consumer Category	No of Consumers	Connected Load in KW	% Distribution
8	Temporary			
9	Sub-total (LT)	136341	228427	94.60%
	HT Category			
10	HTP-II (Industrial, others)**	33	7972	3.33%
11	HTP-IV (PWW-others)*	4	685	0.29%
12	HTP-VII(Agriculture)*	28	4287	1.79%
13	Sub-total (HT)	65	12943	5.40%
14	TOTAL (LT + HT)	136406	241370	100.00%

Source: MPECS

Chart 3-1: Consumer category wise break-up of connected load in kW for FY 2004-05



3.2.2 Input Energy Measurement

Energy input from MSEB to MPECS is metered at various interface points spread over 33 kV and 11 kV network. Input energy is recorded at 23 metering points of MSEB. As per Hon'ble Commissions interim order dated 18th July 2002 directive, MPECS has installed energy meters at 80 metering points of 11 kV level for measuring energy input at 11 kV. Hence distribution losses estimation has been conducted at 33 kV and 11 kV voltage levels. In case of failure of 11 kV metering system, 33 kV metered input is assumed as 11 kV input. Consequently, 33 kV losses in some of months are estimated to be very low.

3.2.3 Estimation of unmetered energy consumption

Unmetered agricultural consumption is estimated by conducting LT-Agriculture feeder's audit. Energy meters are installed on secondary side (LT) of DTC for measuring energy input. Consumer connected load on secondary side of DTC may comprises metered as well as unmetered consumer load. Hence, metered energy consumption is also recorded along with DTC meter reading. Unmetered energy consumption is estimated by reducing metered energy consumption and estimated line losses of the LT circuit of the concerned DTC in accordance with the methodology prescribed by REC for computation of line losses from total energy input recorded at DTC.

MPECS has initiated agriculture feeder audit since year 2002. During April 2002, 19 number of DTC's were sampled and sample size was increased to 34 metering points till March 2003. During FY 2003-04 average 63 number of DTC were sampled. During month of April 2003, 41 DTCs were sampled. Sampled unmetered agriculture load was 2574 HP (1.46%) of 176,837 HP total agricultural connected load. During FY 2003-04 number of sampled meter reading available were increased to 70 DTC reading till March 2004. Further, during FY2004-05, average sampled un-metered agriculture load increased to **4013 HP (approx. 2.3%)** of total connected load corresponding to total un-metered connected load of 174263 HP. During FY 2005-06 71 DTCs were sampled. However, some of the inter-division feeders were transferred to respective transformers for sake of consistency in division-wise energy accounting. Thus, average sampled un-metered connected load available for sampling reduced to **3668 HP** during 2005-06. Thus, out of



average connected load of 171,179 HP connected load during November 2005, 3668 HP of connected load (2.12%) is sampled.

Subdivision wise average connected load and load sampled is provided in table below.

Table 3-2 Average connected load and percentage load sampled during FY 2004-05

Sub division	Average Connected Load	Average Load Sampled	% Load Sampled
SRM (RURAL)	25584	578	2.26%
SRM(URBAN)	4399	107	2.44%
BELAPUR	16390	488	2.98%
BBLR	31614	747	2.36%
KOLHAR	27165	695	2.56%
RAHURI	29729	485	1.63%
VAMBORI	18358	580	3.16%
MANORI	14653	228	1.55%
DEOLALI	6371	105	1.65%
Total	174263	4013	2.30%

Source: MPECS

During FY 2004-05 sampled DTC readings are available for nine sub-division i.e. SRM (R), SRM (U), Belapur, Bableshwar, Kolhar, Rahuri, Vambori, Manori and Deolali. Subdivision wise monthly percentage HP sampled for FY 2004-05 is provided in following table.

Table 3-3 Percentage agricultural load sampled

Sub division	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05
	% of sampled load											
SRM (R)	2.7%	2.7%	2.3%	2.4%	2.6%	2.3%	2.1%	2.3%	2.3%	1.5%	1.9%	2.1%
SRM(U)	2.8%	2.8%	2.8%	1.3%	1.3%	1.3%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
BELAPUR	2.4%	2.9%	3.1%	3.1%	3.1%	3.1%	3.1%	3.3%	3.1%	3.0%	3.2%	2.5%
BBLR	2.5%	2.4%	2.4%	2.1%	2.3%	2.3%	2.3%	2.5%	2.5%	2.4%	2.4%	2.4%
KOLHAR	2.7%	2.7%	2.3%	2.4%	2.7%	2.7%	2.4%	2.7%	2.4%	2.4%	2.7%	2.6%
RAHURI	1.5%	1.5%	1.4%	1.2%	1.3%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
VAMBORI	4.4%	3.4%	3.8%	4.2%	4.3%	3.5%	3.4%	3.1%	1.9%	1.9%	1.9%	1.9%

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 49



Sub division	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05
% of sampled load												
MANORI	1.7%	1.7%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
DEOLALI	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%
Total	2.5%	2.4%	2.3%	2.3%	2.4%	2.3%	2.3%	2.4%	2.2%	2.1%	2.2%	2.2%

Source: MPECS

During FY 2005-06 number of DTC sampled were not increased and hence sampling percentage have remain steady during FY 2005-06. Consumption norm kWh/HP is derived on monthly basis for all subdivisions. Same norm is applied for deriving subdivision wise consumption for total agricultural connected load. Total energy sale and loss is assessed by considering metered input energy, metered energy sold and assessed unmetered energy.

3.2.4 Analysis of Sampling Data

During FY 2004-05, 780 DTC meter reading i.e. average 65 number of DTC meter reading are available for estimating unmetered consumption. Selective bad data of defective meter reading are eliminated from analysis of unmetered consumption. A total of 702 meter reading data points are available for analysis purpose. Based on methodology discussed in above section, agriculture consumption norm kWh/HP/annum is estimated for each subdivision per month. Annual frequency distribution of number of sampled reading and hours of operation per day is mentioned in following chart.

Table 3-4 Frequency Distribution of Hr of operation per day

Hr of operation per Day	No. Of Readings (No.)	Class Frequency (%)
<2	52	7.4%
2-3	67	9.5%
3-4	92	13.1%
4-5	85	12.1%
5-6	67	9.5%
6-7	66	9.4%
7-8	58	8.3%
8-9	61	8.7%
9-10	35	5.0%
10-11	27	3.8%
11-12	20	2.8%

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07

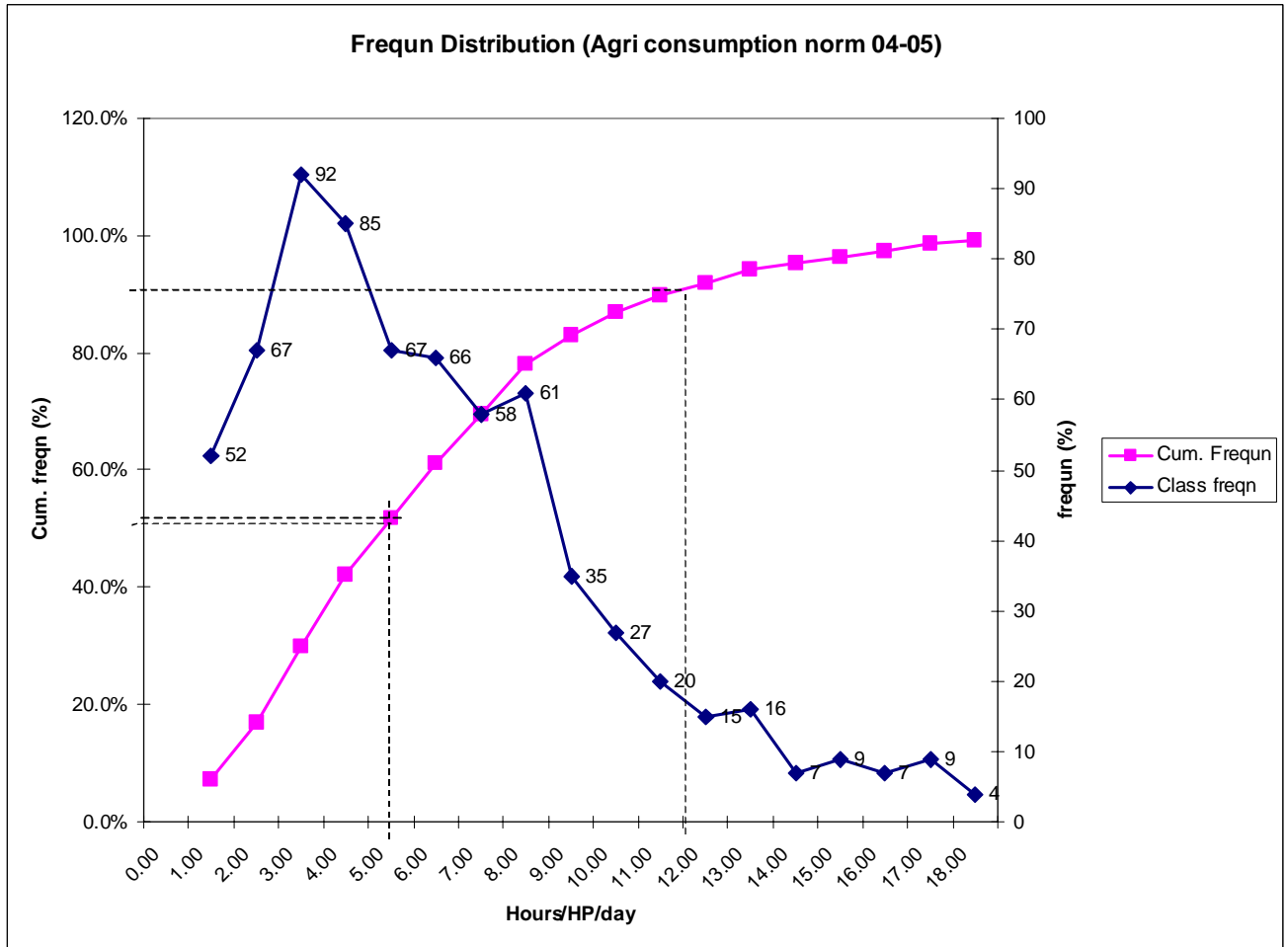


Hr of operation per Day	No. Of Readings (No.)	Class Frequency (%)
12-13	15	2.1%
13-14	16	2.3%
14-15	7	1.0%
15-16	9	1.3%
16-17	7	1.0%
17-18	9	1.3%
18-19	4	0.6%
19-20	0	0.0%
20-21	1	0.1%
21-22	1	0.1%
22-23	0	0.0%
23-24	0	0.0%
>24	2	0.3%

Source: MPECS



Figure 3-1: Frequency Distribution chart of Hour of agricultural consumption per day



From frequency distribution chart it can be observed that maximum number of reading indicate 4 to 6 hr of pump operation per day. From cumulative frequency distribution graph, it can be inferred that (a) Around 50% (355 out of 702) readings indicate 5 to 6 (avg. 5.56) hours per day of operation and (b) 90% of readings (645 out of 702) indicate less than 12 hours per day of operation.

Table 3-5 Cumulative Frequency distribution of Hr of Operation

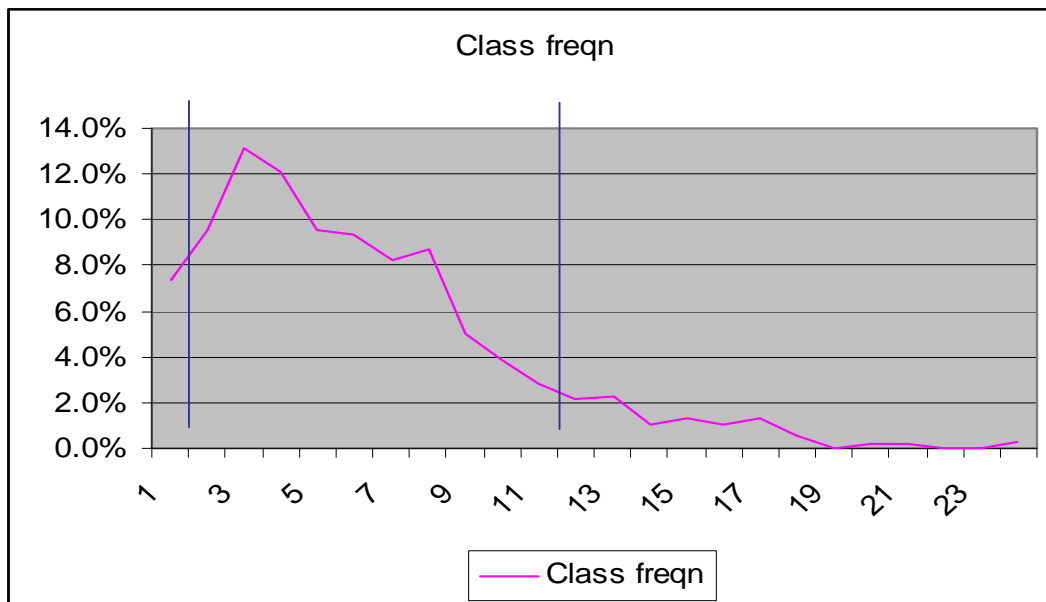
Hr of operation per Day	No. Of Readings (No.)	Cumulative no. of readings (No.)	Class Frequency (%)	Cumulative Frequency (%)
<2	52	52	7.4%	7.4%
2-3	67	119	9.5%	17.0%
3-4	92	211	13.1%	30.1%



Hr of operation per Day	No. Of Readings (No.)	Cumulative no. of readings (No.)	Class Frequency (%)	Cumulative Frequency (%)
4-5	85	296	12.1%	42.2%
5-6	67	363	9.5%	51.7%
6-7	66	429	9.4%	61.1%
7-8	58	487	8.3%	69.4%
8-9	61	548	8.7%	78.1%
9-10	35	583	5.0%	83.0%
10-11	27	610	3.8%	86.9%
11-12	20	630	2.8%	89.7%
12-13	15	645	2.1%	91.9%
13-14	16	661	2.3%	94.2%
14-15	7	668	1.0%	95.2%
15-16	9	677	1.3%	96.4%
16-17	7	684	1.0%	97.4%
17-18	9	693	1.3%	98.7%
18-19	4	697	0.6%	99.3%
19-20	0	697	0.0%	99.3%
20-21	1	698	0.1%	99.4%
21-22	1	699	0.1%	99.6%
22-23	0	699	0.0%	99.6%
23-24	0	699	0.0%	99.6%
>24	2	701	0.3%	99.9%

Source: MPECS

Figure 3-2: Frequency Distribution chart of Hour of agricultural consumption per day



Frequency distribution curve it can be observed that mean of reading observed fall between 5 to 6 hr of operation per day. Within a range of 2 hr per day to 12 hr per day covers over 80% of sampled readings. Hence, sampled agricultural consumption reading considered are filtered in for data reading falling within range of 2 hr to 12 hr of operation per day. Same filtering criteria are applied for assessment of FY 2005-06.



Table 3-6 Categorization of LT Ag reading

Operating Hours/HP/Annum	SRM (R)	SRM (U)	BELA PUR	BBLR	KOLH AR	RAHU RI	VAMB ORI	MANO RI	DEOL ALI	Total
<=2	5	0	3	20	6	1	17	0	0	52
2<hr<=3	16	2	4	5	11	12	9	8	0	67
3<hr<=4	21	2	8	6	13	14	22	6	0	92
4<hr<=5	23	7	8	5	15	7	15	4	1	85
5<hr<=6	14	6	7	8	11	12	3	4	2	67
6<hr<=7	8	4	10	14	13	10	3	4	0	66
7<hr<=8	9	0	5	15	13	3	3	5	5	58
8<hr<=9	2	0	7	12	12	8	4	4	12	61
9<hr<=10	4	0	7	9	4	3	3	3	2	35
10<hr<=11	3	0	6	2	7	2	0	5	2	27
11<hr<=12	1	0	4	5	4	3	2	1	0	20
12<hr<=13	2	0	3	2	1	2	1	4	0	15
13<hr<=14	0	0	1	4	4	6	1	0	0	16
14<hr<=15	0	0	0	2	1	2	2	0	0	7
> 15 hr	4	0	0	4	12	13	0	0	0	33
TOTAL	112	21	73	113	127	98	85	48	24	701

Source: MPECS

3.3 Data analysis and Findings**3.3.1 MPECS Sub-division wise assessment of agricultural consumption norm for FY 2004-05**

As discussed above unmetered consumption is assessed by estimating consumption norm (kWh/HP) for each subdivision. Following table provide monthly agricultural connected load and estimated kWh/HP/month.

Table 3-7 Agricultural connected load and consumption norm for FY 2004-05

Sub-Div	Units	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04
SRM (RURAL)	HP	535	354	324	566	504	356
	kWh/HP	80	77	107	94	78	68
SRM(URBAN)	HP	124	124	58	58	58	58
	kWh/HP	110	98	79	84	67	59

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07



Sub-Div	Units	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04
BELAPUR	HP	357	446	401	514	449	444
	kWh/HP	202	136	92	151	116	109
BBLR	HP	549	577	577	579	579	579
	kWh/HP	158	146	127	145	104	146
KOLHAR	HP	645	604	618	534	325	540
	kWh/HP	161	121	94	101	106	125
RAHURI	HP	380	377	341	341	256	465
	kWh/HP	142	109	85	109	91	112
VAMBORI	HP	489	502	476	479	575	358
	kWh/HP	97	97	120	84	92	124
MANORI	HP	180	90	70	101	101	104
	kWh/HP	118	142	144	93	103	136
DEOLALI	HP	105	105	105	105	105	105
	kWh/HP	154	164	170	169	167	163
Total	HP	3363	3177	2969	3275	2952	3008
	kWh/HP	136	119	108	115	100	118

Sub-Div	Units	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05
SRM (RURAL)	HP	275	468	545	395	378	443
	kWh/HP	62	81	107	127	157	193
SRM(URBAN)	HP	66	124	124	124	124	124
	kWh/HP	78	84	108	106	112	86
BELAPUR	HP	444	537	511	485	430	405
	kWh/HP	94	148	199	187	186	201
BBLR	HP	405	522	624	647	429	691
	kWh/HP	107	169	142	166	167	173
KOLHAR	HP	398	500	454	376	524	594
	kWh/HP	115	131	148	171	145	130
RAHURI	HP	313	396	391	439	349	349
	kWh/HP	101	91	131	152	151	168
VAMBORI	HP	498	458	329	329	276	329
	kWh/HP	111	64	68	83	68	112
MANORI	HP	129	160	160	160	160	160
	kWh/HP	104	146	203	190	186	184

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 56



Sub-Div	Units	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05
DEOLALI	HP	105	105	105	105	105	105
	kWh/HP	120	139	151	168	167	201
Total	HP	2633	3268	3241	3059	2773	3198
	kWh/HP	101	118	139	153	151	162

Source: MPECS

Overall consumption norm for agriculture consumption for FY2004-05 based on energy audit studies is presented in the following Table.

Table 3-8 Consumption Norm during FY 2004-05

Agricultural category	kWh/HP/ annum	Hr/HP/Annum	Hr/HP/Day
LT Agricultural load	1535	2057	5.64

Source: MPECS

3.3.2 MPECS Sub-division wise assessment of agricultural consumption norm during initial eight months of FY 2005-06).

Table 3-9 Agricultural Connected load and consumption norm during FY 2005-06

Sub-Div	Units	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05
SRM (RURAL)	HP	636	553	496	354	553	604	632	562
	kWh/HP	167	159	145	129	133	152	146	156
SRM(URBAN)	HP	124	124	124	124		62	128	128
	kWh/HP	131	119	112	139		146	93	148
BELAPUR	HP	405	405	470	512	275	332	430	244
	kWh/HP	182	180	192	155	147	152	187	139
BBLR	HP	632	655	490	564	692	635	650	583
	kWh/HP	188	162	148	156	140	122	131	156
KOLHAR	HP	514	514	597	449	598	640	381	349
	kWh/HP	147	138	142	187	142	144	158	128
RAHURI	HP	366	433	388	410	394	406	406	416
	kWh/HP	111	99	104	167	136	83	114	163
VAMBORI	HP	226	360	360	289	289	228	228	283
	kWh/HP	110	103	104	99	86	76	74	106

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07



Sub-Div	Units	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05
MANORI	HP	118	118	109	109	120	120	120	98
	kWh/HP	171	163	194	202	168	77	138	160
DEOLALI	HP	105	105	105	105	105	160	153	153
	kWh/HP	175	186	217	224	219	160	180	198
Total	HP	3124	3265	3137	2915	3024	3186	3127	2814
	kWh/HP	158	144	145	157	138	128	140	149

Source: MPECS

Overall consumption norm for agriculture consumption for FY2005-06 based on energy audit studies is presented in the following Table.

Table 3-10 Consumption Norm during first half of FY 2005-06

Agricultural category	kWh/HP/ annum	Hr/HP/Annum	Hr/HP/Day
Apr-05 to Nov-05 (Eight month)	1742*	2335	6.40
12-mth moving avg. (Dec-04 to Nov-05)	1767	2369	6.49

(*) Eight months Year Consumption Norm converted to Equivalent Annual Norm

3.4 Sub Division wise energy sale and Loss estimation

Table in Appendix-2 provides estimated unmetered energy sale, recorded metered energy sale, input energy and estimated losses. Also as discussed earlier 33 kV loss in some of month is negligible because of assumptions made in case of 11 kV metering failure as 33 kV input equal 11 kV input.

3.5 Energy Balance

3.5.1 Energy Balance for FY 2004-05

During FY 2004-05 metered energy sale of 106.31 MU has been reported. Metered energy sale for past few years has been in range of 100 MU per annum and the same is

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 58



increasing at rate of 1.5%-2% p.a., despite reduction in some HT industrial categories, mainly due to installation of meters and conversion of some of the un-metered connections into metered supply. Unmetered consumption from FY 2004-05 has been assessed on basis of sampled agricultural consumption as discussed in Energy Audit paragraph. Un-metered energy consumption of 261.29 MU is estimated for FY 2004-05.

During FY 2004-05, 551.51 MU of energy is purchased from MSEB. Total sale of 367.60 MU is estimated for both metered as well as unmetered category. Total loss has been assessed to be around 183.91 MU of energy. Loss level of 33.35% has been estimated for FY 2004-05.



Table 3-11 Monthwise Energy Balance for FY 2004-05

Units (MU)	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05
Power Purchase	50.3	43.4	39.6	42.1	36.5	44.0	32.4	44.1	49.2	55.4	60.4	54.1
Metered Sale	9.5	9.0	9.6	9.0	9.5	9.2	9.5	8.7	7.7	7.9	8.3	8.4
Unmetered Sale	21.4	22.2	21.4	22.2	22.0	21.3	22.0	21.4	22.4	22.5	20.2	22.4
Total Sale	30.9	31.2	31.0	31.2	31.4	30.4	31.5	30.1	30.1	30.4	28.5	30.8
Total Loss	19.4	12.1	8.6	10.9	5.0	13.5	0.9	14.0	19.1	25.1	31.9	23.3
Loss %	38.6	28.0	21.8	25.8	13.7	30.8	2.8	31.7	38.8	45.2	52.8	43.1

Source: MPECS

Accordingly, summary of energy balance for FY2004-05 is presented in the following Table 3-12.

Table 3-12 Summary of Energy Balance for FY2004-05

Particulars	Total (FY 2004-05)
Power Purchase, MU	551.51
Metered Sale, MU	106.31
Unmetered Sale, MU	261.29
Total Sale, MU	367.60
Total Loss, MU	183.91
Loss %	33.35%

Source: MPECS

3.5.2 Energy Balance for FY 2005-06

For FY 2005-06, supply availability from MSEB has significantly improved as compared to constrained supply during FY2004-05. Energy purchase from MSEB during first half of FY 2005-06 has increased to 302.1 MU as compared to 255.78 MU during first half of FY 2004-05. During FY 2004-05 MPECS has purchased 551.5 MU from MSEB. Correspondingly, meter energy consumption during first half of FY 2005-06 has also improved significantly at 58.6 MU as compared to 55.8 MU metered consumption during first half of FY 2004-05. Also, reflecting corresponding growth in un-metered consumption, the consumption norm for Unmetered category consumption for first half



has increased from 1399 kWh/HP for FY 2004-05 to 1742 kWh/HP during first half of FY 2005-06. Table 3.13 provide half yearly energy balance for FY 2005-06.

Table 3-13 Energy Balance for first half of FY 2005-06

Units (MU)	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05
Power Purchase	55.8	55.2	54.1	51.3	41.6	44.1	42.1	51.3
Metered Sale	9.2	9.3	9.7	9.8	10.5	10.1	9.5	8.8
Unmetered Sale	24.6	25.5	24.6	25.5	25.4	24.5	25.3	24.5
Total Sale	33.8	34.8	34.4	35.2	35.9	34.6	34.8	33.3
Total Loss	22.0	20.4	19.8	16.0	5.7	9.5	7.3	18.1
Loss %	39.4%	37.0%	36.5%	31.3%	13.8%	21.5%	17.3%	35.2%

Source: MPECS

Table 3-14 Energy Balance for FY 2005-06

Particulars	Total FY 2005-06
Power Purchase, MU	611.61
Metered Sale, MU	108.65
Unmetered Sale, MU	298.79
Total Sale, MU	407.44
Total Loss, MU	204.17
Loss %	33.38%

Source: MPECS

3.5.3 Energy Balance for FY 2006-07

Consumer category wise metered energy requirement is projected and discussed in earlier section. Total metered energy requirement of 116.77 MU is projected for EY 2006-07. Regarding unmetered category i.e. agricultural pumps, energy consumption for FY 2006-07 has been projected based on 12 monthly moving average consumption norm of 1767 kWh / HP as assessed from Dec-2005 to Nov-2006. LT unmetered agricultural consumption 307.16 MU is assessed for FY 2006-07 based on connected load for



FY2006-07 as projected under Chapter-2. MPECS has made significant investment for reducing technical loss which includes installing capacitors on distribution feeders, reducing load on overloaded equipment like distribution lines and transformers, installing new 33/ 11 KV substations etc. Loss reduction of 1% and loss level of 32.5 % is projected for FY 2006-07. Energy requirement of 623.98 MU is projected for FY 2006-07.

Table 3-15 Energy Balance for FY 2006-07

Particulars	Total FY 2006-07
Metered Sale, MU	114.03
Unmetered Sale, MU	307.16
Total Sale, MU	421.19
Target Loss %	32.50%
Energy Input Requirement, MU	623.98

Source: MPECS

Table 3-16 Consumer Category wise sales Energy Input and Losses in MU

In Million Units	Previous Year	Current Year	Ensuing Year
	FY2004-05	FY2005-06	FY2006-07
Category	Actual	Actual	Projection
LT Category			
Domestic (LD-1)	40.66	40.34	41.95
Non-domestic (LD-2)	9.97	9.78	10.17
General Motive Power (LTP-G)	10.66	11.45	11.91
Public Water Works	3.38	3.53	3.53
Agriculture Consumers (metered)	1.03	4.22	5.27
Agriculture Consumers (un-metered)	261.29	298.79	307.16
Public Street Lighting	2.46	2.24	2.24
Temporary	0.01	0.01	0.01
Sub-total (LT)	329.47	370.36	381.24
HT Category			
HTP-II (Industrial, others)	30.74	28.30	29.62
HTP-IV (PWW-others)	1.66	1.64	2.00
HTP-VII(Agriculture)	5.73	7.15	7.33
Sub-total (HT)	38.13	37.09	38.95
TOTAL (LT + HT)	367.60	407.44	421.19

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 62



Power Purchase	551.51	611.61	623.98
Total Losses	183.91	204.17	202.79
Losses, %	33.35%	33.38%	32.50%

Source: MPECS



Section 4 Projections of Power purchase Expenses



4. Projections of Power purchase expenses

This section elaborates on the power purchase quantum and expenses payable to MSEB. Table 4.1 provides energy balance for FY 2004-05, FY 2005-06 and FY 2006-07. Detail discussion on power purchase expenses for each financial year is provided in following paragraph. Further, as directed by the Commission during the Technical Validation session held on November 8, 2006, we are pleased to submit this **Additional Information** based on following:

- Updated actual performance and financial/account related information for FY2005-06 based on audited financial statement for FY2005-06 as against earlier information, which was based on actual data for 8 month (April 2005 to November 2005) and projections for remaining 4 months (December 2005 to March 2006).
- In addition, impact of Hon'ble Commission's Tariff Order dated September 20, 2006 in case of MSEDCL ARR/Tariff Petition for FY2006-07 has also been covered for the purpose of this Additional Information, as directed by Hon'ble Commission.

As outlined under Section-3, the quantum of energy units purchased from MSEB during FY2004-05 and during FY2005-06 amount to 551.51 MU and 611.61 MU respectively. Further, quantum of energy units required to be purchased during FY2006-07 is projected to be around 623.98 MU. The energy balance for the three years is presented in the table below.

Table 4-1: Energy balance for FY 04-05, FY 05-06 and FY 06-07

	FY 2004-05	FY 2005-06	FY 2006-07
Input from MSEB in MU	551.51	611.61	623.98
Energy Sale in MU	367.60	407.44	421.19
Loss estimated in MU	183.91	204.17	202.79

Source: MPECS

In case of MPECS, power purchase expenses account for almost 63% of the total expenses and hence forms a major component of the total expenses of MPECS. The sub-components of the total power purchase expenses are energy charges, demand charges and fuel cost adjustment charges, renewable purchase obligation.



Other charges levied by MSEB on account of power purchase include delayed payment charges (DPC) and interest on energy bill arrears. Even though these charges are related to power purchase expenses but are not actual power purchase expenses and hence, these have not been considered as a part of the power purchase costs for ARR and Tariff determination for the PY and CY and have been shown separately in the profit and loss account under the head 'Other Expenses - DPC and Interest on DPC'.

4.1 Power Purchase Expenses for FY 2004-05

As discussed in the above section, MPECS had purchased energy equivalent to 551.51 MU from MSEB during FY 2004-05. Table 4.2 below shows the component-wise break-up of the power purchase expenses of MPECS during FY 2004-05. The power purchase expenses of MPECS during the FY 2004-05 amount to Rs. 126,23 lakh. The effective cost per unit purchased is 2.29 Rs./kWh which include 1.5 Rs./kWh towards energy charge, 0.63 Rs./kWh derived towards demand charge and 0.16 Rs./kWh towards FOCA charge from MSEB.

Table 4-2 Component of Power Purchase Cost during FY 2004-05

Source of Power (Station wise)	Month	Utility-share-(MW)/Billing Demand (kVA)	Energy Received (MU)	Demand Charges, Rs/k VA/month	Total Annual Fixed-Demand charges (Rs lakh)	Energy Charge, Rs/unit	Capacity-Energy Charges (Rs Lakh)	Fuel Price Adjustment Charge (Rs/kWh)	Fuel Price Adjustment Cost (Rs Lakh)	Total Variable Charges (Rs Lakh)	Total Cost of Energy Received (Rs Lakh)	Avg cost of energy received (Rs/kWh)
	(a)	(b)	(c)	(d)	(e)=(b)x(d)	(f)	(g) = (c)x (f)	(h)	(i) = (c) x (h)	(j) = (g+i)	(l) = (e+j)	(m)=(l)/(c)
MSEDCL	Apr-04	139761	50.32	200.00	279.52	1.50	754.74	0.17	85.54	840.28	1119.80	2.23
	May-04	146496	43.35	200.00	292.99	1.50	650.31	0.07	30.35	680.66	973.65	2.25
	Jun-04	134254	39.63	200.00	268.51	1.50	594.41	0.00	0.00	594.41	862.92	2.18
	Jul-04	136543	42.07	200.00	273.09	1.50	631.00	0.13	55.63	686.63	959.72	2.28
	Aug-04	143702	36.46	200.00	287.40	1.50	546.87	0.14	51.04	597.91	885.31	2.43
	Sep-04	140430	43.96	200.00	280.86	1.50	659.43	0.02	8.79	668.22	949.08	2.16
	Oct-04	116485	32.38	200.00	232.97	1.50	485.77	0.15	48.58	534.35	767.32	2.37
	Nov-04	134873	44.14	200.00	269.75	1.50	662.15	0.25	110.36	772.51	1042.26	2.36
	Dec-04	156877	49.21	200.00	313.75	1.50	738.10	0.30	147.62	885.72	1199.48	2.44
	Jan-05	159455	55.44	200.00	318.91	1.50	831.67	0.12	66.53	898.20	1217.11	2.20
	Feb-05	162421	60.43	200.00	324.84	1.50	906.50	0.32	193.39	1099.89	1424.73	2.36
	Mar-05	159988	54.11	200.00	319.98	1.50	811.69	0.13	70.35	882.04	1202.01	2.22
Sub-total (MSEDCL)	Apr-04 to Mar-05	144274	551.51	200.00	3462.57	1.50	8272.64	0.16	868.18	9140.82	12603.39	2.2853
RPO Pool contribution	Apr-04 to Mar-05	0.78%	4.30			2.12	91.20	(1.66)	(71.30)	19.90	19.90	0.46
Total		144274	551.51		3462.57		8363.84		796.88	9160.72	12623.29	2.2889

Source: MPECS

It is noted that power purchase cost on account of renewable purchase obligation (RPO) during FY2004-05 amounts to Rs 91.2 Lakh corresponding to RPO obligation of 4.3 MU (i.e. 0.78% of power purchase quantum of 551.51 MU) at the rate of Rs 2.12 per unit, based on claim received from MEDA, a nodal agency for Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07



settlement of RPO pool. It is envisaged that MPECS shall receive 'credit notes' worth Rs 71.30 lakh (4.30 MU x Rs 1.66/unit) from MEDA corresponding to its contribution to RPO Pool. The credit for energy rate pertains to variable charge paid by MPECS to MSEB (i.e. Rs 1.50/unit energy charge + Rs 0.16/unit FCA = Rs 1.66/unit – total VC)

4.2 Power Purchase Expenses for FY 2005-06

MPECS had purchased energy equivalent to 611.61 MU from MSEB during FY 2005-06. Table below shows the component wise break up of the power purchase expenses during FY 2005-06. The power purchase expense of MPECS during FY 2005-06 amount to 146,20 Lakh. The effective cost per unit is 2.39 Rs./kWh which include 1.50 Rs./kWh toward energy charge, 0.60 Rs./kWh derived toward demand charge and 0.27 Rs./kWh toward FOCA charge payable to MSEB. Per unit demand charge for MPECS has reduced from 0.63 Rs./kWh during FY 2004-05 to 0.60 Rs./kWh during FY 2005-06. Reduction in per unit demand charge is due to significant increase in purchase of energy quantum from 551.51 MU to 611.61 MU and recording of correspondingly higher demand while rate of demand charge remaining same. However, MPECS would like to highlight that MSEDCL continues to charge billing demand based on aggregate of maximum demand recorded by various demand meters located at 23 metering points. Thus, MPECS continues to pay higher demand charges, when its 'simultaneous maximum demand' would actually be lower than that billed by MSEDCL as per current practice. MPECS has requested MSEDCL to take this aspect into consideration and revise their 'billing of demand charges' on 'simultaneous maximum demand' basis, as directed by Hon'ble Commission to TPC in case of supply by TPC to REL and TPC to BEST. MPECS requests Hon'ble Commission to issue appropriate directions in this matter at the earliest, as the higher demand charges are continued to be reflected in the monthly bills as well as arrears of MPECS to MSEDCL.



Table 4-3 Component-wise cost of power purchase during FY 2005-06

Source of Power (Station wise)	Month	Utility-share-(MW)/Billing Demand (kVA)	Energy Received (MU)	Demand Charges, Rs/kVA/month	Total Annual Fixed-Demand charges (Rs lakh)	Energy Charge, Rs/unit	Capacity-Energy Charges (Rs Lakh)	Fuel Price Adjustment Charge (Rs/kWh)	Fuel Price Adjustment Cost (Rs Lakh)	Total Variable Charges (Rs Lakh)	Incentive (Rs Lakh)	Total Cost of Energy Received (Rs Lakh)	Avg cost of energy received (Rs/kWh)
	(a)	(b)	(c)	(d)	(e)=(b)x(d)	(f)	(g) = (c)x (f)	(h)	(i) = (c) x (h)	(j) = (g+i)	(k)	(l) = (e+j)	(m)=(l)/(c)
MSEDCL	Apr-05	166322	55.85	200.00	332.64	1.50	837.68	0.22	122.86	960.54		1293.19	2.32
	May-05	151944	55.20	200.00	303.89	1.50	828.03	0.15	82.80	910.84		1214.72	2.20
	Jun-05	149633	54.11	200.00	299.27	1.50	811.63	0.19	102.81	914.43		1213.70	2.24
	Jul-05	146550	51.27	200.00	293.10	1.50	769.11	0.48	246.12	1015.23		1308.33	2.55
	Aug-05	155531	41.60	200.00	311.06	1.50	624.07	0.52	216.34	840.41		1151.48	2.77
	Sep-05	145858	44.06	200.00	291.72	1.50	660.97	0.42	185.07	846.04		1137.75	2.58
	Oct-05	142551	42.13	200.00	285.10	1.50	631.92	0.16	67.40	699.32		984.42	2.34
	Nov-05	149966	51.34	200.00	299.93	1.50	770.07	0.37	189.95	960.02		1259.95	2.45
	Dec-05	160416	53.22	200.00	320.83	1.50	798.36	0.07	37.26	835.62		1156.45	2.17
	Jan-06	155210	56.13	200.00	310.42	1.50	841.88	0.00	0.00	841.88		1152.30	2.05
	Feb-06	165712	54.91	200.00	331.42	1.50	823.61	0.40	219.63	1043.24		1374.67	2.50
Mar-06	183465	51.79	200.00	366.93	1.50	776.78	0.40	207.14	983.92		1350.85	2.61	
Sub-total (MSEDCL)	Apr-05 to Mar-06	156097	611.61	200.00	3746.32	1.50	9174.11	0.27	1677.38	10851.49		14597.81	2.3868
RPO Pool contribution	Apr-05 to Mar-06	1.10%	6.73			2.11	141.95	(1.77)	(119.37)	22.59		22.59	0.34
Total		156097	611.61		3746.32		9316.06		1558.02	10874.08		14620.39	2.3905

Source: MPECS

It is noted that power purchase cost on account of renewable purchase obligation (RPO) during FY 2005-06 is **Rs 141.95 Lakh** corresponding to RPO obligation of **6.73 MU** (i.e. **1.10%** of power purchase quantum of 611.61 MU) at the rate of **Rs 2.11** per unit, based on claim received from MEDA, a nodal agency for settlement of RPO pool. It is envisaged that MPECS shall receive 'credit notes' worth **Rs 119.37 lakh** (6.73 MU x Rs 1.77/unit) from MEDA corresponding to its contribution to RPO Pool. The credit for energy rate pertains to variable charge paid by MPECS to MSEB (i.e. Rs 1.50/unit energy charge + Rs 0.27/unit FCA = Rs 1.77/unit – total VC)

4.3 Projection of Power Purchase Expenses for FY 2006-07

The energy requirement for the EY is projected at 623.98 MUs. It is envisaged that MPECS would have an obligation to purchase Renewable Energy units to the extent of 18.72 MU during FY2006-07 assuming RPO obligation for State as 3%. The cost per unit for the Renewable Purchase Obligation is assumed at Rs. 3.30 per unit. Thus for the balance of 605.26 MU, MPECS proposes to purchase the same from MSEB during the FY 2006-07.



Further, Hon'ble Commission had issued a Tariff Order in case of MSEDCL's ARR/Tariff Petition for FY2006-07 on September 20, 2006. According, to the said Order the tariff for bulk supply to MPECS has been revised to Rs 2.80 per unit from Rs 1.50 per unit and the FCA has been reduced to 'nil'. Also, demand charges has been retained at existing level of Rs 200 /kVA/month. Above Order has been made effective from October 2006. Accordingly, we have considered power purchase cost from April 2006 to September 2006 at earlier BST rate and have projected power purchase cost from October 2006 to March 2007 at the revised BST as directed by the Commission for the purpose of this 'Additional Information'.

Accordingly, overall per unit power purchase cost of energy amounts to 3.20 Rs/kWh for the FY 2006-07, which includes 2.57 Rs./kWh towards energy charge and 0.63 Rs/kWh towards demand charges.. Hence, the total power purchase expenses for the EY are estimated at Rs. 200.22 Lakh.

Table 4-4 Component of Power Purchase Cost during FY 2006-07

Source of Power (Station wise)	Month	Utility-share-(MW)/Billing Demand (kVA)	Energy Received (MU)	Demand Charges, Rs/kVA/month	Total Annual Fixed-Demand charges (Rs lakh)	Energy Charge, Rs/unit	Capacity-Energy Charges (Rs Lakh)	Fuel Price Adjustment Charge (Rs/kWh)	Fuel Price Adjustment Cost (Rs Lakh)	Total Variable Charges (Rs Lakh)	Incentive (Rs Lakh)	Total Cost of Energy Received (Rs Lakh)
	(a)	(b)	(c)	(d)	(e)=(b)x(d)	(f)	(g)=(c)x(f)	(h)	(i)=(c) x (h)	(j)=(g+i)	(k)	(l)=(e+j)
MSEDCL	Apr-06	164285	56.95	200.00	328.57	1.50	854.29	0.78	444.23	1298.52		1627.09
	May-06	160183	52.87	200.00	320.37	1.50	793.09	0.96	507.58	1300.67		1621.04
	Jun-06	152372	50.29	200.00	304.74	1.50	754.30	0.98	492.81	1247.11		1551.85
	Jul-06	151945	50.07	200.00	303.89	1.50	751.12	0.88	440.66	1191.78		1495.67
	Aug-06	160608	41.88	200.00	321.22	1.50	628.18	1.03	431.35	1059.52		1380.74
	Sep-06	153660	47.22	200.00	307.32	1.50	708.35	0.25	118.06	826.41		1133.73
	Oct-06	139033	39.97	200.00	278.07	2.80	1119.27	0.00	0.00	1119.27		1397.34
	Nov-06	152883	51.22	200.00	305.77	2.80	1434.25	0.00	0.00	1434.25		1740.01
	Dec-06	170302	54.95	200.00	340.60	2.80	1538.64	0.00	0.00	1538.64		1879.24
	Jan-07	168891	59.85	200.00	337.78	2.80	1675.92	0.00	0.00	1675.92		2013.70
	Feb-07	176120	61.88	200.00	352.24	2.80	1732.57	0.00	0.00	1732.57		2084.81
Mar-07	184343	56.81	200.00	368.69	2.80	1590.72	0.00	0.00	1590.72		1959.40	
Sub-total (MSEDCL)	Apr-06 to Mar-07	161219	623.98	200.00	3869.25	2.80	13580.70	0.39	2434.68	16015.38		19884.63
RPO Pool contribution	Apr-06 to Mar-07	3.00%	18.72			3.30	617.74	(2.57)	(480.46)	137.28		137.28
Total		161219	623.98		3869.25		14198.44		1954.22	16152.66		20021.91

Source: MPECS

A comparative picture of MPECS vis-à-vis other licensees has been shown in the table below. The power purchase expenses as a percentage of the total expenses of MPECS works out to 59% as compared to other licensees with REL being next in line at 50%.



Table 4-5 Comparison of Power Purchase expenses of MSEB vis-à-vis. other licensees during FY 2004-05

Key ratios	MSEB*	TPC*	REL*	MPECS
Units Generated, MU	45,983	9,924	3,488	
Units Purchased, MU	17,939	81	3,598	551.51
Total Energy Input Units, MU	63,922	10,005	7,086	551.51
Generation expenses, Rs. L	424,300	171,300	55,500	
Power Purchase expenses, Rs. L	349,400	42,100	124,800	12,623
Total Energy Expenses, Rs. L	773,700	213,400	180,300	12,623
Total expenses, Rs. L	1,379,000	295,300	248,200	21,347
Ratio-1= Power purchase expenses/Total expenses, %	25.34%	14.26%	50.28%	59.13%
Ratio-2= Total energy expenses/Total energy input units, Rs/unit	1.21	2.13	2.54	2.29
Ratio-3= Power purchase expenses/Units purchased, Rs/unit	1.95	51.98	3.47	2.29
Sales, MUs	40,517	9,357	6,166	367.60
Ratio-2= Total energy expenses/Sales units, Rs/unit	0.86	0.45	2.02	3.43
Revenue, Rs. L	1,276,100	329,100	247,950	6,160
Ratio-3= Total energy expenses/Revenue, %	60.63%	64.84%	72.72%	204.91%

Source: MPECS

Note: Figures for other licensees are based on MERC's last Tariff Order.

From the above table, it is seen from the ratio of total energy expenses to total sales units of MPECS is among the highest with Rs 3.43 per unit. As also is seen from the **ratio of total energy expenses as a percentage of revenue** is the highest for MPECS with **205%** compared all the other licensees. It is thus evident that the present level of 'Bulk Supply Tariff' is certainly not affordable to MPECS due to its adverse consumer mix and the revenue earning potential limited by the predominant agriculture and rural consumer mix. In order to ensure sustained operations of MPECS, it would be necessary to review the current applicable 'Bulk Supply Tariff' to MPECS.



4.4 Key Regulatory Issues to be Addressed as regards Power Purchase

In the context of Power Purchase Quantum and Cost, MPECS would like to submit before Hon'ble Commission, its key concerns as under:

- i) Defining 'Interface Points' for supply to MPECS**
- ii) Accounting of Energy Input and Estimation of Losses**
- iii) Recording of Maximum Demand**
- iv) Average Billing and Meter Reading**

i) Defining 'Interface Points' for supply to MPECS

The MPECS currently receives bulk power supply from Maharashtra State Electricity Distribution Company Ltd (MSEDCL), one of the successor company of erstwhile Maharashtra State Electricity Board (MSEB) at 23 interface points comprising 11kV (8 interface points) and 33 kV (15 interface points) emanating from MSETCL's Grid Substations viz. Babaleshwar, Rahuri, Sangamner, Pathardi, Newasa etc., The feeders emanating from these Grid Sub-stations supplies power to distribution licensee MSEDCL as well. Thus, MPECS in turn receives supply at its 33 kV or 11 kV receiving stations, as the case may be, either from Grid Sub-Stations directly or supplied by MSEDCL at its receiving station.

It is our understanding that all feeders emanating from Grid sub-Stations forms part of interface points between MSETCL and MSEDCL. Further, MSEDCL in turn supplies power to MPECS at its 'receiving stations', typically, at 11 kV. Thus, interface point for supply between MSEDCL and MPECS should have been 'receiving stations of MPECS' at HV side. Accordingly, it needs to be clarified whether interface points for power supply to be received by MPECS from MSEDCL forms part of Grid Sub-station or interface point for supply to MPECS shall only be at its 'receiving substations'. MPECS requests Hon'ble Commission to direct MSETCL and MSEDCL accordingly in this respect.

ii) Accounting of Energy Input and Estimation of Losses

As outlined under previous paragraph, in case interface points for supply by MSEDCL to MPECS is at its 'receiving substation' then, all energy metering and billing should be based with respect to these reference points. Currently, MSEDCL records energy input based on meters installed at the Grid Substations thereby



resulting in MPECS required to bear the sub-station losses and line losses upto its receiving station. As directed by Hon'ble Commission earlier, MPECS has installed meters at its receiving sub-stations incomers comprising around 80 points. Based on analysis of the units recorded by these meters and the units billed by MSEDCL based on its meter readings, there is a difference of around 2% to 3% in energy units, which amounts to losses required to be borne by MPECS.

In view of above, MPECS requests Hon'ble Commission to direct MSEDCL to install 'metering equipment' at the Receiving Stations of MPECS and bill accordingly, based on recorded energy units thereof, in line with the 'interface points' identified for supply to MPECS.

iii) Recording of Maximum Demand

Further, as regards billing, MPECS would like to highlight that MSEDCL continues to charge billing demand based on aggregate of maximum demand recorded by various demand meters located at 23 metering points. Thus, MPECS continues to pay higher demand charges, when its 'simultaneous maximum demand' would actually be lower than that billed by MSEDCL as per current practice. MPECS has requested MSEDCL to take this aspect into consideration and revise their 'billing of demand charges' on 'simultaneous maximum demand' basis, as directed by Hon'ble Commission to TPC in case of supply by TPC to REL and TPC to BEST. MPECS requests Hon'ble Commission to issue appropriate directions in this matter at the earliest, as the higher demand charges are continued to be reflected in the monthly bills as well as arrears of MPECS to MSEDCL.

iv) Average Billing and Meter Reading

MPECS would like to humbly submit that based on 'energy bills' raised by MSEDCL for past one year, it can be noted that energy units consumption charged at almost 9 to 10 metering points out of 23 metering points has been estimated or assessed based average reading due to defect in the energy meters, metering equipment – CT or PT failure etc. Despite repeated requests from MPECS, MSEDCL has failed to address this grave concern of MPECS. This has a grave impact not only on the commercials of MPECS but also on its other performance parameters such as Energy Inputs to MPECS, Losses estimation of MPECS etc.



MPECS requests Hon'ble Commission to kindly direct MSEDCL to address this concern of MPECS and ensure that henceforth the billing should be based only on the actual meter readings. Further, MPECS requests Hon'ble Commission to direct MSEDCL to undertake immediate inspection of all 'meters' and 'metering arrangement' and MPECS be permitted to witness such Inspection Tests. Further, MSEDCL be directed to undertake joint meter reading alongwith MPECS for billing purpose. It may be directed that failure of MSEDCL on this part cannot be tolerated.



Section 5 Projection of Operating Financial and Other Expenses



5. Projection of Operating, Financial and Other Expenses

This Section covers all the operating, financial and other expense items of MPECS. The expenses are broadly divided into three categories being 'Operating Expenses', 'Financial Expenses' and 'Other Expenses'. The expenses falling under the category of 'Operating Expenses' are operation and maintenance expenses, administration and general expenses and employee expenses. The 'Financial Expenses' mainly consist of depreciation and interest and finance charges. The 'Other Expenses' include concessions and rebates to consumers, other debits and write-offs, DPC and interest on energy bill arrears, interest on regulatory asset of MPECS, extraordinary items and provisions for income tax. This Section elaborates the expense items over the years and explains the basis for projecting the same. In order to draw up a comparative picture between MPECS and other licensees in the State of Maharashtra, a table indicating the key ratios has been included for each expense item.

Further, as directed by the Commission during the Technical Validation session held on November 8, 2006, we are pleased to submit this **Additional Information** based on following:

- Updated actual performance and financial/account related information for FY2005-06 based on audited financial statement for FY2005-06 as against earlier information, which was based on actual data for 8 month (April 2005 to November 2005) and projections for remaining 4 months (December 2005 to March 2006).

5.1 Repairs & maintenance charges

The Repairs & Maintenance (R&M) expenses consists of vehicle and transportation expenses, material used for R&M work, establishment expenses, bank commission, repairs and maintenance expenses, insurance premium, expenses on metering equipment and computer maintenance. The R&M expenses form only around 0.59% of the total expenses and 1.23% of the GFA in the year 2004-05, which is very less as compared to the other licensees in the State of Maharashtra. This is shown in Table 5-1 below.



Table 5-1 Key comparative O&M expense ratios for FY 2004-05

Key ratios	MSEB	TPC	REL	MPECS
R&M expenses, Rs. L	73,800	15,500	4,825	126.14
Total expenses, Rs. L	1,379,000	295,300	248,200	21,347
Ratio-1= R&M expenses/Total expenses, %	5.35%	5.25%	1.94%	0.59%
Gross Fixed Assets (GFA), Rs. L	2,482,700	377,100	208,700	10,296
Ratio-2= R&M expenses/GFA, %	2.97%	4.11%	2.31%	1.23%
Sales, Mus	40,517	9,357	6,166	367.60
Ratio-3= R&M expenses/per MU, Rs/unit	0.18	0.17	0.08	0.03
Revenue, Rs. L	1,276,100	329,100	247,950	6,160
Ratio-4= R&M expenses/Revenue, %	5.78%	4.71%	1.95%	2.05%

Source: Licensees Petitions before MERC for FY 2003-04 & 2004-05; MPECS data

It is evident from the above table that MPECS R&M expenses as a percentage of the total expenses or as a percentage of the gross fixed assets much lower than the other licensees. Additionally, the R&M expenses/MU for MPECS is only Rs. 0.03 per unit for the PY, which is the least among the licensees.

The R&M expenses have a direct relation with the wear & tear of the Society's assets and account for 1.23% of the GFA during the PY. Thus, due to shortage of funds, the curtailed R&M expenses actually incurred during the PY would not be representative for the future projections. Accordingly, while projecting the R&M expenses for the EY this aspect has been taken into consideration. Out of the total expenses, around 3% of the R&M expenses have been capitalized.

The following table shows projected expenses under this head. It is envisaged that there will be an increase in the O&M expenses during the CY and EY, on account of several O&M activities which were deferred during earlier years due to scarcity of funds. However, MPECS expenses under this head are still low in comparison to the other licensees as reflected in the table 5-1 above.

Table 5-2 R&M expenses of MPECS over the PY, CY and EY

Sr. No.	Particulars	2004-05 PY	2005-06 CY	2006-07 EY
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Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 76



	(Rs. in Lakhs)	Actual	Actual	Projected
1.00	Plant & Machinery	102.44	194.15	200.00
2.00	Buildings	1.18	3.10	5.00
3.00	Civil Works	0.00	0.00	0.00
4.00	Hydraulic Works	0.00	0.00	0.00
5.00	Lines & Cable Networks	0.00	0.00	0.00
6.00	Vehicles	15.40	19.58	20.00
7.00	Furniture & Fixtures	0.00	0.00	0.00
8.00	Office Equipment	1.08	1.40	1.25
9.00	Other	10.63	10.28	15.00
10.00	Gross R&M Expenses	130.72	228.51	241.25
11.00	Less: Expenses Capitalised	(4.58)	(11.25)	(5.48)
12.00	Net R&M Expenses	126.14	217.26	235.77

Source: MPECS

The following table highlights the change in the R&M expenses over the PY, CY and EY. There is an increase in the R&M expenses during the CY and EY. The R&M expenses as a percentage of the total expenses accounted for only 0.59% during the PY, which has increased to 0.93% during the CY and 1.09% during the EY. Additionally, the R&M expenses as a percentage of the GFA during the PY amounted to only 1.23%. This has subsequently increased to 1.99% of GFA during the CY and 1.95% of GFA during EY, respectively.

Table 5-3 Ratios pertaining to R&M expenses of MPECS over the PY, CY and EY

Key ratios	PY	CY	EY
	2004-05	2005-06	2006-07
O&M expenses, Rs. L	126.14	217.26	235.77
Total expenses, Rs. L	21,347	24,536	23,372
Ratio-1= R&M expenses/Total expenses, %	0.59%	0.89%	1.09%
Gross Fixed Assets (GFA), Rs. L	10,296	10,920	12,110
Ratio-2= R&M expenses/GFA, %	1.23%	1.99%	1.95%
Sales, Mus	367.60	407.44	421.19
Ratio-3= R&M expenses/per MU, Rs/unit	0.03	0.05	0.06
Revenue, Rs. L	6,160	6,426	7426
Ratio-4= R&M expenses/Revenue, %	2.05%	3.38%	3.17%

Source: MPECS

Thus it is seen from the above table that the R&M expenses of MPECS have been projected at Rs. 236 lakh for EY from Rs. 126 lakh and Rs.217 Lakh during the PY and CY respectively. Also, the ratio of R&M expenses to total expenses and R&M expenses as



a percentage of the GFA have improved in the CY and EY, however, they still remain below the comparative ratios for the other licensees.

5.2 Administration & General charges

The Administration and General (A&G) expenses comprises of rent, rates, taxes and insurance, licence and registration fees, travelling and conveyance, printing and stationery, books and periodicals, photocopying expenses, telephone, postage and telegram, electric & water charges, legal charges, audit fees, MERC tariff filing and consultancy charges, advertisement expenses, general meeting expenses, system development expenses, computer training expenses and miscellaneous expenses. The A&G expenses as a percentage of total expenses amounts to 0.32% of the total expenses of MPECS during the PY.

The comparative ratios of MPECS vis-à-vis Other Licensees are shown in the table below. The A&G expenses as a percentage of total expenses amount to 0.32% for MPECS, during the PY, whereas the similar comparative for all other licensees, it is over 1%. Also, MPECS has the lowest ratio for A&G expense per unit sold which is Re. 0.02 per unit.

Table 5-4 Key comparative ratios of MPECS vis-à-vis Other Licensees for FY 2004-05

Key ratios	MSEB	TPC	REL	MPECS
A&G expenses, Rs. L	14,500	5,100	4,352	68.47
Total expenses, Rs. L	1,379,000	295,300	248,200	21,347
Ratio-1= A&G expenses/Total expenses, %	1.05%	1.73%	1.75%	0.32%
Sales, MUs	40,517	9,357	6,166	367.60
Ratio-2= A&G expenses/per MU, Rs/unit	0.04	0.05	0.07	0.02
Revenue, Rs. L	1,276,100	329,100	262,900	6,160
Ratio-3= A&G expenses/Revenue, %	1.14%	1.55%	1.66%	1.11%

Source: Licensees Petitions before MERC for FY 2003-04 & 2004-05; MPECS data

For projection of the A&G expenses for the EY, these have been considered on an average basis with an increase for the inflation rates prevalent. All expenses have been projected to increase by 6% based on WPI inflation. The total A&G expenses for the CY are projected at Rs. 83 lakh and for the EY are projected at Rs. 95 lakh. Out of the total A&G expenses,



around 13% have been capitalized, which is the average rate of capitalisation of the A&G expenses over the last five years.

Table 5-5 A&G expenses of MPECS over the PY, CY and EY

Sr. No.	Particulars	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. in Lakhs)	Actual	Actual	Projected
1	Rent Rates & Taxes	4.23	6.54	2.00
2	Telephone & Postage, etc.	9.07	8.38	8.50
3	Legal charges & Audit fee	6.81	5.88	6.50
4	Professional, Consultancy, Technical fee	1.58	0.06	15.00
5	Conveyance & Travel	15.27	16.92	14.80
6	Electricity charges	5.05	5.14	5.00
7	Fees & subscription	0.00	11.04	15.00
8	Books & periodicals	0.53	0.16	0.20
9	Printing & Stationery	10.18	11.40	11.00
10	Advertisements	3.99	2.73	4.00
11	License Fee and other related fee	0.23	3.12	5.00
12	Training	0.10	0.09	0.50
13	Miscellaneous Expenses	1.33	1.06	1.50
14	Office Expenses	12.27	10.82	13.10
15	Others	9.06	1.66	8.00
16	Gross A&G Expenses	79.70	85.00	110.10
17	Less: Expenses Capitalised	(11.23)	(11.48)	(14.86)
18	Net A&G Expenses	68.47	73.52	95.24

Source: MPECS

The following table highlights the change in the A&G expenses over the PY, CY and EY. The increase in the A&G expenses over the three years can be observed from the ratio of A&G expenses to total expenses. This ratio was at 0.32% during the PY which has increased to 0.35% during the CY and to 0.47% during the EY. Also, A&G expense per unit sold was Re. 0.02 per unit during the PY, which has remained steady at Re 0.02 per unit during the CY and EY as well.

Table 5-6 A&G expenses of MPECS over the PY, CY and EY

Key ratios	PY	CY	EY
	2004-05	2005-06	2006-07
A&G expenses, Rs. L	68.47	85.00	110.10
Total expenses, Rs. L	21,347	24536	23372
Ratio-1= A&G expenses/Total expenses, %	0.32%	0.35%	0.47%
Sales, MUs	367.60	407.44	421.19
Ratio-2= A&G expenses/per MU, Rs/unit	0.02	0.02	0.02

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 79



employees recruited during the PY and (b) revision in the salaries of the existing employees during the CY and EY. During the PY, MPECS has introduced the facilities of 'leave encashment' and 'overtime' for their staff. Additionally, during PY, MPECS was required to recruit additional staff to the extent of 450 employees by virtue of the District Court Notification DYCL/NSK/PUB/AWARD/4301/2004 dated 18th October 2004. As per the notification, a settlement has been arrived at between MPECS and the Ahmednagar Zillha Shramik Sabha, regarding the temporary staff working with MPECS in earlier years. As a result, the temporary staff has been taken on the payrolls of MPECS with effect from November 2004. Further, MPECS would like to submit that there has not been any revision in the salaries since April 1995, although MSEB had effected pay revision during April 1998 and April 2003. MPECS through its Board Resolution no.10 of 1st November 2004 has approved pay revision with effect from 1st November 2004 onwards. Further, this revision has been effected prospectively. Thus, there has not been any revision for a period of almost 10 years since 1995. In view of above, the employees expenses for the CY (FY2005-06) have increased from Rs.1739 lakh during PY to 2182 lakh and are projected taking into account such pay revision and after considering projected reduction in number of employees due to retirement for EY (FY 2006-07). Hence, there would be an increase in the salaries in the ensuing year. The total number of employees over PY, CY and EY are presented in the following table.

Table 5-8 No. of Employees of MPECS over the PY, CY and EY

Sr. No.	Particulars of Employees	2004-05 PY	CY	EY
	(no. of employees)	Actual	Actual	Projected
A	Officer/Managerial Cadre	12	12	10
1	Technical	7	7	7
2	Administrative	3	3	2
3	Accounts and finance	2	2	1
B	Staff Cadre	1904	1876	1856
1	Technical	895	886	857
2	Administrative	138	125	138
3	Accounts and finance	361	364	356
4	Others	510	501	512
	TOTAL (A + B)	1916	1888	1866

Table 5-9 Employee expenses of MPECS over the PY, CY and EY

Sr. No.	Particulars	2004-05 PY	CY	EY
	(Rs. in Lakhs)	Actual	Actual	Projected

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07



Sr. No.	Particulars	2004-05 PY	CY	EY
	(Rs. in Lakhs)	Actual	Actual	Projected
1	Basic Salary	571.60	932.04	952.33
2	Dearness Allowance (DA)	788.45	725.23	956.02
3	House Rent Allowance	31.64	45.84	47.22
4	Conveyance Allowance	0.49	2.21	1.54
5	Leave Travel Allowance	0.55	1.02	0.80
6	Earned Leave Encashment	21.46	89.70	70.00
7	Other Allowances	45.48	40.49	52.78
8	Medical Reimbursement	29.43	32.69	33.03
9	Overtime Payment	1.49	2.34	1.80
10	Payment under Workmen's Compensation Act	6.68	5.25	5.00
11	Provident Fund Contribution	182.61	219.97	257.43
12	Gratuity Payment	59.80	85.10	98.36
13	Others	0.00		0.00
14	Gross Employee Expenses	1739.68	2181.88	2476.30
15	Less: Expenses Capitalised	(234.99)	(282.52)	(254.03)
16	Net Employee Expenses	1504.69	1899.36	2222.27

Source: MPECS

The table below shows a comparative picture of the key ratios pertaining to the employee expenses of MPECS over the PY, CY and EY. It is observed that there is a substantial increase in the ratio of employee expenses to total expenses, which stands at 7.05% during the PY and at 7.73% and 9.50% during the CY and EY respectively. Also, the employee expenses per unit of sale stands increased from Re. 0.41 per unit to Re. 0.47 per unit during CY and to Rs 0.53 per unit during EY.

Table 5-10 Comparison of Key ratios of Employee expenses over the PY, CY and EY

Key ratios	PY	CY	EY
	2004-05	2005-06	2006-07
Employee expenses, Rs. L	1,505	1,899	2,222
Total expenses, Rs. L	21,347	24,536	23,372
Ratio-1= Employee expenses/Total expenses, %	7.05%	7.73%	9.50%
Sales, MUs	367.60	407.44	421.19
Ratio-2= Employee expenses/per MU, Rs/unit	0.41	0.47	0.53
Revenue, Rs. L			

Source: MPECS

Thus it is observed from the above para that the net employee expenses of MPECS have been increased to Rs. 1899 lakh from Rs. 1,505 lakh during the PY and are projected at Rs. 2222 lakh for the EY. Also, the ratio of employee expenses to total expenses and Additional Information pertaining to MPECS Petition for approval of ARR for 82 FY05, FY06, FY07 and Tariff Revision for FY07



employee expenses per unit of sale has increased substantially in the CY and EY over the PY. However, it still remains below the comparative norms for MSEB.

5.4 Other expenses

This broad category includes the following heads of expenses:

- a. Concession & Rebates to consumers;
- b. Other debits, write-offs and provisions;
- c. DPC & Interest on energy bill arrears;
- d. Extraordinary expenses; and
- e. Provision for doubtful debts.

For the purpose of projecting each of the individual items under 'Other Expenses' they have been divided into three paragraphs as follows:

5.4.1 Concessions and rebates to consumers:

In accordance with the GOM resolution, MPECS has implemented the 'Krishi Sanjivani Yojana' during 2004-05. Under this scheme, MPECS has to waive off the following components:

- a. delayed payment charges – entire balance;
- b. interest on delayed payment charges – 50% of the balance;

due by the agricultural consumers. The amount provided by way of concessions, rebates and incentives (power factor incentive) to Agricultural and industrial consumers during the PY and CY amounts to Rs. 92 lakh and Rs. 21.90 lakh respectively.

5.4.2 Other debits, write-offs and provisions:

These are primarily pertaining to the items stores written off, bad debts written off, and provision for bad and doubtful debts. The item 'stores written off' is difficult to estimate. Hence, for estimating the same for the CY and EY, these are considered on the basis of the average expenses under this head over the past years. The write-off of bad debts has not been projected for CY and EY, however, provisioning for bad and doubtful debts has been projected for the CY and EY. MPECS has been making a provision for bad and doubtful debts every year @ 2% of the amount of the revenue billed. The total amount falling under the item 'other debits and write-offs' during the CY and the EY amount to Rs. 128 lakh and Rs. 148 lakh respectively.



5.4.3 *Delayed payment charges and interest on energy bill arrears:*

Pursuant to issuance of the Order by Hon'ble Commission dated 16th December 2005 in the matter of Case no. 33 of 2005, Hon'ble Commission has ruled that provision of creating 'regulatory asset' in the books of MSEB to treat past power purchase dues of MPECS shall not be operative and instead had directed GOM to remedy the said GR and address the issue of past power purchase dues, separately. The relevant extract of said Order is as under:

'In the above circumstances, the Commission is of the view that the functions of the Commission under sub-sections (1) and (2) of section 86 of the Act are distinct and the GOM-GR would not be operative as regards creation of 'regulatory asset'. (Ref. Clause 21 of MERC Order dt. 16.12.2005)

'The Commission hereby advises the State Government to expedite the process to remedy the said GOM-GR as submitted by Shri P. B. Patil, Deputy Secretary, in view of the above observations of the Commission.' (Ref. Clause 22 of MERC Order dt. 16.12.2005).

While GOM is yet to issue its remedied GR as regards treatment of past power purchase dues, MSEDCL continues to charge 'delayed payment charges' (DPC) and interest on past power purchase dues during PY (2004-05) and CY (2005-06) to MPECS as per following table. It is envisaged that, GOM would issue a separate GR or remedy the said GR to address the issue of 'past power purchase dues' and interest thereof shortly, a separate mechanism will have to be evolved to address treatment of the past power purchase dues so that future operations of the MPECS are not overburdened with the past power purchase dues, which has arisen due to factors beyond the reasonable control of MPECS.

It is for the same reason; the Hon'ble Commission in its recommendations to GOM regarding long term viability of MPECS has discussed various mechanisms to address this issue of historical cost burden. The relevant extract of MERC's recommendations (as per Cl. 7.2 of A7: Key Recommendations) is as under:

"7.2 In order to enable, MPECS turn around its operations during the transition period, a separate mechanism to discharge the past power purchase dues and accumulated losses of MPECS should be evolved, so that the future operations of MPECS are not overshadowed by the burden of past dues."



Accordingly, it is assumed that in the ensuing year, once GOM issues its remedied GR, which is expected to address the issue of past power purchase dues, the question of projecting interest cost and DPC related charges pertaining to past power purchase dues, will not arise.

Table 5-11 Other expenses of MPECS over the PY, CY and EY

Sr. No.	Particulars	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. in Lakhs)	Actual		Projected
1	Delayed Payment Charges (DPC) on MSEDCL bills	252.07	288.98	0.00
2	Interest charges on arrears towards MSEDCL bills	6139.00	6775.53	0.00
	TOTAL	6391.07	7064.51	0.00

5.4.4 Extraordinary items:

This item has the components like election expenses of the society, compensation to shareholders and donations. In terms of projecting these expenses for the EY, MPECS expectations regarding expenses under this head have been put into numbers which work out to Rs. 58 lakh during the EY.

5.4.5 Contribution to Contingency Reserve:

As per clause 63.7.1 of the recently notified MERC (Terms of Conditions of Tariff) Regulations 2005, a distribution licensee is permitted to recover an amount towards contribution to Contingency Reserve upto 0.25 per cent of original cost of fixed assets, as part of its ARR. The relevant extract of the said Regulations is as under.

“Where the Distribution Licensee has made an appropriation to Contingencies Reserve, a sum not less than 0.25 per cent and not more than 0.5 per cent of the original cost of fixed assets shall be allowed towards such appropriation in the calculation of wheeling charges:” (Cl. 63.7.1 of MERC Tariff Regulations)

Accordingly, MPECS has provided a sum of Rs 18.86 L, Rs 31.03 L and Rs 33.99 L during CY, PY and EY respectively, as contribution towards contingency reserve.

Thus a summary of Other expenses comprising concession & rebate to consumers, provisioning for bad and doubtful debts, write-offs, delayed payment charges, interest on Additional Information pertaining to MPECS Petition for approval of ARR for 85 FY05, FY06, FY07 and Tariff Revision for FY07



past power purchase dues, extra-ordinary expenses and contribution towards contingency reserves, for PY, CY and EY is presented in the following table.

Table 5-12 Other expenses of MPECS over the PY, CY and EY

Sr. No.	Particulars	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. in Lakhs)	Actual	Actual	Projected
1	Concessions & rebates to consumers	92.22	21.90	5.00
2	Other debits, write-offs and provisions (including provision for doubtful debts)	123.21	128.54	148.54
3	Delayed Payment Charges (DPC) on MSEDCL bills	252.07	288.98	0.00
4	Interest charges on arrears towards MSEDCL bills	6139.00	6775.53	0.00
5	Extraordinary expenses	7.50	1.10	58.00
6	Contribution towards Contingency Reserves	18.86	31.03	33.99
	Other expenses (Total)	6632.85	7247.08	245.53

Source: MPECS

5.5 Depreciation

As regards depreciation, MPECS has been applying the Straight Line Method (SLM) and at the rates prescribed by the Central Government's Ministry of Finance (Department of Revenue) (Central Board of Direct Taxes) vide its Notification No. S.O. 265 (E) dated March 27, 1994 issued under the Electricity (Supply) Act 1948 for the purpose of its books of accounts. In fact, annual accounts finalised for PY (i.e. FY2004-05) are based on this assumption. However, MPECS notes that Hon'ble Commission has notified MERC (terms and conditions of tariff) Regulations 2005 on 24th August 2005. As per clause 63.4 of the said Tariff regulations, the depreciation for the purpose of ARR and tariff determination shall be permitted at the rates as prescribed under the Annexure of the said Tariff Regulations. As is evident from the working sheet, the average depreciation rate for distribution assets is 3.60% (as against 7.84% as per earlier GOI notification); for telecommunication and other tools and equipment is 6% (as against 12.77% as per earlier GOI notification); for vehicles is 18% (as against 33.40% as per earlier GOI notification); and for building and compound is 2.57% (as against 3.02% as per earlier GOI notification). Accordingly, the revised depreciation expenses account for 2.98% of the GFA during the PY.



The following table highlights the key ratios of MPECS vis-à-vis other licensees. It is seen from the table below that the ratio of depreciation expenses to total expenses stands at 1.44% for MPECS for FY 2004-05, which is the lowest among all licensees compared.

Table 5-13 Key comparative ratios for Depreciation for FY 2004-05

Key ratios	MSEB	TPC	REL	MPECS
Depreciation, Rs. L	158,500	18,600	22,600	306.80
Total expenses, Rs. L	1,379,000	295,300	248,200	21,347
Ratio-1= Depreciation/Total expenses, %	11.49%	6.30%	9.11%	1.44%
Gross Fixed Assets, Rs. L	2,482,700	377,100	343,606	10,296
Ratio-2= Depreciation/GFA, %	6.38%	4.93%	6.58%	2.98%
Sales (MUs)	40,517	9,357	6,166	367.60
Ratio-3= Depreciation/per MU, Rs/unit	0.39	0.20	0.37	0.08

Source: Licensees Petitions before MERC for FY 2003-04 & 2004-05; MPECS data

There is a change in the method used for calculation of depreciation as reported under MPECS financial statements which is further elaborated in the section on 'mapping with audited accounts'. Accordingly, the depreciation expenses for the CY work out to Rs. 341.32 lakh and for the EY work out to Rs. 388.74 lakh. Additionally, Section 5.7 on 'projecting capital expenditure and the financing plan' provides detailed information on the addition to the capital work-in-progress being added to the fixed assets schedule of MPECS during the CY and EY respectively.

The following table highlights the key ratios pertaining to depreciation during the PY, CY and EY. There is a increase in the depreciation as a percentage of GFA, which was 2.98% during the PY and stands increased to 3.07% and 3.20% during the CY and EY respectively, mainly on account of significant addition to GFA and capitalisation of work in progress activities as undertaken during PY, CY and EY. The depreciation per unit of sale remains more or less constant at Re. 0.08 per unit in the PY and CY and is projected to increases marginally to Re. 0.09 per unit during EY. This is mainly due to the fact that quite a few assets have reached 90% of their depreciable values.

Table 5-14 Key ratios of MPECS over the PY, CY and EY

Key ratios	PY	CY	EY
	2004-05	2005-06	2006-07
Depreciation, Rs. L	306.80	341.32	388.74

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 87



Key ratios	PY	CY	EY
	2004-05	2005-06	2006-07
Total expenses, Rs. L	21,347	24536	23372
Ratio-1= Depreciation/Total expenses, %	1.44%	1.39%	1.66%
Gross Fixed Assets, Rs. L	10,296	10,920	12110
Ratio-2= Depreciation/GFA, %	2.98%	3.12%	3.20%
Sales (MUs)	367.60	407.44	421.19
Ratio-3= Depreciation/per MU, Rs/unit	0.08	0.08	0.09

Source: MPECS

Thus it is observed from the above table that the depreciation expenses are projected to increase in the EY to Rs. 388.74 lakh respectively from Rs. 306.80 lakh and Rs. 341.32 lakh during the PY and CY respectively.

5.6 Interest and finance charges:

The interest expenses of MPECS basically can be classified into three categories being interest on existing loans, interest on new loans to fund capital investment and interest on working capital requirement.

For the purposes of projecting the interest expenses, the three categories mentioned above have been broken up into three paragraphs elaborated below:

5.6.1 Interest on existing loans taken from REC

At the beginning of FY2004-05, MPECS has outstanding loan from REC of Rs 34.91 lakh, out of which Rs 15.16 lakh and Rs. 15.15 lakh was repaid during PY (FY2004-05) and CY (FY2005-06). The interest rate for the existing loan was 8.5% p.a. Accordingly, interest cost of Rs 2.32 lakh and Rs 0.84 lakh has been considered during the PY and CY respectively.

5.6.2 Interest on additional loans projected to be sanctioned by APDRP / PMG / REC

As advised by Hon'ble Commission in its recommendations to GOM, MPECS will have to undertake 'time bound turnaround program', and Hon'ble Commission has projected that MPECS would require to invest around Rs 10 to 12 Crore p.a. to strengthen its system, reduce technical and commercial losses, improve its metering infrastructure, reduce transformer failure rates etc. According to the 'detailed note on the findings and recommendations on the viability of MPECS' it is projected that a predominant portion of



the funds required by MPECS as capital investments would qualify as investments under the APDRP/PMG schemes.

In view of above, MPECS has already undertaken several initiatives for strengthening the distribution network through addition of new sub-stations and augmentation of capacities of some of the existing substations and other system improvement schemes. This has resulted in significant capital outlay requirement necessitating funds from various financial institutions. The details of various project schemes undertaken during PY and CY and to be undertaken during EY are provided in subsequent paragraphs.

MPECS is exploring various alternatives for financing/availing loans for proposed project outlay. However, MPECS notes that MERC has notified MERC (terms and conditions for Tariff) Regulations 2005. As per clause 61.1 and Cl. 63.3.1, Hon'ble Commission shall approve the interest cost for capital expenditure incurred on or after 1st April 2005 on normative debt:equity of 70:30. The relevant extract of said Tariff Regulations is as under.

61.1 Any capital expenditure incurred during a financial year on a capital expenditure project commenced on or after April 1, 2005 and/ or on purchase of fixed asset on or after such date shall be assumed to be financed at a normative debt:equity ratio of 70:30, to be applied on the annual allowable capital cost for such year.

61.2 Any fixed asset capitalized on account of a capital expenditure project commenced on or after April 1, 2005 or on account of fixed asset purchased on or after such date shall be assumed to have been financed at a normative debt:equity ratio of 70:30 to be applied on the original cost of such project/ fixed asset.

63.3.1 The Distribution Licensee shall be allowed to recover the interest expense on all approved loans as at March 31, 2005, based on the approved interest rate and the repayment schedules of such loans in accordance with Regulation 62 above.

63.3.2 The Distribution Licensee shall be allowed to recover the interest rate on all loans taken for approved capital expenditure projects commenced on or after April



1, 2005, approved additions to fixed assets and approved purchases of fixed assets on or after such date based on the following terms and conditions:”

(a) The interest rate shall be as approved by the Commission in the investment plan;

(b) The value base shall be the normative loan capital of such capital expenditure project / fixed asset;

(c) The normative loan capital shall be assumed to be repaid in accordance with the normative repayment schedule as per Regulation 62 of these Regulations.”

In view of above, while MPECS is yet to finalise/tie up its loan requirement for the proposed capital outlay from the identified loan sources, MPECS has proceeded to include interest cost on normative basis in accordance with the Tariff Regulations notified by the Hon’ble Commission. The summary of interest expenses for the PY, CY and EY are provided in the following Table.

Table 5-15 Interest expenses of MPECS over the PY, CY and EY

Sr. No.	Project Particulars	Source	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. in Lakhs)		Actual	Actual	Projected
1	33/11 KV Sub stations	Assumed on Normative 70% basis	10.73	19.93	16.86
2	33 / 11 KV Sub station		4.48	11.69	13.29
3	H. T. lines		3.81	9.39	13.28
4	L. T. lines		2.94	8.39	14.06
5	Dist. transformer (63 kva / 100 kva)		1.50	4.49	16.74
6	Service connections	Consumer Contrib./ Internal funds	0.00	0.00	0.00
7	Electronic energy meters		0.00	0.00	0.00
8	System improvement	Assumed on Normative 70% basis	0.94	5.46	8.79
9	Energisation charges		13.14	24.41	20.65
10	Head office		1.64	5.61	9.96
11	Existing Loan (REC)		2.32	0.84	0.00
12	Gross Interest Expenses		41.51	90.20	113.62
13	Less: Expenses Capitalised				
14	Net Interest Expenses		41.51	90.20	113.62

Source: MPECS

Further, in this context MPECS would like to submit that, the Hon’ble Commission may kindly consider that the loans required for funding the capital investments required for the



turnaround of MPECS require to be backed by a Government guarantee. However, due to problems in securing the same, MPECS is not able to avail of the concessional interest rates offered under the APDRP / REC and other funded schemes. Hence, it amounts to an increase in the interest expenses of MPECS and as a result a higher tariff charged to its consumers. Additionally, an increase in the capital investment would be required to be funded through additional loans considering the low debt : equity ratio of MPECS. Hence, MPECS would be in a position to avail of more loans at concessional rates if they are backed by Government guarantees.

5.6.3 Interest for working capital requirements.

As per MERC Tariff Regulations, a distribution licensee is permitted to recover interest on working capital as part of ARR in accordance with following provisions:

63.6.1 The Distribution Licensee shall be allowed interest on the estimated level of working capital for the financial year, computed as follows:

- (a) One-twelfth of the amount of Operation and Maintenance expenses for such financial year; plus*
- (b) One-twelfth of the sum of the book value of stores, materials and supplies including fuel on hand at the end of each month of such financial year; plus*
- (c) Two months equivalent of the expected revenue from wheeling charges at the prevailing tariffs; minus*
- (d) Amount, if any, held as security deposits under clause (b) of sub-section (1) of Section 47 of the Act from consumers and Distribution System Users.*

63.6.2 Interest shall be allowed at a rate equal to the Short Term Prime Lending Rate of the State Bank of India as at the date on which the application for determination of tariff is made.

63.6.3 Interest shall be allowed on the amount held as security deposit from Distributio System Users at the Bank Rate as at the date on which the application for determination of tariff is made.

Accordingly, projection of interest on working capital including interest on consumer security deposits is summarised in the following Table.



Table 5-16 Interest on working capital for PY, CY and EY

Sr. No.	Project Particulars	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. in Lakhs)	Actual	Actual	Projected
1	Computation of Working Capital			
1.1	One-twelfth of the amount of Operations and Maintenance Expenses	141.61	182.51	212.77
1.2	One-twelfth of the sum of the book value of stores, materials and supplies	78.39	98.39	118.39
1.3	One-sixth of the expected revenue from sale of electricity at the prevailing tariffs	1026.75	1071.14	1087.12
1.4	<i>Less:</i>			
1.5	Amount of Security Deposit			
a	From Consumers	823.67	853.67	883.67
b	From Distribution System users			
1.6	One month power purchase cost	1051.94	1218.37	1247.50
	Total Working Capital	-628.87	- 720.00	- 712.88
2	Computation of working capital interest			
2.1	Rate of Interest (% p.a.)	10.0%	10.0%	10.0%
2.2	Interest on Working Capital	0.00	0.00	0.00
3	Interest on Security Deposit			
3.1	Rate of Interest (% p.a.)	5.5%	5.5%	5.5%
3.2	Interest on Security Deposit	45.30	46.95	48.60
4	Guarantee Charges			
5	Finance Charges			
6	Total Other Interest & Finance Charges	45.30	46.95	48.60

Source: MPECS

It may be noted that the working capital requirement is projected to be negative, on account of very high power purchase cost due to high Bulk Supply Tariff, whereas 'revenue potential' and receivables thereof are significantly lower at existing tariff rates corresponding to the consumer mix that MPECS has. Hence, interest on working capital has not been computed for PY, CY and EY.

However, interest on consumer security deposits have been considered at bank rate of 5.5%.

5.7 For projecting capital expenditure

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07



5.7.1 Capital Work-in-Progress

As per the time-bound turn around program mentioned by MERC in its 'Detailed note on the findings and recommendations on the viability of MPECS', it has been broadly projected that MPECS has to invest around Rs. 10 to 12 Crore p.a. in strengthening its system, reducing its technical and commercial losses, improving its metering infrastructure and reducing the transformer failure rates, etc. A predominant portion of the capital expenditure on these initiatives would qualify as investments under APDRP / PMG / REC funds. Hence, there has been an increase in the capital work-in-progress during the CY and EY to fulfil the requirements under the time-bound turn around program.

The existing and proposed capital expenditure plan for PY, CY and EY corresponding to various schemes is summarised in the following Tables.

Table 5-17 Capital Work in Progress (CWIP) over the PY

Sr. No.	Project Particulars	Opening Bal.	Additions	Capitalisation	Closing Bal.
	(Rs. in Lakhs)	Actual	Actual	Actual	Actual
1	33/11 KV Sub stations		291.95	26.14	265.81
2	33 / 11 KV Sub station		122.00	42.54	79.46
3	H. T. lines		103.61	40.87	62.74
4	L. T. lines		79.91	57.34	22.57
5	Dist. transformer (63 kva / 100 kva)		40.90	43.01	
6	Service connections		62.56	31.24	31.32
7	Electronic energy meters		130.00	0.26	129.74
8	System improvement		45.54	0.09	45.45
9	Energisation charges		357.59	130.03	227.56
10	Head office		44.70	16.77	27.93
11	TOTAL (C-WIP)		1278.76	388.29	890.47

Source: MPECS

Table 5-18 Capital Work in Progress (CWIP) over the CY

Sr. No.	Project Particulars	Opening Bal.	Additions	Capitalisation	Closing Bal.
	(Rs. in Lakhs)	Estim.	Estim.	Estim.	Estim.
1	33/11 KV Sub stations	265.81	0.00	131.67	134.14
2	33 / 11 KV Sub station	79.46	91.50	79.46	91.50
3	H. T. lines	62.74	63.13	125.87	0.00
4	L. T. lines	22.57	79.91	102.48	0.00
5	Dist. transformer (63 kva / 100 kva)		46.12	46.12	
6	Service connections	31.32	62.56	62.56	31.32
7	Electronic energy meters	129.74	130.00	100.00	159.74
8	System improvement	45.45	101.10	45.45	101.10
9	Energisation charges	227.56	0.00	97.52	130.03
10	Head office	27.93	69.70	62.78	34.85
11	TOTAL (C-WIP)	890.47	644.02	853.92	680.57

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07



Source: MPECS

Table 5-19 Capital Work in Progress (CWIP) over the EY

Sr. No.	Project Particulars	Opening Bal.	Additions	Capitalisation	Closing Bal.
	(Rs. in Lakhs)	Estim.	Estim.	Estim.	Estim.
1	33/11 KV Sub stations	134.14	0.00	134.14	0.00
2	33 / 11 KV Sub station	91.50	0.00	91.50	0.00
3	H. T. lines	0.00	81.18	81.18	0.00
4	L. T. lines	0.00	108.70	108.70	0.00
5	Dist. transformer (63 kva / 100 kva)	-2.11	305.60	183.36	120.13
6	Service connections	31.32	62.79	62.68	31.44
7	Electronic energy meters	159.74	174.96	264.71	69.98
8	System improvement	101.10	11.22	101.10	11.22
9	Energisation charges	130.03	0.00	130.03	0.00
10	Head office	34.85	71.20	34.85	71.20
11	TOTAL (C-WIP)	680.57	815.65	1192.25	303.97

Source: MPECS

5.8 Income tax

Since MPECS has been a loss-making rural electric co-operative, no tax provision has been considered on its income.

5.9 Summary of revenue expenses excluding power purchase expense

The following table highlights the total operating, financial and other expenses of MPECS during the three years.

Table 5-20 Summary of revenue expenses excluding power purchase expense

Sr. No.	Particulars	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. in Lakhs)	Actual	Actual	Projected
A	Operating expenses			
1	R&M expenses	126.14	217.26	235.92
2	A&G expenses	68.47	73.52	95.24
3	Employee expenses	1,505.00	1899.36	2,229.00
	Sub-total of operating expenses	1699.30	2190.14	2560.40
B	Financial expenses			
4	Depreciation	306.80	341.32	376.66
5	Interest and finance charges	41.51	90.20	113.62
6	Interest on working capital	45.30	46.95	48.60
	Sub-total of financial expenses	393.61	478.47	538.88
C	Other expenses			
6	Concessions & rebates to consumers	92.22	21.90	5.00

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 94



Sr. No.	Particulars	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. in Lakhs)	Actual	Actual	Projected
7	Other debits, write-offs and provisions (including provision for doubtful debts)	123.21	128.54	132.55
8	Delayed Payment Charges (DPC) on MSEDCL bills	252.07	288.98	0.00
9	Interest charges on arrears towards MSEDCL bills	6139.00	6775.53	0.00
10	Extraordinary expenses	7.50	1.10	58.00
11	Contribution towards Contingency Reserves	18.86	31.03	32.96
	Other expenses (Total)	6632.85	7247.08	228.51
	Total revenue expenses (A+B+C)	8,726.08	9915.68	3,327.55

Source: MPECS

The total revenue expenses of MPECS during the PY, CY and EY work out to Rs. 8726 lakh, Rs. 9915.68 lakh and Rs. 3327 lakh respectively.



Section 6 Revenue Expenses and Aggregate Revenue Requirement



6. Summary of Revenue Expenses and Aggregate Revenue Requirement

This Section summarises the total revenue expenses of MPECS along with the Aggregate Revenue Requirement after taking into consideration capital base and reasonable return.

6.1 Summary of revenue expenses and ARR of MPECS

In this section, we have summarized the revenue expenses of MPECS. The total revenue expenses of MPECS including power purchase expenses work out to Rs. 21349.05 lakh, Rs. 24536.08 lakh and Rs. 23371.68 lakh during the PY, CY and EY respectively.

Table 6-1 Summary of revenue expenses of MPECS over the PY, CY and EY

Sr. No.	Particulars (Rs. in Lakhs)	2004-05 PY Actual	2005-06 CY Actual	2006-07 EY Projected
A	Revenue expenses			
1	Power purchase expenses	12623.29	14620.39	20021.91
2	Operating expenses	1699.30	2190.14	2553.28
3	Financial expenses	393.61	478.47	550.96
4	Other expenses	6632.85	7247.08	245.53
	Sub-total	21349.05	24536.08	23371.68

Source: MPECS

The Aggregate Revenue Requirement, of the licensees include apart from revenue expenses, a reasonable return on capital base. The following paragraphs elaborate the basis for workings for the capital base and reasonable return thereof for the period FY 2004-05, FY 2005-06 and FY 2006-07.

6.2 Projecting the Capital Base

As per clause 73.2 and Cl. 76.1, Hon'ble Commission shall approve the return on equity for capital expenditure incurred on or after 1st April 2005 on normative debt:equity of 70:30. The relevant extract of said Tariff Regulations is as under.

“73.2 Any fixed asset capitalized on account of a capital expenditure project commenced on or after April 1, 2005 or on account of fixed asset purchased on or



after such date shall be assumed to have been financed at a **normative debt:equity ratio of 70:30 to be applied** on the original cost of such project/ fixed asset.”

“76.1.1 The Distribution Licensee shall be **allowed a return at the rate of 16 per cent per annum**, in Indian Rupee terms, on the amount of **approved equity capital**: **Explanation I** – for the purpose of this Regulation, **equity capital shall be the sum total of paid-up equity capital, preference share capital, fully / compulsorily convertible debentures (or other financial instrument with equivalent characteristics), foreign currency convertible bonds, share premium account and any reserves, available for distribution as dividend or for capitalization by way of issue of bonus shares, which have been invested in the Distribution Business and in the Retail Supply Business. The amount of any grant, revaluation reserve, development reserve, contingency reserve and contributions from consumers / users shall not be included in the equity capital. The amount reflected in the books of account as deferred tax liability or deferred tax asset of the Distribution Business and the Retail Supply Business shall be added or deducted, as the case may be, from the amount of equity capital.**”

In view of above, MPECS has considered ‘Regulated Equity base’ for PY at the beginning of FY2004-05 as sum of Paid up equity capital and appropriate reserves, as stipulated above as per audited Annual Account for FY2004-05. In addition, MPECS has considered equity contribution as 30% of the proposed capital expenditure on normative basis in accordance with above Tariff Regulations. The Capital Base for projection of ‘regulated returns’ is summarised in the following Table 6-2 for the PY, CY and EY.

Table 6-2 Computation of Capital Base for the PY, CY and EY

Sr. No.	Particulars	PY	CY	EY
	(Rs. in Lakhs)			
1.	Regulatory Equity at the beginning of the year	624.97	944.83	1080.274
2.	Capital Expenditure	1238.76	644.02	815.65
3.	Equity portion of capital expenditure	319.86	135.44	173.37
4.	Regulatory Equity at the end of the year	944.83	1080.27	1253.64

Source: MPECS



6.3 Computation of Reasonable Return

The table below shows the working of the Reasonable Return of MPECS for the PY, CY and EY. It is observed from below, that the reasonable return works out to Rs. 125.58 lakh, Rs. 162.01 lakh and Rs. 186.71 lakh during the PY, CY and EY respectively.



Table 6-3 Computation of Reasonable Return for the PY, CY and EY

Sr. No.	Particulars	PY	CY	EY
	(Rs. in Lakhs)			
1.	Regulatory Equity at the beginning of the year	624.97	944.83	1080.274
2.	Capital Expenditure	1238.76	644.02	815.65
3.	Equity portion of capital expenditure	319.86	135.44	173.37
4.	Regulatory Equity at the end of the year	944.83	1080.27	1253.64
	Return Computation			
5.	Return on Regulatory Equity at the beginning of the year	16% x (1) 100.00	151.17	172.84
6.	Return on Equity portion of capital expenditure	16% x (3)/2 25.59	10.84	13.87
7.	Total Return on Regulatory Equity	(5)+(6) 125.58	162.01	186.71

6.4 Projecting ARR

The following table shows summary of revenue expenses and ARR figures for the three years. The ARR (Gross) for the PY is Rs. 21474.63 lakh, and for CY is Rs 24698.09 lakh. The same is projected to be reduced to Rs. 23558.39 lakh for the EY. The NRR figures after considering the non-tariff income work out to Rs. 21023.82 lakh, Rs. 24257.11 lakh and Rs. 23069.39 lakh respectively.

Table 6-4 Summary of revenue expenses and ARR for the PY, CY and EY

Sr. No.	Particulars	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. in Lakhs)	Actual	Actual	Projected
A	Revenue expenses			
1	Power purchase expenses	12623.29	14620.39	20021.91
2	Operating expenses	1699.30	2190.14	2553.28
3	Financial expenses	393.61	478.47	550.96
4	Other expenses	6632.85	7247.08	245.53
	Sub-total	21349.05	24536.08	23371.68
B	Reasonable Return	125.58	162.01	186.71
C	Aggregate Revenue Requirement (A+B)	21474.63	24698.09	23558.39
D	Less: Non-tariff income	(450.81)	(435.46)	(489.00)
E	Net Revenue Requirement	21023.82	24262.63	23069.39

Source: MPECS



Section 7 Projection of Revenue at Existing Tariff



7. Projection of Revenue at Existing Tariff

The income of MPECS basically consists of revenue from tariffs and charges, non-tariff income and revenue subsidy from the Government. The revenue from tariffs and charges includes the components like fixed charges, energy charges, FOCA charges and T&D loss charges. The non-tariff revenue consists of components like income from investments, meter testing and burnt charges, reconnection and shifting charges, rent from buildings, sale of scrap, miscellaneous revenue and DPC and interest on DPC.

Further, as directed by the Commission during the Technical Validation session held on November 8, 2006, we are pleased to submit this **Additional Information** based on following:

- Updated actual performance and financial/account related information for FY2005-06 based on audited financial statement for FY2005-06 as against earlier information, which was based on actual data for 8 month (April 2005 to November 2005) and projections for remaining 4 months (December 2005 to March 2006).
- In addition, impact of Hon'ble Commission's Tariff Order dated September 20, 2006 in case of MSEDCL ARR/Tariff Petition for FY2006-07 has also been covered for the purpose of this Additional Information, as directed by Hon'ble Commission.

7.1 Revenue from tariffs and charges

7.1.1 Tariff Revenue Generation for FY 2004-05

MPECS had earlier filed an application consisting of a tariff revision proposal before the Hon'ble Commission for FY 2002-03. In connection with the above, the Hon'ble Commission in its interim order dated 18th July 2002 has directed MPECS to adopt the tariff notified for MSEB in its tariff order dated 10th January 2002 for its retail consumers. Subsequently, MPECS had filed petition on 13th Jun 2005 before Hon'ble Commission for revision in retail supply tariff as well as revision in bulk supply tariff for FY2005-06. Pending disposal of above petition, MPECS, until now, continues to bill all its consumer categories on basis of the above tariff order as directed by Hon'ble Commission. Further, Hon'ble Commission approved revised tariff schedule for consumers of MSEB through its Tariff Order in respect of MSEB's ARR/Tariff Petition for FY 2003-04. However,

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07



pending approval from Hon'ble Commission MPECS has continued billing its consumers on previous tariff order (i.e. as per Tariff Order for FY2001-02) for MSEB retail consumers till date. However, MPECS has been charging FOCA charges from the consumers in line with MERC's FOCA Order to be applicable for MSEB from time to time.

During FY 2004-05 average revenue realisation of MPECS from all consumer categories was Rs. 1.68 per unit. The total revenue generation from tariffs and charges for FY 2004-05 works out to Rs. 6160.47 lakh. Table 7-1 below reflects consumer category-wise and tariff component-wise break-up of revenue.

Table 7-1 Consumer category wise revenue generation for FY 2004-05

CATEGORY	Sale	Revenue from Fixed Charges	Revenue from Energy Charges	Revenue from TDL Charges	Revenue from FOCA charge	Total Revenue
	In MU	Rs. Lakh	Rs. Lakh	Rs. Lakh	Rs. Lakh	Rs. Lakh
L T CONSUMERS						
Domestic (LD1)	40.66	233.90	745.74	58.55	52.86	1091.06
Non-Domestic (LD2)	9.97	81.19	363.31	29.91	12.96	487.37
General Motive Power (LTP-G)	10.66	103.64	283.13	26.64	13.85	427.27
Public water works	3.38	6.40	29.76	0.00	4.40	40.55
Agricultural-metered	1.03	4.11	9.31	1.03	1.34	15.80
Agricultural-Flat rate	261.29	2264.45	0.00	205.86	236.74	2707.04
Public Street Lighting	2.46	1.79	43.20	0.00	3.20	48.19
SUB TOTAL (LT)	329.47	2695.46	1474.44	322.00	325.36	4817.26
H T CONSUMERS						
HTP-II (Industrial , others)	30.74	249.67	823.75	92.22	39.96	1205.60
HTP-IV (PWW-others)	1.66	9.48	30.39	0.00	2.16	42.02
HT-VII (Agriculture)	5.73	73.90	10.61	5.39	5.69	95.58
SUB TOTAL (HT)	38.13	333.05	864.74	97.61	47.81	1343.21
TOTAL	367.60	3028.51	2339.18	419.61	373.17	6160.47

Source: MPECS

Table 7-2 below reflects consumer category wise per unit revenue realisation.

Table 7-2 Consumer category wise per unit revenue realisation for FY 2004-05

Category	PU FC (Rs./kWh)	PU EC (Rs./kWh)	PU Total (Rs./kWh)
L T CONSUMERS			
Domestic (LD1)	0.58	2.11	2.68
Non-Domestic (LD2)	0.81	4.07	4.89

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07



Category	PU FC (Rs./kWh)	PU EC (Rs./kWh)	PU Total (Rs./kWh)
General Motive Power (LTP-G)	0.97	3.04	4.01
Public water works	0.19	1.01	1.20
Agricultural-metered	0.40	1.13	1.53
Agricultural-Flat rate	0.87	0.17	1.04
Public Street Lighting	0.07	1.88	1.96
SUB TOTAL (LT)	0.82	0.64	1.46
H T CONSUMERS			
HTP-II (Industrial , others)	0.81	3.11	3.92
HTP-IV (PWW-others)	0.57	1.96	2.53
HT-VII (Agriculture)	1.29	0.38	1.67
SUB TOTAL (HT)	0.87	2.65	3.52
TOTAL	0.82	0.85	1.68

Source: MPECS

7.1.2 Tariff Revenue Generation for FY 2005-06

As discussed above, for FY 2005-06 MPECS has billed its consumers based on tariff schedule applicable to MSEB's retail consumers in accordance with Hon'ble Commission Tariff Order for FY 2001-02. During FY 2005-06, the total energy sales have increased significantly due to good monsoon conditions and plenty of water availability has led to surge in power requirement for irrigation purposes despite extensive load shedding imposed by MSEB. The estimated agricultural consumption has increased to 303.79 MU during FY 2005-06 from 262.32 MU during FY 2004-05. As a result, the average revenue realisation from tariffs and charges has reduced to Rs. 1.52 per unit and the revenue generation from tariffs and charges is projected at Rs. 6426.83 lakh during FY 2005-06.

Table 7-3 Consumer category wise revenue generation for FY 2005-06

CATEGORY	Sale	Revenue from Fixed Charges	Revenue from Energy Charges	Revenue from TDL Charges	Revenue from FOCA charges	Total Revenue
	In MU	Rs. Lakh	Rs. Lakh	Rs. Lakh	Rs. Lakh	Rs. Lakh
L T CONSUMERS						
Domestic (LD1)	40.34	258.46	739.79	58.09	108.91	1165.24
Non-Domestic (LD2)	9.78	82.89	356.24	29.33	26.40	494.86
General Motive Power (LTP-G)	11.45	112.01	304.19	28.63	30.92	475.75
Public water works	3.53	6.43	30.96	0.00	9.54	46.92
Agricultural – metered	4.22	8.44	37.98	4.22	11.39	62.03
Agricultural – Flat rate	298.79	2259.56	0.00	205.41	369.75	2834.72
Public Street Lighting	2.24	1.82	40.81	0.00	6.05	48.68
SUB TOTAL (LT)	370.35	2729.61	1509.97	325.68	562.95	5128.20

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 104



H T CONSUMERS						
HTP-II (Industrial , others)	28.30	229.37	763.79	84.89	76.40	1154.45
HTP-IV (PWW-others)	1.64	9.48	30.32	0.00	4.43	44.23
HT-VII (Agriculture)	7.15	5.60	64.33	10.72	19.30	99.95
SUB TOTAL (HT)	37.09	244.46	858.43	95.61	100.13	1298.63
TOTAL	407.44	2974.06	2368.40	421.29	663.08	6426.83

Source: MPECS



Table 7-4 Consumer category wise per unit revenue realisation for FY 2005-06

Category	PU FC (Rs./kWh)	PU EC (Rs./kWh)	PU Total (Rs./kWh)
L T CONSUMERS			
Domestic (LD1)	0.64	2.25	2.89
Non-Domestic (LD2)	0.85	4.21	5.06
General Motive Power (LTP-G)	0.98	3.18	4/15
Public water works	0.18	1.15	1.33
Agricultural – metered	0.20	1.27	1.33
Agricultural – Flat rate	0.76	0.19	0.97
Public Street Lighting	0.08	2.09	2.17
SUB TOTAL (LT)	0.74	0.65	1.38
H T CONSUMERS			
HTP-II (Industrial , others)	0.81	3.27	4.08
HTP-IV (PWW-others)	0.58	2.12	2.69
HT-VII (Agriculture)	0.08	1.32	1.40
SUB TOTAL (HT)	0.66	2.31	2.97
TOTAL	0.73	0.85	1.58

Source: MPECS

7.1.3 Tariff Revenue Generation for FY 2006-07

Hon'ble Commission has approved retail tariff for MPECS as per its Order dated July 2002, wherein it had permitted MPECS to charge retail tariff as approved by the Commission vide its Order dated 10th January 2002 in case of MSEB. Accordingly, the revenue during April 2006 to September 2006 are based on actual sales at the tariff rates as approved under said Order.

Further, Hon'ble Commission had issued Tariff Order in case of MSEDCL petition for ARR/Tariff Order for FY2006-07 wherein it had revised retail supply tariff for MSEDCL consumers under its Order dated 20th September 2006.

While, it is understood that the retail tariff determination is the licensee specific activity. However, it is desirable that uniform retail tariff in respect of various consumer categories is maintained across the State to the extent possible. It is also noted that Hon'ble Commission in its statutory advice to the GOM in respect of restructuring of MSEB vide its letter dated May 14, 2004 as per Clause 2, (**Distribution company formation**) has also advocated the concept of uniform retail supply tariff for particular tariff category across State. The relevant extract of the paragraph is mentioned below:

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 106



“In view of the potential differences in operating parameters and consumer mix across distribution companies, preventing divergence of tariffs would be a difficult task. The State Government should formulate specific mechanisms as a part of the restructuring process to ensure that objectives of end use tariff uniformity across the State for particular tariff categories (if any) are not vitiated.”

Accordingly, projections of revenue for October 2006 to March 2007 are based on revised retails supply Tariff as approved by the Commission for MSEDCL consumers under its Order dated 20th September 2006.

The details of revenue from sale of power at “existing tariff and revised tariff” is shown category wise in table 7.5. With current tariff schedule average revenue realisation is projected to be around Rs 1.76 per unit and the total tariff revenue amounts to Rs. 7426.80 Lakh.

Table 7-5 Consumer category wise revenue generation at Existing tariff for FY 2006-07

CATEGORY	Sale	Revenue from Fixed Charges	Revenue from Energy Charges	Revenue from FOCA Charges	Revenue from T&D Losses	Total Revenue
	In MU	Rs. Lakh	Rs. Lakh	Rs. Lakh	Rs. Lakh	Rs. Lakh
L T CONSUMERS						
Domestic (LD1)	41.95	259.48	662.35	146.83	30.20	1098.87
Non-Domestic (LD2)	10.17	102.69	376.33	35.59	15.25	529.86
General Motive Power (LTP-G)	11.91	117.05	360.43	41.68	14.89	534.05
Public water works	3.53	10.13	34.86	12.36	0.00	57.35
Agricultural,(LT) metered	5.27	13.17	52.71	18.45	2.64	86.96
Agricultural,(LT) Flat rate	307.16	3024.62	0.00	542.35	104.30	3671.27
Public Street Lighting	2.24	2.28	44.60	7.84	0.00	54.72
SUB TOTAL (LT)	382.24	3529.43	1531.28	805.09	167.27	6033.07
H T CONSUMERS						
HTP-II (Industrial , others)	29.62	248.49	805.21	103.68	44.43	1201.81
HTP-IV (PWW-others)	2.00	20.83	42.56	7.01	0.00	70.39
HT-VII (Agriculture)	7.33	9.81	80.59	25.64	5.49	121.53
SUB TOTAL (HT)	38.95	279.12	928.35	136.33	49.93	1393.73
TOTAL	421.19	3808.55	2459.63	941.42	217.20	7426.80

Source: MPECS

Table 7-6 Consumer category wise per unit revenue realisation for FY 2006-07



Category	PU FC	PU EC	PU Total
L T CONSUMERS			
Domestic (LD1)	0.62	2.00	2.62
Non-Domestic (LD2)	1.01	4.20	5.21
General Motive Power (LTP-G)	0.98	3.50	4.48
Public water works	0.29	1.34	1.62
Agricultural,(LT) metered	0.25	1.40	1.65
Agricultural,(LT) Flat rate	0.98	0.21	1.20
Public Street Lighting	0.10	2.34	2.44
SUB TOTAL (LT)	0.92	0.65	1.58
H T CONSUMERS			
HTP-II (Industrial , others)	0.84	3.22	4.06
HTP-IV (PWW-others)	1.04	2.48	3.52
HT-VII (Agriculture)	0.13	1.53	1.66
SUB TOTAL (HT)	0.72	2.86	3.58
TOTAL	0.90	0.86	1.76

Source: MPECS

7.2 Non-tariff income

The item 'Non-tariff income' primarily is the revenue earned on account of charges imposed other than the basic charges applicable to consumers. These include the following items:

- a. income from investments; and
- b. other non tariff income being:
 - i. meter testing fees and meter burnt charges;
 - ii. reconnection charges;
 - iii. shifting charges;
 - iv. rent of building and land;
 - v. sale of scrap material; and
 - vi. other miscellaneous revenue
- c. delayed payment charges; and
- d. interest on arrears

A table below shows a comparison of MPECS visa-a-vis. other licensees in terms of non-tariff income as a part of total income. It is observed from the table below that the non-tariff income of the MSEB and MPECS is relatively higher compared to TPC and REL. However, when comparing the ratio for non-tariff income as a percentage of the total



income of MPECS, it is observed that MPECS is relatively lower at a ratio of 6.82% whereas the comparative ratio for MSEB works out to 8.01%, which is the highest.

Table 7-7 Comparative key ratios of MPECS v/s Other Licensees

Key ratios	MSEB	TPC	REL	MPECS
Non tariff income, Rs. L	102,200	5,200	14,950	450.81
Revenue, Rs. L	1,173,900	329,100	247,950	6,160
Ratio-1= Non tariff income/Revenue, %	8.71%	1.58%	6.03%	7.32%
Sales, Mus	40,517	9,357	6,166	367.60
Ratio-2= Non tariff income/per MU, Rs/unit	0.25	0.06	0.24	0.12
Total Income	1,276,100	348,900	262,900	6,611
Ratio-3= Non tariff income / Total Income (%)	8.01%	1.49%	5.69%	6.82%

Source: Licensees Petitions before MERC for FY 2003-04 & 2004-05; MPECS data

MPECS notes that Hon'ble Commission has notified 'Supply Code' Regulations. As per clause 18.1 of Supply Code Regulation, every distribution licensee has to file application for approval of 'Schedule of Charge' within one month from notification of such Regulation. Accordingly Hon'ble Commission directed MPECS to file it application for 'Schedule of Charge'. As directed by Hon'ble Commission, MPECS has filed Petition for approval of Schedule of Miscellaneous and Other Charges for Financial Year 2005-06 in accordance with Part VI (Section 45 to Section 47) of the Electricity Act 2003, Regulation no. 18 of MERC (Electricity Supply Code and Other Condition of Supply) Regulations, 2005, which is under kind perusal of the Hon'ble Commission. Table 7.8 below shows the non-tariff income of MPECS over the PY, CY and EY.

Table 7-8 Non-tariff income of MPECS over the PY, CY and EY

Sr. No.	Particulars	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. In Lakhs)	Actual		Projected
1	Customer Charges	6.25	6.99	10.00
2	Sale & Repair of Lamps and Apparatus	0.62	0.36	1.00
3	Rents	2.66	1.83	3.00
4	Other/Miscellaneous receipts	9.72	16.15	15.00
5	Interest on Other Investments	97.59	100.13	110.00
6	Delayed Payment Charges	50.99	58.65	60.00
7	Interest on Delayed Payment	264.09	233.69	275.00
8	Sale of Scrap	18.89	17.66	15.00
9	TOTAL	450.81	435.46	489.00

Source: MPECS



The table below shows the non-tariff income of MPECS over the years. It is observed therefrom that there has been no significant change in the ratios of MPECS over the three years.

Table 7-9 Non-tariff income of MPECS over the PY, CY and EY

Key ratios	PY	CY	EY
	2004-05	2005-06	2006-07
Non tariff income, Rs. L	450.81	435.46	489.00
Revenue, Rs. L	6,160	6426	7427
Ratio-1= Non tariff income/Revenue, %	7.32%	6.78%	6.58%
Sales, MUs	367.60	407.44	421.19
Ratio-2= Non tariff income/per MU, Rs/unit	0.12	0.11	0.12
Total Income	6,611	6861	7916
Ratio-3= Non tariff income / Total Income (%)	6.82%	6.35%	6.18%

Source: MPECS

Thus, it is observed from the para above, that the non-tariff income of MPECS is Rs. 435.46 lakh during the FY 2005-06 and is projected to be Rs. 489.00 lakh during FY 2006-07.



**SECTION 8: Projection of Net Revenue Requirement
and Revenue Gap**



8. Projection of Net Revenue Requirement and Revenue Gap

This Section has summarized the Aggregate Revenue Requirement, Net Revenue Requirement and Revenue Gap of MPECS in absolute terms and per unit of sale after taking into consideration the subsidy to be provided by the GOM to MPECS.

8.1 Summary of ARR, NRR and Revenue Gap for PY, CY and EY

The following table summarises the Aggregate Revenue Requirement, Net Revenue Requirement and revenue gap before taking into consideration the revenue subsidy to be received from the GOM. The ARR per unit of sale during the PY is Rs. 5.84 p.u. which increases to Rs. 6.06 p.u. during CY and is projected to reduce to Rs. 5.59 p.u. during EY mainly on account of proposed non-applicability of interest on past power purchase dues and delayed payment charges.

Table 8-1 Annual Revenue Requirement and Revenue Gap (For the EY at existing and revised tariffs)

Sr. No.	Particulars	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. in Lakhs)	Actual	Actual	Projected
A	Sales (MU)	367.60	407.44	421.19
B	Revenue expenses			
1	Power purchase expenses	12623.29	14620.39	20021.91
2	Operating expenses	1699.30	2190.14	2553.28
3	Financial expenses	393.61	478.47	550.96
4	Other expenses	6632.85	7247.08	245.53
	Sub-total	21349.05	24536.08	23371.68
C	Reasonable Return	125.58	162.01	186.71
D	Aggregate Revenue Requirement (A+B)	21474.63	24698.09	23558.39
E	ARR per MU, Rs/ unit	5.84	6.06	5.59
F	Less: Non-tariff income	(450.81)	(435.46)	(489.00)
G	Net Revenue Requirement	21023.82	24262.63	23069.39
H	Net Revenue Requirement per MU, Rs/ unit	5.72	5.95	5.48
I	Revenue at existing tariffs	6,160.47	6426.83	7426.80
J	Revenue Gap	(14,863.35)	(17835.80)	15642.59

Source: MPECS

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 112



The ARR is Rs. 21,474.63 lakh, Rs. 24698.09 lakh and Rs. 23558.39 during the PY, CY and EY respectively. The corresponding revenue from tariffs and charges is Rs. 6,160.47 lakh, Rs. 6426.83 and Rs. 7426.80 lakh. The non-tariff income is Rs. 450.81 lakh, Rs. 435.46 lakh and Rs. 489 lakh during the PY, CY and EY respectively. Thus, the NRR works out to Rs. 21,023.82 lakh, Rs. 24262.63 lakh and Rs. 23069.39 lakh during the PY, CY and EY respectively.

The revenue gap without taking into consideration the subsidy quantum works out to Rs. 14,863.35 lakh, Rs. 17835.80 lakh and Rs. 15642.59 lakh for FY 2004-05, FY 2005-06 and FY 2006-07 respectively.

The above figures have been worked out at the existing tariffs.

8.2 Revenue subsidy

The income from revenue subsidy for the PY and CY is received under the following heads:

- a. subsidy received towards rate difference (difference in the rates announced by MERC and GOM for Agricultural consumers);
- b. subsidy received under the 'krishi sanjivani scheme';
- c. subsidy from the GOM towards drought relief for Agricultural consumers;
- d. subsidy received towards free power to Agricultural consumers;
- e. state government grant towards viable tariff; and
- f. revenue subsidy under the provisions of the GOM GR dated 24th August, 2004.

All of the above have been shown on an accrual basis, which is the accounting method adopted by MPECS. However, the subsidy received under the above heads except under (e) and (f) has been reflected as a part of the revenues as it is mainly in the nature of compensation received on behalf of the consumers. The subsidy received under the above heads (e) and (f) is in the nature of a direct compensation to the Society and hence is accounted separately under the head 'revenue subsidy income'.

The following table shows the total revenue expenses of MPECS and the ARR (Gross and Net), along with the revenue gap figures, both before and after taking into consideration the revenue subsidy from the GOM. It is observed therefrom that the revenue gap after



considering the revenue subsidy from the GOM works out to Rs. 14,863.35 lakh, Rs. 17835.80 lakh and Rs. 15642.59 lakh during the PY, CY and EY respectively.

Table 8-2 ARR, NRR and Revenue Gap of MPECS for the PY, CY and EY (at existing tariffs)

Sr. No.	Particulars	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. in Lakhs)	Actual	Actual	Projected
A	Sales (MU)	367.60	407.44	421.19
B	Revenue expenses			
1	Power purchase expenses	12623.29	14620.39	20021.91
2	Operating expenses	1699.30	2190.14	2553.28
3	Financial expenses	393.61	478.47	550.96
4	Other expenses	6632.85	7247.08	245.53
	Sub-total	21349.05	24536.08	23371.68
C	Reasonable Return	125.58	162.01	186.71
D	Aggregate Revenue Requirement (A+B)	21474.63	24698.09	23558.39
E	ARR per MU, Rs/ unit	5.84	6.06	5.59
F	Less: Non-tariff income	(450.81)	(435.46)	(489.00)
G	Net Revenue Requirement	21023.82	24262.63	23069.39
H	Net Revenue Requirement per MU, Rs/ unit	5.72	5.95	5.48
I	Revenue at existing tariffs	6,160.47	6426.83	7426.80
J	Revenue Gap	(14,863.35)	(17835.80)	15642.59
K	Revenue Subsidy			7,200.00
L	Revenue Gap including revenue subsidy	(14,863.35)	(17835.80)	(8442.59)
M	Revenue Gap including revenue subsidy per MU, Rs/ unit	-4.04	-4.38	- 2.00

Source: MPECS

There is subsidy of Rs. 7,200 lakh expected to be received as per the provisions of the GOM GR dated August 24, 2004 during the EY. Thus, the revenue gap after taking into consideration the subsidy works out Rs. 8442.59 lakh during the EY.

Thus, despite of considering the subsidy available from the GOM, there still remains a revenue gap to be bridged. The proposed mechanism to bridge the revenue gap at the



existing tariffs has been considered by way of a hike in the tariffs and a reduction in the BST offered by MSEB, which has been discussed at length in the next Section.



Appendix -1: Mapping with audited statements



In this Section we have attempted to map the audited financial statements with the formats prescribed for maintaining accounts under the Companies Act, 1956. Herein, the method adopted by MPECS to account for certain items like power purchase cost, depreciation, etc. is elaborated. Also, the reclassification of certain expenses is discussed. This is done in order to use the financial statements drawn up earlier for the purpose of projecting the expenses, income, capital expenditure, etc and facilitate drawing up the Profit and Loss Account for the financial years ended March 31, 2005 and March 31, 2006. The mapping with the audited accounts is arrived at as follows:

Pertaining to the Profit and Loss Account for the year ended March 31, 2004:

1. The following components have been considered to be a part of the item 'Cost of Power':

- a. delayed payment charges and
- b. interest on arrears

However, for the workings in the Petition, have been considered separately under our workings under the item 'Other expenses - DPC & Interest on arrears' and not under the item 'Cost of Power' as per the audited statements.

2. In the audited statements, 'Employee expenses' were not recorded as a separate item and was booked under the items 'Operation & Maintenance (O&M)' and 'Administration & General Charges (A&G)'. However, for the purpose of workings in the Petition and projections for the CY and EY, there has been a reclassification of the expenses and the salaries of employees as well as all the allowances (travelling, medical), labour welfare expenses, workmen's compensation and retirement benefits have been reflected under a separate expense head 'Employee Expenses'.
3. The expenses which are in the nature of extraordinary expenses have been booked under the item 'A&G' as per the audited statements. These expenses are primarily consisting of items like election expenses of the society, compensation paid to shareholders, donations. Such expenses have also been identified, reclassified and reflected under a separate head 'Extraordinary expenses' for the purposes of projections.
4. The percentage depreciation rates used for the purpose of calculation of 'Depreciation on fixed assets' is as per the Gazette prescribed by the Central Government's Ministry of Finance (Department of Revenue) (Central Board of Direct Taxes) vide its Notification No. S.O. 265 (E) dated March 27, 1994 issued



under the Electricity (Supply) Act 1948. However, there is a difference in the method adopted for calculation of actual depreciation from the one prescribed under the Notification. The method adopted earlier for calculation of depreciation is as follows:

$$\begin{aligned} & \text{Amount of Depreciation of Asset 'A'} \\ & = (\text{Opening GFA value of 'A' adjusted for any sale}) \times \text{Depreciation rate prescribed} \times 0.9\% \end{aligned}$$

Additionally, the accumulated depreciation on 'A' is also restricted to a maximum of 90% of the GFA (original cost of asset). However, as per the above-mentioned Gazette Notification, the method of depreciation can be interpreted such that the straight line method shall be applied for the calculation of depreciation at the full rates prescribed and the maximum depreciation on the asset shall be restricted to 90% of the original cost of asset. Also, it recommends that there shall be no further depreciation provided when the accumulated depreciation reaches the limit of 90% of the original cost of assets.

Further, MPECS so far has been applying the Straight Line Method (SLM) and at the rates prescribed by the Central Government's Ministry of Finance (Department of Revenue) (Central Board of Direct Taxes) vide its Notification No. S.O. 265 (E) dated March 27, 1994 issued under the Electricity (Supply) Act 1948 for the purpose of its books of accounts. In fact, annual accounts finalised for PY (i.e. FY2004-05) are based on this assumption. However, MPECS notes that Hon'ble Commission has notified MERC (terms and conditions of tariff) Regulations 2005 on 24th August 2005. As per clause 63.4 of the said Tariff regulations, the depreciation for the purpose of ARR and tariff determination shall be permitted at the rates as prescribed under the Annexure of the said Tariff Regulations. As is evident from the working sheet, the average depreciation rate for distribution assets is 3.60% (as against 7.84% as per earlier GOI notification); for telecommunication and other tools and equipment is 6% (as against 12.77% as per earlier GOI notification); for vehicles is 18% (as against 33.40% as per earlier GOI notification); and for building and compound is 2.57% (as against 3.02% as per earlier GOI notification). Accordingly, the revised depreciation expenses account for 2.98% of the GFA during the PY.

5. The item 'Excess of expenditure over income for the year (i.e. loss for the year)' in the books of MPECS has been calculated in the audited statements without taking the following into account:



- a. provision for bad & doubtful debts (bad & doubtful debts reserve); and
 - b. Provision for interest on consumers' security deposit.
- i.e. the following items have not been accounted as expenses and reflected in the 'Net Revenue and Appropriation Account'.



**PART B: Revenue Gap for FY 2004-05, FY 2005-06 and
FY 2006-07**



Section 9: Revenue Gap and Mechanisms to bridge Revenue Gap



9. Revenue Gap and Mechanisms to bridge Revenue Gap

9.1 Revenue gap at existing tariff

Based on workings for annual revenue requirement (under Section 7) and Revenue and other income (under Section 8), the Net Revenue requirement and Revenue Gap at existing tariff for PY (FY2004-05), CY (FY2005-06) and EY (FY 2006-07) is projected as under:

Table 9-1 Annual Revenue Requirement and Revenue Gap

Sr. No.	Particulars	2004-05 PY	2005-06 CY	2006-07 EY
	(Rs. in Lakhs)	Actual	Actual	Projected
A	Sales (MU)	367.60	407.44	421.19
B	Revenue expenses			
1	Power purchase expenses	12623.29	14620.39	20021.91
2	Operating expenses	1699.30	2190.14	2553.28
3	Financial expenses	393.61	478.47	550.96
4	Other expenses	6632.85	7247.08	245.53
	Sub-total	21349.05	24536.08	23371.68
C	Reasonable Return	125.58	162.01	186.71
D	Aggregate Revenue Requirement (A+B)	21474.63	24698.09	23558.39
E	ARR per MU, Rs/ unit	5.84	6.06	5.59
F	Less: Non-tariff income	(450.81)	(435.46)	(489.00)
G	Net Revenue Requirement	21023.82	24262.63	23069.39
H	Net Revenue Requirement per MU, Rs/ unit	5.72	5.95	5.48
I	Revenue at existing tariffs	6,160.47	6426.83	7426.80
J	Revenue Gap	(14,863.35)	(17835.80)	15642.59
K	Revenue Subsidy			7,200.00
L	Revenue Gap including revenue subsidy	(14,863.35)	(17835.80)	(8442.59)
M	Revenue Gap including revenue subsidy per MU, Rs/ unit	-4.04	-4.38	- 2.00

Source: MPECS

Accordingly, the net revenue gap after taking into consideration the subsidy for the PY, CY and EY are projected to be around to Rs. 14,863.35 lakh (for FY 2004-05) Rs. 17835.80 lakh (for FY2005-06) and Rs. 8442.59 lakh (for FY2006-07).

9.2 Mechanism for bridging the Revenue GAP for FY04-05 and FY05-06

Additional Information pertaining to MPECS Petition for approval of ARR for FY05, FY06, FY07 and Tariff Revision for FY07 122



The reasons for projected Revenue Gap for FY2004-05 (PY) and FY2005-06 (CY) and FY2006-07 can be mainly ascribed to un-sustainable power purchase costs arising out of bulk supply tariff for supply of power by MSEB to MPECS. It is for the same reason; the Hon'ble Commission in its recommendations to GOM regarding long term viability of MPECS has discussed various mechanisms to address this issue of historical cost burden. The relevant extract of MERC's recommendations (as per Cl. 7.2 of A7: Key Recommendations) is as under:

“7.2 In order to enable, MPECS turn around its operations during the transition period, a separate mechanism to discharge the past power purchase dues and accumulated losses of MPECS should be evolved, so that the future operations of MPECS are not overshadowed by the burden of past dues.”

Accordingly, GOM has issued its GR taking into consideration above recommendation of Hon'ble Commission and GOM in its GR dated August 24, 2004 has stated that MSEB shall treat the past arrears from MPECS as 'Regulatory asset' in its books and not to charge any further interest on the past arrears henceforth. MSEB shall recover the said regulatory asset from MPECS upon turnaround of operations of MPECS.

However, pursuant to issuance of the Order by Hon'ble Commission dated 16th December 2005 in the matter of Case no. 33 of 2005, Hon'ble Commission has ruled that provision of creating 'regulatory asset' in the books of MSEB to treat past power purchase dues of MPECS shall not be operative and instead had directed GOM to remedy the said GR and address the issue of past power purchase dues, separately. The relevant extract of said Order is as under:

‘In the above circumstances, the Commission is of the view that the functions of the Commission under sub-sections (1) and (2) of section 86 of the Act are distinct and the GOM-GR would not be operative as regards creation of ‘regulatory asset’. (Ref. Clause 21 of MERC Order dt. 16.12.2005)

‘The Commission hereby advises the State Government to expedite the process to remedy the said GOM-GR as submitted by Shri P. B. Patil, Deputy Secretary, in view of the above observations of the Commission.’ (Ref. Clause 22 of MERC Order dt. 16.12.2005).



While GOM is yet to issue its remedied GR as regards treatment of past power purchase dues, MSEDCL continues to charge interest on past power purchase dues and 'delayed payment charges' (DPC) during PY (2004-05) and CY (2005-06) to MPECS, thereby resulting into significant revenue gap for MPECS. The past power purchase dues (including interest charges and DPC) accumulated are Rs 53205.16 Lakhs as on 31-Mar-2005. In fact, the same has increased upto Rs 83470 lakhs as on October 2006.

MPECS in its earlier Petition dated 13th Jun 2005 had proposed to treat revenue gap from upto FY2004-05, (mainly arising due to un-viable bulk supply tariff) as regulatory asset to be recovered from its consumers in future, upon turnaround of its operations, in line with GOM-GR that proposed MSEB to treat past power purchase dues as 'regulatory asset' in its books to be recovered from MPECS in future without further levy of any interest charges thereof. However, as directed by Hon'ble Commission in its Order dated 16th December 2005 (Case 33 of 2005), GOM will have to devise suitable mechanism to address the issue of 'past power purchase dues (including interest and DPC thereof) of MPECS to MSEB' and remedy the existing GR accordingly.

It is envisaged that, GOM would issue a separate GR or remedy the said GR to address the issue of 'past power purchase dues' and interest thereof shortly, a separate mechanism will have to be evolved to address treatment of the past power purchase dues so that future operations of the MPECS are not overburdened with the past power purchase dues, which has arisen due to factors beyond the reasonable control of MPECS.

In this context, MPECS would like to highlight that National Tariff Policy recently notified by Central Government on 6th January 2006 also recommends that opening level of 'uncovered revenue gap' must be covered through transition financing arrangements or capital restructuring. The relevant extract of draft National Tariff Policy is as under:

"8.2.2 The facility of regulatory asset has been adopted by some Regulatory Commissions in the past to limit tariff impact in a particular year. This should be done only as exception, and subject to the following guidelines:

- a. The circumstances should be clearly defined through regulations, and should primarily include natural causes or force majeure conditions. Under business as usual conditions, the opening balances of uncovered gap must be covered through transition financing arrangement or capital restructuring;*



- b. *Carrying cost of Regulatory Asset should be allowed to the Utilities;*
- c. *Recovery of Regulatory Asset should be time bound and within a period not exceeding three years at most and preferably within control period;*
- d. *The use of facility of Regulatory Asset should not be repetitive.*

Further, as per clause 8.2.1 of National Tariff Policy, the past losses can be attributed to utilities/consumers, **only if** they have arisen due to ‘controllable factors’. The relevant extract of the NTP is as under -

(5) Pass through of past losses or profits should be allowed to the extent caused by uncontrollable factors. During the transition period controllable factors should be to the account of utilities and consumers in proportions determined under the MYT framework. (Cl. 8.2.1 (5) of NTP)

Thus, it is clear that while ‘Regulatory Asset’ as a mechanism is an acceptable principle for recovery of un-covered revenue gap, it needs to be verified and ascertained whether it is appropriate to pass on ‘past losses’ to utility/consumers especially arising due to uncontrollable factors. Besides, as indicated in the earlier paragraphs, the quantum of past power purchase dues of Rs 83470 lakh is extremely high to be able to be recovered from future consumers of MPECS, given size of operations of MPECS and its consumer mix thereof. As directed by Hon’ble Commission, GOM would need to evolve separate mechanism to address this burning issue in such a manner as not to burden future operations of MPECS and also provide relief to newly formed MSEDCL carved out of restructured MSEB. Hon’ble Commission may need to approve the suitable mechanism for treatment of past power purchase dues of MPECS to MSEB/MSEDCL taking into consideration above aspect.

Proposal for treatment of Un-covered Revenue Gap of MPECS for FY 2004-05 and FY 2005-06

In view of above, MPECS has not proposed any mechanism for treatment of revenue gap upto FY2005-06. Further, Prayer made by MPECS through its earlier Petition dated 13th Jun 2005 stands corrected to that extent. MPECS requests Hon’ble Commission to kindly grant leave to separately propose suitable mechanism for treatment of ‘un-covered revenue gaps’ in the previous years upto FY2005-06, in case GOM fails to address this grave concern of MPECS in a timely manner.



9.3 Mechanism for bridging the Revenue GAP for FY 2006-07

As outlined under Table 9.1 the revenue gap for FY 2006-07 is Rs 15642.59 lacs. Further, after taking into consideration the proposed revenue subsidy of Rs 7,200 lacs as per GOM GR dated August 24, 2004, the Net Un-covered Revenue Gap for FY 2006-07 is projected to be Rs 8442.59 lacs.

There are various ways in which the above un-covered revenue gap can be bridged, namely,

- a) Proposed revision in retail supply tariff
- b) Proposed revision in bulk supply tariff for supply by MSEB to MPECS
- c) Additional subsidy support by government
- d) Regulatory Asset

The regulatory issues and our views in respect of each of the above mechanisms are discussed below.

a) Uniform Retail Supply Tariff across State (parity amongst consumers of MSEB and MPECS)

It is understood that the retail tariff determination is the licensee specific activity. However, it is desirable that uniform retail tariff in respect of various consumer categories is maintained across the State to the extent possible. It is also noted that Hon'ble Commission in its statutory advice to the GOM in respect of restructuring of MSEB vide its letter dated May 14, 2004 as per Clause 2, (**Distribution company formation**) has also advocated the concept of uniform retail supply tariff for particular tariff category across State. The relevant extract of the paragraph is mentioned below:

“In view of the potential differences in operating parameters and consumer mix across distribution companies, preventing divergence of tariffs would be a difficult task. The State Government should formulate specific mechanisms as a part of the restructuring process to ensure that objectives of end use tariff uniformity across the State for particular tariff categories (if any) are not vitiated.”

MPECS is submitting herewith its Petition for approval of ARR and Tariff determination to Hon'ble Commission. Thus, based on the consumer/sales mix of MPECS with a predominant agricultural consumption, the revenue earning potential of the MPECS shall



be guided by the uniform retail supply tariff determination philosophy and trajectory to be adopted by Hon'ble Commission for other licensees in the State including MPECS. This aspect needs to be considered while ascertaining the level of subsidy requirement for MPECS. It is thus preferred that clarity in terms of long term principles and regulatory certainty in these matters would be of utmost importance.

It is noted that National Tariff Policy has also advocated concept of uniform Retail Supply Tariff. The relevant extract of draft National Tariff policy is as under –

*“8.4 (2) The National Electricity Policy states that existing PPAs with the generating companies would need to be suitably assigned to the distribution companies. The State Governments may make such assignments taking care of different load profiles of the distribution companies **so that the retail tariffs are uniform in the State for different categories of consumers.** Thereafter, the retail tariffs would reflect the relative efficiency of distribution companies in procuring power at competitive costs, controlling theft and reducing other distribution losses.”*

Thus, since MPECS is a rural distribution licensee with limited distribution area surrounded by MSEB distribution circles, it would be necessary to implement uniform retail supply tariff principles as applicable for MSEB distribution area.

The detailed tariff design and principles for tariff revision in the context of MPECS taking into account consumer mix, sales mix and load profile of MPECS are further elaborated along with proposal for revision in retail tariff under subsequent Section-9.4.

b) Bulk Supply Tariff for power supply by MSEB to MPECS (short term and long term)

Currently, MPECS does not have any generating capacity of its own and is entirely dependent on the bulk energy supply by MSEB to meet its energy requirement. Hence, the determination of bulk supply tariff of MSEB would have critical influence on the power purchase cost. Also, since the power purchase expenses account for around 86% of the total expenses of MPECS during the EY, it is evident that the profitability and thus the long term viability of operations of MPECS will be affected by a change in the BST. Hence, the long term tariff (multi-year tariff) principles to be outlined by Hon'ble



Commission for MSEB (or its successor entity upon restructuring of MSEB) need to be specified or taken into consideration, as the same would have grave impact on determination of requirement of subsidy for MPECS and viability of operations of MPECS during transition period as well as in the long term.

In this context, it is noted that, Central Government has published National Policy for 'Rural Electrification and management of local distribution and bulk purchase of power in rural areas' on August 23, 2006 and have invited comments from the stakeholders. The relevant extract of the said policy as regards 'bulk power purchase' by such 'rural electric utility / co-operative are as under:

“Bulk purchase of power:-

9.13 Persons exempt under Section 13 may procure power from the existing licensee of the area or from any other source.

9.14 Where such persons purchase power from the licensee of the area, they would be treated as a separate category by the Appropriate Commission for the determination of the Bulk Purchase Price (“BPP”) to be paid by them to the licensees.

In such cases the tariff for retail sale to the consumers in the area of such persons would be as determined for the licensee by the Appropriate Commission.

9.15 If not determined competitively, the BPP should be set on a normative basis based on representative consumer mix and should not vary on a case-to-case basis. The BPP set alongwith margins prescribed for the local distribution enterprise should be such that consumers tariff is maintained at the same level. This BPP would be fully factored into the submissions of the State Utilities to the State Electricity Regulatory Commissions for their revenue requirements.

MPECS wish to humbly submit that above approach as prescribed under National Policy for Rural Electrification and management of bulk purchase of power in case of MPECS, shall render regulatory certainty to the entire exercise and will not subject MPECS to tariff shocks.



Further, in line with National Tariff Policy as outlined above, it would be critical to implement uniform retail supply tariff across the State. For MPECS, with predominant agriculture consumption and on account of characteristic consumer mix, sales mix and load profile, this limits the revenue earning potential for MPECS as distribution licensee. Hence, it would be essential that for MPECS, which do not have any generating capacity of its own and is entirely dependent on MSEB for its bulk power purchase requirements, the 'Bulk Supply Tariff', so determined by Hon'ble Commission does not render MPECS operations un-viable neither in short term nor in long term.

Many State Electricity Regulatory Commissions such as APERC, KERC, and UPERC have adopted principle of differential bulk supply tariff across distribution companies in order to address the ground reality that distribution licensees with predominant rural and agriculture consumer mix and sales consumption mix, is adversely placed and constrained in terms its revenue earning potential.

Accordingly, we have proposed a 'Revised Bulk Supply Tariff' proposal for FY 2006-07 under Section-11 for the kind consideration of the Hon'ble Commission.

c) *Quantification of Revenue Subsidy from Government and manner of compensation*

As per the said GR, the level of revenue subsidy requirement is estimated to be around Rs 72 Crore per annum and the same shall be provided as direct compensation to MSEB. As it is clear from above submissions that level of subsidy requirement is dependent on the retail supply tariff and bulk supply tariff to be applicable for MPECS. Thus, level of subsidy requirement is to be derived as balancing figure based on pre-agreed formula and the same is not subjected to any minimum (floor) or maximum (cap) levels in a year. It needs to be ensured that while MPECS can be held responsible for its performance, it is adequately protected for the risks associated with tariff determination and resultant subsidy compensation thereof.

We also note the advice of the Hon'ble Commission to the GOM vide its letter dated May 14, 2004 under Clause 10, that *"upfront commitment on subsidies may also provide distribution companies the necessary comfort in operations and investments."*

Thus, it is submitted that there should be 'in-principle' agreement on formula/mechanism for determination level of subsidy requirement rather than specifying any absolute level. Further, it is submitted that Hon'ble Commission may issue appropriate directions to
Additional Information pertaining to MPECS Petition for approval of ARR for 129
FY05, FY06, FY07 and Tariff Revision for FY07



GOM in line with provision under Section 65 of Electricity Act 2003, so that interests of MPECS and MSEB (or its successor entity) are adequately safeguarded.

d) Other Regulatory Issues

i) Quantification of Capital Subsidy from Government and manner of compensation

As per GOM GR dated August 24, 2004 it is proposed that GOM shall extend capital subsidy support to MPECS of around Rs 4 Crore per annum in order to enable MPECS undertake time bound action plan as recommended by MERC and to undertake rural electrification works and other capital expenditure schemes. However, we also note that Hon'ble Commission in its report and recommendations submitted to GOM on viability of MPECS vide its letter dated January 27, 2004 have noted that MPECS will have to undertake capital investment to the tune of around Rs 10 to 12 Crore per year in order meet up with the challenges outlined under 'Time Bound Turn-around Programme' and the performance targets specified therein. A relevant extract of the report as per Cl. 6.5 is furnished below.

“6.5 It is broadly estimated that MPECS has to invest around Rs 10 to 12 Crore per year to strengthen its system, reduce technical and commercial losses, improve its metering infrastructure, reduce transformer failure rates etc. a predominant portion of which would qualify as investment under APDRP/PMG funds which needs to be facilitated by GOM.”

Hence, it is submitted that Hon'ble Commission may note that the capital subsidy confirmed by GOM as per their GR dated August 24, 2004 is not adequate to cover the capital investment plan required to meet up 'Time bound turn-around programme' and hence MPECS will be required to mobilize additional resources to fund its proposed capital investment plan which is a challenging task under the current constrained financial position of MPECS. Hence, we agree with Hon'ble Commission's recommendation that GOM should facilitate availability of funds under APDRP/PMG/REC schemes and Hon'ble Commission may consider issuing appropriate directions in the matter.

However, we also wish to submit that the conditions for availing funds under APDRP/PMG/REC require guarantee from the State Government, which is currently not available for the project schemes of MPECS. This has posed a major hurdle in availability

*Additional Information pertaining to MPECS Petition for approval of ARR for 130
FY05, FY06, FY07 and Tariff Revision for FY07*



of funds from such schemes to MPECS. Hon'ble Commission may issue appropriate directions in the matter to enable MPECS avail such funds, if available.

ii) Performance Targets

We note that GOM in its GR has linked the provision of the subsidy to the adherence to the time bound action plan for turn-around and meeting the performance targets specified by the Hon'ble Commission in its recommendations submitted to GOM. The recommendations outlined by Hon'ble Commission in its report cover performance targets in terms of reduction in transmission and distribution losses, improvement in the collection efficiency, target for metering, consumption norm for agriculture consumption etc. While we agree in principle to the performance parameters specified, we also note that the Hon'ble Commission has acknowledged in its Report to GOM that MPECS's operations are more efficient than MSEB in comparable distribution areas on key performance and service parameters.

Further, it is submitted that the improvement in performance and trajectory thereof, would depend on the detailed cost-benefit analysis, evaluation of investment/resource requirement, micro level technical feasibility analysis of various schemes etc. It is also important to accurately ascertain the current level of performance in respect of these parameters such as distribution loss level, agricultural consumption norm, collection efficiency etc. before setting out long term trajectory/target level of performance. These are the matters which require detailed scrutiny by Hon'ble Commission. It is also submitted that the level of capital subsidy confirmed by GOM in its GR is not adequate to fund the total capital expenditure plans required as per 'Turn-around Programme'.

In this context, we also note that National Tariff Policy has also recognized the need to have detailed scrutiny of current ground reality before setting performance target and trajectory for the licensee to comply. The relevant extract of the draft National Tariff Policy is as under –

“5.3(h)(2) In cases where operations have been much below the norms for many previous years, the initial starting point in determining the revenue allowance and the improvement trajectories should be recognized at 'actual' levels and not the 'desired' levels. Suitable benchmarking studies may be conducted to establish the 'desired' performance standards. Separate studies may be required for each utility



to assess the capital expenditure necessary to meet the minimum service standards.”

Hence, it is requested that Hon'ble Commission may set the appropriate performance targets upon detailed scrutiny of submissions made by MPECS including this ARR/Tariff Petitions in due course.



9.4 Summary of Proposed Tariff Schedule

In line with Hon'ble Commission's Order dated September 20, 2006 in case of MSEDCL ARR/Tariff Petition for FY2006-07, the Proposed Tariff Schedule for revision in retail supply by MPECS to various consumer categories for the year FY2006-07 is submitted hereunder:

Category	Existing Tariff			Proposed Tariff		Category
	Demand Charges (Rs/HP/kVA/month)	Energy Charges (p/u)	T & D Loss Charge (p/u)	Demand Charges (Rs/HP/kVA/month)	Energy Charges (p/u)	
(1) Domestic (LD1)						(1) Domestic (LD1)
0-30	20	100	10	3	40	0-30 BPL
31 -100 Units	30	255	20	40	190	0 -100 Units
101 - 300 Units	30	295	20	40	340	101 - 300 Units
> 300 Units	30	455	20	40	450	> 300 Units
Addl Fixed Charge - 3 phase	75					3 phase Rs 100 per service connection
Addl Fixed Charge -CL>10kW	Rs.75 /10 KW					Addl Fixed Charge Rs 100 /10Kw load
(2) Non Domestic (LD2)						(2) Non Domestic (LD2)
0 - 100 Units	70	250	30	100	290	0 - 100 Units
101 -200 Units	70	410	30	100	375	101 -200 Units
> 200 Units	70	500	30	100	490	> 200 Units
Addl Fixed Charge - 3 phase	125					3 phase Rs 150 per service connection
Addl Fixed Charge -CL>10kW	Rs 125 /10 KW					Addl Fixed Charge Rs 150 /10Kw load
						Optional LT MD based tariff will be available for all consumers
(3) General Motive Power (LTP-G)						(3) General Motive Power (LTP-G)
0 - 1000 Units	60	240	25	220	300	0 - 1000 Units
1001 -15000Units	60	300	25	220	400	>1000 Units
>15000 Units	60	340	25			LT MD based tariff will be available for all consumers
Optional MD based tariff	Rs 220/ kVA/month					
2200 hrs - 0600 hrs		-50			-85	2200 hrs - 0600 hrs
0600 hrs - 0900 hrs		0			0	0600 hrs - 0900 hrs
0900 hrs - 1200 hrs		30			80	0900 hrs - 1200 hrs
1200 hrs - 1800 hrs		0			0	1200 hrs - 1800 hrs
1800 hrs -2200 hrs		60			110	1800 hrs -2200 hrs
(Power loom included in LTP - G) Power loom (Unmetered)	450					
				200	1100	(4) Advertisement & hoarding
(4) Public Water Supply						(5) Public Water Supply
Urban P.W. Schems	60	225	0	50	100	0-20 Kw
Rural P.W. Schems				60	150	21-40 Kw
Grampanchayat	20	75	0	90	240	41-50 Kw
C Class Municipal Councils & Metered	30	140	0			
(5) Agriculture (incl Poultry)						(6) Agriculture (incl Poultry)
Flat Rate Tariff (Rs/HP/month)	110	0	10			Flat Rate Tariff (Rs/HP/month)
a) Circles consumption norm 1300 hour /hp/year				180	0	a) Circles consumption norm 1300 hour /hp/year
b) Circles consumption norm above 1300 hour /hp/year				150	0	b) Circles consumption norm above 1300 hour /hp/year
Metered Tariff	10	90	40	15	110	Metered Tariff
(6) Street Light Tariff						(7) Street Light Tariff
Grampanchayat A,B,C Class MC	20	170	0	30	210	Grampanchayat A,B,C Class MC
Municipal Corporation	20	250	0	30	250	Municipal Corporation

Category	Existing Tariff			Proposed Tariff		Category
	Demand Charges (Rs/HP/kVA/month)	Energy Charges (p/u)	T & D Loss Charge (p/u)	Demand Charges (Rs/HP/kVA/month)	Energy Charges (p/u)	
(7) HIP - I (BMR/PMR)	325	285	30			(8) HIP - I
				350	215	Continuous industries
				350	285	Non Continuous industries
2200 hrs - 0600 hrs		-75			-85	2200 hrs - 0600 hrs
0600 hrs - 0900 hrs		0			0	0600 hrs - 0900 hrs
0900 hrs - 1200 hrs		50			80	0900 hrs - 1200 hrs
1200 hrs - 1800 hrs		0			0	1200 hrs - 1800 hrs
1800 hrs - 2200 hrs		90			110	1800 hrs - 2200 hrs
(8) HIP - II HIP (Non BMR/PMR)	300	280	30	350	340	(9) HT Seasonal category
Seasonal consumers	350	270	30			
(9) HIP - III PWW(BMR/PMR)	300	265	0			
(10) HIP - IV PWW(Non BMR/PMR)	250	255	0			(10) HIP II Public Water Works
				350	260	Express Feeders
				350	240	Non Express Feeders
Optional ToD Tariff (HIP- III & IV)						Optional ToD Tariff (HIP- III & IV)
2200 hrs - 0600 hrs		-50			-85	2200 hrs - 0600 hrs
0600 hrs - 0900 hrs		0			0	0600 hrs - 0900 hrs
0900 hrs - 1200 hrs		30			80	0900 hrs - 1200 hrs
1200 hrs - 1800 hrs		0			0	1200 hrs - 1800 hrs
1800 hrs - 2200 hrs		60			110	1800 hrs - 2200 hrs
(12) HIP - VI						(12) HIP - IV Bulk Supply
Residential Complex	100	220	20	150	240	Residential Complex
Commercial Complex	100	350	30	150	360	Commercial Complex
(13) HIP VII (Agriculture & Related)						(13) HIP V (Agriculture)
Metered tariff	10	90	15	25	130	Metered tariff

