



TARIFF ORDER

**MULTI YEAR AGGREGATE REVENUE REQUIREMENT
FOR CONTROL PERIOD FY 2016-17 TO FY 2017-18**

&

TARIFF FOR FY 2016-17

FOR

**MANIPUR STATE POWER DISTRIBUTION COMPANY
LIMITED**

Petition (ARR & Tariff) No. 3 of 2015

29 FEBRUARY 2016

**JOINT ELECTRICITY REGULATORY COMMISSION
FOR MANIPUR AND MIZORAM**

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ABBREVIATIONS

Abbreviation	Description
A&G	Administrative and General
AAD	Advance Against Depreciation
ARR	Aggregate Revenue Requirement
CAG	Controller and Auditor General of India
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CWIP	Capital Work in Progress
DG	Diesel Generation
DPS	Delayed Payment Surcharge
EA, 2003	Electricity Act, 2003
EDM	Electricity Department, Manipur
EHT	Extra High Tension
FSA	Fuel Surcharge Adjustment
FY	Financial Year
GFA	Gross Fixed Assets
GOI	Government of India
HT	High Tension
JERC	Joint Electricity Regulatory Commission for Manipur and Mizoram
kV	Kilovolt
kVA	Kilovolt-ampere
kW	kilowatt
kWh	kilowatt-hour
LT	Low Tension
MAT	Minimum Alternate Tax
MDI	Maximum Demand Indicators
MSPCL	Manipur State Power Company Limited
MSPDCL	Manipur State Power Distribution Company Limited
MUs	Million Units
MYT	Multi Year Tariff
NTI	Non-Tariff Income
O&M	Operation and Maintenance
PGCIL	Power Grid Corporation of India Ltd
PLF	Plant Load Factor
PLR	Prime Lending Rate
PPA	Power Purchase Agreement
PWW	Public Water Works
R&M	Repair and Maintenance
RoE	Return of Equity
RGGVY	Rajiv Gandhi Gramina Vidyutikaran Yojan
SBAR	State Bank Advance Rate
SLDC	State Load Despatch Centre
T&D	Transmission and Distribution
UI	Unscheduled Interchange
RE	Revised Estimate
REC	Renewable Energy Certificate

JOINT ELECTRICITY REGULATORY COMMISSION FOR MANIPUR AND MIZORAM

TBL Bhawan, 2nd to 5th Floor
peter street, E18, Khatla, Aizwal,
Mizoram – 796001

Petition (ARR & Tariff) No. 3 of 2015

In the matter of

Determination of Aggregate Revenue Requirement (ARR) for control period FY 2016-17 to FY 2017-18 and Retail Tariff for FY 2016-17 for sale of electricity by the Manipur State Power Distribution Company Limited (MSPDCL) in the State of Manipur.

AND

Manipur State Power Distribution Company Limited-----Petitioner
(herein referred to as MSPDCL)

Present

Mr. R.K. Kishore Singh
Chairperson

ORDER

(29/02/2016)

1. The Manipur State Power Distribution Company Limited (herein after referred to as MSPDCL) is a deemed licensee in terms of section 14 of the Electricity Act 2003 (herein after referred to as Act), engaged in the business of generation and distribution of electricity in the state of Manipur.
2. As per the directive of the Commission, the MSPDCL has filed the Petition for determination of Aggregate Revenue Requirement (ARR) for control period FY 2016-17 to FY 2018-19 and Retail Tariff for FY 2016-17. But as per JERC M&M (MYT) Regulation 2014 the first control period is three years from FY 2015-16 to FY 2017-18 and for every block of 5 years thereafter. Accordingly, the period in present MYT petition is limited to FY 2016-17 to FY 2017-18.
3. In exercise of the powers vested under section 62 read with section 64 of the Electricity Act 2003 and Regulation 16 JERC for M&M (Multi Year Tariff) Regulations,

2014 (herein after referred to as Tariff Regulations) and other enabling provisions in this behalf the Commission issues this order for approval of the ARR for control period FY 2016-17 to FY 2017-18 and determination of retail Tariff for FY 2016-17 for supply of electricity in the state of Manipur.

4. Tariff Regulations specify that the distribution licensee shall file ARR and Tariff Petition in all aspects along with requisite fee as specified in Commission's fees, fines and charges regulations, on or before 30th November of the preceding year. Accordingly the MSPDCL has filed the petition approval of ARR for control period FY 2016-17 to FY 2017-18 and Tariffs for the FY 2016-17.
5. Though the JERC for M&M (MYT) Regulations 2014 do not provide annual performance review, the Commission considers it appropriate to review the previous year ARR with reference to RE, but without changing the principles. Accordingly review for FY 2015-16 is carried out.
6. Regulation 17 of the MYT Regulations, 2014 provides giving adequate opportunity to all stake holders and general public for making suggestions/objections on the Tariff Petition as mandated under section 64 of the Electricity Act 2003. Accordingly the Commission directed MSPDCL vide letter No.H.20013/08/15-JERC dt. 05.01.2016 to publish the ARR for control period FY 2016-17 to FY 2017-18 and Tariff Petition for the FY 2016-17 in an abridged form as public notice in news papers having wide circulation in the state inviting suggestions/objections on the Tariff Petition.
7. Accordingly MSPDCL has published the Tariff Petition in the abridged form as public notice in various news papers and the Tariff petition was also placed on the website of MSPDCL. The last date of submission of suggestions/objections was fixed on 29.01.2015.
8. The Commission, to ensure transparency in the process of Tariff determination and for providing proper opportunity to all stake holders and general public for making suggestions/objections on the Tariff petition and for convenience of the consumers and general public across the state, has decided to hold the public hearing at the headquarters of the state. Accordingly the Commission held public hearing at

Imphal on 19.02.2016 at Hotel Classic Regency Hall from 10:30 AM to 12:30PM.

9. The proposal of MSPDCL was also placed before the State Advisory Committee in its meeting held on 18.02.2016 and various aspects of the Petition were discussed by the Committee.

10. The Commission took into consideration the facts presented by the MSPDCL in its Petition and subsequent filings, the suggestions/objections received from stakeholders, consumer organizations, general public and State Advisory Committee and response of the MSPDCL to those suggestions/objections.

11. The Commission taking into consideration all the facts which came up during the public hearing and meeting of the State Advisory Committee, has approved the ARR for control period FY 2016-17 and FY 2017-18 and revised tariffs for the FY 2016-17.

12. The Commission has reviewed the directives issued earlier in the Tariff orders for FY 2010-11 to FY 2015-16 and noted that some of the directives are complied and some are partially attended. The Commission has dropped the directives complied with and the remaining directives are consolidated and fresh directives are added.

13. This order is in ten chapters as detailed below;

- Chapter 1: Introduction.
- Chapter 2: Summary of ARR for control period FY 2016-17 and FY 2017-18.
- Chapter 3: Power Sector in Manipur - An overview.
- Chapter 4: Public hearing process.
- Chapter 5: Annual Performance Review for FY 2015-16.
- Chapter 6: Analysis of ARR for control period FY 2016-17 and FY 2017-18 and Commission's decisions.
- Chapter 7: Tariff principles and design.
- Chapter 8: Wheeling charges for FY2016-17.
- Chapter 9: Directives.
- Chapter 10: Fuel and Power purchase cost Adjustment.

14. The MSPDCL should ensure implementation of the order from the effective date after

issuance of a public notice, in such a font size which is clearly visible in two daily newspapers having wide circulation in the state within a week and compliance of the same shall be submitted to the Commission by the MSPDCL.

15. This order shall be effective from 1st April, 2016 and shall remain in force till 31st March, 2017 or till the next Tariff Order of the Commission.


(R.K. Kishore Singh)
Chairperson

Place : Aizawl

Date : 29.02.2016

1. Introduction

1.1 JERC for Manipur and Mizoram (JERC, M&M)

In exercise of the powers conferred by the Electricity Act 2003, (hereinafter referred to as Act) the Government of India constituted Electricity Regulatory Commission for the States of Manipur and Mizoram to be known as “Joint Electricity Regulatory Commission for Manipur and Mizoram” vide GOI. Gazette (Extra Ordinary) Notification No. 23/3/2002 R&R dated 18/01/2005, (hereinafter referred to as Commission) as per the authorization given by the Government of Manipur and the Government of Mizoram vide Memorandum of Agreement dated 23/07/2004. The Commission constituted is a two-member body designated to function as an autonomous authority responsible for regulation of the power sector in States of Manipur and Mizoram. The powers and functions of the Commission are as prescribed in the Act. The head office of the Commission is presently located at Aizawl, the capital town of Mizoram. The Commission became functional w.e.f. January 24th, 2008.

- a) In accordance with the Act, the Commission discharges the following functions:
- i. Determine the tariff for generation, transmission, distribution and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State:
Provided that where open access has been permitted to a category of consumers under Section 42 of the Act, the State Commission shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers;
 - ii. Regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;
 - iii. Facilitate intra-State transmission and wheeling of electricity;
 - iv. Issue licenses to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the

State;

- v. Promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee;
 - vi. Adjudicate upon the disputes between the licensees and generating companies; and to refer any dispute for arbitration;
 - vii. Levy fee for the purposes of this Act;
 - viii. Specify State Grid Code consistent with the Grid Code specified under Clause (h) of sub-section (1) of Section 79 of the Act;
 - ix. Specify or enforce standards with respect to quality, continuity and reliability of service by licensees;
 - x. Fix the trading margin in the intra-State trading of electricity, if considered, necessary;
 - xi. Discharge such other functions as may be assigned to it under the Act.
- b) Further, the Commission also advises the State Government on all or any of the following matters namely:
- i. Promotion of competition, efficiency and economy in activities of the electricity industry;
 - ii. Promotion of investment in electricity industry;
 - iii. Reorganization and restructuring of electricity industry in the State;
 - iv. Matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the State Commission by the State Government.
- c) The State Commission ensures transparency while exercising its powers and in discharging its functions.
- d) In discharge of its functions, the State Commission is guided by the national Tariff Policy (NTP) as brought out by GOI in compliance to Section 3 of the Act. The objectives of the NTP are to:

- Ensure availability of electricity to consumers at reasonable and competitive rates;
- Ensure financial viability of the power sector and attract investments;
- Promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimize perceptions of regulatory risks;
- Promote competition, efficiency in operations and improvement in quality of supply.

1.2 ARR and Tariff Petition

After the enactment of Electricity Act 2003, various reforms have been initiated in the power sector including restructuring of integrated state electricity boards into separate companies. The Electricity Department of Manipur has been restructured into two companies viz., the Manipur State Power Company Limited(MSPCL) responsible for transmission function and the Manipur State Power Distribution Company Limited(MSPDCL) responsible for distribution and generation functions with effect from 1st Feb' 2014,

At present, as the petitioner does not own any major generating plant and is not in a position to sell power to other licensees, the question of fixation of generation tariff may not arise. In the petition MSPDCL has, estimated ARR of Rs. 585.08 Crore and Rs 674.32 Crore for FY 2016-17 and FY 2017-18 respectively for Distribution Sector and considered a tariff support of Rs. 262.62 Crore from the Government of Manipur for FY 2016-17 thereby showing a revenue gap of Rs. 30.59 Crore, which the MSPDCL proposed to recover through proposed tariff.

1.3 Admission of Petition

MSPDCL has filed petition for approval of ARR for control period FY 2016-17 to FY 2017-18 and Tariff for FY 2016-17. The Commission has admitted the ARR Petition for control period FY 2016-17 & FY 2017-18 and tariff petition for the FY 2016-17 filed by the MSPDCL.

The Commission also observed that the ARR filed by the petitioner was incomplete and lacking critical and vital information required as specified in Commission's

Regulations on Terms and Conditions for Determination of Tariff. Therefore, MSPDCL was asked to submit the required information vide Commission's letters No.H.20013/08/15-JERC (Pt), dated 04.01.2016 and 14.01.2016.

Pending receipt of additional information, the ARR and Tariff Petition was admitted on 28.12.2015 and marked as Petition (ARR and Tariff) No.3 of 2015 of JERC for M&M to avoid delay in processing of ARR.

The MSPDCL has submitted some data/information/clarifications etc vide its letters

1. No.2/19/2015/MSPDCL(COMM)/8181-84, dated 03.02.2016.
2. No.2/19/2015/MSPDCL(COMM)/8177-80, dated 03.02.2016.

1.4 Public Hearing Process

The Commission directed the MSPDCL, to publish the summary of the ARR and tariff proposal in the abridged form and manner as approved in accordance with Section 64 of the Act to ensure public participation.

The public notice was published by the Executive Director, MSPDCL in the following newspapers inviting the public to forward their objections and suggestions on the petition on or before 29.01.2016.

Sl. No.	Name of the Newspaper	Language	Date of Publication
1	The Sangai Express	English	13.01.2016
2	The Sangai Express	Manipuri	13.01.2016
3	Poknapham	Manipuri	13.01.2016
4	Nahrolgi Thoudang	Manipuri	14.01.2016

The Commission received one objection / suggestion from all Manipur Power Consumers' Association on the petition filed by the MSPDCL. The Commission passed on the objection received to MSPDCL for communicating their response to the objections raised.

1.5 Notices for Public Hearing

A Public Notice was published by the Commission in the following leading newspapers giving due intimation to the general public, interested parties,

objectors and the consumers about the public hearing to be held at Imphal on 19.02.2016.

Sl. No	Name of the news paper	Language	Date of Publication
1	Poknapham	Manipuri	09.02.2016 & 10.02.2016
2	Imphal Free Press	English	09.02.2016

1.6 Public Hearing

The Public hearing was held as scheduled on 19.02.2016 at Hotel Classic Regency Hall from 10:00 AM to 12:30 PM. During the public hearing, each objector was provided a time slot for presenting before the Commission his/her views on the petition of the MSPDCL. The main issues raised by the objectors during the public hearing and corresponding response of the MSPDCL are briefly narrated in Chapter - 4.

1.7 Meeting of State Advisory Committee

The State Advisory Committee, which met on 18.02.2016 at 11:00 AM, at Hotel Classic Regency Hall, Imphal discussed the MYT ARR for control period FY 2016-17 to FY 2017-18 and Tariff proposal for FY 2016-17 of the MSPDCL. Minutes of the meeting are given in the Annexure – I.

1.8 Compliance of Directives

In its previous Tariff orders the Commission had issued certain directives to the MSPDCL and erstwhile EDM in the public interest. A summary of directives issued compliance of the licensee, comments of the Commission and new directives issued are discussed in Chapter 9 of this Tariff Order.

2. Summary of ARR and Tariff Petition

2.1 Aggregate Revenue Requirement (ARR)

The MSPDCL, in its petition, has submitted the Aggregate Revenue Requirement for the control period FY 2016-17 to FY 2017-18 for meeting its expenses and the estimated revenue with the existing tariff. The proposed ARR and revenue gap are shown in Table below.

**Table 2.1: Aggregate Revenue Requirement for control period FY 2016-17 to FY 2017-18
(Rs .Crore)**

Sl. No	Particulars	FY 2016-17 Projected	FY 2017-18 Projected
1	Costs		
2	Power Purchase Cost	375.68	414.39
3	Transmission Charges for Inter State	51.70	57.45
4	Intra State Transmission Charges (MSPCL)	51.98	83.80
5	Fuel Cost	-	-
6	Employee Cost	78.77	88.21
7	Repairs and Maintenance Cost	6.11	6.88
8	Admin & General Cost	2.53	2.65
9	Depreciation	0.42	0.47
10	Interest and Finance charges	0.16	0.31
11	Interest on working capital	12.74	14.82
12	Provision for Bad Debts	3.00	3.00
13	Add: Return on Equity	2.33	2.71
14	Less: Non-Tariff Income	0.34	0.37
15	Annual Revenue Requirement	585.08	674.32
16	Less Revenue from Sale energy at existing Tariff	278.67	324.90
17	Less Revenue from UI sales	13.20	14.25
18	Revenue Gap	293.21	334.67

(Source: Table-25 of ARR Petition)

2.2 Tariff

The MSPDCL in its petition has submitted the proposed tariff for the FY 2016-17 as detailed in the Table 2.2 below:

Table 2.2: Existing and Proposed Tariff Structure for FY 2016-17

Existing Tariff			Proposed Tariff		
Particulars	Fixed Charges (Rs./kW/ kVA/ Month)	Energy Charges (Rs./kWh)	Particulars	Fixed Charges (Rs./kW/ kVA/Month)	Energy Charges (Rs./kWh)
LT SUPPLY			LT SUPPLY		
Kutir Jyoti			Kutir Jyoti		
0-15 kWh	20	1.00	1-15 kWh	20	1.10
Above 15 kWh	20	1.50			

Existing Tariff			Proposed Tariff		
Particulars	Fixed Charges (Rs./kW/ kVA/ Month)	Energy Charges (Rs./kWh)	Particulars	Fixed Charges (Rs./kW/ kVA/Month)	Energy Charges (Rs./kWh)
Domestic Light & Power			Domestic Light & Power		
0-100 kWh	60	2.90	1-100 kWh	60	3.20
101-200 kWh	60	3.50	101-200 kWh	60	3.90
Above 200 kWh	60	4.40	Above 200 kWh	60	4.80
Commercial			Commercial		
0-100 kWh	80	3.90	1-100 kWh	80	4.30
101-200 kWh	80	4.65	101-200 kWh	80	5.10
Above 200 kWh	80	5.50	Above 20 kWh	80	6.10
Public Lighting	65	5.15	Public Lighting	65	5.70
Public Water Works	100	5.15	Public Water Works	100	5.70
Agriculture	60	3.05	Agriculture	60	3.40
Cottage & Small Industry	65	3.05	Cottage & Small Industry	65	4.30
HT SUPPLY			HT SUPPLY		
Commercial	100	5.40	Commercial	105	5.90
Public Water Works	90	4.85	Public Water Works	100	5.30
Agriculture	100	2.85	Agriculture	105	3.10
Medium Industry	100	4.00	Medium Industry	105	4.40
Large Industry	100	4.65	Large Industry	105	5.10
Bulk Supply	100	4.20	Bulk Supply	105	4.60

Prayer

The MSPDCL has requested the Hon’ble Commission to:

- Admit the Aggregate Revenue Requirement of FY 2016-17 to FY 2017-18 and the Tariff Revision proposal for FY 2016-17 as submitted herewith.
- Admit the Annual Performance Review for FY 2015-16
- Condone any inadvertent omissions/errors/shortcomings and permit the Petitioner to add/change/modify/alter this filing and make further submission as may be required at a future date.
- Permit submission of any additional information required by the Commission during the processing of the Petition.
- And pass such other and further orders as are deemed fit and proper in the facts and circumstances of the case.

3. Power Sector in Manipur- An Overview

3.1 Geographical Reality

The MPDCL is responsible for generation and distribution of electricity in the State of Manipur, which has a total area of 22,347 Sq KM with nine districts namely, Bishnupur, Churachandpur, Chandel, Imphal-East, Imphal-West, Senapati, Tamenglong, Thoubal and Ukhrul. Manipur occupies an area of great strategic importance in North East corner of India. Manipur is bounded by States of Nagaland in the North, Mizoram in the South, Assam in the West and sharing international boundary with Myanmar in the East. The total population of Manipur State is 27.22 lakhs as per 2011 census. MSPDCL serves about 2.59 lakhs consumers of various categories. Per capita consumption is about 162kWh for the year 2014-15.

3.2 Power Supply

a) Own Generation

The MSPDCL has own generation plants micro hydel, diesel with installed capacity of 45.11 MW. The units generated from the units and the cost is summarised in Table below:

Table 3.1: Own generation

Sl. No	Item	Unit	Approved	Actual (till Aug'15)	Estimated
1	Generation from Hydel	MU	0.33	0.14	0.33
2	Diesel	MU	0.68	0.28	0.68
3	Total Units Generated		1.01	0.42	1.01
	Cost				
4	Total Fuel Cost	Rs Crore	1.19	1.19	1.19

b) Power Purchase

The MSPDCL is mostly dependent on Central Generating Stations (CGS) located in different parts of the North Eastern Region for meeting its energy requirement. The total firm share from the Central Sector Generating Stations of NEEPCO and NHPC and Tripura is 154.30 MW as depicted in the Table below. The actual peak and off-peak availabilities are however always less because of low plant load factors.

Table 3.2: Energy Allocation from Central Generating Stations (CGS)

Sl. No	Station	Installed Capacity	FY 14-15 (Actual)	
			Manipur Allocation (MW)	AVG Allocation in %
A	NEEPCO(Hydro)			
1	Kopili I HEP	200	14.78	7.39%
2	Kopili II HEP	25	1.74	6.95%
3	Khandong HEP	50	3.28	6.56%
4	Ranganadi HEP	405	33.90	8.37%
5	Doyang HEP	75	5.90	7.87%
	Sub total	755	59.60	
B	NEEPCO(Gas Based)			
1	Assam Gas based Power Project	291	23.60	8.11%
2	Agartala Gas Turbine Power Project	84	6.98	8.31%
	Sub total	375	30.58	
C	NHPC(Loktak HEP)			
1	Purchased	105	32.62	30.12%
	Sub total	105	32.62	
D	TRIPURA			
1	Baramura (Gas Based)(Unit IV)	21	5.25	25%
2	Baramura(Gas Based)(Unit V)	21	5.25	25%
E	New Projects			
1	OTPC-(Pallatana-Unit I)	363	21.00	0.00%
2	OTPC-(Pallatana-Unit II)	363	0.00	0.00%
3	NTPC Bongaigaon Unit I	250	0.00	0.00%
4	NTPC Bongaigaon Unit II	250	0.00	NA
	Sub Total	768	31.50	
	Total	2003	154.30	

The energy draws from various central generating stations and Tripura during 2014-15 are given Table below:

Table 3.3: Energy Draws from Central Generating Stations & Tripura (MU)

Station	FY 2014-15 Estimated
NEEPCO (Hydro)	
Kopili I HEP	39.53
Kopili II HEP	5.62
Khandong HEP	5.68
Ranganadi HEP	92.37
Doyang HEP	12.30
Sub total	155.50
NEEPCO (Gas Based)	
Assam Gas based Power Project	138.67
Agartala Gas Turbine Power Project	51.15
Agartala Gas Extension	-
Sub total	189.82
NHPC (Loktak HEP)	
Purchased (20.02MW)	65.37
Free Power (12.60 MW)	41.15
Sub total	106.52
TRIPURA	
Baramura (Gas Based)- (Unit IV and V)	82.59
OTPC-Pallatana (Unit I)	152.98
OTPC-Pallatana (Unit II)	
NTPC Bongaigaon (Unit I)	0.00
NTPC Bongaigaon (Unit I)	0.00
Renewable- Solar	-
Renewable- Non Solar	-
Sub Total	235.57
Gross Power Purchase	687.41

(Source: Table 9 of ARR)

3.3 Transmission and Distribution

For the purpose of drawing power from the Central Sector generating stations and other sources in the North Eastern Region, the MSPDCL has utilized 4 Nos single circuit 132kV interstate transmission lines, two being owned by PGCIL and two by MSPCL, as detailed below.

Owned by MSPCL

- Leimatak-Ningthoukhong-Karong-Kohima-132 kV line.
- Leimatak-Jiribam-132 kV line

Owned by PGCIL

- Leimatak – Imphal - Dimapur – 132 kV line.
- Leimatak - Jiribam – 132 kV line.

Manipur, being a hilly state with its population unevenly dispersed and spread over remote corners, it is having large network of Sub-Transmission and Distribution system. The details of Distribution network, owned & operated by MSPDCL as on 31/03/2015, are given in Table below.

Table 3.4: Distribution Network as on 31.3.2015

Sl.No	Voltage	Distribution lines (Ckt. Km)		Sub-stations (nos.)	Sub- station/ transformer MVA
		Double Ckt.	Single Ckt.		
1	11kV lines	16.090	5773.78		
2	LT lines		8998.90		
3	Distribution transformers			4228	408.5
4	11 kV (UG)		0.010		
5	LT cable (UG)		0.280		

3.4 Distribution Loss

The Transmission and Distribution losses of MSPDCL system are 41.96% during the year 2014-15. The technical and commercial losses are not segregated.

3.5 Consumer Profile

The category wise consumers and corresponding energy sales during the year 2014-15 are given in Table below:

Table 3.5: Number of consumers and connected load of MSPDCL for FY 2014-15

Sl. No.	Consumer Category	FY 2014-15	
		No. of consumers (Nos.)	Connected Load (kW)
1	Kutir Jyoti	24472	1707
2	Domestic	218090	315816
3	Commercial	12100	33837
4	Public lighting	469	1016
5	Public waterworks	172	20303
6	Agriculture & Irrigation	63	1035
7	Temporary supply	12	75
8	Small and cottage industry	2308	16404
9	Medium industry	81	8096
10	Large industry	23	2433
11	Bulk supply	694	50758
12	Grant Total	258484	451479

3.6 Demand

The energy demand for the MPDCL is met by supply of power from own generation, central generating stations of North Eastern Region and Baramura Gas Based Plants in Tripura State. The annual energy requirement during FY 2014-15 was 762.04 MU.

3.7 Energy Audit

The MSPDCL is not conducting Energy Audit effectively either at the incoming stage or at the consumer end. At present, the MSPDCL is arriving at the losses by taking the input at 11kV point and compare it with energy sales at consumer end and showing the difference as distribution loss.

3.8 Energy Metering

Out of 258484 service connections as on 31.3.2015, 40977 connections are reportedly without meters. During the year 2013-14 (up to September, 2013) alone, 2664 new service connections are released without meters out of which 68 are HT service connections. Added to this 42123 service connections are with defective meters as on 31.3.2014. Metering of 11KV feeders is not completed and DTRs are not provided with meters.

3.9 Continuity of Power Supply

The Power Supply in the state has improved. The duration of power supply to the rural area is about 10 to 16 hours a day while in urban and state capital is 24 hours a day.

4. Public Hearing Process

4.1 Introduction:

On admitting the MYT ARR for FY 2016-17 to FY 2017-18 and Tariff Petition for FY 2016-17, the Commission directed the MSPDCL to make available the copies of petition to the general public, post the petition on their website and also publish the same in newspapers in abridged form and invite comments/objections/suggestions from them. One written objection is received from All Manipur Power Consumers Association, Imphal.

4.2 Public Hearing:

In order to ensure transparency in the process of determination of tariff as envisaged in the Electricity Act, 2003, Public Hearing was held at Hotel Classic Regency Hall, Imphal on 19.02.2016 from 10:00 A.M. to 12:30 P.M. During the Public Hearing those who submitted objections in writing and the participants from general public were given an opportunity to offer their views in respect of the MYT ARR for FY 2016-17 to FY 2017-18 and Tariff Petition for FY 2016-17 of MSPDCL. The list of stakeholders who attended the Public Hearing is given in Annexure-II. The Officers of MSPDCL who attended the Public Hearing responded on the issues raised by the objectors.

4.3 Proceedings of Public Hearing:

4.3.1 Objection 1

Any observation in respect of the Tariff petition filled by the MSPDCL cannot be minutely observed by the Association or by any other party or individual as the notice period is very short of 8 days.

Reply of MSPDCL

The public notice for inviting objections and comments was issued based on the directions of the Hon'ble Commission after the Commission had admitted the petitions. The public notice was issued on 15th Jan, 2016 and 14 days were given to objectors for submitting their objections/suggestions to the Commission.

Commission's observation:

The reply of MSPDCL is noted.

4.3.2 Objection 2

Copy of the Tariff petition is not readily available in the office of MSPDCL as per advice in the notice, published in local newspaper, resulting delay of getting the petition. No website also for getting the petition is given in the notice.

Reply of MSPDCL

The tariff petition was uploaded in the MSPDCL website. However the website link was not mentioned the notice. The same will be taken care of in future.

Commission's observation:

The reply of MSPDCL is noted.

4.3.3 Objection 3

GLOSSARY of the abbreviated words may be provided for general public.

Reply of MSPDCL

MSPDCL has taken care to provide the full form of abbreviated words in the text of the tariff petition along with the abbreviated words (in brackets). However, MSPDCL has taken a note of the objection and shall provide a summary of all the abbreviated words, in the next filing, for easy reference of the consumers.

Commission's observation:

The reply of MSPDCL is noted.

4.3.4 Objection 4

As per your Tariff petition, Transformation capacity of 132KV sub -station in Manipur is 317.5 MVA (page 11) whereas your connected load of MSPDCL for the FY 2015-'16 is 460.541 MW. It is a miss matching. It would create load shedding in the state.

Reply of MSPDCL

MSPDCL would like to clarify that the transformation capacity at 132kV or higher levels is not supposed to be same as the connected load of the consumers. This is because of the basic reason that all the connected load of consumers are never in active operating condition at the same time and as such the load in the electrical network at different voltage levels is much less than the sum total of connected load. Since, the transformation capacity at that voltage level is designed to meet the load/demand at that level, the same shall be less than the connected load. Further,

the transformation capacity of MSPDCL is sufficient to meet the demand of the consumers.

Commission's observation:

The reply of MSPDCL is noted.

4.3.5 Observation 5

Your Annexure B for Renewable Energy purchased (a) Solar (b) Non-Solar as mentioned in page 20 are not available in the petition.

Reply of MSPDCL

The above annexure B related to Renewable Energy, purchase of solar RECs & Non-solar REC was missed out to upload in the website. The same is produced herewith as enclosure.

Commission's observation:

The reply of MSPDCL is noted.

4.3.6 Objection 6

The calculation of Transmission charges in respect of PGCIL is undisputed whereas in case of MSPDCL is doubtful and very high as compared to PGCIL and require a thorough checking.

Reply of MSPDCL

MSPDCL has incorporated the transmission charges of MSPCL as per the separate ARR and tariff petition filed by MSPCL before the Hon'ble Commission. Further, the same shall be scrutinized in detail by the Hon'ble Commission and approved after prudence check of each of the components. The approved ARR of MSPCL shall be added in the ARR of MSPCL.

Commission's observation:

The reply of MSPDCL is noted.

4.3.7 Objection 7

Cost of employees of MSPDCL is very high even after Electricity Department, Manipur has been restructured from 1st of Feb. 2014, without indicating total numbers of employees.

Reply of MSPDCL

The number of employees of MSPDCL have been provided in the ARR and tariff petition at Page 23. The actual number of employees as on Aug'2015 is 2273. Further, the projected number of recruitments and retirements for the control period of FY 2016-17 to FY 2018-19 have also been provided. The actual number of employees in MSPDCL is less than the sanctioned strength and it is submitted that there was no major recruitment for the last 10 years i.e. prior to restructuring of Electricity Department of Manipur. As such, there is requirement now to recruit new employees for institutional strengthening of the newly incorporated company.

Commission's observation:

The reply of MSPDCL is noted.

4.3.8 Objection 8

As per Appendix 2.4 of CAG Report, number 1 (one) of 2014 it is stated that Award of Work to the second and third lowest Bidders is made by ignoring the lowest Bidder resulted an extra expenditure of the Rs. 13.82 crore in implementation of RGGVY scheme in two Districts (C.C. Pur and Imphal West). It clearly indicates that this increase in expenditure effect Tariff Rate. So kindly withdraw it from the Tariff calculation.

Reply of MSPDCL

The award to the second and third lowest bidder is done only in those circumstances when the first lowest bidder has not accepted the award of work or has not completed contractual formalities required in the specific contract. Such instances are unavoidable in specific cases and as such, the same should not be removed from the tariff calculations.

Commission's observation:

The reply of MSPDCL is noted.

4.3.9 Objection 9

Repeated fall of Towers have been observed, 1st on 25th March 2013 (Three Towers) another on 4th April 2015 (Two Towers). It loses in crores of Rupees

effecting in the Tariff Revision So, kindly withdraw it also from the Tariff calculation.

Reply of MSPDCL

Related to MSPCL.

Commission's observation:

The reply of MSPDCL is noted.

4.3.10 Objection 10

Currently the owner of the Leimakhong (Heavy Fuel) Generating Station (6 x6MW), DG Sets of 8.511 MW and Micro Hydel capacity of 0.60 MV/ are in operating conditions without indicating actual ownership.

Reply of MSPDCL

The small DG sets and the micro hydel power stations are operated only in exceptional circumstances if there is a shortage of power in peak conditions. The heavy fuel plant at Leimakhong is owned by MSPCL along with the micro hydel plant. The other small DG sets at various places around Imphal city are owned by MSPDCL.

Commission's observation:

The reply of MSPDCL is noted.

4.3.11 Objection 11

Repair and Maintenance Expenses may be outsourced for the reduction of Tariff Rate.

Reply of MSPDCL

MSPDCL would like to submit that the outsourcing of R&M expenditure would result in reduction of R&M expenses as MSPDCL is taking all efforts to maintain same within efficient norms.

Commission's observation:

The reply of MSPDCL is noted.

4.3.12 Objection 12

That, "Tariff increase" is a must no doubt but in case of Manipur neither there is efficiency of work nor transparent working style of the MSPDCL and therefore "Tariff increase" by using new slab methods in case of Domestic light and powers as well as Commercial in the following way. Domestic light and power:-In the 1st slab 1-100 Kwh/month may be changed to 1-200 Kwh/month. In the 2nd slab 101-200Kwh/month may be changed to 201-400 Kwh/month and the so on for domestic consumers and other consumers accordingly. The increased in the Tariffs slab levels are necessitated owing to the increase of the application of the Modern Electricity Appliances in the Domestic Power consumers and other sectors in the society, but remains very poor per capita income in this area compare to other part of the country.

Reply of MSPDCL

MSPDCL would like to submit that the tariff rates needs to be increased to match the huge gap between approved cost of supply and average revenue per unit. This huge gap has been created in absence of regular periodic tariff revisions in the past and as such the gap had to borne by the State Government. Now, since the companies have been restructured, it has important that the companies are financially sustainable and the dependency on State Government support needs to be restricted gradually. For this purpose, it is essential that periodic tariff revisions are made to bridge the huge gap existing between cost of supply and tariff. Moreover, the tariff in Manipur is less than most of the neighbouring states in North East India and much less than the tariff existing in other parts of India. The proposed revision in slabs would essentially imply a reduction in tariff as consumers in the higher tariff slab (say 100-200 units) will be removed to the lower tariff slab (0-100 units). This proposal is completely unjustified as there is no case for reduction of tariff. In Manipur, the domestic category is the main consuming category for electricity and the proposed modifications in the slab would have a serious impact on the revenue of the company.

Commission's observation:

The reply of MSPDCL is noted.

5. Annual Performance Review for FY 2015-16

5.1 Back Ground

The Commission had approved the ARR and tariffs for FY 2015-16 vide Tariff Order dated 27/02/2015 based on projected data by MSPDCL. Now the MSPDCL has filed petition for annual performance review for FY 2015-16 based on revised estimates. As verified from the Petition there are difference in certain items of costs as well as revenue between the approvals granted by the Commission and revised estimates now furnished.

The Commission considers it appropriate and fair to revisit and review the approvals granted by it in the tariff order for FY 2015-16 with reference to revised estimates now furnished by the MSPDCL but without altering the principles and norms adopted earlier. These matters are discussed in the succeeding paragraphs.

5.2 Energy Sales

Petitioner's Submission:

Proper estimation of category wise energy sales is essential to determine the quantum of power purchase and the likely revenue. This section examines in detail the estimated consumer category wise sales projected by the MSPDCL for FY 2015-16 vis-a-vis the approved figures in the tariff order for FY 2015-16.

Consumers and connected load

The approved number of consumers and connected load for FY 2015-16 are compared with the actual number of consumers and connected load till August'15 and the estimated data of number of consumers and connected load till March'16:

Table 5.1: No. of consumers and connected load of MSPDCL for FY 2015-16

Sl. No.	Category	Approved		Actual (till Aug'15)		Estimated (till Mar'16)	
		No. of consumer (No.)	Connected Load (KW)	No. of consumer (No.)	Connected Load (KW)	No. of consumer (No.)	Connected Load (KW)
1	Kutir Jyoti	20273	1783	25450	1754	26536	1802
2	Domestic	204601	321017	231280	323154	236488	330492
3	Commercial	12317	36158	12636	34367	12781	34897
4	Public Lighting	380	1130	457	1022	457	1027

Sl. No.	Category	Approved		Actual (till Aug'15)		Estimated (till Mar'16)	
		No. of consumer (No.)	Connected Load (KW)	No. of consumer (No.)	Connected Load (KW)	No. of consumer (No.)	Connected Load (KW)
5	PWW	190	23924	170	20077	174	19851
6	Agriculture and Irrigation	63	1795	63	1083	64	1131
7	Temp. Supply	2	68	5	65	5	54
8	Small and Cottage Industries	2898	16074	2319	16659	2609	16914
9	Medium Industries	29	7857	84	8238	84	8381
10	Large Industries	44	2616	23	2377	33	2321
11	Bulk Supply	965	56731	717	51745	785	52732
12	Total	241762	469153	273204	460541	280016	469602

As seen from the above, the total number of consumers has increased than the approved figures for most of the categories. The increase in number of consumers has been particularly high in categories of Kutir Jyoti and Domestic due to the programs of rural electrification carried out in past few years.

However, due to the revision of connected load for a number of consumers, the connected load of commercial, public lighting, Public Water Works, Agriculture and Large Industry categories is less than the approved figures for FY 2015-16. The estimated data for year-end of FY 2015-16 has been arrived by considering the actual data till August'15 and applying the trends in each of the categories for the past few years.

Units Sold

The approved figures for category wise units sold in FY 15-16 are compared with the actual data till August'15 and estimated for the complete FY 2015-16 as detailed in the table below:

Table 5.2: Category wise Units Sold/Billed

(MU)

Energy Sales	FY 2015-16 Approved	FY 2015-16 (Till Aug'15) Actual	FY 2015-16 Estimated
Kutir Jyoti	10	5.35	14.45
Domestic	317	110.83	272.29
Commercial	58	16.63	38.64
Small Industry	20	6.99	19.54
Medium Industry	3	1.35	3.04
Large Industry	20	1.95	7.27
Bulk	191	36.3	106.28
Street Lighting	7	1.7	4.52
Irrigation and Water Works	12	0.86	2.97
Public Water Works	40	6.44	16.04
Temporary	0	0	0.01
Total Energy Sales	678	188.4	485.03

It may be observed that the estimated sales for most of the categories are less than the approved figures because the availability of power in FY 2015-16 has been less than the projected availability due to delay in commissioning of upcoming plants which has resulted in supply of restricted power to the consumers, especially in areas outside Imphal.

Commission's Analysis:

Based on the actuals for FY 2015-16 (upto Aug'15) furnished by the MSPDCL the category wise energy sales approved by the Commission are as detailed in Table below:

Table 5.3: Category wise energy sales approved by the Commission for FY 2015-16 after review

Sl.No.	Energy Sales	Energy sales approved by the Commission (MU)
1	Kutir Jyoti	14
2	Domestic	272
3	Commercial	39
4	Small Industry	20
5	Medium Industry	3
6	Large Industry	7
7	Bulk	106
8	Street Lighting	5
9	Irrigation	3
10	Public Water Works	16
	Total Energy Sales	485

The Commission approves energy sales at 485 MU for FY 2015-16 after review.

5.3 Distribution Loss

Petitioner's Submission:

From FY 2014-15, the actual T&D losses have increased due to the impact of rural electrification carried in the last few years. As such, the actual losses in FY 2014-15 and FY 2015-16 (till Aug'15) are 44% and 42%, much higher than the actual losses of around 31% in FY 2013-14. However, MSPDCL is committed to bring down the increased losses due to various measures like prepaid metering, regularizing unauthorized connections, system strengthening etc. Due to these measures, the T&D losses for the current year are expected to be at 38% by the year end.

Commission's Analysis:

The erstwhile electricity department of Manipur has been unbundled into (i) Manipur State Distribution Company Ltd (MSPDCL) responsible for distribution and generation functions and (ii) Manipur Power Company Ltd (MSPCL) responsible for transmission function in the state of Manipur w.e.f 01.02.2014. As such transmission losses are shifted to MSPCL which are around 3.6% as furnished by the licensee. The Commission in its Tariff Order for FY 2014-15 while approving T&D loss for FY 2014-15 at 25% has fixed loss reduction trajectory for the period from FY 2015-16 to FY 2017-18 as follows:

FY 2015-16	24%
FY 2016-17	23%
FY 2017-18	22%

A directive was also issued to conduct voltage wise energy audit and report. Since the erstwhile EDM has been bifurcated into two companies with effect from 01.02.2014, the MSPDCL is responsible for distribution loss only. As a result the T&D losses approved by the Commission for FY 2015-16 have been segregated into transmission and distribution loss assuming transmission loss at 3.6% as detailed below:

Table 5.4: Distribution Loss for FY 2015-16 approved by the Commission

T&D Loss	Transmission	Distribution
24%	3.6%	20.4%

The Commission accordingly approves distribution loss at 20.4% for FY 2015-16 after review.

This is subject to conducting system study and energy audit. Segregation of technical and commercial losses to be completed by Sept-2016.

5.4 Energy Requirement

Based on the distribution loss energy requirement approved by the Commission in its Tariff order dated 27.02.2015 and estimated by the MSPDCL and now approved by the Commission are furnished in Table below:

Table 5.5: Energy Requirement for FY 2015-16

Particulars	Approved by the Commission	Estimated by MSPDCL	Now approved by the Commission
Sales	678	485.03	485
T&D Loss (%)	20.40%	38%	20.40%
T&D Loss (MU)	173.76	297.32	124.30
Energy Requirement	851.76	782.35	609.30

5.5 Energy Availability and Source of Power

5.5.1 Own Generation

MSPDCL is having its own generation plant such as small hydel, diesel and HFO with installed capacity of 45.11 MW. Own generation approved by the Commission in its order dated 27.02.2015, estimated by MSPDCL and now approved by the Commission after review for FY 2015-16 are furnished in Table below:

Table 5.6: Own Generation approved by the Commission for FY 2015-16

Particulars	Approved by the Commission in T.O dated 27.02.2015	Estimated by the MSPDCL	Now approved by the Commission
Hydel	0.33	0.33	0.33
Diesel	0.68	0.68	0.68
Total	1.01	1.01	1.01

The Commission approves own generation at 1.01 MU for FY 2015-16 after review.

5.5.2 Power Purchase from central generating stations

Petitioner's submission

The MSPDCL has been allocated power from various central generating stations in North Eastern Region (viz. NEEPCO, NHPC, Tripura-Baramura and OTPC- Pallatana) and NTPC– Bongaigaon for power purchase under long term PPA basis, as detailed

in Table below:

Table 5.7: Energy Allocation from Central Generating Stations for FY 2015-16

Source	Installed Capacity	FY 15-16 (Estimated)	
		Manipur Allocation (MW)	Avg . Allocation %
NEEPCO (Hydro)			
Kopili I HEP	200	14.78	7.39%
Kopili II HEP	25	1.74	6.95%
Khandong HEP	50	3.28	6.56%
Ranganadi HEP	405	33.91	8.37%
Doyang HEP	75	5.9	7.87%
New Projects			
Kameng HEP Stage I	300	0	0.00%
Kameng HEP Stage II	300	0	0.00%
Pare HEP	110	0	0.00%
Turial HEP	60	0	0.00%
Subtotal	1525	59.61	
NEEPCO (Gas Based)			
Assam Gas based Power Project	291	23.59	8.11%
Agartala Gas Turbine Power Project	84	6.98	8.31%
Agartala Gas Turbine Power Project- EXT	51	0	0.00%
New Projects			
Monarchak Gas Based Power Project	101	0	0.00%
Subtotal	527	30.57	
NHPC (Loktak HEP)			
Purchased (20.02 MW) and Free (12.60 MW)	105	31.62	30.12%
Subtotal	105	31.62	
TRIPURA			
Baramura(Gas Based)(Unit IV & Unit V)	42	10.5	25%
New Projects			
OTPC-(Pallatana- Unit I)	363	21	5.79%
OTPC-(Pallatana- Unit II)	363	21	5.79%
NTPC			
NTPC Bongaigaon Unit I	250	0	0.00%
NTPC Bongaigaon Unit II	250	0	0.00%
NTPC Bongaigaon Unit II	250	0	0.00%
Subtotal	1518	52.5	
Total	3675	174.3	

Commission's analysis:

Power purchase approved by the Commission in its order dated 27.02.2015, estimated by MSPDCL and now approved by the Commission after review for FY 2015-16 are furnished in the Table below:

Table 5.8: Power purchase approved by the Commission for FY 2015-16 after review

Source	Approved by the Commission for FY 2015-16	Actual FY 2015-16 (till Aug'15)	Estimated for FY 2015-16	Now approved by the Commission
NEEPCO (Hydro)				
Kopili I HEP	55.74	28.31	46.71	46.71
Kopili II HEP	6.05	3.66	5.8	5.8
Khandong HEP	11.3	7.07	9.32	9.32
Ranganadi HEP	88.65	65.73	92.36	92.36
Doyang HEP	17.05	6.12	15.41	15.41
Subtotal	178.79	110.89	169.61	169.61
NEEPCO(Gas Based)				
Assam Gas based Power Project	137.29	52.44	138.67	138.67
Agartala Gas Turbine Power Project	52.33	21.84	51.15	51.15
Agartala Gas Extension	0	0.85	3.83	3.83
Subtotal	189.62	75.13	193.65	193.65
NHPC (Loktak HEP)				
Purchased	101.48	31.48	130.87	130.87
Free Power	67.21	20.84	61	61
Subtotal	168.69	52.32	191.88	191.88
TRIPURA				
Baramura (Gas Based)(Unit IV and V)	64.29	34.43	82.59	82.59
OTPC - (Pallatana - Unit-I)	154.8	76.48	152.98	152.98
OTPC - (Pallatana - Unit-II)	154.8			
NTPC Bongaigaon Unit - I	90.84	0	22.71	22.71
NTPC Bongaigaon Unit-II	30.11	0	0	0
Renewable-Solar	2.58 REC	0.43 REC	2.64 REC	2.64 REC
Renewable-Non Solar	49.07 REC	0.71 REC	50.19 REC	50.19 REC
Sub Total	494.84	110.91	258.28	258.28
Gross Power Purchase	1031.94	349.25	813.41	813.41

5.6 Energy Balance

Energy Balance approved by the Commission in its order dated 27.02.2015 and estimated by MSPDCL and now approved by the Commission are furnished in Table below:

Table 5.9: Energy Balance approved by the Commission for FY 2015-16 after review

Sl.No	Particulars	Unit	Approved by the commission in T.O dated 27.02.2015	Estimated by MSPDCL	Now Approved by the Commission
A	Energy Requirement				
1	Energy Sales	MU	678	485.03	485
2	Distribution loss	%	20.40%	38.00%	20.40%
3	Distribution loss	MU	173.76	297.32	124.30
4	Energy Requirement	MU	851.76	782.35	609.30
B	Energy Availability				

Sl.No	Particulars	Unit	Approved by the commission in T.O dated 27.02.2015	Estimated by MSPDCL	Now Approved by the Commission
5	Own Generation (Net)	MU	1.01	1.01	1.01
6	Power Purchase	MU	1031.94	813.41	813.41
7	Less: External Losses	%	2.99%		3.25%
8	Less: External Losses	MU	30.86	38.00	26.44
9	Net energy available at state periphery	MU	1001.08	775.41	786.97
10	UI Purchase			246.80	246.80
11	Total			1022.21	1033.77
12	Transmission Loss @ 3.6%	MU	36.04		37.22
13	Energy Available for Distribution	MU	965.04	1022.21	996.56
14	Total Energy available (5+13)	MU	966.05	1023.22	997.57
15	Surplus (14-4)	MU	114.29	240.87	388.27
16	Surplus grossed up by 3.6% for sale outside the state	MU	118.56	240.87	402.77

While calculating energy balance the NER transmission losses are considered at 3.25% being the average weekly losses in NER during 30.03.2015 to 20.12.2015. The intra state transmission losses are considered at 3.6% as furnished by MSPDCL. UI Purchases are considered at 246.80 MU as estimated by MSPDCL. Thus the surplus works out to 402.77 MU.

5.7 Power Purchase Cost

Petitioner's submission

MSPDCL has estimated power purchase cost of Rs 320.55 Crore for purchase of 1060.22 MU including UI purchase of 246.80 MU during FY 2015-16 as detailed in Table below:

Table 5.10: Power Purchase estimated by MSPDCL for FY 2015-16

Sl No	Particulars	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	FY 2014-15			FY 2015-16		
					MU Purchased / generated (ex- bus)	All Charges Total in Rs Crs	Average rate (P/kwh)	MU Purchased / generated (ex- bus)	All Charges Total in Rs Crs	Average rate (P/kwh)
A	Own Generation	0.60	1.00	0.60						
1	Leimakhong - Micro Hydel	42.27	1.00	42.27	0.33	0.00	0.33	0.00		
2	Various Diesel Generating plants	0.00		0.00	0.68	1.19	17.50	0.68	1.19	17.50
B	CGS - NEEPCO									
1	Kopili -I HE	200.00	0.07	14.78	39.53	3.82	0.97	46.71	5.06	1.08
2	Kopili-II HE	25.00	0.07	1.74	5.62	1.04	1.85	5.80	1.48	2.56
3	Khandong HE	50.00	0.07	3.28	5.68	1.50	2.64	9.32	2.55	2.74
4	Ranganadi HE Project	405.00	0.08	33.90	92.37	26.72	2.89	92.36	37.13	4.02
5	Doyang HE Project	75.00	0.08	5.90	12.30	5.72	4.65	15.41	5.80	3.76
6	Assam GBPP	291.00	0.08	23.60	138.67	50.96	3.67	138.67	48.40	3.49
7	Agartala GTPP	84.00	0.08	6.98	51.15	21.07	4.12	51.15	23.03	4.50
8	Agartala GTPP-EXT	51.00	0.08	4.24	0.00	0.00		3.83	1.62	4.23
C	CGS - NHPC	105.00	0.18	19.02						
1	Loktak HE	0.00		12.60	64.10	20.19	1.90	130.87	22.65	1.18
2	Loktak Free Power	0.00		0.00	42.42	0.00		61.00	0.00	
D	Other	42.00	0.25	10.50						
1	Baramura GBPP Unit IV and V	363.30	0.06	21.00	82.59	24.63	2.98	82.59	24.89	3.01
2	OTPC Pallatana Unit I	363.30	0.06	21.00	152.98	36.08	2.36	152.98	53.79	3.52
3	OTPC Pallatana Unit II	0.00		0.00	0.00	0.00		0.00	0.00	
E	New Plants	250.00	0.05	13.33						
1	NTPC Bongaigaon Unit I	250.00	0.05	13.33	0.00	0.00		22.71	7.45	3.28
2	NTPC Bongaigaon Unit II	250.00	0.05	13.33	0.00	0.00		0.00	0.00	
3	NTPC Bongaigaon Unit III	101.00	0.04	4.04	0.00	0.00		0.00	0.00	
4	Monarchak Gas Based Power Project Neepco	300.00	0.02	7.00	0.00	0.00		0.00	0.00	
5	Kameng HEP Stage I	300.00	0.02	7.00	0.00	0.00		0.00	0.00	
6	Kameng HEP Stage II	110.00	0.04	4.40	0.00	0.00		0.00	0.00	
7	Pare HEP	60.00	0.04	2.40	0.00	0.00		0.00	0.00	
8	Tuirial HEP	1000.00	0.02	21.50	0.00	0.00		0.00	0.00	

SI No	Particulars	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	FY 2014-15			FY 2015-16		
					MU Purchased / generated (ex- bus)	All Charges Total in Rs Crs	Average rate (P/kwh)	MU Purchased / generated (ex- bus)	All Charges Total in Rs Crs	Average rate (P/kwh)
9	Lower Subansiri Stage I	1000	2.15%	21.5	0	0		0	0	
10	Lower Subansiri Stage II	0		0	0	0		0	0	
	Renewable-Solar	0		0	0	0		2.64	0.92	3.5
	Renewable-Non Solar	0		0.04	0	0		50.19	7.53	1.5
F	Interstate Transmission loss	0		192.47	24.75			38		
	Sub Total	0		0.05	688.42	192.92	2.8	814.42	243.49	2.99
	Power available at State Periphery	0		0	662.66			776.42		
G	Power Purchased under UI/ Trading	0		0	176.83	45.67		246.8	77.06	3.12
	TOTAL	0		0	839.5			1023.22		
H	Power Sold under UI/ Trading	0		0	50.78			240.87		
	Supplementary bills/Arrear bills	0				16.02			0	
I	Total energy input to Distribution Company system (E-F)				788.71	254.61		782.35	320.55	

Commission's analysis:

As verified from station wise average rates, the rates adopted by MSPDCL are more than the rates projected for FY 2016-17. As such the rates projected for FY 2016-17 are adopted and power purchase cost worked out for purchase of 1060.22 MU as estimated by MSPDCL as detailed in Table below:

Table 5.11: Power Purchase Cost approved by Commission for FY 2015-16 after review

Source (MUs)	Quantity of Power Purchased (MU)	Average Rate (Rs/kWh)	Power Purchase Cost (Rs. Cr)
NEEPCO(Hydro)			
Kopili I HEP	46.71	0.97	4.53
Kopili II HEP	5.80	1.84	1.07
Khandong HEP	9.32	2.64	2.46
Ranganadi HEP	92.36	2.96	27.34
Doyang HEP	15.41	4.33	6.67
Sub Total	169.60		42.07
New Projects			
Kameng HEP Stage I			
Kameng HEP Stage II			
Pare HEP			
Turial HEP			
Sub Total	0.00	0.00	0.00
NEEPCO(Gas Based)			
Assam Gas based Power Project	138.67	3.85	53.39
Agartala Gas Turbine Power Project	51.15	4.23	21.64
Agartala Gas Turbine Power Project- EXT	3.83	4.23	1.62
Sub Total	193.65		76.64
New Projects			
Monarchak Gas Based Power Project			
Sub Total	0.00		0.00
NHPC(Loktak HEP)			
Purchased (20.02 MW)	117.76	2.00	23.55
Free Power (12.60 MW)	74.12	0.00	0.00
Sub Total	191.88		23.55
TRIPURA			
Baramura(Gas Based)(Unit IV & Unit V)	82.59	3.01	24.86
New Projects			
OTPC- (Pallatana-Unit I)	152.98	2.74	41.92
OTPC- (Pallatana-Unit II)			
Sub Total	235.57		66.78
NTPC			
NTPC Bongaigaon Unit I	22.71	3.00	6.81
NTPC Bongaigaon Unit II			
NTPC Bongaigaon Unit II			
Sub Total	22.71		6.81
Renewable Solar			0.92
Non Solar			7.52
Total Power	813.41		224.30
UI Purchase	246.8	3.12	77.00

Source (MUs)	Quantity of Power Purchased (MU)	Average Rate (Rs/kWh)	Power Purchase Cost (Rs. Cr)
Grand Total	1060.21		301.30

The Commission approved power purchase cost of Rs 301.30 Crore for purchase of 1060.21 MU including UI purchase of 246.80 MU and free power of 74.12 MU for FY 2015-16 after review.

5.8 Transmission Charges

The MSPDCL has estimated intra state transmission charges at Rs 41.37 Crore for FY 2015-16. The Commission has approved Transmission ARR at Rs 24.79 Crore for FY 2015-16 after review. As such the same are considered as intra-state transmission charges for FY 2015-16. The PGCIL charges are however considered at Rs 41.37 Crore as estimated by MSPDCL. Thus the total transmission charges approved by the Commission for FY 2015-16 as detailed in Table below:

Table 5.12: Transmission charges approved by the Commission for FY 2015-16 after review

Sl.No	Particulars	Approved by the Commission in T.O dated 27.02.2015	Estimated by MSPDCL	Now Approved by the Commission
1	MSPCL Transmission Charges	41.98	41.37	24.79
2	PGCIL Transmission Charges	43.76	41.37	41.37
	Total	85.74	82.74	66.16

The Commission approves transmission charges at Rs 66.16 Crore for FY 2015-16 after review.

5.9 Employee Cost

The employee cost approved by the Commission for FY 2015-16 in its order dated 27.02.2015 and estimated by the MSPDCL and now approved by the Commission are furnished in Table below:

Table 5.13: Employee Cost approved by the Commission for FY 2015-16 after review

Employees Cost	Approved	Actual (till Aug'15)	Estimated FY 2015-16
Pay Band	27.49	11.4	27.13
Grade Pay	6.47	2.1	5.98
D.A.	28.63	10.26	30.1
H.R.A.	3.25	1.13	3.09
SCA	3.12	1.08	2.71
TA	1.97	0.69	1.73
Training Cost	1.06	0.4	1.06
NPS Contribution	0.25	0.1	0.25
Total	72.25	27.16	72.06
Medical	0.5	0.5	0.5
Others	3.5	3.48	3.48
Grand Total	76.25	31.13	76.03
Average number of employees	2306	2273	2273

Commission's analysis

The actual expenses during FY 2014-15 are Rs. 72.77 Crore. The Commission considers an escalation of 3.25% over the actual expenses during FY 2014-15 which works out to Rs. 75.14 Crore.

The Commission approves employee cost at Rs 75.14 Crore as against Rs. 76.03 Crore estimated by MSPDCL for FY 2015-16 after review.

5.10 R&M Expenses

R&M expenses approved by the Commission for FY 2015-16 in its order dated 27.02.2015 and estimated by the MSPDCL and now approved by the Commission are furnished in Table below:

Table 5.13: R&M Expenses approved by the Commission for FY 2015-16 after review

Sl. No	R&M Cost	Approved	Actual (till Aug'15)	Estimated FY 2015-16	Now Approved by the Commission
1	Grand Total	4	2.24	5.38	5.38

The Commission approves R&M expenses at Rs 5.38 Crore as estimated by MSPDCL for FY 2015-16 after review.

5.11 Administration and General Expenses

The A&G expenses for FY 2015-16 approved by the Commission and estimated by

the MSPDCL and now approved by the Commission are furnished in Table below:

Table 5.14: A&G Expenses approved by the Commission for FY 2015-16 after review

Sl. No	A&G Cost	Approved	Actual (till Aug'15)	Estimated FY 2015-16	Now Approved by the Commission
1	Grand Total	1.25	1.51	2.42	2.42

The Commission approves Rs 2.42 Crore for Administration and General Expenses as estimated by MSPDCL for FY 2015-16 after review.

5.12 Depreciation

The Commission in its order dated 27.02.2015 had approved depreciation of Rs 0.61 Crore for FY 2015-16. The MSPDCL has now estimated Rs 0.37 Crore without providing detailed calculation.

Commission Analysis:

GFA as per opening balance and additions during FY 2014-15 and FY 2015-16 are considered as furnished by MSPDCL and depreciation worked out at effective rate of 2.77% and considered 1% of total assets stated to be funded through equity as stated by MSPDCL. Thus the depreciation worked out to 0.20 Crore as detailed in Table below:

Table 5.15: Depreciation approved by the Commission for FY 2015-16 after review

Sl.No	Particulars	FY 2014-15	FY 2015-16
1	Opening GFA	553.85	661.74
2	Additions	107.89	125.01
3	Closing GFA	661.74	786.75
4	Average GFA	607.80	724.25
5	Average rate of Depreciation	2.77%	2.77%
6	Depreciation	17	20
7	1% of Depreciation	1.70	0.20

The Commission approves depreciation of Rs 0.20 Crore for FY 2015-16 after review.

5.13 Interest and Finance Charges

The MSPDCL has not claimed interest and finance charges.

5.14 Interest on Working Capital

Interest on working capital is worked out as per JERC M&M (MYT) Regulations 2014, based on approved costs. The rate of interest is considered at 14.75% being SABR as

on 01.04.2015 as detailed in Table below:

Table 5.16: Interest on working capital approved by the Commission for FY 2015-16 after review

Sl.No	Particulars	FY 2015-16	
		Total Cost	One Month Cost
1	Employee Cost	75.14	6.26
2	R&M Expenses	5.38	0.45
3	A&G Expenses	2.42	0.20
4	Maintenace of Spares @1% of GFA	661.74	6.62
5	Receivables equivalent to one month	222.12	18.51
6	Total	967.89	32.04
7	Rate of Interest	14.75%	14.75%
8	Interest on Working Capital	142.76	4.73

The Commission approves interest on working capital at Rs 4.73 Crore for FY 2015-16 after review.

5.15 Provision for bad debts

The Commission in its order dated 27.02.2015 had approved provision for bad debts at Rs 3.00 Crore for FY 2015-16. The MSPDCL has estimated the same amount.

The Commission approves Rs 3.00 Crore towards provision for bad debts for FY 2015-16 after review.

5.16 Return on Equity

The Commission in its Order dated 27.02.2015 had approved RoE at Rs 1.40 Crore for FY 2015-16. The MSPDCL has now estimated RoE at Rs 1.94 Crore including MAT at 20.01%.

The Commission approves RoE at Rs 1.94 Crore for FY 2015-16 after review.

5.17 Non-Tariff Income

The Commission in its order dated 27.02.2015 had approved non-Tariff Income at Rs. 0.32 Crore for FY 2015-16. The MSPDCL has estimated non-tariff income at Rs. 0.33 Crore.

The Commission approves non-tariff income at Rs. 0.33 Crore for FY 2015-16 after review.

5.18 Aggregate Revenue Requirement

Aggregate Revenue Requirement approved by the Commission in its order dated 27.02.2015 and estimated by the MSPDCL and now approved by the Commission are furnished in table below:

Table 5.17: Aggregate Revenue Requirement approved by the Commission for FY 2015-16 after review

Sl. No	Particulars	Approved in T.O	Estimated by MSPDCL	Approved by the Commission
1	Fuel Cost	1.19	1.19	1.19
2	Power purchase cost	295.97	319.36	301.30
3	Arrears of Power Purchase bills	15.00	0.00	-
4	Transmission charges	85.74	82.74	66.16
5	Employee costs	76.25	76.03	75.14
6	Repair & Maintenance expense	4.00	5.38	5.38
7	Adm & Gen. Expenses	1.25	2.42	2.42
8	Depreciation	0.61	0.37	0.20
9	Interest & Finance Charges	0.39	0.00	-
10	Interest on Working capital	12.50	9.72	4.73
11	Provision for bad debts	3.00	3.00	3.00
	Total Cost	495.90	500.20	459.52
12	Add: Return on Equity / ROE	1.40	1.94	1.94
13	Less: Non Tariff income	0.32	0.33	0.33
	Aggregate Revenue Requirement	496.98	501.81	461.13

5.19 Revenue from Revised Tariff for FY 2015-16

Based on energy sales new approved by the Commission and surplus power arrived the revenue worked out to be Rs. 347.78 Crore as detailed below:

Table 5.18: Revenue from revised tariff for FY 2015-16 after review

Sl. No	Category	Energy Sales (MU)	Average Rate (Rs. / kWh)	Revenue (Rs. Crores)
A	LT Supply			
1	Kutir Jyoti	14	1.70	2.38
2	Domestic	272	4.32	117.57
3	Commercial	34	6.20	20.86
4	Public Lighting	5	5.33	2.66
5	Public Water Works	4	-	2.08
6	Agriculture	1	-	0.32
7	Small Industries	20	-	7.35
8	Total LT	350		153.22
9	Commercial	5	-	2.91
10	Public Water Works	12	-	8.19
11	Agriculture	2	-	0.76
12	Medium Industries	3	-	2.14
13	Large Industries	7	-	3.57
14	Bulk Supply	106	4.84	51.33

Sl. No	Category	Energy Sales (MU)	Average Rate (Rs. / kWh)	Revenue (Rs. Crores)
15	Total HT	130	-	68.90
16	Total LT + HT	485	-	222.12
17	UI Sales	402.77	3.12	125.66
	Total	887.77		347.78

5.20 Revenue Gap

Revenue gap approved by the Commission in its order dated 27.02.2015 and estimated by the MSPDCL and now approved by the Commission are furnished in table below:

Table 5.19: Revenue gap approved by the Commission for FY 2015-16 after review

Sl. No	Category	Approved by the Commission	Estimated by the MSPDCL	Now approved the Commission
1	Net ARR	496.98	501.81	461.13
2	Revenue from Sale of power	319.27	237.10	347.78
3	Gap	177.71	264.71	113.35

5.21 Government subsidy

The Commission in its Order dated 27.02.2015 had proposed Government subsidy of Rs. 177.71 Crore for FY 2015-16. Now after review the same has been reduced to Rs. 113.35 Crore as detailed supra.

6. Analysis of Aggregate Revenue Requirement for control period FY 2016-17 and FY 2017-18

6.1 Energy Sales

Proper estimation of category wise energy sales is essential to determine the quantum of power purchase and the likely revenue. This section examines in detail the consumer category wise sales projected by the MSPDCL in its petition for assessment of ARR.

6.2 Consumer Categories

The MSPDCL serves about 2,58,484 consumers as on 31.03.2015 in its licensed area and the consumers are categorized as under:

- a) Kurtir Joyti(LT)
- b) Domestic(LT)
- c) Commercial(LT&HT)
- d) Public Lighting(LT)
- e) Agricultural(LT&HT)
- f) Public water works(LT&HT)
- g) Cottage & Small industry(LT)
- h) Medium industry(HT)
- i) Large industry(HT)
- j) Bulk supply(HT)

The MSPDCL serves the consumers at different voltages according to the consumer's requirement. In the categories, of Commercial, Agriculture and public water works there are LT consumers as well as HT consumers, while medium Industry, Large Industry and Bulk Supply categories are under HT only and Kurti Jyoti and domestic categories are under LT only.

6.3 Growth of Consumers and Connected Load

Petitioner's submission

The MSPDCL has furnished the category wise number of consumers and their connected load for the years 2014-15 (actuals) and estimated for FY 2015-16 and

projected for FY 2016-17 and FY 2017-18 as detailed in Table below:

Table 6.1: No. of consumers and connected load of MSPDCL

Category	PY 2014-15		CY 2015-16		FY 2016-17		FY 2017-18	
	No. of Consumers	Connected Load (MW)	No. of Consumers	Connected Load (MW)	Projection of no. of Consumers	Projection of Conn. Load (MW)	Projection of no. of Consumers	Projection of Conn. Load (MW)
Kutir Jyoti	24,472	1,707	27,343	1,802	30,550	1,902	34,134	2,008
Domestic	218,090	315,816	243,674	330,492	272,260	348,855	304,198	368,237
Commercial	12,100	33,837	12,781	34,897	13,501	36,836	14,262	38,882
Public Lighting	469	1,016	457	1,027	446	1,084	435	1,144
Public Water-works	172	20,303	174	19,851	176	20,954	178	22,118
Agri & Irrigation	63	1,035	64	1,131	65	1,194	66	1,261
Cottage & Small Industries	2,308	16,404	2,609	16,914	2,950	17,853	3,335	18,845
Bulk	694	50,758	785	52,732	887	55,662	1,003	58,755
Temporary	12	75	5	54	2	57	1	61
Medium Industries	81	8,096	84	8,381	87	8,847	91	9,338
Large Industries	23	2433	29	2321	38	2449	48	2586
TOTAL	258,484	451,479	288,006	469,602	320,962	495,694	357,751	523,235

(Source: Format 1 & additional information)

6.4 Overall Approach to Sales Projection

Petitioner's Submission:

The MSPDCL has furnished the category wise actual sales during FY 2011-12 to FY 2015-16 (up to Aug'15) as detailed below.

Table 6.2: Consumer category wise energy sales from FY 11-12 to FY 15-16 (Till Aug'15) (MU)

Energy Sales	FY 11-12 Actuals	FY 12-13 Actuals	FY 13-14 Actuals	FY 14-15 Actuals	FY 15-16 (till Aug-15)
Kurti Jyoti		7.94	12.50	12.69	5.35
Domestic	173.72	195.81	202.03	243.95	110.83
Commercial	27.20	30.82	34.39	35.83	16.63
Public lighting	4.08	4.78	5.49	4.40	1.70
Public water works	20.17	23.60	28.25	16.99	6.44
Agriculture & Irrigation	0.83	1.59	3.12	2.41	0.86
Cottage & Small Industries	14.48	17.24	14.86	18.13	6.99
Bulk	68.48	80.45	97.61	96.86	36.30
Temporary	1.10	0.54	0.09	0.03	0.00
Medium Industry	2.92	2.36	2.37	2.79	1.35

Energy Sales	FY 11-12 Actuals	FY 12-13 Actuals	FY 13-14 Actuals	FY 14-15 Actuals	FY 15-16 (till Aug-15)
Large Industry	11.86	13.93	14.38	8.22	1.95
Total Energy Sales	324.83	379.04	415.09	442.29	188.40

As can be seen, overall energy sales are significantly dependent on the domestic consumers to the extent of around 50%. Energy sold to various consumer categories over the past 3 years has grown at around 11% per annum on cumulative average basis owing to the increased availability of power in the state and growing demand for power within the state. The MSPDCL is of the view that the factors affecting the actual consumption of electricity are numerous and often beyond the control of the utility including factors such as Government Policy, economic, climate and weather conditions and force majeure events like natural disasters, etc. MSPDCL therefore, for projecting the category-wise consumption for the FY 2016-17, FY 2017-18 has considered the past growth trends of last 4 years in each of the consumer category sales and the availability of supply. The analysis of the growth rate lends insight into the behaviour of each category and hence formed the basis of forecasting the sales for each category. On the other hand, it is important to note that the past trend of supply shows the trend of the restricted demand which can increase or decrease based on the new projected availability.

1. It is to be noted that the energy availability for Manipur in FY 2015-16 will increase as MSPDCL's share from NHPC Loktak HEP has been increased by 8MW (Non-Free category) and Unit I of Bongaigaon and NEEPCO Monarchak Gas Based Power Projects are expected towards the end of the current year. As such, for projecting sales for FY 2015-16, the past year trend of increase in sales is considered which is based on the similar restricted demand scenario. However, for FY 2016-17 and FY 2017-18 the availability is going to increase because of the new generation capacities expected to be available from NTPC Bongaigoan Unit II and III. In addition to that MSPDCL is also expecting power from Kameng HEP Stage I and Pare HEP in FY 2016-17 and from Kameng HEP Stage II and Tuirial HEP in FY 2017-18. Also MSPDCL's share from NHPC Loktak HEP has been increased by 8 MW (Non-Free category). Because of new generation capacity, the restriction in demand would be relaxed and the sale is

expected to be increased accordingly. The supply of additional power would imply an increased burden on the revenue expenditure gap of the company which needs to be met by rational increase in retail supply tariff as well as necessary subsidy support from the State Government, as detailed in the subsequent sections. MSPDCL is committed to improve its performance of revenue collection and bridge the gap of revenue and expenditure in the coming years. However, in the initial years, MSPDCL shall require the necessary subsidy support as well as rational increase in tariff to meet the increased quantum of power supply and sales.

- For estimating the growth in restricted sales due to increase in number of registered consumers, increase in billing efficiency and increase in load factor of consumers, previous years Compounded Annual Growth Rate (CAGR) trends have been considered for each category of consumer for the past three years (FY 2011-12 to FY 2014-15) i.e. 3 year CAGR, 2 year CAGR or 1 year CAGR. For FY 2016-17, additional growth is assumed on account of increased availability for various selected categories. The growth rate assumed for the MYT period and the past three year CAGR is tabulated below for reference.

Table 6.3 Category wise Trend of Units Billed

Consumer Categories (Trend in units Sold)	3 yr CAGR	2 yr CAGR	1 yr CAGR	Growth Rate assumed for increase in restricted demand	Growth rate assumed for FY 15-16	Growth rate assumed for FY 16-17	Growth rate assumed for FY 17-18
Kurti Jyoti	13.89%	12.23%	19.63%	2yr	13.89%	52.49%	21.47%
Domestic	11.98%	11.62%	20.75%	2yr	11.62%	49.45%	19.05%
Commercial	9.63%	7.83%	4.19%	2yr	7.83%	44.38%	15.01%
Public lighting	2.58%	-4.00%	-19.80%	1Yr	2.58%	2.58%	2.58%
Public water works	-5.56%	-15.15%	-39.87%	2yr	-5.56%	-5.56%	-5.56%
Agriculture & Irrigation	42.79%	23.25%	-22.82%	2yr	23.25%	23.25%	23.25%
Cottage & Small Industries	7.77%	2.54%	22.01%	2yr	7.77%	44.30%	14.95%
Bulk	12.25%	9.72%	-0.77%	2yr	9.72%	46.91%	17.03%
Temporary	-70.33%	-77.05%	-68.21%	3Yr	-68.21%	-68.21%	-68.21%
Medium Industry	-1.48%	8.81%	17.70%	1Yr	8.81%	8.81%	8.81%
Large Industry	-11.51%	-23.20%	-42.86%	1Yr	-11.51%	18.48%	-5.62%

Consumer Categories (Trend in units Sold)	3 yr CAGR	2 yr CAGR	1 yr CAGR	Growth Rate assumed for increase in restricted demand	Growth rate assumed for FY 15-16	Growth rate assumed for FY 16-17	Growth rate assumed for FY 17-18
Total Energy Sales	10.84%	8.02%	6.55%		10.84%	45.23%	17.23%

- a) For domestic category which is the major consumption category in Manipur contributing 50% of sales (approx.) in the state, MSPDCL projected energy sales for FY 2015-16 at 2 year CAGR of 11.62% over actual sales during FY 2014-15. For FY 2016-17 to FY 2017-18 a growth rate of 49.45%, 19.05% adopted over estimated sales for FY 2015-16.
- b) For commercial, 2 year CAGR on 7.83% applied over actual sales during FY 2014-15 to estimate sales for FY 2015-16 and for FY 2016-17 to FY 2017-18 a growth rate of 44.38% and 15.01% adopted over estimated sales for FY 2015-16.
- c) For small industry two year CAGR of 7.77% applied over actual sales of FY2014-15 for estimate sales for 2015-16 and for FY 2016-17 to FY 2017-18 a growth rate of 44.30%, 14.95% applied over projected sales of FY 2015-16.
- d) For medium industry growth rate of 8.81% (1 year CAGR) applied over actual sales of 2014-15 to estimate sales for 2015-16 and for projecting sales for FY 2016-17 to FY 2017-18.
- e) For Large industry a growth rate of -11.51% (Y-O-Y growth) applied over actual sales of 2014-15 to estimate sales for 2015-16 and for FY 2016-17 to FY 2017-18 a growth rate of 18.48% and 5.64% applied over FY 2015-16.
- f) For Bulk Supply a growth rate of 9.72% (2 Year CAGR) applied over actual sales of 2014-15 to estimate sales for 2015-16 and for FY 2016-17 to FY 2017-18 a growth rate of 49.61% and 17.03% applied overestimated sales of 2015-16.
- g) For other categories like irrigation and agriculture, public water works and public

lighting two year CAGR of 23.25%, 5.56% (2 year CAGR), 2.58% (Y-O-Y) have been applied respectively.

The actual sales of FY 2014-15 estimated sales for FY 2015-16 and projected sales for FY 2016-17 and FY 2017-18 proposed by MSPDCL are furnished in Table below:

Table 6.4: Energy Sales Projected by MSPDCL

Energy Sales	(MU)			
	FY 14-15 Actuals	FY 15-16 Estimated	FY 16-17 Projected	FY 17-18 Projected
Kurti Jyoti	12.69	14.45	22.04	26.77
Domestic	243.95	272.29	406.92	484.44
Commercial	35.83	38.64	55.78	64.16
Public lighting	4.40	4.52	4.63	4.75
Public water works	16.99	16.04	15.15	14.31
Agriculture & Irrigation	2.41	2.97	3.66	4.51
Cottage & Small Industries	18.13	19.54	28.20	32.41
Bulk	96.86	106.28	156.13	182.72
Temporary	0.03	0.01	0.00	0.00
Medium Industry	2.79	3.04	3.30	3.59
Large Industry	8.22	7.27	8.61	8.13
Total Energy Sales	442.29	485.03	704.43	825.79

(Source: Table-4 of Petition)

6.5 Commission’s Analysis of Energy Sales Projection

The MSPDCL has projected the energy sales for different categories of consumers for FY 2016-17 to FY 2017-18 as given in Table 6.4 above. As per the tariff schedule commercial, public water works, and irrigation agricultural categories are mix of HT and LT categories and domestic, public lighting and cottage and small industries are under LT category, while medium Industry, Large Industry and Bulk Supply are under HT category. The energy sales are not following any definite trend. However, based on CAGR of actual sales during FY 2011-12 to FY 2014–15, the projected sales for FY 2016-17 to FY 2017-18 are arrived as discussed below.

Table 6.5: Compound Annual Growth Rate approved by the Commission

Energy Sales	FY 11-12 Actuals	FY 12-13 Actuals	FY 13-14 Actuals	FY 14-15 Actuals	3 Year CAGR	2 year CAGR	Y-O-Y CAGR
Kurti Jyoti	0	7.94	12.50	12.69		26.42%	1.52%
Domestic	173.72	195.81	202.03	243.95	11.98%	11.62%	20.75%
Commercial	27.20	30.82	34.39	35.83	9.62%	7.82%	4.19%
Public lighting	4.08	4.78	5.49	4.40	2.55%	-4.06%	-19.85%
Public water	20.17	23.60	28.25	16.99	-5.56%	-15.15%	-39.86%

Energy Sales	FY 11-12 Actuals	FY 12-13 Actuals	FY 13-14 Actuals	FY 14-15 Actuals	3 Year CAGR	2 year CAGR	Y-O-Y CAGR
works							
Agriculture & Irrigation	0.83	1.59	3.12	2.41	42.66%	23.11%	-22.76%
Cottage & Small Industries	14.40	17.24	14.86	18.13	7.98%	2.55%	22.01%
Bulk	68.48	80.45	97.61	96.86	12.25%	9.73%	-0.77%
Medium Industry	2.92	2.36	2.37	2.79	-1.51%	8.73%	17.72%
Large Industry	11.86	13.93	14.38	8.22	-11.50%	-23.18%	-42.84%
Total Energy Sales	324.76	379.06	415.09	442.30	10.85%	8.02%	6.56%

a) Kutir Jyoti

MSPDCL has projected energy sales of 22.04MU and 26.77MU for FY 2016-17 and FY 2017-18 considering actual sales of FY 2014-15 at 12.69 MU. The 2 year CAGR is 26.42% while Y-O-Y CAGR is 1.52% there is sudden growth of consumption during FY 2013-14 over the previous year and it is stabilised in FY 2014-15. As such Y-O-Y growth of 1.52% is considered reasonable. However as per the definition of Kutir Jyoti category, if the total consumption in the past three months exceeds 45 kWh the connection should be converted to Domestic. Thus consumption worked out based on 45W per connection on total number of connections works out to 15MU.

The Commission approves energy sales under Kutir Jyoti category at 15 MU for FY 2016-17 and for FY 2017-18 at 17 MU as against MSPDCL projection of 22.04 MU and 26.77 MU respectively.

b) Domestic

MSPDCL has projected energy sales of 406.92MU and 484.44MU for FY 2016-17 and FY 2017-18 based on actual energy sales during FY 2014-15 at 243.95 MU. Domestic category is the major consumption category in Manipur, contributing about 50% of total energy sales in the State. The three years CAGR (FY-12 to FY-15) is 11.98% while two year CAGR (FY-13 to FY-15) is 11.62% and Y-O-Y growth rate (FY-14 to FY-15) is 20.75%. Y-O-Y growth rate of 20.75% is considered

reasonable. However, considering improved power supply into state and the normal increase in per capita consumption level and increased utilization of electrical appliances, the sales projected by the MSPDCL are considered.

Considering the improved power supply position and consumer growth, the Commission approves the energy sales to the domestic category at 406MU and 484MU for the FY 2016-17 and FY 2017-18 respectively as against MSPDCL projection of 406.92 MU and 484.44 MU.

c) Commercial

The MSPDCL projected energy sales of 55.78 MU and 64.16 MU for FY 2016-17 and FY 2017-18 for this category based on actual sales during FY 2014-15 at 35.83 MU. The 3 year CAGR (FY-12 to FY-15) 9.62% and the 2 year CAGR (FY-13 to FY-15) is 7.82% and Y-O-Y growth rate is 4.19%. Considering the past growth and improvement in availability of power, it is considered reasonable to consider 3 year CAGR PA on the actual consumption during FY 2014-15. However in view of increased number of consumers the sales projected by MSPDCL are considered as detailed below.

Particulars	FY 2016-17	FY 2017-18
LT	50	58
HT	4	6
Total	54	64

The Commission approves the energy sales for commercial category at 54 MU and 64 MU for FY 2016-17 and FY 2017-18 respectively against MSPDCL projection of 55.78 MU and 64.16 MU.

d) Cottage and Small Industry

The MSPDCL has projected energy sales in this category at 28.20MU for and 32.41MU for FY 2016-17 and FY 2017-18 respectively based on actual sales during FY 2014-15 at 18.13MU. The three-year CAGR (FY-12 to FY-15) is 7.98% while 2 year CAGR (F-13 to FY-15) is 2.55% and Y-O-Y growth (FY-14 to FY-15) is 22.01%. As seen from past sales there is a drop in sales during FY 2013-14. MSPDCL has not furnished reasons for the drop in FY 2013-14. The Commission considers it reasonable to adopt 3 year CAGR per annum over actual sales during

FY 2014-15. However due to increased number of consumers and improvement supply of power the sales projected by MSPDCL are considered.

The Commission approves the energy sales of 28MU and 32MU for FY 2016-17 and FY 2017-18 respectively for this category against MSPDCL projection of 28.20MU and 32.41MU.

e) Medium Industry

The MSPDCL has projected energy sales of 3.30MU and 3.59MU for FY 2016-17 and FY 2017-18 respectively for this category. Actual sales during FY 2014-15 are 2.79MU. There is negative growth during 2012-13 and 2013-14 compared to 2011-12 and started increasing since 2014-15. The MSPDCL has not furnished reason for such negative growth. Commission feels it reasonable to consider 2 year CAGR per annum over the actual sales during FY 2014-15.

The Commission approves the energy sales of 4MU and 4MU for FY 2016-17 and FY 2017-18 respectively for this category as against MSPDCL projection of 3.30 MU and 3.59MU.

f) Large Industry

The MSPDCL has projected energy sales of this category at 8.61MU and 8.13MU for FY 2016-17 and FY 2017-18 respectively. The actual sales during FY 2014-15 were 8.22MU. There is a drop in sales during FY 2014-15 and the MSPDCL has not explained reasons for such drop. The sales during FY 2011-12 to FY 2013-14 are steadily increased. The sales during FY 2013-14 are 14.68MU as such it is considered reasonable to project sales at 16MU and 17MU for FY 2016-17 and FY 2017-18 respectively.

The Commission approves the energy sales of 16MU and 17MU for this category for the year FY 2016-17 and FY 2017-18 respectively as against 8.61MU and 8.13MU projected by the MSPDCL.

g) Bulk Supply

The MSPDCL projected energy sales of 156.13MU and 182.72MU for FY 2016-17 and FY 2017-18 respectively for Bulk Supply category. The actual sales during FY

2014-15 are 96.86MU. The 3 years CAGR (FY-12 to FY-15) is 12.25% while 2 year CAGR (FY-13 to FY-15) is 9.73% and Y-O-Y growth (FY-14 to FY-15) is (-)0.77%. Substantial growth is observed since FY 2011-12. The Commission considers it reasonable to adopt 3 year CAGR per annum over actual sales during FY 2014-15. However in view of increased number of connections the sales projected by MSPDCL are considered.

The Commission approves the energy sales of 156MU and 182MU for FY 2016-17 and FY 2017-18 against 156.13MU and 182.72MU projected by MSPDCL.

h) Public Lighting

The MSPDCL projected energy sales for this category at 4.63MU and 4.75MU for FY 2016-17 and FY 2017-18 respectively. There is drop in energy consumption during FY 2014-15. The MSPDCL has not furnished reasons for decrease in consumption during FY 2014-15. There is no reason for negative growth in view of better public lighting in all towns and villages. The consumption during FY 2013-14 is 5.49MU hence a consumption of 6MU and 7MU are considered reasonable for FY 2016-17 and FY 2017-18 respectively.

The Commission approves the energy sales for Public lighting at 6MU and 7MU for FY 2016-17 and FY 2017-18 respectively as against MSPDCL projection of 4.63MU and 4.75MU.

i) Irrigation & Agriculture

The MSPDCL has projected energy sales of 3.66MU and 4.51MU for FY 2016-17 and FY 2017-18 respectively. The actual sales during FY 2014-15 are 2.41MU. The sale during FY 2013-14 suddenly increased and dropped during FY 2014-15. The MSPDCL has not furnished reasons for such drop. The 3 year CAGR (FY-12 to FY-15) is 42.66%, 2 year CAGR is 23.11%. and Y-O-Y growth rate is (-)22.76%. It is considered reasonable to adopt 2 years CAGR PA over FY 2014-15 to project sales during FY 2016-17 and FY 2017-18 as detailed below.

Particulars	FY 2016-17	FY 2017-18
LT	1	2
HT	3	3
Total	4	5

The Commission approves the energy sales for irrigation & agricultural category at 4MU and 5MU for FY 2016-17 and FY 2017-18 respectively as against 3.66MU and 4.51MU projected by MSPDCL.

j) Public Water Works

The MSPDCL has projected energy sales at 15.15MU and 14.31MU for FY 2016-17 and FY 2017-18 for this category. The actual sales during FY 2014-15 are 16.99MU. The year wise consumption is erratic for which reasons are not furnished by MSPDCL. Considering the growing demand, it is considered reasonable to project sales at 18MU and 19MU for FY 2016-17 and FY 2017-18 respectively as follows.

Particulars	FY 2016-17	FY 2017-18
LT	3	4
HT	15	15
Total	18	19

The Commission therefore approves the energy sales of 18MU and 19MU for FY 2016-17 and FY 2017-18 for public water works category respectively as against 15.15MU and 14.31MU projected by MSPDCL

6.6 Category wise Energy Sales Approved

The category wise energy sales for the year FY 2016-17 and FY 2017-18 as discussed above and approved by the Commission segregating KutirJyoti, LT & HT categories as against the projected sales by the MSPDCL are given in Table below:

Table 6.6: Category-Wise Energy Sale approved by the Commission for control period FY 2016-17 and FY 2017-18

Sl. No	Name of Category	(MU)			
		Energy Sales projected by MSPDCL		Energy sales approved by Commission	
		FY 2016-17	FY 2017-18	FY 2016-17	FY 2017-18
	Domestic				
1	(a) Kutir Jyoti	22.04	26.77	15	17
	(b) Domestic	406.92	484.44	406	484
	Commercial	55.78	64.16		
2	(a) LT			50	58
	(b) HT			4	6
	Industrial				
3	(a) Cottage & Small industry	28.20	32.41	28	32
	(b) Medium Industry (HT)	3.30	3.59	4	4

Sl. No	Name of Category	Energy Sales projected by MSPDCL		Energy sales approved by Commission	
		FY 2016-17	FY 2017-18	FY 2016-17	FY 2017-18
	(c) Large Industry (HT)	8.61	8.13	16	17
4	Bulk Supply (HT)	156.13	182.72	156	182
5	Public Lighting	4.63	4.75	6	7
6	Public Water Works	15.15	14.31		
	(a) LT			3	4
	(b) HT			15	15
7	Irrigation & Agriculture	3.66	4.51		
	(a) LT			1	2
	(b) HT			3	3
	Total	704.42	825.79	707	831

6.7 T&D Losses

Petitioner's submission

1. MSPDCL has stated that being a hilly terrain and characterised by population spread out throughout the State, the system network of the state consist of long length of LT distribution lines, with ageing components which are being upgraded through various schemes, The MSPDCL has achieved a significant reduction in transmission and distribution losses. The T&D losses for FY 2011-12 and FY 2012-13 and FY 2013-14 were 34.75%, 30.09% and 30.79% respectively. The actual T&D losses for FY 2014-15 were 43.92%.
2. MSPDCL has estimated the T&D loss of 38% for FY 2015-16 and projected T&D losses of 33% and 28% for FY 2016-17 and FY 2017-18.
3. The T&D Loss trajectory projected by MSPDCL is summarised in the table given below:

Table 6.7: T&D Losses

Particulars	FY 2014-15 (Actual)	FY 2015-16 (Estimates)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
T&D Losses	43.92%	38.00%	33.00%	28.00%

4. The MSDPCL submits to the Commission to approve the T&D Losses submitted above.

Commission's Analysis

The erstwhile Electricity Department of Manipur is unbundled into (i) Manipur State Power Distribution Company Limited (MSPDCL) responsible for distribution function and (ii) Manipur State Power Company Limited (MSPCL) responsible for

transmission function with effect from 1st Feb, 2014. As such transmission losses are shifted to MSPCL which are around 3.6% as furnished by the licensee. The inter-state pool losses, which are about 3.48% during FY 2014-15 based on weekly pool losses in the north eastern region from 31.03.2014 to 29.03.2015, shall be taken into consideration. With the actual data given by MSPDCL, the distribution losses during FY 2014-15 are calculated as detailed in table below.

Table 6.8: MSPDCL – Distribution Loss Calculation for FY 2014-15

Sl.No	Particulars	Unit	FY 2014-15
A	Energy Availability		
1	Own Generation	MU	1.01
2	Power Purchase from CGS in NER	MU	687.41
3	Pool Losses	%	3.48%
4	Pool Losses on (2) above	MU	23.92
5	Add: UI Purchases	MU	176.83
6	Less: UI Sales	MU	50.78
7	Energy available (1+2-4+5-6)	MU	790.55
8	Less intra State Transmission Loss at 3.6% on (7)		28.46
9	Net energy available for sale within the state		762.09
10	Energy Sales within the State	MU	442.29
11	Distribution Loss(9-10)	MU	319.80
12	Distribution (11/9)	%	41.96%

Thus the distribution loss during FY 2014-15 works out to 41.96% as against 43.92% furnished by the MSPDCL. The commission in its tariff order for FY 2014-15 had approved T&D loss at 25% for FY 2014-15 and fixed loss reduction trajectory for the period FY 2015-16 to FY 2017-18 as follows:

Sl.No	Year	% Loss
1	2015-16	24.00%
2	2016-17	23.00%
3	2017-18	22.00%

A directive was also issued to conduct voltage wise energy audit and report. Since the erstwhile EDM has been bifurcated into two companies with effect from 1.2.2014, the MSPDCL is responsible for distribution loss only.

As a result the T&D loss as approved by the Commission in its tariff order for FY 2014-15 has been segregated into transmission loss and distribution loss assuming transmission loss at 3.6% as detailed in table below.

Table 6.9: Distribution loss Trajectory approved by the Commission

Sl.No	Year	T&D Loss	Transmission loss	Distribution loss
1	2015 - 16	24 %	3.6 %	20.4 %
2	2016-17	23%	3.6%	19.4%
3	2017-18	22%	3.6%	18.4%

The Commission accordingly approves distribution loss for FY 2016-17 at 19.4% and for FY 2017-18 at 18.4%.

This is subject to conducting system studies and energy audit.

Segregation of Technical and Commercial loss shall also be completed by September 2016.

6.8 Energy Requirement

The MSPDCL has projected energy requirement as per its sale and availability of power as detailed in Table below:

Table 6.10: Energy Requirement projected by MSPDCL

Energy Balance	FY 2014-15 Actual	FY 2015-16 Estimated	FY 2016-17 Projected	FY 2017-18 Projected
Sales	442.29	485.03	704.43	825.79
T&D losses	43.92%	38.00%	33.00%	28.00%
Add: Losses	346.43	297.32	347.01	321.19
Energy Required at Periphery	788.71	782.35	1051.44	1146.98
Energy Available at State Bus	839.5	1023.22	1125.08	1229.11
Surplus/ (Deficit) Power(UI)	50.78	240.87	73.64	82.13

(Source: Table - 6 of ARR)

Commission’s Analysis

The Commission after considering Distribution losses at 19.4% and 18.4% for FY 2016-17 and FY 2017-18 has computed energy requirement based on energy sales approved for FY 2016-17 and FY 2017-18 as given in table below:

Table 6.11: Energy requirement approved by the Commission for FY 2016-17 to FY 2017-18

Sl. No	Particulars	Projected by the MSPDCL		Approved by the Commission	
		FY 2016-17	FY 2017-18	FY 2016-17	FY 2017-18
1	Energy Sales (MU)	704.43	825.79	707	831
2	Distribution Loss (%)	29.40%	24.40%	19.40%	18.40%
3	Distribution Loss (MU)	293.35	266.52	170.17	187.38
4	Energy requirement at distribution Periphery (1+3)	997.78	1092.31	877.17	1018.38

The Commission approves the energy requirement at 877.17MU and 1018.38MU for FY 2016-17 and FY 2017-18 respectively as against 997.78MU and 1092.31MU.

6.9 Energy Availability and Sources of Power

a) Own generation

Petitioner's submission

The MSPDCL is having its own generation plants such as small hydel, diesel and HFO with installed capacity of 45.11 MW and projected a net generation of 1.01 MU during FY 2016-17 and FY 2017-18 detailed in Table below:

Table 6.12: Own Generation for FY 2016-17 and FY 2017-18

S.NO	Item	Unit	Previous year FY 2014-15 (Actuals)	Current Year FY 2015-16 (R.E)	Ensuring year FY 2016-17 (Projection)	Ensuring year FY 2017-18 (Projection)
1	2	3	4	5	6	7
1	Installed Capacity	MW	45.11	45.11	45.11	45.11
	Generation					
2	a. Hydel	MU	0.33	0.33	0.33	0.33
	b. Diesel	MU	0.68	0.68	0.68	0.68
	Total	MU	1.01	1.01	1.01	1.01

Commission's Analysis

The Commission approves own generation at 1.01 MU (Net) P.A for FY 2016-17 and FY 2017-18 as projected by MSPDCL.

b) Purchase of Power from Central Generating Stations

Petitioner's submission

The MSPDCL has been allocated power from various central generating stations in North Eastern Region (viz. NEEPCO, NHPC, Tripura-Baramura and OTPC-Pallatana) and NTPC– Bongaigaon for power purchase under long term PPA's, as detailed in Table below:

Table 6.13: Energy Allocation from Central Generating Stations for FY 2016-17 and FY 2017-18

Source	Installed Capacity	FY 14-15 (Actual)		FY 16-17 (Proj.)		FY 17-18 (Proj.)	
		Manipur Allocation (MW)	Avg . Allocation %	Manipur Allocation (MW)	Avg . Allocation %	Manipur Allocation (MW)	Avg . Allocation %
NEEPCO (Hydro)							
Kopili I HEP	200	14.78	7.39%	14.78	7.39%	14.78	7.39%

Source	Installed Capacity	FY 14-15 (Actual)		FY 16-17 (Proj.)		FY 17-18 (Proj.)	
		Manipur Allocation (MW)	Avg . Allocation %	Manipur Allocation (MW)	Avg . Allocation %	Manipur Allocation (MW)	Avg . Allocation %
Kopili II HEP	25	1.74	6.95%	1.74	6.95%	1.74	6.95%
Khandong HEP	50	3.28	6.56%	3.28	6.56%	3.28	6.56%
Ranganadi HEP	405	33.91	8.37%	33.91	8.37%	33.91	8.37%
Doyang HEP	75	5.9	7.87%	5.9	7.87%	5.9	7.87%
New Projects							
Kameng HEP Stage I	300	0	0.00%	7	2.33%	7	2.33%
Kameng HEP Stage II	300	0	0.00%	0	0.00%	7	2.33%
Pare HEP	110	0	0.00%	4.4	4.00%	4.4	4.00%
Tural HEP	60	0	0.00%	0	0.00%	2.4	4.00%
Subtotal	1525	59.61		71.01		80.41	
NEEPCO (Gas Based)							
Assam Gas based Power Project	291	23.59	8.11%	23.59	8.11%	23.59	8.11%
Agartala Gas Turbine Power Project	84	6.98	8.31%	6.98	8.31%	6.98	8.31%
Agartala Gas Turbine Power Project- EXT	51	0	0.00%	4.24	8.31%	4.24	8.31%
New Projects							
Monarchak Gas Based Power Project	101	0	0.00%	4.04	4.00%	4.04	4.00%
Subtotal	527	30.57		38.85		38.85	
NHPC (Loktak HEP)							
Purchased (20.02 MW) and Free (12.60 MW)	105	31.62	30.12%	39.62	37.73%	39.62	37.73%
Subtotal	105	31.62		39.62		39.62	
TRIPURA							
Baramura(Gas Based)(Unit IV & Unit V)	42	10.5	25%	10.5	25%	10.5	25%
New Projects							
OTPC-(Pallatana-Unit I)	363	21	5.79%	21	5.79%	21	5.79%
OTPC-(Pallatana-Unit II)	363	21	5.79%	21	5.79%	21	5.79%
NTPC							
NTPC	250	0	0.00%	13.33	5.33%	13.33	5.33%

Source	Installed Capacity	FY 14-15 (Actual)		FY 16-17 (Proj.)		FY 17-18 (Proj.)	
		Manipur Allocation (MW)	Avg . Allocation %	Manipur Allocation (MW)	Avg . Allocation %	Manipur Allocation (MW)	Avg . Allocation %
Bongaigaon Unit I							
NTPC Bongaigaon Unit II	250	0	0.00%	13.33	5.33%	13.33	5.33%
NTPC Bongaigaon Unit II	250	0	0.00%	13.33	5.33%	13.33	5.33%
Subtotal	1518	52.5		92.49		92.49	
Total	3675	174.3		241.97		251.37	

(Source: Table 8 of ARR)

The MSPDCL for the purpose of estimation of the power availability during FY 2016-17 and FY 2017-18 has considered the following sources of power:

- NHPC (Loktak HEP) Central Public Sector Generating Stations, (NE Region);
 - From FY 2015-16, share of Non free category power has been increased by 8 MW
- NEEPCO (Hydro) Central Public Sector Eastern Region Generating Stations, (NE Region); in addition to existing Plants, generation from following upcoming plants has been considered
 - Kameng HEP Stage I expected to be commissioned in November, 2016
 - Kameng HEP Stage II expected to be commissioned in March, 2017
 - Pare HEP expected to be commissioned in June, 2016
 - Tural HEP expected to be commissioned in March, 2017
- NEEPCO (Gas) Central Public Sector Generating Stations, (NE Region); in addition to existing Plants, generation from following upcoming plant has been considered
 - Monarchak Gas Based Power Project expected to be commissioned in January, 2016
- Baramura(Gas turbine), Unit IV & V; Tripura State Electricity Corporation Ltd.
- OTPC, Pallatana-Unit I; (ONGC Thermal Power Corporation) which is already commissioned in January'2014
- OTPC, Pallatana Unit II; (ONGC Thermal Power Corporation) which is already commissioned in December'2014,

- NTPC Bongaigaon Unit I for the full MYT period as it is expected to be commissioned in December' 2015
 - NTPC Bongaigaon Unit II for the full MYT period as it is expected to be commissioned in March, 2016
 - NTPC Bongaigaon Unit III for last quarter of FY 2016-17 and rest of entire MYT period as it is expected to be commissioned in December '2016
 - Over-drawl under unscheduled interchange during peak hours at lean period
 - Own generation during peak and emergency conditions
1. Energy availability from hydro generating plants of NHPC Loktak and NEEPCO for Kopili-I, Kopili-II, Khandong HEP, Ranganadi HEP and Doyang HEP has been taken at the average energy scheduled from the respective Generating Plants during the last three years i.e. FY 2012-13 to FY 2014-15 owing to the weather fluctuations each year.
 2. Average energy scheduled during the last year i.e. FY 2014-15 has been taken respectively for Assam Gas based Power Project, Agartala Gas Turbine Power Project and TSECL Baramura plant to arrive at the energy availability for FY 2016-17 and FY 2017-18 based on the latest performance achieved by these plants.
 3. For estimating the energy availability from hydro plants, normative annual plant load factor of 30% and normative auxiliary consumption of 1% has been estimated based on the performance of the running projects in North Eastern India.
 4. Similarly, for estimating the energy availability from NTPC Bongaigaon Unit I, normative annual plant availability factor of 85% and normative auxiliary consumption of 8.5% has been estimated based on the norms provided in CERC tariff regulations for FY 2014-19. For NEEPCO Moranchak, normative annual plant availability factor of 85% and normative auxiliary consumption of 2.5% has been considered based on CERC Regulations.
 5. Further, Unit I of NTPC Bongaigaon is expected to be commissioned in December“ 2015 and will be operational for last quarter of FY 2015-16 and onwards. Unit II NTPC Bongaigaon is expected to be commissioned in March“

2016 and will be operational for four months during the financial year of 2016-17 and onwards. Unit III NTPC Bongaigaon is expected to be commissioned in December, 2016 and will be operational for last quarter of FY 2016-17 and onwards.

6. Actual % allocation of power to MSPDCL from central generating stations has been taken from the latest monthly report of Energy Accounting of North Eastern Regional Power Committee.
7. As per the JERC (Renewable Purchase Obligation and its compliance) Regulations, 2010 and its subsequent order (13011/510) dated 22nd September, 2014, MSPDCL is required to meet 5% of its requirement through renewable sources for FY 2016-17 and FY 2017-18 including 0.25% through solar sources. Currently, there are very limited sources of renewable generation within the state and some of the solar plants in Manipur are also not connected to the grid. In order to meet the solar obligation, MSPDCL along with MANIREDA is planning to introduce a policy for grid connected roof top solar power plants. However, the actual generation from such sources and its purchase by MSPDCL may take some more time.
8. Accordingly, MSPDCL has planned to meet its Renewable Purchase Obligation (RPO) in FY 2016-17 and FY 2017-18 by purchasing Renewable Energy Certificates (RECs) from IEX at the prevailing market rates for the ensuing year FY 2016-17. The current Market rates are as follows:
 - a. Solar REC @ Rs. 3.50 per MU
 - b. Non Solar REC @ Rs.1.50 per MU
9. Inter State Transmission Losses @3.60% for all Power purchased from central generating stations has been considered to arrive at the energy available at the state bus of Manipur. Table 6.14 below depicts the station wise power purchase for FY 2012-13, FY 2013-14, FY 2014-15 and those projected for FY 2016-17 and FY 2017-18.

Considering the above the MSPDCL has projected power purchase during FY 2016-17 and FY 2017-18 as detailed in Table below:

Table 6.14: Power purchase projected by MSPDCL for FY 2016-17 and FY 2017-18 (MU)

Source	FY 12-13 Actuals	FY 13-14 Actuals	FY 14-15 Actuals	FY 15-16 Estimated	FY 16-17 Projected	FY 17-18 Projected
NEEPCO(Hydro)						
Kopili I HEP	48.42	52.19	39.53	46.71	46.71	46.71
Kopili II HEP	6.4	5.37	5.62	5.8	5.8	5.8
Khandong HEP	10.62	11.67	5.68	9.32	9.32	9.32
Ranganadi HEP	102.74	81.98	92.37	92.36	92.36	92.36
Doyang HEP	15.56	18.38	12.3	15.41	15.41	15.41
New Projects						
Kameng HEP						
Stage I	0	0	0	0	6.04	18.21
Kameng HEP Stage II	0	0	0	0	0	18.21
Pare HEP	0	0	0	0	8.59	11.45
Turial HEP	0	0	0	0	0	6.24
Sub Total	183.74	169.59	155.5	0	184.23	223.71
NEEPCO(Gas Based)						
Assam Gas based Power Project	131.88	137.29	138.67	138.67	138.67	138.67
Agartala Gas Turbine Power Project	51.23	52.33	51.15	51.15	51.15	51.15
Agartala Gas Turbine Power Project- EXT	0	0	0	3.83	20.68	20.68
New Projects						
Monarchak Gas Based Power Project	0	0	0	0	29.33	29.33
Sub Total	183.11	189.62	189.82	0	239.83	239.83
NHPC(Loktak HEP)						
Purchased (20.02 MW) and Free (12.60 MW)	167.9	184.96	106.52	191.88	191.88	191.88
Sub Total	167.9	184.96	106.52	191.88	191.88	191.88
TRIPURA						
Baramura(Gas Based)(Unit IV & Unit V)	80.56	64.29	82.59	82.59	82.59	82.59
New Projects						
OTPC-(Pallatana-Unit I)			152.98	152.98	152.98	152.98
OTPC-						

Source	FY 12-13 Actuals	FY 13-14 Actuals	FY 14-15 Actuals	FY 15-16 Estimated	FY 16-17 Projected	FY 17-18 Projected
(Pallatana-Unit II)						
Sub Total	80.56	64.29	235.57	233.57	235.57	235.57
NTPC						
NTPC Bongaigaon Unit I	0	0	0	22.71	90.84	90.84
NTPC Bongaigaon Unit II	0	0	0	0	90.82	90.82
NTPC Bongaigaon Unit II	0	0	0	0	22.39	90.82
Total Power						
Purchase	615.31	608.46	687.41	22.71	1055.56	1163.47
Own generation	1.01	1.01	1.01	1.01	1.01	1.01
Total power available	616.32	609.47	688.42	814.42	1056.58	1164.49
Less: Inter-state transmission loss	22.15	21.9	24.75	38	38	41.89
Add: Power purchased under UI /trading	17.28	36.17	176.83	246.8	106.5	106.5
Total power available at state bus	611.45	623.74	840.5	1023.22	1125.08	1229.1

Commission's Analysis

The Commission has examined the allocation of power available for MSPDCL from the central generating stations and other for the year FY 2016-17 and FY 2017-18 and approved the power purchase at 1055.56MU for FY 2016-17 and 1163.47MU for FY 2017-18 as projected by MSPDCL as detailed in table below. UI purchase is not considered as there is surplus power. In case of necessity the MSPDCL may resort for UI purchase which will be considered while truing up.

Table 6.15: Energy drawal approved by the Commission for FY 2016-17 and FY 2017-18 (MU)

Source (MUs)	FY 16-17 Projected	FY 17-18 Projected
NEEPCO(Hydro)		
Kopili I HEP	46.71	46.71
Kopili II HEP	5.8	5.8
Khandong HEP	9.32	9.32
Ranganadi HEP	92.36	92.36
Doyang HEP	15.41	15.41
New Projects		
Kameng HEP		
Stage I	6.04	18.21
Kameng HEP Stage II	0	18.21
Pare HEP	8.59	11.45
Tural HEP	0	6.24
Sub Total	184.23	223.71
NEEPCO(Gas Based)		
Assam Gas based Power Project	138.67	138.67
Agartala Gas Turbine Power Project	51.15	51.15
Agartala Gas Turbine Power Project- EXT	20.68	20.68
New Projects		
Monarchak Gas Based Power Project	29.33	29.33
Sub Total	239.83	239.83
NHPC(Loktak HEP)		
Purchased (20.02 MW) and Free (12.60 MW)	191.88	191.88
Sub Total	191.88	191.88
TRIPURA		
Baramura(Gas Based)(Unit IV & Unit V)	82.59	82.59
New Projects		
OTPC- (Pallatana-Unit I)	152.98	152.98
OTPC- (Pallatana-Unit II)		
Sub Total	235.57	235.57
NTPC		
NTPC Bongaigaon Unit I	90.84	90.84
NTPC Bongaigaon Unit II	90.82	90.82
NTPC Bongaigaon Unit II	22.39	90.82
Total Power		
Purchase	1055.56	1163.47

The Commission approves power purchase at 1055.56MU and 1163.47MU including free power of 74.12MU per annum from Loktak HEP (at 12.6MW) for FY 2016-17 and FY 2017-18.

6.10 Energy Balance

The MSPDCL has considered inter-state transmission loss at 3.6%. But the average regional transmission losses in NER are about 3.25% based on weekly transmission losses for the period from 30.3.2015 to 20.12.2015 is not considered. Considering the inter-state transmission loss at 3.25% and intra-state transmission loss at 3.6% and distribution losses at 19.4% for FY 2016-17 and 18.4% for FY 2017-18, the energy balance approved by the Commission for FY 2016-17 and FY 2017-18 are furnished in Table below:

Table 6.16: Energy balance approved by the Commission for FY 2016-17 and FY 2017-18

Sl. No	Particulars	Unit	Approved by the commission	
			FY 2016-17	FY 2017-18
A	Energy Requirement	MU		
1	Energy Sales	%	707	831
2	Distribution loss	MU	19.40%	18.40%
3	Distribution loss	MU	170.11	187.38
4	Energy Requirement	MU	877.17	1018.38
B	Energy Availability	MU		
5	Own Generation (Net)	MU	1.01	1.01
6	Power Purchase	MU	1055.56	1163.47
7	Less:External Losses	%	3.25%	3.25%
8	Less:External Losses	MU	34.31	37.81
9	Net energy available at state periphery(5+6-8)	MU	1022.26	1126.67
10	Tr Loss 3.6%	MU	36.80	40.56
11	Energy Available for Distribution	MU	985.46	1086.11
12	Surplus (12-4)		108.29	67.73
13	Surplus grossed up by 3.6% for sale outside the state		112.33	70.26

The Commission accordingly approves energy availability at 985.46MU and 1086.11MU with surplus of 112.33 MU and 70.36 MU during FY 2016-17 and FY 2017-18 respectively.

6.11 Revenue Requirement for FY 2016-17 and FY 2017-18

The MSPDCL has projected a net ARR of as given in Table below

Table 6.17: Aggregate Revenue Requirement Projected by MSPDCL for control period FY 2016-17 and FY 2017-18

	(Rs. Crore)	
Annual Revenue Requirement	FY 2016-17 Projected	FY 2017-18 Projected
Costs		
Power Purchase Cost (Inc Fuel Cost)	375.68	414.39
Transmission Charges	51.70	57.45
Transmission Charges MSPCL	51.98	83.80
Employee Cost	78.77	88.21
Repairs & Maintenance Cost	6.11	6.88
Admin & General Cost	2.53	2.65
Depreciation	0.42	0.47
Interest and Financial Charges	0.16	0.31
Interest on Working Capital	12.74	14.82
Provision for Bad Debts	3.00	3.00
Total Costs	583.09	671.98
Add: Return on Equity	2.33	2.71
Less: Non-Tariff Income	0.34	0.37
Annual Revenue Requirement	585.08	674.32

Commission's Analysis

The expenses projected by MSPDCL under each head and the Commission's analysis are discussed below.

6.12 Fuel Cost

The MSPDCL has submitted the actual fuel cost incurred during FY 2014-15 and estimated for FY 2015-16 and projected for FY 2016-17 and FY 2017-18 as detailed in table below:

Table 6.18: Fuel Cost projected by MSPDCL

	(Rs.Crore)			
Particulars	FY 2014-15 (Actual)	FY 2015-16 (Estimated)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
Fuel Cost	1.19	1.19	1.19	1.19

(Source: Table 13 of ARR)

The MSPDCL further stated that the average cost of generation comes to around Rs.17/kWh.

The Commission approves the fuel cost of Rs.1.19 Crore for P.A for FY 2016-17 and FY 2017-18 as projected by the MSPDCL.

6.13 Power Purchase Cost

Petitioner's submission

The MSPDCL has projected power purchase cost of Rs.374.49 Crore and Rs 413.20 Crore for FY 2016-17 and FY 2017-18 respectively including arrears to a tune of Rs.27.37 Crore towards power purchase to purchase power of 1055.56MU and 1163.47MU including free power from Loktak HEP for FY 2016-17 and FY 2017-18 respectively as detailed in tables below:

Table 6.19: Power Purchase Cost Projected by MSPDCL for FY 2016-17 and FY 2017-18 (Rs. Crore)

Sl. No.	Source	Power Purchase Cost 2014-15 Actuals (Rs. Crore)	Power Purchase Cost FY 2015-16 Estimated (Rs. Crore)	Power Purchase Cost FY 2016-17 Projected (Rs. Crore)	Power Purchase Cost FY 2017-18 Projected (Rs. Crore)
A	CGS - NEEPCO				
1	Kopili -I HE	3.82	5.06	4.52	4.52
2	Kopili-II HE	1.04	1.48	1.07	1.07
3	Khandong HE	1.5	2.55	2.46	2.46
4	Ranganadi HE Project	26.72	37.13	27.38	27.38
5	Doyang HE Project	5.72	5.8	6.67	6.67
6	Assam GBPP	50.96	48.4	53.32	54.92
7	Agartala GTPP	21.07	23.03	21.63	22.28
8	Agartala GTPP- EXT		1.62	8.75	9.01
B	CGS - NHPC				
9	Loktak HE	20.19	22.65	38.38	38.38
10	Loktak Free Power				
C	TSECL				
11	Baramura GBPP Unit IV and V	24.63	24.89	24.88	25.62
12	OTPC Pallatana Unit I	36.08	53.79	41.88	43.14
13	OTPC Pallatana Unit II				
D	New Plants				
14	NTPC Bongaigaon Unit I (15-16)		7.45	27.25	28.07
15	NTPC Bongaigaon Unit II (16-17)			27.25	28.06
16	NTPC Bongaigaon Unit III (16-17)			6.72	28.06
17	Monarchak Gas Based Power Project Neepco (15-16)			9.53	9.82
18	Kameng HEP Stage I (16-17)			1.54	4.64
19	Kameng HEP Stage II			0	4.64

Sl. No.	Source	Power Purchase Cost 2014-15 Actuals (Rs. Crore)	Power Purchase Cost FY 2015-16 Estimated (Rs. Crore)	Power Purchase Cost FY 2016-17 Projected (Rs. Crore)	Power Purchase Cost FY 2017-18 Projected (Rs. Crore)
	(17-18)				
20	Pare HEP (16-17)			2.19	2.92
21	Tuirial HEP (17-18)			0	1.59
22	Lower Subansiri Stage I			0	0
23	Lower Subansiri Stage II			0	0
24	Renewable-Solar		0.92	0.92	1.02
25	Renewable-Non Solar		7.53	7.53	8.3
E	Sub Total	191.73	242.3	315.06	353.76
26	UI/ Trading Purchase	45.67	77.06	33.26	33.26
27	Arrears of power purchase bills	16.02		27.37	27.37
F	Total Power Purchase Cost Including Arrears	253.42	319.36	374.49	413.2

MSPDCL has stated that the cost of purchase from the central generating stations for FY 2016-17 and FY 2017-18 is estimated based on the following method:

- The per unit power purchase rate for various stations was calculated for FY 2012-13, FY 2013-14, FY 2014-15 and FY 2015-16(up to August, 2015).
- The latest invoices for each of the station of NHPC and NEEPCO were analyzed for the month of July“ 2015 and August'2015and the latest applicable normative fixed charges and variable charges is tabulated for each station. Based on the latest applicable normative fixed and variable charges, a normative per unit tariff is calculated and tabulated. It may be noted that the actual power purchase rate of the stations were different from the normative rate calculated based on the normative fixed and variable charge per unit because the actual billing done by the generating stations were based on the actual performance achieved in terms of actual availability factor and actual units generated as against the normative availability factor and normative units generation. The latest invoices for the various generating stations for the month of July“ 2015 and August'2015 are attached as Annexure for reference.

- As such, for estimating the per unit power purchase rate in FY 2016-17, FY 2017-18, FY 2018-19 of NHPC and NEEPCO, the per unit average rate has been selected based on the latest actual average power purchase rate of FY 2014-15 or FY 2015-16 (for first five months) based on the projected performance in terms of units generated.
- The tariff of the new generating plants of NTPC Bongaigaon has not been approved by CERC. As such, the provisional tariff of NTPC Bongaigaon has been assumed as Rs. 3.00 per unit (as expected based on the current power purchase rate of coal based stations).
- For Gas based Power Stations, average per unit rate has been increased by 3% for FY 2017-18 to take into account expected increase in gas price.

The power purchase cost has been calculated by multiplying the per unit average power purchase rate as estimated above and projected units from each of the stations for FY 2016-17 and FY 2017-18.

Besides the current power purchase bills for FY 2016-17 and FY 2017-18, MSPDCL shall also be required to clear the pending arrears of the power purchase invoices. As on 29.09.2015, MSPDCL has arrears of more than Rs.82.11 Crore of power purchase invoices. The reason for these arrears is the large number of supplementary bills issued by the central generating stations based on the new tariff orders and other supplementary orders issued by CERC post implementation of control period of FY 2014-19.

MSPDCL is planning to liquidate around Rs. 27.37Crore of arrears in each of the ensuing years of MYT period. Out of this Rs.27.34 Crore of arrears, Rs. 4.04Crore is due for NHPC and the remaining Rs. 23.33Crore is due for NEEPCO. It may be noted that MSPDCL is planning to pay only the principal part and planning to request NEEPCO to waive of the arrears pending due to interest component. Regarding the NHPC arrear, the amount is payable as per the order of arbitrator under a very old litigation case which is under further sub-judice but the pending amount needs to be cleared to avoid further accumulation of interest on the outstanding.

The method of estimating average power purchase rate for each of the stations and the per unit rates for FY 2016-17 and FY 2017-18 is summarized in the table below:

Table 6.20: Power Purchase rate for FY 2016-17 AND FY 2017-18

Sl. No.	Source	Average Tariff in Rs/unit			FY 2015-16	Latest Applicable Fixed Charges	Latest Applicable variable Charge	Normative Tariff	Average Tariff Assumed for 2016-17	Remarks	Average Tariff Assumed for 2017-18
		FY 2012-13	FY 2013-14	FY 2014-15							
A	CGS - NEEPCO										
1	Kopili-I HE	0.99	0.96	0.97	0.74	3.02	0.40	1.04	0.97	Tariff of FY 14-15	0.97
2	Kopili-II HE	1.88	1.81	1.85	1.69	0.49	0.94	1.79	1.84	Avg of last 3 years	1.84
3	Khandong HE	2.77	2.62	2.64	1.51	1.07	0.67	1.82	2.64	Tariff of FY 14-15	2.64
4	Ranganadi HE Project	2.74	3.26	2.89	2.35	13.42	1.22	2.67	2.96	Avg of last 3 years	2.96
5	Doyang HE Project	3.31	4.38	4.65	3.95	3.24	2.08	4.18	4.33	Avg. of last 3 years including ongoing FY	4.33
6	Assam GBPP	3.21	3.58	3.67	3.85	21.15	2.72	4.24	3.85	Tariff of FY 15-16	3.96
7	Agartala GTPP	3.46	3.72	4.12	4.23	6.26	3.29	4.51	4.23	Tariff of FY 15-16	4.36
8	Agartala GTPP- EXT				4.23			0.00	4.23	Tariff of FY 15-16	4.36
B	CGS - NHPC										
9	Loktak HE	2.37	2.65	3.15	3.00	13.98	1.40	2.47	2.93	Avg. of last 3 years including ongoing FY	2.93
10	Loktak Free Power	0.00	0.00	0.00							
C	TSECL										
11	Baramura GBPP Unit IV and V	3.00	3.01	2.99	3.01				3.01	Tariff of FY 15-16	3.1
12	OTPC Pallatana Unit I		2.53	2.36	2.74	31.60	1.29	3.36	2.74	Tariff of FY 15-16	2.82
13	OTPC Pallatana Unit II								2.74		2.82
D	New Plants										
14	NTPC Bongaigaon Unit I (15-16)				3.00		1.86		3.00		3.09
15	NTPC Bongaigaon Unit II (16-17)				3.00		1.86		3.00		3.09
16	NTPC Bongaigaon				3.00		1.86		3.00		3.09

Sl. No.	Source	Average Tariff in Rs/unit			FY 2015-16	Latest Applicable Fixed Charges	Latest Applicable variable Charge	Normative Tariff	Average Tariff Assumed for 2016- 17	Remarks	Average Tariff Assumed for 2017-18
		FY 2012-13	FY 2013-14	FY 2014-15							
	Unit III (16-17)										
17	Monarchak Gas Based Power Project Neeeco (15-16)				3.00		1.86		3.25	Considering changes in Natural gas prices	3.35
18	Kameng HEP Stage I (16-17)								2.55		2.55
19	Kameng HEP Stage II (17-18)								2.55		2.55
20	Pare HEP (16-17)								2.55		2.55
21	Tuirial HEP (17-18)								2.55		2.55
22	Lower Subansiri Stage I								2.93		2.93
23	Lower Subansiri Stage II								2.93		2.93
24	Renewable-Solar								3.50	Taken from IEX Oct 2015 Data	
25	Renewable-Non Solar								1.50		
26	Power Purchased under UI	2.65	3.56	2.58	3.22				3.12		3.12

Commission’s Analysis

As already discussed in Para 6.9(b) ante, the Commission has finalized and approved the quantum of power to be purchased by MSPDCL during the year’s FY 2016-17 and FY 2017-18. The power purchase cost constitutes about 64% of the ARR.

As verified from the power purchase rates arrived by the MSPDCL in table 6.20 supra, it is observed in general that the average rates FY 2012-13, FY 2013-14 and FY 2014-15 are adopted by the MSPDCL. The Commission considers it reasonable. For new Baramura and Pallatana, stations the rates assumed by MSPDCL are considered as it is.

The Commission needs a clear explanation on pending arrears and when the bills are received whether any penal charges included etc. After examining the arrears bills the commission will take a decision on admittance of arrear bills, as penalty, if any, cannot be passed on to consumers. As such the arrears to a tune of Rs 27.37 Crore P.A proposed during FY 2016-17 and FY 2017-18 are not allowed. PGCLIL and SLDC transmission charges are admitted as projected by MSPDCL and MSPCL transmission charges are considered as approved by the Commission in MSPCL transmission ARR for FY 2016-17 and FY 2017-18. UI/Trading charges of Rs 33.26 Crore P.A proposed during FY 2016-17 and FY 2017-18 are also not allowed since UI purchase is not considered as there is surplus power. Free power from Loktak HEP is not quantified. However, the MSPDCL has furnished breakup of power purchase at 20.02 MW and free power at 12.6 MW. So out of the total power drawal of 191.88MU the free power is worked out to 74.12MU. Cost of purchase of REC to fulfil purchase of renewable energy is allowed as proposed by MSPDCL.

Considering the above, the power purchase cost is approved by the Commission for FY 2016-17 and FY 2017-18 as furnished in the following tables.

Table 6.21: Power Purchase Cost of MSPDCL approved by the Commission for FY 2016-17

Source	Quantity of Power Purchased (MU)	Average Rate (Rs/kWh)	Power Purchase Cost (Rs. Cr)
NEEPCO(Hydro)			
Kopili I HEP	46.71	0.97	4.53

Source	Quantity of Power Purchased (MU)	Average Rate (Rs/kWh)	Power Purchase Cost (Rs. Cr)
Kopili II HEP	5.80	1.84	1.07
Khandong HEP	9.32	2.64	2.46
Ranganadi HEP	92.36	2.96	27.34
Doyang HEP	15.41	4.33	6.67
New Projects			
Kameng HEP Stage I	6.04	2.55	1.54
Kameng HEP Stage II			
Pare HEP	8.59	2.55	2.19
Turial HEP			
Sub Total	184.23		45.80
NEEPCO(Gas Based)			
Assam Gas based Power Project	138.67	3.85	53.39
Agartala Gas Turbine Power Project	51.15	4.23	21.64
Agartala Gas Turbine Power Project-EXT	20.68	4.23	8.75
New Projects			
Monarchak Gas Based Power Project	29.33	3.25	9.53
Sub Total	239.83		93.30
NHPC(Loktak HEP)			
Purchased (20.02 MW)	117.76	2.93	34.50
Free Power (12.60 MW)	74.12	0.00	0.00
Sub Total	191.88		34.50
TRIPURA			
Baramura(Gas Based)(Unit IV & Unit V)	82.59	3.01	24.86
New Projects			
OTPC- (Pallatana-Unit I)	152.98	2.74	41.92
OTPC- (Pallatana-Unit II)			
Sub Total	235.57		66.78
NTPC			
NTPC Bongaigaon Unit I	90.84	3.00	27.25
NTPC Bongaigaon Unit II	90.82	3.00	27.25
NTPC Bongaigaon Unit II	22.39	3.00	6.72
Sub Total	204.05		61.22
Renewable Solar			0.92
Non Solar			8.30
Total Power	1055.56		310.82

Table 6.22: Power Purchase Cost of MSPDCL approved by the Commission for FY 2017-18

Source	Quantity of Power Purchased (MU)	Average Rate (Rs/kWh)	Power Purchase Cost (Rs. Cr)
NEEPCO(Hydro)			
Kopili I HEP	46.71	0.97	4.53
Kopili II HEP	5.80	1.84	1.07
Khandong HEP	9.32	2.64	2.46

Source	Quantity of Power Purchased (MU)	Average Rate (Rs/kWh)	Power Purchase Cost (Rs. Cr)
Ranganadi HEP	92.36	2.96	27.34
Doyang HEP	15.41	4.33	6.67
New Projects			
Kameng HEP Stage I	18.21	2.55	4.64
Kameng HEP Stage II	18.21	2.55	4.64
Pare HEP	11.45	2.55	2.92
Turial HEP	6.24	2.55	1.59
Sub Total	223.71		55.87
NEEPCO(Gas Based)			
Assam Gas based Power Project	138.67	3.96	54.91
Agartala Gas Turbine Power Project	51.15	4.36	22.30
Agartala Gas Turbine Power Project-EXT	20.68	4.36	9.02
New Projects			
Monarchak Gas Based Power Project	29.33	3.35	9.83
Sub Total	239.83		96.06
NHPC(Loktak HEP)			
Purchased (20.02 MW)	117.76	2.93	34.50
Free Power (12.60 MW)	74.12	0.00	0.00
Sub Total	191.88		34.50
TRIPURA			
Baramura(Gas Based)(Unit IV & Unit V)	82.59	3.10	25.60
New Projects			
OTPC- (Pallatana-Unit I)	152.98	2.82	43.14
OTPC- (Pallatana-Unit II)			
Sub Total	235.57		68.74
NTPC			
NTPC Bongaigaon Unit I	90.84	3.09	28.07
NTPC Bongaigaon Unit II	90.82	3.09	28.06
NTPC Bongaigaon Unit II	90.82	3.09	28.06
Sub Total	272.48		84.20
Renewable Solar			1.02
Non Solar			8.30
Total Power	1163.47		348.69

The Commission accordingly approves the power purchase cost at Rs. 310.82 Crore and Rs. 348.69 Crore for FY 2016-17 and FY 2017-18 for purchase of 1055.56MU for FY 2016-17 and 1163.47MU for FY 2017-18 including free power from loktak at 74.12MU P.A.

6.14 Operation and Maintenance Expenses

Petitioner's submission

1. Operation and Maintenance expenses comprise of the following heads:
 - **Employees Expenses** which includes the basic pay, dearness pay, dearness allowances, house rent allowances, and other allowances, new pension scheme paid to the staff;
 - **Repair and Maintenance (R&M) Expenses**, which include all expenditure incurred on the maintenance and upkeep of distribution assets; and
 - **Administrative and General Expenses**, which include all expenditure incurred in operating a business such as office and IT expenses, consultancy and regulatory fee etc.

2. As such, the arrear figures have been removed from the actual data of employee expenses for considering the base of projections for FY 2015-16 and FY 2016-17 and FY 2017-18 respectively. However considering impact of implementation of upcoming VII pay commission, an increase of around 20% has been considered in the total employee expenses for FY 2017-18.

3. The methodology adopted by MSPDCL for projecting the values of each component of the O&M expense for FY 2015-16&FY 2015-16 and FY 2016-17 and FY 2017-18 has been explained in the following section.

a) Employee cost

Old Employees of EDM

1. As per the transfer scheme notified by Government of Manipur under the restructuring exercise, all the employees (including regular employees, work charge staff and muster roll) of erstwhile Electricity Department have been transferred to the new companies on deputation for three years. They have transferred to the new companies on "as-is-where-is "basis". As such, the old employees of EDM working in distribution area have been transferred to MSPDCL while those working in transmission function have been transferred to MSPCL.

2. Under the deputation, all the employees of MSPCL shall have the same

pay structure as existing in EDM and no deputation allowance is being paid to the employees. Also, the terminal benefits (including pension, gratuity and leave encashment) of the old regular employees shall continue to be borne directly by the State Government. The new companies shall only bear the salary component (including basic, HRA TA, DA etc) of the deputed employees.

3. The employee expenses for the old employees have been projected based on the actual payouts made in FY 2014-15 after restructuring by MSPDCL.
4. New Employees of MSPDCL: During MYT period, MSPDCL plans to recruit around 43 (20 in FY 2016-17, 10 in FY 2017-18 and 13 in FY 2018-19) employees to take care of retirements and existing vacancies. These employees have been recruited on contract basis for one year which can be regularized after a year. The costs of the new employees have been estimated based on the existing average pay of the old employees.
5. National Pension Scheme: NPS is a defined contribution based pension scheme launched by Government of India with effect from January'2004. Government of Manipur has also adopted NPS for employees joining after 2005. MSPDCL has around 170 and 190 employees who are eligible under NPS in FY 2016-17 and FY 2017-18 respectively and as such, MSPDCL contributes 10% of the basic pay as pension contribution.

6. Projection of Salaries and Cost

For projecting the employees cost, the average basic bay of the employees (including grade pay and House Rent Allowance) has been increased by 3%. Further, the provision of DA component is increased by 12% in line with the recommendations made by the Sixth Central Pay Commission, which is to be increased at the rate of 6% every six months and also as per the policy adopted by State Government in past few years.

7. **Training Cost:** Post restructuring, the employees of the restructured companies would require extensive training and capacity building to

enable institutional strengthening of the new entities. As such, MSPDCL is projecting 1.5% of the employees cost as training cost in FY 2016-17 to FY 2017-18.

8. The total staff strength of MSPDCL is projected to be reduced in the next years as new recruitments are few in comparison with retirements in FY 2015-16 is 91 and 103. During MYT period, Employee number of MSPDCL will reduce with the effect of retirement of employees i.e. 90, 120 and 137 for FY 2016-17 and FY 2017-18 as recruitment plan for these years are 20 and 10.
9. The MSPDCL would like to bring into the notice of Hon^{ble} Commission that certain components of employee cost increase should be considered as uncontrollable factors, especially factors like DA/Basic hike through Government, revision through VII Pay Commission etc. The MSPDCL would not be in a position to not allow these increases as any deviation will be against law/policy. The revision in salaries and other incentives are kept at par with the other departments of Government of Manipur and is a legal binding on the department to follow the same. Therefore, MSPDCL requests the Commission to adopt a relaxed and realistic approach for employee expenditure, keeping in view the obligation of the organization towards the employees.

Table 6.23: Employee cost projected by MSPDCL

	(Rs. Crore)			
Employees Cost (Rs Cr)	FY 2014-15 (Actual)	FY 2015-16 (Estimated)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
Pay Band	26.48	27.13	27.08	31.8
Grade Pay	5.84	5.98	5.97	7.01
D.A.	29.09	30.1	32.67	34.76
H.R.A.	3.02	3.09	3.09	3.62
SCA	2.65	2.71	2.71	3.18
TA	1.69	1.73	1.73	2.03
Training Cost	0	1.06	1.1	1.24
NPS Contribution	0	0.25	0.57	0.9
Total	68.77	72.06	74.91	84.55
Medical	0.5	0.5	0.48	0.46
Others	3.5	3.48	3.37	3.21
G. Total	72.77	76.03	78.77	88.21

Average Employee Count	2285	2273	2203	2093
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(Source: Table 14 of ARR)

MSPDCL requested the commission to approve the costs as projected.

Commission's analysis

As seen from the above the MSPDCL projected an overall escalation in employee costs at 4.48% for FY 2015-16 over the actual expenses during FY 2014-15, and 3.25% for FY 2016-17 over the estimated expenditure during FY 2015-16 and 11.98% over projected expenditure for FY 2016-17. The Commission considers it reasonable to allow a projection of 3.25% P.A over actual expenditure during FY 2014-15 to project the expenditure during FY 2016-17 and FY 2017-18 an escalation of 8.25% is considered keeping in view VII pay commission pay revision as detailed in Table below:

Table 6.24: Employee Cost Approved by the Commission for FY 2016-17 and FY 2017-18 (Rs.Crore)

Particulars	FY 2014-15	Escalation P.A	FY 2015-16	FY 2016-17	FY 2017-18
Employee Cost	72.77	3.25%	75.14	77.58	83.98

The Commission approves the employee cost of Rs.77.58 Crore for FY 2016-17 and for Rs 83.98 Crore FY 2017-18 as against Rs 78.77 Crore and Rs 88.21 Crore projected by MSPDCL respectively.

b) Repairs and Maintenance expenses

1. These expenses include expenses on repairs and maintenance of Plant and Machinery, Transformers, Lines, cable network etc., Vehicles, Office equipment, etc.
2. The repair and maintenance expenses incurred by the distribution divisions of erstwhile Electricity Department of Manipur in FY 2014-15 have been assumed to the actual R&M expenses for MSPDCL. Similarly, the actual R&M expenses incurred in FY 2014-15 have been increased based on ratio of Asset addition and WPI (of around 2%).
3. Based on the above mentioned trend, for the ensuing years, the R&M cost is expected to increase to around Rs 6.11Crore and Rs 6.88 Crore in FY 2016-17 and FY 2017-18.

4. MSPDCL submits to the Commission that it is important for MSPDCL to incur the R&M expenses as mentioned above in order to maintain and strengthen the system and quality of supply.
5. The R&M cost for FY 2014-15, FY 2015-16, FY 2016-17 and FY 2017-18 are summarized in table below:

Table 6.25: R & M Expenses furnished by the MSPDCL for FY 2016-17 and FY 2017-18

(Rs. Crore)					
Sl.No.	R&M Cost	FY 2014-15 Actual	FY 2015-16 Estimate	FY 2016-17 Projected	FY 2017-18 Projected
1	Grand Total	4.33	5.38	6.11	6.88

The MSPDCL requested the Commission to approve the expenses without any disallowance as the same is necessary for proper maintenance and strengthening of the system and quality of supply in the region in order to ensure consumer satisfaction.

Commission's Analysis

Considering actual expenditure during FY 2014-15, the MSPDCL has projected expenditure for FY 2016-17 and FY 2017-18 at an escalation of 21.44% for FY 2015-16 and 13.57% for FY 2016-17 and 12.6% for FY 2017-18 over the previous year's expenditure. The actual expenditure during FY 2015-16 up to 08/2015 (5 months) is Rs 2.34 Crore. However, The Commission considers the expenditure projected by MSPDCL.

The Commission accordingly approves Rs. 6.11 Crore for FY 2016-17 and Rs 6.88 Crore for FY 2017-18 as projected by MSPDCL.

c) Administrative and General Expenses

1. Administrative and General (A&G) expense comprise of various sub-heads including the following:
 - Travel and conveyance expenses
 - Consultancy and regulatory fees
 - IT services and outsourcing cost
 - Office expenses

- Publication expenses
 - Other administration expenses
2. The segregated A&G expense for MSPDCL in FY 2014-15 is 2.31Crore. MSPDCL has projected the A&G expense for FY 2015-16 and for MYT period for each of the heads based on the expected increase/decrease in each of the head and taking into account inflationary increase expected in some heads.
3. For FY 2015-16 total A&G expenses have been projected at Rs. 2.42 Crore and for FY2016-17 and FY 2017-18 total A&G expenses have been projected at Rs. 2.53 Crore, Rs. 2.65 Crore respectively on account of A&G expenses.

Table 6.26: A&G Expenses projected by MSPDCL for FY 2016-17 and FY 2017-18

A&G Cost	(Rs. Crore)			
	FY 2014-15 (Actual)	FY 2015-16 (Estimated)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
IT And Comp Expenses	0.27	0.29	0.31	0.33
Consultancy & Auditor Charges and Regulatory Charges & Fees	0.28	0.28	0.28	0.28
Advertisement & Printing Charges	0.42	0.45	0.48	0.51
Furniture	0.09	0.09	0.09	0.09
Other expenses	0.4	0.43	0.45	0.48
outsourced staff	0.56	0.58	0.59	0.61
Stationary	0.01	0.01	0.01	0.01
TA/DA	0.14	0.15	0.17	0.19
Vehicle	0.13	0.14	0.14	0.15
Total	2.31	2.42	2.53	2.65

(Source: Table 16 of ARR)

Commission’s Analysis

MSPDCL has projected at an average escalation of 4.67% P.A over the actual expenditure during FY 2014-15 which the Commission considers reasonable.

The Commission approves Rs. 2.53 Crore for FY 2016-17 and Rs 2.65 Crore for FY 2017-18 towards A&G expenses projected by the MSPDCL.

6.15 Capital Expenditure Plan for FY 2016-17 and FY 2017-18

Petitioner’s submission

The MSPDCL has projected capital expenditure to a tune of Rs. 55 Crore P.A for FY 2016 -17 and FY 2017-18 for distribution function mainly focusing on strengthening electricity network and augment new networks for ensuring reliable power to its consumers

Capital expenditure plan

1. Considering the increased in demand from HT & LT consumers, MSPDCL would be required to undertake significant capital expenditure for system augmentation and strengthening. System augmentation would not only help MSPDCL in handling increased load but would also ensure better quality of supply and network reliability to the consumers and reduce T&D loss levels.
2. Every year MSPDCL prepares an Annual resources Plan for the capital investment for new schemes and continuing schemes, which it plans to incur in the ensuing year. The MSPDCL, has to undertake various capital projects for generation, transmission/sub- transmission and distribution functions mainly focusing on the increasing generation capacity, augmenting existing generating plants, strengthening electricity network and developing new network for ensuring reliable power to its consumers.

Details of ongoing capital schemes are furnished hereunder:

Major Capital Expenditure Schemes

- Strengthening and upgrading of existing 11 Kv lines
 - Improvement of Distribution system in Greater Imphal and other Towns
 - Providing prepaid energy meters in Imphal and
 - Replacement of old electromechanical and defective meters with electronic meters
 - GoI schemes of RGGVY and R APDRP
3. Apart from the above schemes, MSPDCL has also undertaken large scale rural electrification and development, augmentation and improvement of electricity infrastructure under newly introduced schemes of GOI namely Deendayal Upadhyaya Gram Jyoti Yojana (DUGJY) and Integrated Power Development Scheme (IPDS) Function wise details of actual expenditure

during 2014-15 and estimated for 2015-16 and projected for FY 2016-17 and FY 2017-18 are given in Table below:

4. Deendayal Upadhyaya Gram Jyoti Yojana aims at augmenting power supply in rural areas via feeder separation. A capital expenditure of Rs.5 Crore has been allocated by MSPDCL for each year of FY 2015-16, FY 2016-17 and FY 2017-18 for implementing these objectives. The main objectives of the scheme are as follows:
 - a) To separate agricultural and non-agricultural feeders in rural areas.
 - b) Strengthening and augmentation of sub transmission and distribution infrastructure in rural areas.
5. Integrated power development initiative also aims at strengthening sub-transmission and distribution systems, including 100% metering and underground cabling. A capital expenditure of Rs.5 Crore has been allocated by MSPDCL for each of FY 2016-17 and FY 2017-18 for implementing these objectives. The main objectives of the scheme are as follows:
 - a) Strengthening of sub transmission and distribution infrastructure in Urban and Semi Urban areas.
 - b) Metering in Urban and Semi-Urban areas
6. Following Table depicts the ongoing capital schemes being undertaken by MSPDCL and the plan for current and ensuing two years:

Table 6.27: Proposed Capital Expenditure

(Rs. Crore)

Name of the Scheme/Work	Actual Expenditure in FY 2014-15	Estimated Expenditure in FY 2015-16	Plan for FY 2016-17				Plan for FY 2017-18			
			Total Plan	Funded by Grant	Funded by Equity	Funded by Loan	Total Plan	Funded by Grant	Funded by Equity	Funded by Loan
11 KV & Below System										
Improvement of Distribution System of Greater Imphal including 11KV feeder segregation	0.34	2.92	2.00	1.91	0.09	0.00	2.00	1.91	0.09	0.00
Improvement of Distribution System of other towns and District Head Quarters (AB Cables/MRI etc)	0.72	0.00	1.00	0.96	0.04	0.00	1.00	0.96	0.04	0.00
Completion of Ongoing APDRP Scheme	7.52	8.00	4.00	3.82	0.18	0.00	4.00	3.82	0.18	0.00
Providing of Pre-paid Energy Meter at Imphal areas	0.00	0.00	2.00	1.91	0.09	0.00	2.00	1.91	0.09	0.00
Procurement of prepaid meters and accessories for other areas	19.50	26.00	15.00	14.33	0.67	0.00	15.00	14.33	0.67	0.00
Street lamps and High mast	5.00	4.89	5.00	4.78	0.22	0.00	5.00	4.78	0.22	0.00
Replacment of Elec-mechanical Meters with Static Meters	3.06	3.00	3.00	2.87	0.13	0.00	3.00	2.87	0.13	0.00
Total: A.1.3	36.14	44.81	32.00	30.58	1.42	0.00	32.00	30.58	1.42	0.00

Name of the Scheme/Work	Actual Expenditure in FY 2014-15	Estimated Expenditure in FY 2015-16	Plan for FY 2016-17				Plan for FY 2017-18			
			Total Plan	Funded by Grant	Funded by Equity	Funded by Loan	Total Plan	Funded by Grant	Funded by Equity	Funded by Loan
Rural Electrification										
Electrification of Tribal Villages (left out) of Tousem Sub-Division	0.00	0.00	1.00	0.96	0.04	0.00	1.00	0.96	0.04	0.00
Electrification of Tribal Villages (left out) of Nungba Sub-Division	0.00	0.00	1.00	0.96	0.04	0.00	1.00	0.96	0.04	0.00
RGVY	17.40	10.24	7.50	7.17	0.33	0.00	7.50	7.17	0.33	0.00
Total: RE	17.40	10.24	9.50	9.08	0.42	0.00	9.50	9.08	0.42	0.00
Misc. Schemes										
Civil Work and Office Construction	2.30	3.25	3.50	3.34	0.16	0.00	3.50	3.34	0.16	0.00
New Schemes										
Integrated Power Development Scheme (IPDS)	0.00		5.00	4.50		0.50	5.00	4.50		0.50
Deen dayal Upadhyaya Gram Jyoti Yojana	0.00		5.00	4.50		0.50	5.00	4.50		0.50
TOTAL	55.84	58.30	55.00	52.00	2.00	1.00	55.00	52.00	2.00	1.00

(Source: Table 17 of ARR)

7. For MYT period, the MSPDCL has proposed a plan capital expenditure of Rs. 55.00 Crore each for FY 2016-17 and FY 2017-18 under various existing and new schemes.
8. It may be noted that funding for most of the schemes except that of RGGVY, R-APDRP DUGJY and IPDS (for MYT period), are covered by grants from State Government and there are no loans or equity for funding of such schemes. For RGGVY, MSPDCL is furnishing loans from REC for 10% of the project cost, as per the directions of Ministry of Power, Government of India, in this regard. For RGGVY, the Central Government is providing 90% grant and 10% is covered through loan. Similarly for DUGJY and IPDS, since Manipur is a special category state, the Central Government is providing a maximum of 90% grant and 10% is covered through loan.
9. The capitalization of the above mentioned scheme in a consolidated manner has been considered at 70% of the planned capital expenditure in the same year, 30% in the second year. A summary of the capital expenditure and capitalization for FY 2015-16 and for MYT period FY 2016-17 and FY 2017-18 is summarized in Table below:

Table 6.28: Capital Work in Progress

SL. No.	Particulars	PY 2014-15	CY 2015-16	(Rs.Crore) MYT Period	
				2016-17	2017-18
A	Opening Balance of CWIP	352.09	297.73	227.76	192.54
B	Fresh Investment during the year	53.53	55.05	55.00	55.00
C	Investment capitalised out of opening CWIP	70.42	86.48	51.72	51.71
D	Investment capitalised out of fresh investment	37.47	38.54	38.50	38.50
	Total Capitalisation during the year (C+D)	107.89	125.01	90.22	90.21
	Closing Balance of CWIP (A + B - C - D)	297.73	227.76	192.54	157.33

Commission's analysis

The MSPDCL has stated that it has capitalized the CWIP on percentage basis irrespective, whether the work is completed or not and asset put to use which is not in order.

MSPDCL is directed to ensure completion of the work and put the assets into operation before capitalisation.

With the above observations the capital expenditure of Rs.55 Crore P.A and capitalisation of Rs 90.22 Crore and Rs 90.21 Crore for FY 2016-17 and FY 2017-18 respectively are considered.

6.16 Gross Fixed Assets**Petitioner's submission**

1. The accounts of FY 2013-17 for the restructured companies have been finalised and audited. As per the audited accounts, the value for gross fixed assets have been taken to project GFA for FY 2015-16 and FY 2016-17 to FY 2017-18.
2. The opening value of GFA for MSPDCL has been increased by the above mentioned capitalization in FY 2015-16 and FY 2016-17 and FY 2017-18. The total capitalization has been divided among the asset categories based on the existing proportion as per the opening asset break up. The same is tabulated here under:

Table 6.29: Gross Fixed Assets Projected by MSPDCL

Asset Categories	(Rs. Crore)			
	31.03.2015	31.03.2016	31.03.2017	31.03.2018
Land & Land rights	-	-	-	
Building and Civil Works	36.54	43.44	48.43	53.41
Hydraulic Works	0	0	0	0
Plant & Machinery	623.59	741.4	826.42	911.43
Communication equipment/IT/Computers	0.05	0.06	0.06	0.07
Vehicles	1.22	1.45	1.61	1.78
Furniture & fixtures	0.25	0.3	0.33	0.36
Office Equipment	0.1	0.12	0.13	0.14
TOTAL	661.74	786.76	876.98	967.19

Commission's Analysis

MSPDCL has stated that the value of GFA has been taken based on the audited opening balance sheet. The opening GFA for FY 2014-15 furnished by MSPDCL has been verified with

closing GFA appearing in opening balance sheet for FY 2013-14 and it is in order. As such the same are considered.

6.17 Depreciation

Petitioner's submission

Depreciation is charged on the basis of straight-line method, on the GFA in use at the beginning of the year and addition in assets during the financial year. The depreciation is based on the original cost of the Gross Fixed Assets.

Table 6.30: Depreciation projected by MSPDCL for FY 2016-17 and FY 2017-18

Sl. No	Particulars	Depreciation rate %	(Rs. Crore)							
			FY 2014-15		FY 2015-16		FY 2016-2017		FY 2017-18	
			Additions (including AAD)	Closing balance of depreciation (including AAD)	Additions (including AAD)	Closing balance of depreciation (including AAD)	Additions (including AAD)	Closing balance of depreciation (including AAD)	Additions (including AAD)	Closing balance of depreciation (including AAD)
1	Land & Land rights	0%	0	0	0	0	-	0	-	0
2	Building and Civil Works	3.34%	1.12	1.47	1.34	2.8	1.53	4.34	1.7	6.04
3	Hydraulic Works		0	0	0	0	0	0	0	0
4	Plant & Machinery	5.28%	30.24	37.5	36.04	73.54	41.39	114.93	45.88	160.81
5	Communication equipment/IT/Computers	15%	0.01	0.01	0.01	0.02	0.01	0.03	0.01	0.04
6	Vehicles	9.50%	0.11	0.14	0.13	0.27	0.15	0.42	0.16	0.58
7	Furniture & fixtures	9.50%	0.01	0.02	0.02	0.04	0.02	0.06	0.02	0.08
8	Office Equipment	6.33%	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.03
	Total (1 to 8)		31.5	39.15	37.53	76.68	43.11	119.79	47.78	167.57
	Percentage of assets funded through grants				0.99		0.99		0.99	
	Depreciation to be claimed		0.31		0.37		0.42		0.47	

(Source: Table - 20 of ARR)

The MSPDCL has further stated that as per the guidelines of Institute of Chartered Accountant of India (ICAI), depreciation should not be claimed as net expenditure for assets funded through government grants. In MSPDCL, as mentioned earlier, most of the funding is through government grants, depreciation shall not be included under ARR on the assets funded through government grants. This is because MSPDCL is not required to repay or recover the amount received as grants from the Government.

It may be noted here that the State of Manipur has been granted a special status similar to that of other North-Eastern States. Government of India provides special assistance for the development of infrastructure facilities in these States. Accordingly, the infrastructure projects of the State of Manipur, including those of MSPDCL are being supported by issue of Grants through various Central Government Ministries and Agencies like Ministry of Power (MoP) through schemes of RGGVY, IPDS, DUGY, R APDRP, Ministry of New and Renewable Energy (MNRE), Ministry of Development of North Eastern Region (DONER) and North Eastern Council (NEC).

Out of the existing capital investment schemes, only for RGGVY and some other central government schemes, MSPDCL is taking loans to the extent of 10% of the total cost of the scheme. Out of these loans also, the loans taken by EDM before 31.01.2014 have been absorbed by Government of Manipur and only the loans taken after February' 2014 shall be taken up by MSPDCL. As such, depreciation is being claimed on the assets funded through the paid up equity of State Government or the new loans taken which is around 1% of the total asset value.

Commission's Analysis:

As per Regulation 28 of JERC for M&M (MYT) Regulations 2014, depreciation shall be computed annually based on strait line method at the approved rates calculated an average GFA. As per opening balance sheet the effective rate of depreciation is 2.77%.

The MSPDCL has claimed depreciation on assets funded through paid up equity which is around 1% of the total asset value. Accordingly the depreciation is worked out as detailed in Table below:

Table 6.31: Depreciation approved by the Commission for control period FY 2016-17 and FY 2017-18

(Rs. Crore)					
Sl.No	Particulars	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
1	Opening GFA	553.85	661.74	786.75	876.97
2	Additions	107.89	125.01	90.22	90.21
3	Closing GFA	661.74	786.75	876.97	967.18
4	Average GFA	607.80	724.25	831.86	922.08
5	Average rate of depreciation	2.77%	2.77%	2.77%	2.77%
6	Depreciation	17	20	23	26

Sl.No	Particulars	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
7	1% of Depreciation	0.17	0.20	0.23	0.26

The Commission accordingly approves depreciation of Rs. 0.23 Crore and Rs 0.26 Crore for FY 2016-17 and FY 2017-18 as against Rs 0.42 Crore and Rs 0.47 Crore projected by MSPDCL respectively.

6.18 Interest and Finance Charges

Petitioner's submission

1. The entire capital expenditure of MSPDCL since its inception has been funded by the State Government through grants and loans from central government Ministries and Agencies like Ministry of Power (MoP) through schemes of APDRP, RGGVY, DUGJY, IPDS etc. Therefore, the utility does not have significant amount of loan liabilities.
2. However for the new Schemes of DUGJY, IPDS 10% of the funds provided will be through loans and hence out of the total capital expenditure of Rs.10 Crore allocated for these two schemes, 10% (i.e. Rs.1 Crore) is considered as new loan amount during FY 2016-17 and FY 2017-18.
3. Interest rate of 14% has been considered for computation of interest cost for long-term loans for MYT period which in line with the applicable current interest rates.
4. Under the restructuring of EDM into MSPDCL and MSPCL the entire loans have been taken by the state government of Manipur and hence the opening loans for FY 2014-15 are assumed to be Zero. There are no loan additions also during the previous Year FY 2014-15. A loan addition of Rs.10 Crore is assumed to be added in each of the years FY 2016-17 and FY 2017-18 respectively.
5. For old consumers (consumers existing before restructuring), Interest cannot be Paid on Security deposit since the data regarding the no of consumers having security deposit is unavailable with MSPDCL. However, for the consumers added after restructuring Interest can be paid on security deposit as per JECR regulations and hence it is considered for the years of FY 2016-17 and each year of MYT period respectively.
6. Details of the loan amounts and interest cost computed for FY 2016-17 and FY 2017-18 is summarized in Table below:

Table 6.32: Interest and Finance Charges furnished by MSPDCL for FY 2016-17 and FY 2017-18
(Rs. Crore)

Particulars	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Interest charges on State Govt. Loans, Bonds And Advances				
Sub Total (A)	0.00	0.00	0.00	0.00
Interest on Long Term Loans /Credits from the FIs/banks/organisations approved by the State Government				
Secured	0.00	0.00	0.14	0.28
PFC/REC				
Un-secured	0.00	0.00	0.00	0.00
Sub Total (B)	0.00	0.00	0.14	0.28
Total (A+B)				
Cost of raising finance & Bank Charges on project loans	0.00	0.00	0.00	0.00
Grand Total Of Interest & Finance Charges	0.00	0.00	0.14	0.28
Less: Interest & Finance Charges Chargeable to Capital Account	0.00	0.00	0.00	0.00
Net Total Of Interest & Finance Charges on Project Loans C-D	0.00	0.00	0.14	0.28
Interest on Consumer Security Deposit	0.00	0.00	0.02	0.03
Interest at weighted average rate of loan portfolio on excess additional equity, if any**	0.00	0.00	0.00	0.00
Total interest and finance charges chargeable to revenue account	0.00	0.00	0.16	0.31

(Source: Table 21 of ARR)

Commission's Analysis

As verified from the interest charges claimed by MSPDCL, no repayment of loan is proposed either in FY 2016-17 or FY 2017-18. Assuming repayment of loan to the extent of depreciation allowed the interest works out as detailed in Table below:

Table 6.33: Interest and Finance Charges approved by the Commission for FY 2016-17 and FY 2017-18

Sl. No	Particulars	FY 2016-17	FY 2017-18
1	Opening Loan	0.00	0.77
2	Additions during the year	1.00	1.00
3	Repayment during the year	0.23	0.26
4	Closing Loan	0.77	1.51

5	Average Loan	0.39	1.14
6	Rate of Interest	14%	14%
7	Interest and Finance Charges	0.05	0.16
8	Interest on consumer security deposit	0.02	0.03
9	Total Interest	0.07	0.19

The Commission approves the interest and finance charges of Rs. 0.07 Crore and Rs 0.19 Crore for FY 2016-17 and FY 2017-18 as against Rs 0.16 Crore and Rs 0.31 Crore projected by the MSPDCL respectively.

6.19 Interest on Working Capital

Petitioner's submission

The MSPDCL has projected interest on working capital at Rs. 12.74 Crore and Rs 14.82 Crore for FY 2016-17 and FY 2017-18 respectively as detailed in Table below:

Table 6.34: Interest on Working Capital Projected by MSPDCL

Sl.No	Particulars	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
A)	Receivables				
A (i)	Annual Revenue for Wheeling and Retail supply Charges	150.71	193.94	278.67	324.9
A (ii)	Receivables equivalent to 2 months average billing	25.12	32.32	46.44	54.15
B (i)	Power Purchase expenses	254.61	320.55	375.68	414.39
B (ii)	1/12th of power purchase expenses	21.22	26.71	31.31	34.53
C (i)	Transmission Charges (Inter State and Intra State)	41.06	82.74	103.68	141.25
C (ii)	1/12th of Transmission Expenses	3.42	6.9	8.64	11.77
D	Total Working capital	49.76	65.93	86.39	100.45
	Interest Rate	14.75%	14.75%	14.75%	14.75%
	Interest on working capital	7.34	9.72	12.74	14.82

Commission's Analysis

As per Regulation 29(4) of JERC for M&M (MYT) Regulations, 2014 interest for working capital loan shall be allowed on the estimated level of working capital for financial year computed as follows:

- Operation and Maintenance expenses for one month; Plus
- Maintenance of spares @ 1% of historical cost escalated @ 6% from the rate of commercial operation; Plus
- Receivables equivalent to one month of expected revenue from sale of electricity at prevailing tariff; Minus

- d. Amount held as security deposit under clause (a) and (b) of sub section (1) of section 47 of the Act from consumers except the security deposits held in the form of bank guarantees.

The rate of interest on working capital loan shall be equal to the State Bank Advance Rate (SBAR) as on 1st April of the financial year in which petition is filed. The rate of interest as on 1.4.2015 is 14.75%. The interest on working capital is worked out on the approved expenses as detailed in Table below:

Table 6.35: Interest on Working Capital approved by the Commission for the FY 2016-17 and FY 2017-18

(Rs. Crore)

Sl.No	Particulars	FY 2016-17		FY 2017-18	
		Total Cost	One Month Cost	Total Cost	One Month Cost
1	O&M Expenses				
	Employee Cost	77.58	6.46	83.98	7.00
	R&M Expenses	6.11	0.51	6.88	0.57
	A&G Expenses	2.53	0.21	2.65	0.22
2	Maintenace of Spares @1% of GFA	786.75	7.87	876.97	8.77
3	Receivables equivalent to one month	309.20	25.77	360.96	30.08
4	Total	1182.16	40.82	1331.44	46.65
5	Rate of Interest	14.75%	14.75%	14.75%	14.75%
6	Interest on Working Capital	174.37	6.02	195.81	6.88

The Commission, accordingly, approves the Interest on Working Capital at Rs. 6.02 Crore for FY 2016-17 and Rs. 6.88 Crore for FY 2017-18 as against Rs. 12.74 Crore and Rs 14.82 Crore projected by MSPDCL.

6.20 Provision for Bad Debts

Petitioner's submission

The MSPDCL has requested for a provision for bad debts at 1.00% of receivables as provided in the Regulation 89.8 of the JERC (Multi Year Tariff) Regulations, 2014 issued by the Hon^{ble} Central Electricity Regulatory Commission.

MSPDCL requests the Hon^{ble} Commission to approve the provision for bad & doubtful debts as summarized in the Table below:

Table 6.36: Provision for Bad debts

	(Rs. Crore)	
Provision for Bad & Doubtful Debts	FY 2016-17 (Projected)	FY 2017-18 (Projected)
Provision for Bad & Doubtful Debts (rounded off)	3.00	3.00

Commission's analysis

As per Regulations 98 (5) of JERC for M&M (Terms and Conditions and for determination of Tariff) Regulations 2010, a provision for bad debts upto 1% of audited receivables be allowed in revenue requirement. As seen the data furnished by MSPDCL the arrears as on 31.08.2015 are Rs 455.62 Crore as against Rs 429 Crore as on 31.08.2014.

This clearly indicates that the MSPDCL is not taking sincere efforts in collection of arrears from the defaulting consumers. The MSPDCL is directed to initiate action as per JERC for M&M (Electricity Supply Code) Regulation, 2010 and Electricity Act, 2003 to realize the dues from the defaulting consumers.

The MSPDCL has not produced audited accounts for FY 2014-15. However the Commission has considered the amount of Rs. 3.00 Crore as projected by MSPDCL.

The Commission approves a provision for bad debts at Rs.3.00 Crore P.A for FY 2016-17 and FY 2017-18 as projected by MSPDCL.

6.21 Return on Equity**Petitioner's submission**

The MSPDCL has state that as per the JERC (Terms and Conditions for Determination of Tariff) Regulations, MSPDCL is entitled for a Return on Equity (RoE) of 19.38% after grossing up the tax rate of 20.01% in 15.5%. The average paid up equity for MSPDCL is taken as Rs.12.05 Crore and Rs 14.05 Crore for FY 2016-17 and FY 2017-18 respectively. As per the opening balance sheet paid up equity is Rs.10.5 Crore and Rs.12.05 Crore for FY 2016-17 and FY 2017-18 respectively. Another Rs. 2 Crore, 2 Crore and .95 Crore of equity shall be paid up in FY 2015-16, FY 2016-17 and FY 2017-18 to increase the paid up equity capital to Rs. 15 Crore.

Based on this the RoE calculations is given below,

Table 6.37: Return on Equity

Sl.No	Particulars	PY 2014-15	CY 2015-16	(Rs. Crore)	
				MYT Period	
				2016-17	2017-18
1	Return on Equity for the Year	1.95	1.95	2.34	2.72

Commission's Analysis

The opening equity of Rs.10.05 Crore as per opening balance sheet is considered. But the additional equity proposed during FY 2016-17 and FY 2017-18 is not considered as they are not actually paid. Rate of return on equity is considered at 15.5%. MAT rate is considered at 20.01%. The RoE and MAT are worked out as detailed in the Table below:

Table 6.38: Return on Equity Approved by the Commission

Sl.No	Loan Details	Unit	2015-16 Estimated	2016-17 Projected	(Rs. Crore)
					2017-18 Projected
1	Average Equity	Rs Crore	10.05	10.05	10.05
2	Rate of Return on Equity	%	15.50%	15.50%	15.50%
4	Return on Equity	Rs Crore	1.56	1.56	1.56
5	MAT rate	%	20.01%	20.01%	20.01%
6	MAT	Rs Crore	0.31	0.31	0.31
7	Grossed up by 20.01%	Rs Crore	0.39	0.39	0.39
8	Total (4+7)	Rs Crore	1.95	1.95	1.95

The Commission approves RoE at Rs.1.56 Crore P.A for FY 2016-17 and FY 2017-18.

6.22 Income Tax

MAT on the above return on equity at 20.01% for FY 2016-17 and FY 2017-18 works out to Rs 0.39 Crore P.A.

The Commission allows MAT at Rs 0.39 Crore P.A for FY 2016-17 and FY 2017-18 as against Rs 0.78 Crore and Rs 1.55 Crore projected by MSPDCL.

6.23 Non-Tariff Income

The MSPDCL has projected the non-tariff income at Rs. 0.34 Crore and Rs 0.37 Crore for FY 2016-17 and FY 2017-18. Non-tariff income comprises meter rent, late payment charges, miscellaneous income such as interest on staff loans, cost of auctioned stores, rebate on timely payment of power purchase bills etc. The MSPDCL has stated that for projecting non-tariff income for FY 2016-17 and FY 2017-18 the average income under this head for the past three years have been assumed as provided in Table below:

Table 6.39: Non-Tariff Income projected by MSPDCL for FY 2016-17 and FY 2017-18**(Rs. Crore)**

Particulars	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
	Actuals	Estimates	Projected	Projected
Non-Tariff Income	0.31	0.33	0.34	0.37

(Source: Table 23 of ARR)

Commission's Analysis

MSPDCL has not furnished the details under non-tariff income. Non-Tariff Income comprises of meter rent, late payment charges, miscellaneous income such as reconnection charges, Meter/consumer installation charges, interest on staff loans, rebate for timely payment of power purchase bills, cost of auctioned stores material, penalty on theft of energy charges etc.

The MSPDCL is directed to account for revenue from the above heads under Non-Tariff Income invariably from next tariff petition.

For the present non-tariff income is approved as projected by MSPDCL.

The Commission approves the non-tariff income of Rs. 0.34 Crore and Rs 0.37 Crore for FY 2016-17 and FY 2017-18 respectively as projected by the MSPDCL.

6.24 Aggregate Revenue Requirement

Based on the above analysis and approvals, the Aggregate Revenue Requirement projected by the MSPDCL and approved by the Commission for FY 2016-17 and FY 2017-18 are furnished in Table below:

Table 6.40: Aggregate Revenue Requirement for FY 2016-17 and FY 2017-18**(Rs. Crore)**

Sl.No	Particulars	Projected by MSPDCL		Approved by the Commission	
		FY 2016-17	FY 2017-18	FY 2016-17	FY 2017-18
1	Fuel Cost	375.68	414.39	1.19	1.19
2	Power Purchase Cost			310.82	348.69
3	Transmission Charges for inter state	51.70	57.45	51.70	57.45
4	Transmission Charges of MSPCL	51.98	83.80	36.08	43.67
5	Employee Cost	78.77	88.21	77.58	83.98
6	R&M Expenses	6.11	6.88	6.11	6.88
7	A&G Expenses	2.53	2.65	2.53	2.65
8	Depreciation	0.42	0.47	0.23	0.26

Sl.No	Particulars	Projected by MSPDCL		Approved by the Commission	
		FY 2016-17	FY 2017-18	FY 2016-17	FY 2017-18
9	Interest and Financial Charges	0.16	0.31	0.07	0.19
10	Interest on Working Capital	12.74	14.82	6.02	6.88
11	Provision of bad debts	3.00	3.00	3.00	3.00
12	Total Cost	583.09	671.98	495.33	554.84
13	Add: Return on Equity/RoE	2.33	2.71	1.56	1.56
14	Add: Income Tax			0.39	0.39
15	LESS: Non Tariff Income	0.34	0.37	0.34	0.37
16	Aggregate Revenue Requirement	585.08	674.32	496.94	556.42

6.25 Expected Revenue from Existing Tariff

Petitioner's submission

The MSPDCL has projected the revenue from existing tariff at Rs. 291.86 Crore for FY 2016-17 including revenue from UI sales at Rs. 13.20 Crore as detailed in Table below:

Table 6.41: Revenue with Existing Tariff Projected by MSPDCL for FY 2016-17

Revenue	(Rs. Crore)			
	FY 2014-15 Actuals	FY 2015-16 Estimated	FY 2016-17 Projected	Average per unit Existing Tariff
Kutir Jyoti	2.28	2.47	3.76	1.71
Domestic	78.18	96.52	144.25	3.54
Commercial	12.95	20.88	30.15	5.40
Public Lighting	1.47	2.40	2.46	5.31
Public water works	8.08	9.77	9.23	6.09
Agriculture and irrigation	1.09	0.95	1.17	3.20
Cottage & Small Industries	2.57	6.83	9.85	3.49
Bulk	39.34	48.73	71.59	4.59
Temporary	0.02	0.01	1.96	5.93
Medium Industries	1.25	1.80	1.96	5.93
Large Industries	3.49	3.58	4.24	4.92
Total	150.71	193.94	278.67	
UI /trading Receivable	9.1	43.16	13.20	1.79
Total	159.81	237.10	291.86	

(Source: Table 25 of ARR)

Commission's Analysis

As already discussed in Para 6.10, the surplus power to be sold under UI sales is 112.33 MU for FY 2016-17. The MSPDCL has projected UI sales at Rs. 1.79 per kWh. The average rate projected is quite low. During FY 2015-16 the average rate projected by MSPDCL is Rs.

3.12/kWh. Hence, the same is adopted.

Now, with the category wise sales approved vide Para 6.6 the revenue from existing tariffs (including UI sales of 112.37MU) works out to Rs. 326.58 Crore during FY 2016-17 as detailed in Tables below:

Table 6.42: Revenue from Existing Tariff approved by the Commission for FY 2016-17

Sl.No	Category	Energy Sales (MU)	Average Rate (Rs/kWh)	Revenue (Rs. Crore)
A	LT Supply			
1	Kutir Jyoti	15	1.79	2.68
2	Domestic	406	3.74	151.75
3	Commercial	50	5.42	27.09
4	Public Lighting	6	5.24	3.14
5	Public Water Works	3	5.23	1.57
6	Agriculture	1	3.17	0.32
7	Small Industries	28	3.53	9.90
8	Total LT	509		196.45
B	HT Supply			
9	Commercial	4	5.66	2.26
10	Public Water Works	15	6.31	9.46
11	Agriculture	3	3.25	0.97
12	Medium Industries	4	6.58	2.63
13	Large Industries	16	4.83	7.73
14	Bulk Supply	156	4.62	72.02
15	Total HT	198		95.07
16	Grand Total (LT+HT)	707		291.52
17	UI Sales	112.33	3.12	35.05
18	Total Sales	819.33		326.57

Detailed calculation of revenue from sale within the State is given in Annexure -III.

The Commission, accordingly, approves the revenue from existing tariff at Rs. 326.57 Crore for FY 2016-17 including revenue from UI sales at Rs 35.05 Crore.

6.26 Revenue Gap for FY 2016-17 with existing tariff

Table 6.43: Revenue Gap for FY 2016-17

Particulars	Unit	Projected by MSPDCL	Approved by the Commission
Revenue requirement	Rs. Crore	585.08	496.94
Revenue from existing tariff	Rs. Crore	278.67	291.52
Outside state sales	Rs. Crore	13.2	35.05
Total revenue from sale of energy	Rs. Crore	291.86	326.57
Revenue gap	Rs. Crore	293.21	170.37
Energy sales	MU	704.43	707
UI Sales	MU	73.64	112.52
Total Sales	MU	778.07	819.52
Average cost	Rs. /kWh	7.52	6.06
Average realisation	Rs/kWh	3.96	4.12

6.27 Revenue from Revised Tariff for FY 2016-17

As seen from Para 6.26 supra there is a revenue gap of Rs. 170.37 Crore which is about 34.28% of Net ARR FY 2016-17. The existing tariffs are fixed w.e.f 01.04.2015. As such the Commission considers to revise the tariffs by 8% under telescopic billing without giving tariff shock to consumers to bridge the gap partially. Owing to revision of tariffs the MSPDCL is expected to get additional revenue of Rs. 23.58 Crore (Rs. 350.15-326.57) as detailed in Table below:

Table 6.44: Revenue from Revised Tariff for FY 2016-17

Sl.No	Category	Energy Sales (MU)	Average Rate (Rs/kWh)	Revenue (Rs. Crore)
A	LT Supply			
1	Kutir Jyoti	15	2.58	3.87
2	Domestic	406	4.04	163.93
3	Commercial	50	5.77	28.86
4	Public Lighting	6	5.59	3.35
5	Public Water Works	3	5.58	1.67
6	Agriculture	1	3.37	0.34
7	Small Industries	28	3.73	10.46
8	Total LT	509	4.17	212.48
B	HT Supply			
9	Commercial	4	5.96	2.38
10	Public Water Works	15	6.62	9.92
11	Agriculture	3	3.40	1.02

Sl.No	Category	Energy Sales (MU)	Average Rate (Rs/kWh)	Revenue (Rs. Crore)
12	Medium Industries	4	6.88	2.75
13	Large Industries	16	5.18	8.29
14	Bulk Supply	156	5.02	78.26
15	Total HT	198	5.18	102.62
16	Grand Total (LT+HT)	707	4.46	315.10
17	UI Sales	112.33	3.12	35.05
18	Total Sales	819.52	4.27	350.15

Note: Detailed calculation is given in Annexure - IV

There by the gap is reduced to Rs. 146.99 Crore which the MSPDCL shall meet from Government subsidy and by improving internal efficiency.

6.28 Government Subsidy

The MSPDCL proposed budgetary support of Rs. 262.62 Crore from Government of Manipur. As seen from the above it is clear that the revenue from sale of power is not sufficient to meet the expenditure of MSPDCL as a result of this the MSPDCL shall continue to depend upon the subsidy from Government of Manipur. Out of net revenue gap of Rs. 146.99 Crore arrived in para 6.27 supra the MSPDCL shall generate additional revenue of Rs. 1.99 Crore by improving internal efficiency and balance Rs. 145 Crore shall be met from Government subsidy as against Rs. 262.62 Crore proposed by MSPDCL.

7. Tariff Principles and Design

7.1 Background

- a. The Commission, in determining the revenue requirement of MSPDCL for the year 2016-17 and the retail tariff, has been guided by the provisions of the Electricity Act, 2003, the National Tariff Policy (NTP), Regulations on Terms and Conditions of Tariff issued by the Central Electricity Regulatory Commission (CERC) and Regulations on Terms and Conditions of Tariff notified by the JERC for M&M. Section 61 of the Act lays down the broad principles, which shall guide determination of retail tariff. As per these principles the tariff should “Progressively reflect cost of supply” and also reduce cross subsidies “within the period to be specified by the Commission”. The Act lays special emphasis on safeguarding consumer interests and also requires that the costs should be recovered in a reasonable manner. The Act mandates that tariff determination should be guided by the factors, which encourage competition, efficiency, economical use of resources, good performance and optimum investment.

The NTP, notified by Government of India in January 2006, provides comprehensive guidelines for determination of tariff as also working out the revenue requirement of power utilities. The Commission has endeavored to follow these guidelines as far as possible.

- b. The NTP mandates that the Multi-Year-Tariff (MYT) framework be adopted for determination of tariff from 1st April 2006. Accordingly, the MSPDCL has filed petition for determination of ARR for control period FY 2016-17 to FY 2017-18 with reliable data.
- c. The mandate of the NTP is that tariff should be within plus / minus 20% of the average cost of supply by 2010-11. It is not possible for the Commission at this stage to lay down the road map for reduction of cross subsidy within $\pm 20\%$ mainly because of consumers’ low paying capacity and relatively high cost of power. The gap in the year 2010-11 was 36% and that of 2016-17 is about 30.72%. However, in this tariff order an element of performance target has been indicated by setting target for distribution loss reduction and increasing sales volume during the period from 2016-17 to 2017-18. The improved performance, by reduction of loss level, and increase in sales will result in substantial

reduction in average cost of supply. The existing and proposed tariffs of MSPDCL are two part tariff. The Commission has considered for a nominal increase in tariff in view of the extremely poor conditions of power supply in the State.

d. Clause 8.3 of National Tariff Policy lays down the following principles for tariff design:

- (i) In accordance with the National Electricity Policy, consumers below poverty line who consume below a specified level, say 30 units per Month, may receive a special support through cross subsidy. Tariffs for such designated group of consumers will be at least 50% of the average cost of supply. This provision will be re-examined after five years.
 - (ii) For achieving the objective that the tariff progressively reflects the cost of supply of electricity, the SERC would notify the roadmap, within six Months with a target that latest by the end of the year 2016-17 tariffs are within $\pm 20\%$ of the average cost of supply. The road map would have intermediate milestones, based on the approach of a gradual reduction in cross subsidy.
For example, if the average cost of service is Rs.3 per unit, at the end of year 2015-16, the tariff for the cross subsidized categories excluding those referred to in para-1 above should not be lower than Rs. 2.40 per unit and that for any of the cross subsidizing categories should not go beyond Rs.3.60 per unit.
 - (iii) While fixing tariff for agricultural use, the imperatives of the need of using ground water resources in a sustainable manner would also need to be kept in mind in addition to the average cost of supply. The tariff for agricultural use may be set at different levels for different parts of the State depending on the condition of the ground water table to prevent excessive depletion of ground water.
- e. Regulation 16 of JERC for M&M (Terms and Conditions for Determination of Tariff) Regulations specifies.
- (i) The cross subsidy for a consumer category means the difference between the average per unit rate based on tariff schedule of the Commission for that Category and the combine average cost of supply per unit expressed in percentage terms as a portion of the combined average cost of supply.
 - (ii) In the first place, the Commission shall determine the tariff, so that it progressively

reflects the combined average cost of supply of electricity and also reduce cross-subsidies within a reasonable period. In the second phase, the Commission shall consider moving towards category wise cost of supply as a basis for determination of tariff.

- f. The Commission has considered special treatment to Kutir Jyoti connections and agricultural sector. It has also aimed at raising the per capita consumption of the State from 100 kwh in 2010-11 to 162 kWh in 2014-15 to 300 kWh by the end of 2016-17. The Commission endeavors that the tariffs progressively reflects cost of supply in a shortest period and the Government subsidy is also to be reduced gradually. The tariffs have been rationalized with regard to inflation, paying capacity of consumers and to avoid tariff shock.

7.2 Tariffs Proposed by the MSPDCL and Approved by the Commission

a) Existing & Proposed by MSPDCL

MSPDCL in its tariff petition for FY 2016-17 has proposed for revision of the existing retail tariffs to various categories of consumers to earn additional revenue to meet the expenses partly.

The MSPDCL has proposed tariff revision as indicated in table - 7.1 below. The proposed increase in tariff by the MSPDCL would result in an overall increase of about 10%.

Table 7.1: Existing and Proposed Tariff for FY 2016-17

Particulars	Existing Tariff		Proposed by the MSPDCL	
	Fixed Charges (Rs./kW/ kVA/ Month)	Energy Charges (Rs./kWh)	Fixed Charges (Rs./kW/ kVA/Month)	Energy Charges (Rs./kWh)
LT SUPPLY				
Kutir Jyoti				
0-15 kWh	20	1.00	20	1.10
Domestic Light & Power				
0-100 kWh	60	2.90	60	3.20
101-200 kWh	60	3.50	60	3.90
Above 200 kWh	60	4.40	60	4.80
Commercial				
0-100 kWh	80	3.90	80	4.30
101-200 kWh	80	4.65	80	5.10
Above 200 kWh	80	5.50	80	6.10
Public Lighting	65	5.15	65	5.70
Public Water	100	5.15	100	5.70

Particulars	Existing Tariff		Proposed by the MSPDCL	
	Fixed Charges (Rs./kW/ kVA/ Month)	Energy Charges (Rs./kWh)	Fixed Charges (Rs./kW/ kVA/Month)	Energy Charges (Rs./kWh)
Works				
Agriculture	60	3.05	60	3.40
Cottage & Small Industry	65	3.05	65	4.30
HT SUPPLY				
Commercial	100	5.40	105	5.90
Public Water Works	90	4.85	100	5.30
Agriculture	100	2.85	105	3.10
Medium Industry	100	4.00	105	4.40
Large Industry	100	4.65	105	5.10
Bulk Supply	100	4.20	105	4.60

b) Tariff Categories approved by the Commission

The Commission approved tariff categories/sub-categories are given below. The un-metered supply includes consumers not provided with energy meters. Unmetered supply will be billed based on assessed consumption arrived as per JERC for M&M (Electricity Supply Code) 2013 at the relevant rates of metered Tariff of the respective categories.

LT Supply

1 Power Supply for “Kutir Jyoti” – of Domestic Consumers.

- A Metered Supply
- B Un-metered Supply

2 Power Supply for Domestic

- A Metered Supply
- B Un-metered Supply

3 Power Supply for Non-Domestic/Commercial

- A Metered Supply
- B Un-metered Supply

4 Power Supply for Public Lighting

- A Metered Supply
- B Un-metered Supply

5 Power Supply for Public Water Works (PWW)

- A Metered Supply

B Un-metered Supply

6 Power Supply for Irrigation & Agricultural

A Metered Supply

B Un-metered Supply

7 Power Supply to Small Industries

A Metered Supply

B Un-metered Supply

HT Supply

1 Commercial

A Metered Supply

B Unmetered Supply

2 Public Water Works

A Metered Supply

B Un-metered Supply

3 Irrigation & Agriculture

A Metered Supply

B Un-metered Supply

4 Medium Industry

A Metered Supply

B Un-metered Supply

5 Large Industry

A Metered

B Un Metered

6 Bulk supply within the State

A Metered Supply

B Un-metered Supply

c) Tariff for FY 2016-17 Approved by the Commission

Having considered the Petition (ARR & Tariff) No. 3 of 2015 of MSPDCL for approval of Aggregate Revenue Requirement (ARR) and determination of Retail Tariff for sale of

energy and having approved the Aggregate Revenue Requirement (ARR) with a revenue gap of Rs.170.37 Crore vide para 6.26 supra the Commission considers to revise the tariffs under Telescopic billing/with an average increase by 8.25%, as detailed in table below.

The request of the MSPDCL to reduce the slabs under Kurti Jyoti category from two to one is not agreed to.

Table 7.2: Category wise Tariff approved by the Commission for FY 2016-17

Sl.No	Category & Consumption Slab	Fixed Charges per month (Rs.)	Variable Charges (Rs./kwh)
	LT SUPPLY		
1	Kutir Jyoti		
	First - 15 kwh/Month	20	1.40
	Above 15 kwh/Month	20	2.50
2	Domestic		
	First - 100 kwh/Month	60	3.20
	Next 100 kwh/Month	60	3.80
	Above 200 kwh/Month	60	4.70
3	Non-Domestic/Commercial		
	First - 100 kwh/Month	80	4.20
	Next 100 kwh/Month	80	5.00
	Above 200 kwh/Month	80	5.90
4	Public Lighting	65	5.50
5	Public Water Works	100	5.50
6	Irrigation & Agriculture	60	3.25
7	Small Industry	65	3.25
	HT SUPPLY		
1	Commercial	105	5.70
2	Public Water Works	100	5.00
3	Irrigation & Agriculture	100	3.00
4	Medium Industry	100	4.30
5	Large Industry	100	5.00
6	Bulk Supply	100	4.60

Note: The above table depicts fixed and energy charge only

Details are given in the tariff schedule in the Appendix.

d) Miscellaneous Charges and Important Conditions of Supply

The detailed Tariffs including rates for un-metered categories of consumer, miscellaneous charges and Important Conditions of Supply furnished by MSPDCL are examined and approved as given in the Tariff Schedule in the Appendix.

As per Electricity Act, 2003, electricity supply not be given without meters. Commission is also regularly giving directives in this regard. Yet the MSPDCL releasing new connections without meters which is very serious deviation. In next tariff order no unmetered tariff will be allowed.

8. Wheeling Charges for FY 2016-17

8.1 Background

MSPDCL has not filed petition for determination of wheeling charges. However under regulation 79 of JERC (M&M) (MYT) Regulations 2014, the Commission has determined the wheeling charges in order to implement open access in the state. The MSPDCL is not maintaining separate accounts for the distribution wire business and retail supply business. So the ARR of the wheeling business is arrived at as per the following matrix.

Table 8.1 Allocation matrix

Sl. No.	Particulars	Wire business	Retail Supply business
1	Power purchase cost	0	100
2	Employee cost	60	40
3	R & M expenses	90	10
4	Adm. & General Expenses	50	50
5	Depreciation	90	10
6	Interest & Finance Charges	90	10
7	Interest on working Capital	10	90
8	Provision for bad debts	0	100
9	Income tax	90	10
10	Return on equity	90	10
11	Contribution to contingency reserves	100	0
12	Non-tariff Income	10	90

8.2 ARR for wheeling business

ARR for wheeling business arrived in accordance with the above methodology is as detailed in table below.

Table 8.2 ARR of wheeling business approved by the Commission for FY 2016-17

Sl. No	Particulars	Total ARR for FY 2016-17	ARR for wire business for FY 2016-17	Retail Supply for FY 2016-17
1	Power purchase cost	414.50	-	414.50
2	Employee cost	77.58	46.55	31.03
3	R & M expenses	6.11	5.50	0.61
4	Adm. & General Expenses	2.53	1.26	1.27
5	Depreciation	0.23	0.21	0.02
6	Interest & Finance Charges	0.07	0.06	0.01
7	Interest on working Capital	6.02	0.60	5.42
8	Provision for bad debts	3.00	-	3.00
9	Income tax	-	-	-
10	Return on equity	1.95	1.75	0.20
11	Contribution to contingency reserves	-	-	-

Sl. No	Particulars	Total ARR for FY 2016-17	ARR for wire business for FY 2016-17	Retail Supply for FY 2016-17
12	Less: Non-tariff Income	0.34	0.03	0.31
	Total	511.65	55.90	455.75

8.3 Wheeling Tariff

The wheeling tariff has been calculated on the basis of the ARR for wheeling business and total energy sold as detailed in table below.

Table 8.3: Wheeling Tariff approved by the Commission for FY 2016-17

Sl. No	Particulars	Unit	FY 2016-17
1	ARR for wheeling function	Rs/Crore	55.90
2	Energy sold within the state	MU	707
3	Wheeling tariff	Rs/kWh	0.79

The Commission approves wheeling charge at Rs. 0.79/kWh for FY 2016-17.

9. Directives

9.1 General

While examining the information and data contained in the proposed ARR and MYT Petition for the FY 2016-17 and FY 2017-18, it is observed that the computation and compilation of the data have been done based on assumptions only and as a result, there has been difficulties in finalization of the ARR and determination of retail tariff also. The above observation itself substantiates the fact that the administrative, technical and commercial performances of the MSPDCL require substantial improvement within a specified time frame.

Similar situation was noticed in the ARR & Tariff petition for the FY 2015-16. The Commission had observed that while there is ample scope for reducing cost and increasing efficiency in the operation of the department, serious efforts appear to be lacking. It is in the above context that 22 directives were given for compliance in the Tariff Order 2010-11 out of which 5 directives were fully complied with five fresh Directives were issued in tariff order for FY 2012-13. The Commission expected that MSPDCL would take prompt action on the directives and monitor their implementation. Unfortunately, action is yet to be taken on most of the important directives, which could make significant difference to operational efficiency and cost. In some cases action has no doubt been initiated, but overall the seriousness with which the directives were issued by the Commission does not appear to have been realized by the MSPDCL.

In the above background, the Commission is constrained to repeat the directives which have not been fully complied with and also gives specific new directives.

Directive 2: Annual Statement of Accounts

The MSPDCL was directed to prepare separate Annual accounts statements such as balance sheet, profit and loss Account and relevant schedules and statements, every year for regulatory purpose and submit to the Commission duly got them audited.

Compliance Status

The Audited and approved balance sheet of MSPDCL for the year ending 2013-14 is

available and Cost Audit for 2014-15 is also underway. The financial statements for FY 2014-15 are under process and MSPDCL shall submit the same to the Commission upon finalization and statutory audit of the same.

Comment of the Commission

MSPDCL is directive to submit the audited accounts for FY 2014-15 soon.

Directive 3: Maintenance of Asset & Depreciation Registers**Compliance Status:**

Asset register for FY 2013-14 are finalized.

Comment of the Commission

The MSPDCL is directed to up to date the asset register and submit to the Commission soon.

Directive 4: Management Information System (MIS)

The MSPDCL was directed to take appropriate steps to build up credible & accurate database and management information system (MIS) and regularly update the same for future record and reference. Arrangement may also be made for "On-line Payment" and "Payment through Bank" of the electricity bills.

Compliance Status

In Finance & Accounts section, there is day to day monitoring of revenue collected in MSPDCL bank accounts by each revenue collecting division and other bulk consumers/consumers/Govt. departments.

*For online payment mechanism, computerized billing and MIS, may kindly get the details from Manager, Commercial.

Comments of the Commission

The compliance submitted by the MSPDCL is not appropriate to the main directive issued. The MSPDCL should take appropriate steps to build credible and accurate data base for management information system (MIS). This directive is not fully complied with.

Directive 5: Revenue Arrears

The MSPDCL was directed to assess year wise Revenue Arrears due from consumers and submit a report by 30th September, 2011 to the Commission. The MSPDCL was also further directed to initiate action to collect/ liquidate the arrears.

Compliance Status

The revenue arrears for the last four years are as given below:

1	As on 31.03.2010	Rs. 256.91 Crore
2	As on 31.03.2011	Rs. 279.09 Crore
3	As on 31.03.2012	Rs. 317.69 Crore
4	As on 31.03.2013	Rs. 351.165 Crore
5	As on 30.09. 2013	Rs. 396.420 Crore
6	As on 31.03.2014	Rs.420 Crore
7	As on 30.06.2014	Rs.446 Crore
8	As on 31.08.2014	Rs. 429 Crore
9	As on 31.03.2015	Rs 443.48 Crore
10	As on 31.08.2015	Rs 455.62 Crore

The MSPDCL will submit the henceforth quarterly progress report to the Hon'ble Commission.

Comments of the Commission

As seen from the above the arrears are increasing year by year. As on 31.08.2015 the outstanding amount is more than 1.5 year assessment. The MSPDCL is directed to initiate action as per JERC for M&M (Electricity Supply Code) Regulations 2010 and Electricity ACT 2003 to realize the dues and bring down the dues to barest minimum.

Directive 7: De-commissioning of Generating plants

The Compliance to this directive shall be reported to the Commission soon on written off the asset value of defunct generating plants which are lying idle for more than 15 years.

Compliance Status

In the opening Balance sheet of MSPDCL as on 31/01/2014, MSPDCL has taken over the asset from erstwhile EDM as per the written down values as on 31/01/2014 as such the

value of completely depreciated asset has not been included in the gross asset value of MSPDCL. The audited annual account of FY 2015-16 has been attached for reference.

Comment of the Commission

The reply given by MSPDCL is not appropriate to the directive issued. It may be clarified whether the generating plant lying idle for the last 15 years has been written off. If no the amount of scrap value realized should be accounted for in the next ARR Petition.

Directive 8: Sale of Power outside the State

The MSPDCL is directed to ensure that only surplus power be sold under UI sales after fully meeting the state's requirement without any staggering of supply in the state. This may be ensured strictly.

Compliance Status

MSPDCL would like to clarify that the UI mechanism is inherent in the inter-state transmission system and is required for grid stability as per CERC guidelines. The state power supply is wholly dependent upon the Central Generation Stations. There is a big gap between the supply and demand in the state and therefore MSPDCL has to resort to area wise alternate day load-shedding which depends upon the availability of power. Further the MSPDCL has to buy surplus energy through UI mechanism during peak hours to supply reliable power as per its schedule whereas during midnight, demand is less and therefore MSPDCL under draws power from the system.

From FY 2014-15, MSPDCL has also started selling surplus power during off peak hours to exchange or under banking. Hence, the UI under-drawl will be restricted.

Comment of the Commission

The MSPDCL shall ensure that there is no staggering of supply in the State while selling/banking power under UI mechanism/trading.

Directive 9: Distribution Losses

To know the actual Distribution losses in the system, MSPDCL was directed to ensure 100% metering of all feeders, DTs, and consumer connections and conduct voltage wise energy audit. To achieve this it was directed to chalk out an action plan for preliminary energy audit and submit the same to the Commission by May 2011.

Compliance Status

For completion of 100% metering the following schemes are being undertaken:-

1. MSPDCL has targeted for Installation of 223173 numbers of Pre-Paid Meters in Manipur. Out of which 113882 numbers of Pre-Paid meters have already been installed and 106774 numbers of Meters been activated.
2. MSPDCL has targeted to complete the entire work of Pre-Paid metering on/ before March 2016.
3. In Post Paid metering, MSPDCL has already installed 83282 numbers of meters.
4. The work of providing of feeder meters, boundary meters, DT meters, HT meters is in progress under R- APDRP/RGGVY/IPDS/State Scheme.

Comment of the Commission

The directive is not fully complied with

Directive 10: Unauthorized Connection/ Theft of power Cases & Directive 11: Detailed Survey & Investigation

In the above two directives the Commission had directed to carryout detailed survey & Investigation to –

1. Identify unauthorized connections.
2. Physical verification of the connected load of all connections.
3. Physical verification of the categories under which the consumers are availing supply.
4. Verification & updating of names of the consumers etc. and
5. Regularize 30000 unauthorized consumers annually.

Compliance Status

An advance team of MSPDCL officials is carrying out Survey and Investigation of consumers as per JERC (M&M) directives along with regularization of unauthorized connections. The Turn Key Contractors are providing computerized data base for the consumers installed with Energy Meter and reports are being monitored by MSPDCL. The MSPDCL's officials in a process to furnish the Survey and Investigation reports in the prescribed format. Work is in progress and necessary reports will be submitted to the Hon'ble Commission at the

earliest.

Comment of the Commission

If departmental staffs are engaged for physical verification work, the fund crunch will be reduced to greater extent.

Directive 12: Replacement of Defective Meters and Installation of Meters to Un-Metered Connections

The MSPDCL was directed to provide meters to all un metered consumers and replace the defective meters within the time frame given in the commission order No. 24012/2/5/09 – JERC dt 7.1.2011 on 100% metering plan and submit quarterly report regularly.

Compliance status

MSPDCL has installed 197164 meters for new connections, unmetered to metered connections as well as replacement of old/defective meters till October' 2015.

Further, MSPDCL would like to submit to the Hon'ble Commission that it has targeted 100% metering of consumers by end of FY 2015-16. A number of schemes are being implemented for the metering of consumer installation.

Comment of the Commission

The directive is not fully complied with.

Directive 13: Physical and Financial Status of RAPDRP & RGGVY Schemes

As per above directive MSPDCL has to submit physical and financial progress of work done and the impact of the works on revenue performance and metering with details of work done, amount of revenue increase etc.

Compliance Status

No compliance reported by MSPDCL.

Comments of the Commission:

As verified, physical progress of works is very poor. Unless targeted works are completed in time and put the assets into use, the required benefits will not be achieved.

Directive 14: Interest on Security Deposit

MSPDCL was directed to furnish up to-date position of interest on security deposit as per regulation 6.10(5) of JERC (supply code) regulations 2010.

The above rule position may be followed scrupulously and not to commit breach of rule.

Compliance Status

Two new security deposit accounts have been opened by MSPDCL corporate office with State Bank of Indian Paona Bazaar (i) Security Deposit A/C (Meter) No 33810369620 (ii) Security Deposit A.C (Works) 34944027846. For the other security deposit A/C for deposit works, enquiry rights request has been put to State Bank of India, Paona Bazaar.

MSPDCL does not have accurate database for security deposit of consumers who were connected before the 31.01.2014. As such MSPDCL is not in a position to pay interest on consumer security deposit for such consumers. However for new consumers MSPDCL shall pay interest as per JERC Regulations and in this regards a provision of 0.02 Crore has been kept in the ARR of FY 2016-17.

Comment of the Commission

The directive is not fully complied with.

Directive 15: Power from Renewable Sources

The MSPDCL was directed to procure power for renewable sources.

Compliance Status

There is no grid connected renewable energy in NE region. Efforts have been made to purchase REC through IEX or PTC and the same will be done in the ensuing FY 2015-16. For past years, MSPDCL requests waiver of RPO obligation since there is no grid connected renewable energy in the state.

Further, MSPDCL along with MANIREDA is planning to formulate a scheme for grid connected solar roof top plants which should help MSPDCL to comply with the solar RPO.

Comment of the Commission

The MSPDCL explore all possible to purchase renewable energy.

Directive 16: Investment Plan and Capping of Capital expenditure

Annual Investment Plan shall be submitted to the Commission and necessary approval of Commission shall be obtained for all major capital works costing Rs. 5.00 Crore and above before execution of the works.

Compliance Status

The annual investment plan is being submitted every year with the ARR and Tariff Petition to the Hon'ble Commission. In the present petition for FY 15-16, MSPDCL is submitting the annual investment plan of FY 15-16 to the Commission. All the major capital investment schemes are being undertaken by MSPDCL with the prior approval of State Government and as per the approved schemes of State Government and Central Government. Most of capital investment schemes are being funded entirely by grants from the State Government and as such are not recovered through tariff from consumers.

Comment of the Commission

Individual works costing Rs.5.00cr and above should be submitted separately to the Commission for approval before execution.

Directive 17: Maximum Demand Indicator Meters (MDI)**Compliance Status**

The new meters being purchased by the department have the provision of maximum demand indicator which are being installed on bulk and HT consumers. Recently, the department has purchased 259 no. of such meters and more number of such meters are being planned for further purchase. A total of 1568 such meters are already installed in bulk consumers.

Comment of the Commission

The directive is not fully complied with.

New Directives

Directive 18: As verified from the Tariff Schedule, it is observed that unmetered categories

are prevailing in all categories including HT. Continuance of HT connections without meters is highly irregular. As per Electricity Act, 2003 supply to no service be released without meter. As such, the MSPDCL is directed to provide HT meters to all unmetered HT connections in the first instance and report compliance by 30.09.2016 positively.

In respect of LT categories all unmetered connections be provided with meters by 31.03.2017.

Progress and providing meters to unmetered connections be reported quarterly indicating category wise number of unmetered connections at the beginning of the quarter and installed during the quarter and balance to be installed.

Directive 19: Reduction of billing slabs

The MSPDCL is directed to reduce the billing slabs of LT Non-domestic/commercial from three to two slabs in the next Tariff Petition for FY 2017-18.

Directive 20: Inhouse development of IT enabled system:

The MSPDCL is directed to take steps for development of inhouse IT enabled system so that all software issues can be attended/solved departmentally instead of depending on consultants.

Directive 21: Uptodation of computerised billing program of power factor and rebate/surcharge

MSPDCL should up-to-date computerised billing programmes to facilitate adoption of power factor rebate/surcharge as indicated in the tariff schedule.

Directive 22: Installation of meters to all 11 kV feeders and DT's

MSPDCL should install meters for all 11 kV's and DT's in all RAPDRP covered towns by 30.06.2016. Sample study should be conducted to know the highest feeder loss and highest DT loss and report to be submitted to the Commission by 30.09.2016.

Directive 23: Furnishing of correct data of slab-wise consumers, connected load and energy sales:

The slabwise consumers, connected load and energy sales furnished by MSPDCL are far from truth. The MSPDCL should conduct at least some sample study in urban and rural areas if not able to find out 100% data and furnish actual data or nearer to the facts in the next tariff petition to assess revenue correctly.

10. Fuel and Power Purchase Cost Adjustment

10.1 Background

Section 62 sub-section 4 of the Electricity Act, 2003 provides that no tariff or part of any tariff may ordinarily be amended, more frequently than once in every financial year, except in respect of any changes expressly permitted under the terms of any fuel surcharge formula as may be specified. This provision of the Act requires the Commission to specify the formula for fuel surcharge.

Accordingly, the Commission has specified the formula for working out the Fuel and Power Purchase Cost Adjustment (FPPCA) charges and other terms and conditions of FPPCA allowed the distribution licensee to recover the FPPCA charges from the consumers.

Accordingly, the amount of Fuel and Power Purchase Cost Adjustment (FPPCA) charges shall be computed as under:

$$\text{FAC (Rs./kWh)} = \frac{Q_c(RC_2 - RC_1) + Q_o(RO_2 - RO_1) + Q_{pp}(R_{pp2} - R_{pp1}) + V_z + A}{(Q_{pg1} + Q_{pp1} + Q_{pp2}) \times \left[1 - \frac{L}{100}\right] - \text{PSE}} \times 100$$

Where,

- Q_c = Quantity of coal consumed during the adjustment period in Metric Tons (MT).
= (SHR X Q_{pg}) (1+TSL) X 1000/GCV, or actual whichever is less.
- R_{c1} = Weighted average base rate of coal supplied ex-power station coal yard as approved by the Commission for the adjustment period in Rs./MT
- R_{c2} = Weighted average base rate of coal supplied ex-power station coal yard for the adjustment period in Rs./MT
- Q_o = Actual Quantity of oil (in KL) consumed during the adjustment period or normative oil consumption as per Tariff order whichever is

- less.
- R_{o1} = Weighted average base rate of oil ex-power station (Rs./KL) approved by the Commission for the adjustment period.
- R_{o2} = Weighted average actual rate of oil ex-power station supplied (Rs. / KL) during the adjustment period.
- Q_{pp} = Total power purchased from different sources (kWh) = $Q_{pp2} + Q_{pp3}$
- Q_{pp1} = $Q_{pp3} \left[1 - \frac{TL}{100} \right]$ in kWh
- TL = Transmission loss (CTU) (in percentage terms).
- Q_{pp2} = Power Purchase from sources with delivery point within the state transmission or distribution system (in kWh)
- Q_{pp3} = Power Purchase from sources on which CTU transmission loss is applicable (in kWh)
- R_{pp1} = Average rate of Power Purchase as approved by the Commission (Rs./kWh)
- R_{pp2} = Average rate of Power Purchase during the adjustment period (Rs./kWh)
- Q_{pg} = Own power generation (kWh)
- Q_{pg1} = Own Power generation (kWh) at generator terminal – approved auxiliary consumption
- L = Percentage T&D loss as approved by the Commission or actual, whichever is lower.
- SHR = Station Heat Rate as approved by the Commission (Kcal / kWh)
- TSL = Percentage Transit and Stacking Loss as approved by the Commission
- GCV = Weighted average gross calorific value of coal as fired basis during the adjustment period (Kcal / Kg)
- V_z = Amount of variable charges on account of change of cost of unknown factors like water charges, taxes or any other

unpredictable and unknown factors not envisaged at the time of Tariff fixation subject to prior approval of the Commission (Rs.)

A = Adjustment, if any, to be made in the current period to account for any excess / shortfall in recovery of fuel of Power Purchase cost in the past adjustment period, subject to the approval of the Commission (Rs.)

PSE = Power sold to exempted categories (presently agriculture and BPL-Kutir Jyoti consumers)

If there are more than one power station owned by the Licensee Qc, Rc1, Rc2, Qo, Ro1, Ro2, Qpg and Qpg1 will be computed separately for each power station and sum of the increase/decrease of cost of all power stations shall be taken into consideration.

In case of the two distribution companies, there is no generation of their own. Therefore, Qc, Qo and Qpg1 will be zero in this case.

The Generating Company can levy FPPCA charges with the prior approval of the Commission.

Terms and conditions for application of the FPPCA formula

- 1) The basic nature of FPPCA is 'adjustment' i.e. passing on the increase or decrease in the fuel costs and power purchase cost, as the case may be, compared to the approved fuel costs and power purchase costs in this Tariff Order.
- 2) The operational parameters/norms fixed by the Commission in the Tariff Regulations/Tariff Order shall be the basis of calculating FPPCA charges.
- 3) The FPPCA will be recovered every month in the form of an incremental energy charge (Rs/kWh) in proportion to the energy consumption and shall not exceed 10% of the approved avg. cost of supply in the Tariff order and balance amount, if any, in the FPPCA over and above this ceiling shall be carried forward to be billed in subsequent month.
- 4) Incremental cost of power purchase due to deviation in respect of generation mix or power purchase at higher rate shall be allowed only if it is justified to the satisfaction

of the Commission.

- 5) Any cost increase by the licensee by way of penalty, interest due to delayed payments, etc. and due to operational inefficiencies shall not be allowed.
- 6) FPPCA charges shall be levied on all categories of consumers.
- 7) Distribution licensee shall file detailed computation of actual fuel cost in Rs./kWh for each month for each of power stations of the state generators as well as cost of power purchase (Fixed and Variable) from each source/station and a separate set of calculations with reference to permitted level of these costs.
- 8) The data in support of the FPPCA claims shall be duly authenticated by an officer of the licensee, not below the rank of Chief Engineer on an affidavit supported with the certified copy of energy bills of power purchase, transmission and RLDC charges, bill for coal purchase and its transportation cost, oil purchase bill and the quantity of coal and oil consumed during the month.
- 9) Levy of FPPCA charge will be allowed only when it is ten (10) paise or more per unit. If it is less than 10 (ten) paise/unit, the same may be carried forward for adjustment in the next month.

The incremental cost per kWh due to this FPPCA arrived for a quarter shall be recovered in the energy bill of the month subsequent to the order of the Commission approving FPPCA with full details of rate and unit(s) on which FPPCA charges have been billed. The Generating Company and the Distribution Companies shall provide along with the proposal of FPPCA (as applicable to them) for a quarter, a compliance report of the previous order of the commission in respect of FPPCA.

TARIFF SCHEDULE

Appendix

Tariff Schedule

1. General Conditions of Supply (For all categories of Consumers):

- 1.1 Rebate for advance payment:** For payment of energy bill in advance, a rebate of 1% shall be allowed on the rate of charge of the applicable tariff. This will be applicable only all consumers provided with prepaid energy meters.
- 1.2 Rebate/Surcharge for availing supply at voltage higher/lower than base voltage:** In spite of feasibility/availability of voltage as in the classified supply voltage for corresponding load as per clause 3.2 of the JERC for Manipur and Mizoram(Electricity Supply Code) Regulations, 2013;
- (i) For consumers having contracted load up to 50 kW – If the supply is given at HV/EHV, a rebate of 5 % would be admissible on the rate of energy charge and fixed charge of the applicable tariff.
 - (ii) For consumers having contracted load above 50 kW – If supply is given at voltage lower than the base voltage for corresponding load as per clause mentioned above, the consumer shall be required to pay an extra charge of 10 % on the bill amount (Energy charge + Fixed charge) calculated at the applicable tariff.
 - (iii) All voltages mentioned above are nominal rated voltages as per clause 3.2 of the JERC for Manipur & Mizoram (Electricity Supply Code) Regulations, 2013.
- 1.3 Payment:** All payments shall be made by way of Cash (up to the amount as acceptable to the licensee), Banker's Cheque, Demand Draft or Money Order or e-transfer on line. Cheques and demand drafts shall be payable at any branch of a scheduled commercial bank that is a member of the clearing house for the area where the concerned Sub Divisional Office is located. However, part payment is subjected to acceptance by the competent authority. Bank commission/charges, if any, should be borne by the consumers.
- 1.4 Surcharge for late payment of bills:** If payment is not received within due date surcharge @ 2% at simple interest on the outstanding principal amount for each 30 days successive period or part thereof will be charged, until the amount is paid in full.
- 1.5 Single Point Delivery:** This tariff is based on the supply being given through a single point of delivery and metering at one voltage. Supply at other points at other voltage shall be separately metered and billed for and shall be considered as separate connection.

1.6 Voltage and frequency: All voltages and frequency shall be as per clause 3.1 and 3.2 of the JERC for Manipur & Mizoram (Electricity Supply Code) Regulations, 2013.

1.7 Power Factor Incentive / Surcharge :-

- a) If the average monthly power factor of the consumer increases above 95%, he shall be paid an incentive at the following rate:

For each one percent increase by which his average monthly power factor is above 95%, up to unity power factor	One percent (1%) of the total amount of the bill under the head 'energy charge'.
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- b) If the average monthly power factor of the consumer falls below 90%, he shall pay a surcharge in addition to his normal tariff, at the following rate:

For each one percent by which his average monthly power factor falls below 90% up to 85%	One percent (1%) of the total amount of the bill under the head 'energy charge'.
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- c) If average monthly power factor of the consumer falls below 85%, he shall pay a surcharge in addition to his normal tariff at the following rate :

For each one percent by which his average monthly power factor falls below 85%	Two percent (2%) of the total amount of the bill under the head 'energy charge'.
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- d) If the average monthly power factor of the consumer falls below 70%, then the utility shall have the right to disconnect supply to consumer's installation after serving a notice of 15 days. Supply may be restored only after steps are taken to improve the power factor to the satisfaction of the Utility. This is, however, without prejudice to the levy of surcharge for low power factor in the event of supply not being disconnected.

- e) For this purpose, the "average monthly power factor" is defined as the ratio of total 'Kilo Watt hours' to the total 'Kilo Volt Ampere hours' recorded during the month. This ratio will be rounded off to two figures after decimal. Figure 5 or above, in the third place after decimal being rounded off to the next higher figure in the second place after decimal.

- f) Notwithstanding the above, if the average monthly power factor of a new consumer is found to be less than 90% at any time during the first 6 (six) months from the date of connection, and if

he maintains the average monthly power factor in subsequent three months at not less than 90%, then the surcharge billed on account of low power factor during the said period, shall be withdrawn and credited in next month's bill

1.8 Transformation loss: The consumers getting their supply at HT and metered on the LT side shall be charged transformation loss in kWh as per clause 5.7 JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013. The same is reproduced for convenience sake:

- (1) The average losses in the transformer shall be calculated as follows and added to the energy consumption indicated by the meter :

$$\text{Average loss (kWh)} = \frac{730 \times 1.0 \times C}{100} = \text{Units per month}$$

where C = KVA rating of the transformer.

- (2) The transformer loss arrived at by the above formula shall be added to the energy consumption, even when the recorded energy* consumption is nil.
- (3) 1% of the transformer capacity for transformer above 63 KVA will be added to the recorded maximum demand on the Low Tension side to arrive at the equivalent High Tension demand.

** Note:- In case of un-metered supply, consumed energy computed as per clause 5(1) of this tariff schedule shall be taken as recorded energy consumption.*

1.9 Rounding of Contracted Load/billing demand: For the purpose of calculation of fixed/demand charge in the monthly billing, the contracted load/billing demand shall be taken on actual basis (not to be rounded), except for load less than 500 W. Load less than 500 W shall be taken as 0.5 kW for calculation of fixed/demand charge in the monthly billing. Fixed/Demand charge in the monthly billing shall be calculated as follows:- Fixed/Demand charge per month = Contracted load (in kW) or Billing demand (in kVA) x Rate of fixed charge per month per kW/kVA (as the case may be).

Sample calculation for Domestic Purpose (1) 1.24KW (2) 0.36 kW, Fixed charge for Domestic is Rs 60.00 per kW of contracted load. Sample 1;- Fixed charge = 1.24 x 60 = Rs 74.40 = Rs 74.00. Sample 2 ;- Fixed charge = 0.36 kW (=0.50 kW after rounding) x 60 = Rs 30.00. *Note Fraction of rupees is rounded as per clause 1.10 of this tariff schedule and load below 0.5 kW is rounded to 0.5 kW as per clause 1.9 of this tariff schedule.*

1.10 Rounding of Rupees: Each components of bill, such as energy charge, fixed/demand charge, meter rent, surcharge, rebate of any kind, etc, including interest, involving fraction of a rupee should be individually round off to nearest rupee (fraction of 50 paise and above to be round off to the next higher rupee and fraction less than 50 paise to be ignored). In case of non-availability/scarcity of small

change of rupees less the Rs. 10, consumer may be allowed to tender next higher amount divisible by 10. Such over tendered amount shall be carried to next bill as credit and shall not earn interest whatsoever.

1.11 System of supply:

1.11.1 LT Supply:-

- i) Alternating current, 50 Hz, single phase 230 Volts up to 8kW
- ii) Alternating current, three phase, 400 Volts for loads above 8 kW, subject to the availability of supply. Wherever 3-phase connection is required for load less than or equal to 8 kW, necessary justification shall be provided along with such request for consideration of licensee for extending such supply.

1.11.2 HT Supply ;-

Supply of Electricity to the Consumers at voltage above 400V as per clause 3.2 of JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013.

1.12 The maximum demand means the highest load measured in average kVA or kW at the point of supply of a consumer during any consecutive period of 30 (thirty) minutes during the month or the maximum demand recorded by the MDI during the month.

1.13 Billing demand: The billing demand shall be the maximum demand or 75% of the contracted demand whichever is higher.

1.14 Tax or Duty

The tariff does not include any tax or duty, etc, on electrical energy that may be payable at any time in accordance with any law / State Government Rules in force. Such charges, if any, shall be payable by the consumer in addition to tariff charges.

1.15 Contingency :- In case of any inconsistency between this Tariff schedule and the prevailing JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013, the provision, meaning and content of the said Code shall prevail.

2. LT Supply:-

2.1 LT Category -1:- Kutir Jyoti

Applicability: Applicable to all households who have been given connection under Kutir Jyoti Scheme or similar connection under any scheme of the State Govt. or Central Govt. for the benefit of poorer section. As per existing norms unless superseded by other new norms of KJS, if the total consumption in the last three months exceed 45 kWh, the connection should be converted to LT Category-2 (Domestic).

Permitted load:- Initially single light point connection which can be extended by one or two light points or as per the norms specified by competent Authority from time to time.

Tariff Rates:

A) Fixed Charge : Rs 20.00 per month per connection.

B) Energy charge per month :-

1) Metered Supply:

First 15 kWh @ Rs 1.40 per kWh

Balance above 15 kWh @ Rs 2.50 per kWh

2) Un – metered Supply:

The energy (kWh) so computed as per clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

2.2 LT Category-2:- Domestic

Applicability: Applicable for supply of energy exclusively for domestic purposes only in domestic premises. The Tariff is applicable to supplies for general domestic purposes such as Light, Fans, Heating devices, Television, VCR/VCP, Radio, Refrigerator, Air-conditioner, lift motors and all others appliances only for bona-fide residential used. This will not be applicable to institutions conducting commercial activities of any nature.

Tariff Rates:

A) Fixed Charge : Rs 60.00 per month per kW of contracted load

B) Energy charge per month:-

1) Metered Supply:

First 100 kWh @ Rs 3.20 per kWh

Next 100 kWh @ Rs 3.80 per kWh

Balance above 200 kWh @ Rs 4.70 per kWh

kWh

2) Un-metered Supply:

The energy (kWh) so computed as clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

Note: *If any part of the domestic connection is utilized for any use other than dwelling purpose like commercial, industrial, etc., a separate connection should be taken for such loads under appropriate category, failing which the entire consumption shall be treated as the case may be, in the corresponding category with applicable tariff.*

2.3 LT Category-3:- Non Domestic / Commercial:

Applicability: This tariff is applicable to all lights, all types of fans, heating devices, Television, VCR/VCP, Radio, Refrigerator, Air Conditioner, lift motors, pump and all other appliances for the purpose of private gain including other small power. This tariff includes power loads for non-domestic purposes like Government/semi-government/non-government offices, shops, hospitals, nursing homes, clinics, dispensaries, health centers, restaurants, bars, hotels, clubs, guest houses, circuit houses/rest houses, tourist lodges, picnic spots, resorts, farm/garden houses, clubs, markets, optical houses, public buildings, community halls, stadiums, meeting/conference halls, religious premises like churches, temples, mosques, gurudwaras, religious offices, all types of studios, tea stalls, professional chambers (like Advocates, chartered Accountants, consultants, Doctors, etc.), private trusts, marriage halls, public halls, show rooms, centrally air-conditioning units, commercial establishments, X-ray plants, diagnostic centers, pathological labs, carpenters and furniture makers, repair workshops, laundries, typing institutes, internet cafes, STD/ISD PCO's, FAX/photocopy shops, tailoring shops, Government/Non-Government Institutions, schools, colleges, libraries, research institutes, boarding/lodging houses, railway stations, fuel/oil stations/pumps, bottling or filling stations /plants, service stations, Railway/Bus stations/terminals, All India radio/T.V. installations, printing presses, commercial trusts, societies, banks, financial institutions, theatres, cinema halls, circus, coaching institutes, common facilities in multistoried commercial offices/ buildings, public museums, crematoriums, graveyards, orphanages/recognized charitable institutions where rental or fees of any kind are charged, non-recognized charitable institutions, power supply to tele-communication system/towers and others applications not covered under any other categories.

Tariff Rates:

A) Fixed Charge : Rs 80.00 per month per kW of contracted load.

B) Energy charge per month:-

1) Metered Supply:

First 100 kWh	@ Rs 4.20 per kWh
Next 100 kWh	@ Rs 5.00 per kWh
Balance above 200 kWh	@ Rs 5.90 per kWh

2) Un-metered Supply:

The energy (kWh) so computed as clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

2.4 LT Category-4:- Public Lighting

Applicability: Applicable to Public Street Lighting System in municipality, Town, Committee, Sub-Town/Village, etc. including Signal system and Road & Park lighting in areas of Municipality Town/Committee, Sub - Town/Village, etc.

Tariff Rates:

A) **Fixed Charge** : Rs 65.00 per month per kW of contracted load.

B) **Energy charge per month:-**

1) **Metered Supply:**

All units @ Rs 5.50 per kWh

2) **Un-metered Supply:**

The energy (kWh) so computed as clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

2.5 LT Category-5:- Public Water Works (PWW)

Applicability: Applicable to all public water supply system and sewerage system.

Tariff Rates:

A) **Fixed Charge** : Rs 100.00 per month per kW of contracted load.

B) **Energy charge per month:-**

1) **Metered Supply:**

All units @ Rs 5.50 per kWh

2) **Un-metered Supply:**

The energy (kWh) so computed as per section 5(1) shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

2.6 LT Category-6:- Irrigational Agricultural

Applicability: This tariff is applicable to irrigation/pumping for Agricultural purpose only.

Tariff Rates:

A) **Fixed Charge** : Rs 60.00 per month per kW of contracted load.

B) **Energy charge per month:-**

1) **Metered Supply:**

All units @ Rs 3.25 per kWh

2) **Un-metered Supply:**

The energy (kWh) so computed as per clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

2.7 LT Category-7:- Small Industry

Applicability: Applicable to all Industrial power consumers with demand of power upto 50 kW which are not covered by Category No. 3 (Supply of Non-Domestic/Commercial Purposes), such as steel fabrications, motor body builders, power handloom industry, poultry farming, pisciculture, prawn culture, floriculture in green houses, mushroom production, cold storage units, agriculture based industries, horticulture and any other type of industry where raw material is converted into finished products with the help of electrical motive power, printing press, etc. This will include domestic or commercial within the industrial complex.

Tariff Rates:

A) Fixed Charge : Rs 65.00 per month per kW of contracted load.

B) Energy charge per month:-

1) Metered Supply:

All units @ Rs 3.25 per kWh

2) Un-metered Supply:

The energy (kWh) so computed as per clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

3. HT Supply:- The tariffs are applicable for Consumer availing supply at voltage above 400 V irrespective of connected load/contracted demand. It is mandatory to supply with voltage above 400 V, to consumer having a contracted Load of above 50 kW or Contract Demand of above 59 kVA, as per clause 3.2 of JERC for M&M (Electricity Supply Code) Regulations, 2013

3.1 H.T. Category – 1: Commercial

Applicability: This Tariff is applicable to similar purposes defined in LT Supply Category-3 Supply for Commercial Purposes.

Tariff Rates:

A) Demand Charge : Rs 100.00 per month per kVA of Billing Demand.

B) Energy charge per month:-

1) Metered Supply:

All units @ Rs 5.70 per kWh

2) Un-metered Supply:

The energy (kWh) so computed as per clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

3.2 H.T. Category - 2: Public Water Works (HT- PWW)

Applicability: This tariff is applicable to similar purposes defined in LT Category-5 Supply for Public Water Works (PWW) and sewerage system.

Tariff Rates:

A) Demand Charge : Rs 100.00 per month per kVA of Billing Demand.

B) Energy charge per month:-

1) Metered Supply:

All units @ Rs 5.00 per kWh

2) Un-metered Supply:

The energy (kWh) so computed as per clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

3.3 H.T. Category - 3: Irrigation & Agriculture

Applicability: This Tariff is applicable to irrigation / pumping for agricultural purposes only.

Tariff Rates:

A) Demand Charge : Rs 100.00 per month per kVA of Billing Demand.

B) Energy charge per month:-

1) Metered Supply:

All units @ Rs 3.00 per kWh

2) Un-metered Supply:

The energy (kWh) so computed as per clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

3.4 H.T. Category - 4: Medium Industry

Applicability: This Tariff is applicable to similar purpose defined in LT Category-7 for Small industry. with Contract Demand upto 125 kVA or Contracted Load upto 100kW.

Tariff Rates:

A) Demand Charge : Rs 100.00 per month per kVA of Billing Demand.

B) Energy charge per month:-

1) Metered Supply:

All units @ Rs 4.30 per kWh

2) Un-metered Supply:

The energy (kWh) so computed as per clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

3.5 H.T. Category- 5: Large Industry

Applicability: This Tariff is applicable for supply of power to industrial consumers having license from designated authority of appropriate government and not covered under any other category, at a single point for industrial purposes with Contract Demand above 125 kVA or Contracted Load above 100 kW.

Tariff Rates:

A) Demand Charge : Rs 100.00 per month per kVA of Billing Demand.

B) Energy charge per month:-

1) Metered Supply:

All units @ Rs 5.00 per kWh

2) Un-metered Supply:

The energy (kWh) so computed as per clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

3.6 H.T. Category - 6: Bulk Supply within the State

Applicability: This tariff is applicable for all installations, including mixed loads similar to LT category 2 & 3 such as private sector installation, educational institution, defense installation, government & public sector offices & complexes and Hospital etc., that arrange their own distribution system of power within the premises with the approval of competent authority. This will not include industrial complexes consisting mixed load of LT category 2 & 3.

Tariff Rates:

A) Demand Charge : Rs 100.00 per month per kVA of Billing Demand.

B) Energy charge per month:-

1) Metered Supply:

All units @ Rs 4.60 per kWh

2) Un-metered Supply:

The energy (kWh) so computed as per clause 5(1) of this tariff schedule shall be charged at the same rate for metered tariff given above to arrive at the cost of energy consumed.

4. Temporary Power Supply

Applicability: Temporary power supply shall be given through correct meter and carried out as per procedure laid down in clause 4.56 to 4.70 of the JERC for Manipur & Mizoram (Electricity Supply Code) Regulations, 2013. Bill shall be served at the following rates:

Tariff Rates:

A) Fixed / Demand charge : 1.5 times the rate of fixed/demand charge of the

applicable tariff category for which power supply is given.

B) Energy charge per month:- 1.5 times the rate of the highest rated slab of the applicable tariff category for which energy is supplied.

5 Computation of energy consumed for un-metered supply:

(1) This shall be applicable to consumer (inclusive of street lightings) without meter from initial connection and have not been covered under any of the metering schemes. The monthly energy consumption shall be computed as below:-

Energy Consumption = L x H X F x D

Where L = Contracted load in kW or Billing Demand in kVA, (as per clause 1.9 of this tariff schedule)

H = (a) **For consumer in general:-** Total number of hours in a month during which power is actually supplied to that consumer through that feeder / through that DT concerned, whichever is less, (after taking into account all interruptions of power feeding that) or (730 minus total hours interruptions of power feeding that consumer). where 730 is average number of hours in a month in a non-leap year. (Note:- Interruption shall mean breakdowns of Feeders, Part of feeder, Distribution Transformer, load sheddings, all types of shut downs which should be recorded and informed to concerned billing station)

(b) **For street lights:-** Total number of hours in a month during which power is actually supplied to street lights through that feeder / through that DT concerned, whichever is less, (after taking into account all interruptions of power feeding that) or (365 minus total hours interruptions of power feeding that street light). where 365 is average number of hours between 5 pm to 5 am in a month in a non-leap year. (Note:- Interruption shall mean breakdowns of Feeders, Part of feeder, Distribution Transformer, load sheddings , all types of shut downs which occurs between 5 pm and 5 am. which should be recorded and informed to concerned billing station)

F = Load Factor shall be as stipulated for theft cases in ANNEXURE 11.19 of the Joint Electricity Regulatory Commission for Manipur & Mizoram (Electricity Supply Code) Regulations, 2013. Which is reproduced for convenience sake:-

S. No.	Particulars	Load
1.	Domestic (LT/HT)	40%
2.	Non-domestic/Commercial (LT/HT)	50%
3.	Industrial (LT/HT)	75%
4.	Public Water supply(LT/HT)	50%
5.	Bulk supply	50%
6.	Agriculture/Irrigation(LT/HT)	50%
7.	Street light	50%
8.	Direct theft – All categories	100%

D = Demand factor which shall be taken as (1) 50 % in case of street lighting and (2) 45 % in case of other consumption.

- (2) **Short period of unmetered supply:-** For un-meter (meter not available) supply as a result of defective, burnt, lost meter shall be treated as per 6.11 – 6.13 Of the JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013.

Note: The licensee shall install energy meter within three (3) months from the effective date of this Tariff Order FY 2016-17 and regularize the assessed consumption based on average three (3) months record of metered consumption and adjustment of bill shall be done accordingly.

- (3) **For Un-authorized consumer/theft (includes by-pass of meter)/pilferage and cases cover by section 135 of the Act.:-** The energy consumed shall be computed as per Annexure 11.1.19 Of the JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013. The energy so computed shall be evaluated as follows:-

(a) Load less than 10 kW

- (1) First instance:- Three (3) times of the rate of the applicable tariff (fixed and variable charges) for which the stolen energy was utilized.
- (2) Second and subsequent instance:- Six (6) times of the rate of the applicable tariff (fixed and variable charges) for which the stolen energy was utilized.

(b) Load exceeding 10 kW

- (1) First instance:- Three (3) times of the rate of the applicable tariff (fixed and variable charges) for which the stolen energy was utilized.

(2) Second and subsequent instance:- Six (6) times of the rate of the applicable tariff (fixed and variable charges) for which the stolen energy was utilized.

Note;- Additional punishment of theft shall be as per Electricity Act 2003 (with latest amendment) and as per the JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013.

6. Miscellaneous Charges

6.1 Meter Rent

6.1.1 Meter Rent for non-prepaid meters : Monthly charges for hiring of the meter, indicator payable shall be as follows:

a)	AC, Single phase Energy meter, whole current	Rs. 10.00 per month
b)	AC, Three phase Energy meter, whole current	Rs. 20.00 per month
c)	AC, Three phase Energy meter, CT operated	Rs. 50.00 per month
d)	AC, Three phase Energy meter, CT & PT operated	Rs. 500.00 per month

6.1.2 Meter Rent for Pre-Paid Meters: Monthly charges for hiring of the meter, indicator payable shall be as follows:

a)	AC, Single phase PP, Energy meter, whole current	Rs. 20.00 per month
b)	AC, Three phase PP, Energy meter, whole current	Rs. 40.00 per month

6.2 Other charges for meter:

(i) Meter shifting charge:

(1) Rs 100.00 per shifting if resulted from reconstruction / modification of building and at consumer's request.

(2) Free of cost if shifting is done in the interest of work.

Meter shifting shall be carried out as per Chapter – 5 of the JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013.

- (ii) **Replacement of meter:**-- Licensee shall have stock of energy meter as per clause 5.51 of the JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013. Replacement of meter shall be carried out as per clause 5.31 to 5.50 of the same code mentioned above. Charges for other materials will be extra.

However, in case of replacement of post-paid meter by prepaid meter by the utility, no meter replacement charge shall be borne by the consumer and the entire charge shall be borne by the utility.

- (iii) **Execution charge for re-installation/installation of meter:-**

- a) For existing consumer shall be Free of cost.
 b) For disconnected consumer being re-connected (if meter is removed) shall be charged Rs 75.00.
 c) For new consumer, it shall be included in the cost of service connection as under execution charges.

- (iv) **Cost of Energy Meters supplied by Licensee :**

As per the Licensee's purchase rate plus 15% of its charge if supplied from the Licensee (energy meters approved / tested by the Licensee only shall be used. However, when the cause leading to subsequent replacement is either manufacturing defect or fault of licensee then, it shall be free of cost.

6.3 Charges for testing of Meters at the request of consumers: : (Testing charge is inclusive of costs of meter re-sealing materials/equipment).

- (i) For AC single phase LT energy meter: Rs. 50.00 per meter per testing.
 (ii) For AC three phase LT energy meter, whole current: Rs. 75.00 per meter per testing.
 (iii) For AC three phase LT energy meter, CT operated: Rs. 100.00 per meter per testing.
 (iv) For energy meter AC three phase, CT & PT operated : Rs. 150.00 per meter per testing.

In case the meter supplied by the Licensee fitted to the consumer premises is found to be defective from initial fitting, testing and replacement of meter shall be carried out as per clause 5.31 to 5.50 of the JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013.

6.4 Testing of Consumer's Installation:

The first test and inspection will be carried out free of cost as per clause 4.47 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Electricity supply Code)

Regulations, 2013. Should any further test or inspection is necessitated due to fault in the installation or due to non-compliance with the condition of supply by the consumer an extra charge of Rs. 100.00 per test, payable in advance, shall be levied. In the event of the consumer failing to pay the testing charge in advance within stipulated time, the Licensee will be at liberty to disconnect the consumer's premise from the supplier's main.

6.5 Disconnection and Reconnection

Disconnection: Disconnection of an installation in all cases will be free of charges.

Reconnection:

- (i) For AC single phase LT supply: Rs.80.00
- (ii) For AC three phase LT supply: Rs. 150.00
- (iii) For AC HT supply: Rs. 400.00

Note: - Extra material required will be chargeable.

6.6 Charges for change of category:

Change of category will be carried out as per clause 4.72 to 4.80, clause 4.85 to 4.86 and 4.90 to 4.93 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Electricity supply Code) Regulations, 2013.

6.7 Charges for Replacement of Connection Wire, Cut-out, Fuse, etc.:

Cost of replacement after initial fixation of connection wire, cut-out, fuses, etc. will be borne by the consumers and shall be payable by the consumer in advance as per purchase rate of the Licensee plus 15% of its charges if the Licensee supplies the materials or the consumer may arrange the required materials as per the required specifications of the Department.

The execution charge shall be as given below:

- (a) For Cable and wire:-
 - i) Single phase connection: Rs.400.00 per connection.
 - ii) LT three phase connection: Rs.600.00 per connection.
 - iii) HT three phase connection: Rs.900.00 per 100 meters of the HT line

- (2) For Cut out & Fuse:-
 - (a) Rs 15.00 per cut out.
 - (b) Rs 5.00 per fuse

- 6.8 Re-rating of Installation:-** This charge is for meeting expenses toward spot verification of load and other connected recording works. Fees for re-rating of the consumer's installation at the request of the consumer shall be Rs. 100.00 per rerating per connection.
- These charges shall be payable by the consumer in advance. The aforesaid charges do not include the charges payable by the consumer for other works connected due to change of connected load. Rerating shall be carried out as per clause 4.94 to 4.107 of the JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013.*
- 6.9 Security Deposit:**
- The amount of load/meter security shall be calculated as per the procedure prescribed in clause 4.123 – 4.127 and determine as per Annexure 11.18 of the JERC for M&M (Electricity Supply Code) Regulations, 2013. *Billing Demand shall be taken as 'L' in case of HT consumers load security calculation. However, consumer with prepaid meter shall not be required to pay load security deposit*
- 6.10 Charges for Replacement of tamper proof Meter Box:**
- For AC single phase LT or three phases LT without CT or with CT, the charge will be as per Licensee's purchase rate plus 15% of its charge in case the energy meter box is replaced by the Licensee from its store.
- 6.11 Service Lines & Service Connection:**
- (i) **Type of Service Connection:** Type of service connection and distance for service connection line length will be as per clause 4.2 read with clause 5.10 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013.
- (ii) **Cost of Service Connection:** As stipulated in clause 4.37 and 4.131 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013. If the consumer desires to arrange service connection materials, the Department (not below rank of Junior Engineer concerned) will check all the materials.
- 6.12 Mutation Fee:** Mutation fee i.e fee for change of name shall be Rs 50 per change. This shall be carried out as per clause 4.81 to 4.84 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013.
- 6.13 Cost of Application Form:** The application form shall be free of cost vide clause 4.14 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013.

6.14 Operation & Maintenance (O & M) Charge on dedicated assets :-

The O & M charge of assets created out of such amount received without any obligation to return the same and no interest costs attached to such subvention, from consumer contribution, Deposit work and any similar nature shall be as follows:-

- (1) The completion costs shall be escalated at the rate of 4 % per annum from the year of completion to arrive the costs of the assets for 2015-16 level.
- (2) The annual O & M charges/expenses shall be 5 % from the 2015-16 level costs.
- (3) The O & M charges/expenses for each subsequent will be determined by escalating the base charges/expenses determined above for 2015-16, at the escalation factor of 5.72 % to arrive at possible O & M charges / expenses for each year.

ANNEXURES

JOINT ELECTRICITY REGULATORY COMMISSION

FOR MANIPUR AND MIZORAM



AIZAWL : MIZORAM

TBL Bhawan 2nd – 5th Floor, E-18, Peter Street, Khatla Aizawl, Mizoram - 796001

Fax: 0389-2336299/ 2335523, Tel. No. : 0389-2335625/2336555

Website: www.jerc.mizoram.gov.in, Email: jerc.mm@gmail.com

No. H.11019/26/13-JERC

Dated Aizawl, the 1st March ,2016

**MINUTES OF THE 16TH MEETING OF THE STATE ADVISORY COMMITTEE OF
MANIPUR**

Venue : The Hotel Classic, Regency Hall, Imphal

Date & Time : 18th February 2016, 11:00 AM

The Chairman of the committee, Mr. R.K. Kishore Singh and Chairperson of the Joint Commission for Manipur & Mizoram chaired the meeting. The list of members and participants attending the meeting is appended.

After welcoming the members and the invitees, the Chairperson initiated the agenda wise discussion as below:

Agenda No.1. Confirmation on the Minutes of the 15th Meeting of the SAC,

Manipur held on 19th February, 2015.

Requesting the members to their views and comments on the minutes of the 15th SAC and after obtaining nods from the members, the minutes was declared confirmed.

Agenda No. 2. Determination of Retail Tariff for MSPDCL and Transmission Tariff for MSPCL, Manipur.

The Chairman informed the committee members that the main agenda for the meeting was to obtain the views and comments on the above agenda. With the permission of the chair, the General Manager, Electrical Circle – II (MSPDCL), outlined the Tariff Petition that JERC had issued a new tariff regulations i.e. Multi Year Tariff (MYT) Regulations in June 2014 and as per the JERC MYT Regulations, 2014 and in accordance with the latest directives of JERC, MSPDCL is required to file separate MYT petitions for the period of FY 2016-17 to FY 2018-19 which includes

- the Annual Performance Review of FY 2015-16 and
- the Tariff Determination for FY 2016-17
- the The projections for FY 2016-17 to FY 2018-19 are based on the actual data of FY 2014-15, FY 2015-16 (half year) and the estimations and plans for the future years and the reason why the Corporation requires to submit the petition. He also added that with more power to be procured from outside, Manipur will be getting a regular supply of power. He also stated that MSPDCL has proposed 10% tariff hike for FY 2016-17, the proposed total ARR of MSPDCL (including ARR of MSPCL) is INR 585.08 Cr. The ARR of MSPCL of INR 51.98 Cr is proposed to be entirely recovered from MSPDCL as fixed monthly charges. Hence, ARR of MSPCL is covered within the ARR of MSPDCL. After proposed tariff hike of around 10%, the net gap is coming at around INR 262.62 cr which is proposed to be recovered as subsidy support from Government of Manipur. The subsidy support is increasing on account of increased quantum of power purchase and supply.

Further, GM EC-II, MSPDCL has stated that in the tariff proposal of FY 16-17, MSPDCL has proposed for changes in tariff.

- Allowing a permitted load of 0.25 kW for Kutir Jyoti/BPL consumers as per RGGVY guidelines. If the load exceeds the permitted limit, the consumer shall be converted to domestic category.
- Also, the limit for monthly consumption for billing under Kutir Jyoi consumers has been proposed to be fixed at 15 units/month. If the consumption exceeds the limit, the additional units shall be billed under the domestic category.

- Increasing the energy charge of small categories to Rs. 4.30 per unit from Rs. 3.05 per unit (similar to commercial category)
- Reducing the rebate offered to prepaid consumers from 2% to 1%.

Mr. Irengbam Arun, Sr. Journalist stated that tariff proposed in JERC which was notified by MSPDCL, the public notice published in the news papers was only in English, instead of that it should be in Manipuri language also in different dates so as to reach all the consumers of the state.

In the reply, GM Electrical Circle-II of MSPDCL has stated that public notice was published in four different local news papers dailies in Manipuri & English in two different dates like 13th & 14th Jan, 2016.

In continuation, Mr. Irengbam Arun & Mr. Elangbam Dorendro, Advisor Manipur Power Consumer's Association stated that no doubt availability of power to consumer has increased but still MSPDCL needs to improve their services much and that they need to attend complaints of the consumers promptly. He concluded that he is not against the hike in Tariff but with the condition that the Corporation should give regular power supply to all consumers and urgently rectify the complaints of the consumers. Interacting to this issue, Er. N. Sarat Singh, Managing Director, MSPCL stated that the loss of the revenue is mostly from the commercial side and that there is not much technical loss in the main holding company with the co-operation from the public and installation of prepaid meters, he hoped that this commercial loss also will be plugged soon. Expecting with a better power supply and with this, they agreed to the proposed tariff hike.

Agenda No. 3. Progress of various works in Manipur under Manipur State Power

Distribution Company Ltd. and Manipur State Power Company

Ltd.

On 100% Metering of Consumers: MSPDCL had plans for providing (i) single phase & three phase Pre-Paid energy meters for consumers in greater Imphal areas and in thirteen towns in the valley and (ii) for providing one lakh single phase I-port electronic energy meter for consumers outside town areas of the valley and in district headquarters and towns of all hills districts under state plan.

But with the experience of the impact of Pre-Paid metering already taken up in Greater Imphal areas in improving revenue collection and economical & efficient use of energy, MSPDCL under advice from Government has planned and taken up Pre-Paid metering scheme of consumers which will cover whole Valley districts and district head quarters and towns under all hill districts. Work is already in progress. In order to reduce the high distribution loss prevailing in the State at present the MSPDCL is taking up a plan for Pre-Paid metering covering all households in the four districts of Imphal East, Imphal west, Thoubal and Bishnupur under R-APDRP Part-B, and State Plan. Further, all hill district (headquarters and towns) will also be covered by Pre-Paid metering under State Plan-2. The above scheme envisages Pre-Paid metering of existing consumers as well as regularisation of un-authorized connections on payment of an instalment of Rs. 200/- only for Pre-Paid activation; no extra cost will be involved to facilitate speedy implementation of the scheme. Other works to be covered under the scheme includes replacement of AAC by AB cables and replacement of wooden/bamboo poles and damaged MS -poles by new MS-poles. Work is already in progress. Under State Plan -2, 1st phase, it has been planned to cover areas under 704 distribution transformers under four districts i.e. Imphal East, Imphal West, Thoubal and Bishnupur. Forty four sub-contractors have been empanelled to execute the work within target date of May 2016. Action is already initiated for replacement of AAC by AB cables and damage MS - pole or wooden poles by new MS-poles under areas of 44 distribution transformers under 18 Sub-Divisions of 6 Divisions; i.e. Thoubal, Bishnupur, IED-I, IED-II, IED-III & IED-IV.

Further, Mr. Irengbam Arun stated that wheather MSPCL will be taking up any generation plan in a short time. Mr. N Sarat Singh, MD, MSPCL replies that at present power can be purchased in a very low rate from CPSUs whereas installation of new generating station will cost a bit high as compared to the CPSUs. As such the possibility of starting new generating stations in Manipur is on far cry. Further, Mr. N Sarat Singh also added that the power availability was restricted as there was only single circuit 132 kV line coming from Kohima to Imphal. At present a double circuit 400 kV line is being erected by PGCIL from Silchar to Imphal which can carry upto 1000 MW through which power can be carried from CPSUs. Existing 400 kV line is charged at 132 kV and he states that the state is drawing only 160 MW from EHT line. Further an enquiry was made by Mr. E, Dolendro Singh, why a 400 kV line is being charged at 132 kV. MD, MSPCL clarified that if the load drawn on the consumer side is less than 300 MW, there is a tendency to shoot up the tramission voltage more than 5% due to the capacitance effect resulting the available voltage in the consumers end going up the permissible limit, hence burning of electrical equipments.

The Committee recommends the tariff hike based on thorough examination of the Tariff Petitions of MSPDCL and MSPCL for FY 16 – 17.

The Meeting ends at 1 :45 Pm with a vote of thanks from the Chair.

Sd /- R.K. KISHORE SINGH

Chairperson

Memo No. H.11019/26/13-JERC : Dated Aizawl, the 1st March,2016

Copy to:

1. Secretary to Hon'ble Chief Minister, i/c Electricity Department, Gov't of Manipur for kind information to the Hon'ble Chief Minister.
2. Secretary, P&E Department, Gov't of Manipur for kind information to the Secretary and for taking necessary action on the Minutes of the Meeting.
3. All Members / Invitees of the State Advisory Committee for kind information and for taking necessary action on the Minutes of the Meeting.
4. Guard File.

**JOINT ELECTRICITY REGULATORY COMMISSION
FOR MANIPUR AND MIZORAM
AIZAWL : MIZORAM**

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Website: www.jerc.mizoram.gov.in, Email: jerc.mm@gmail.com

**List of Members and Participants who attended the 16th Meeting of
State Advisory Committee of Manipur**

Date & Time : 18th February,2016 (Thursdar), 11:00 a.m.

Venue : Hotel Imphal, Regency Hall, Imphal, Manipur

Sl. No.	Name	Designation
1	R.K. Kishore Singh	Chairperson, JERC (M&M)
2	L. Sadananda Singh	General Secretary, Senior Citizens' for Society, Manipur
3	Elangbam Dolendra Singh	Advisor, All Manipur Power Consumers' Association
4	Irengbam Arun	Senior Journalist
5	P. Arunkumar Singh	President, Consumers' Club, Imphal
6	Dr. M. Binota Devi	Associate Professor, Department Economics, Imphal College, Imphal
7	Dr. R.K. Tamphasana	Associate Professor, Department of History, G.P Women College, Imphal
8	N. Sarat Singh	Managing Director, Manipur State Power Company Limited. (Special Invitee)
9	Y. Satyanarayana	Consultant ASCI, Hyderabad
10	H. Thanthianga	Assistant Chief(Engineeering),JERC (M&M)

11	L. Pachuau	Chief (Engineering), JERC (M&M)
12	Richard Zothankima	Assistant Secretary, JERC (M&M)
13	Th. Aton Singh	GM(plg), MSPDCL
14	K. Jila Singh	GM (EC-II), MSPDCL
15	Kh. Khamba Singh	GM – EC-I/ MSPDCL
16	Peijush Lohia	Consultant, PWC to MSPDCL & MSPCL
17	I. Sarat Singh	DGM (Com- Tariff)
18	O. Kartik Singh	DGM,IED-II
19	B. Lalneisang Sinate	DGM, KPI
20	L. Joychandra Singh	GM/ EC- III
21	B. Ibomcha Sharma	D.G.M (Bpr)
22	N. Kunjeshore Singh	D.G.M (T)
23	I. Joybi Sing	D.G.M. (Thoubal)
24	N.Purnima	Dy. Manager, MSPDCL
25	A. Priyobarta	Dy. Manager, MSPDCL
26	L. Sachikanta Sharma	Dy. Manager, MSPDCL
27	Th. Satyarat Singh	Dy. Manager, MSPDCL
28	Chitraprakash Saikhum	Project Consultant (PMU) MSPDCL
29	Y. Dayanta	(PMU- UE)
30	T.J. Khongthang	Manager(Power Purchase & Supply)

31	Babie Shirin	Ichel Express
32	Nongpok	Sanaleibak
33	Rustum	Sangai Express
34	R.K. Prashanta	Clerk, JERC(M&M)
35	H. Shantikumar	GM (SLDC) MSPCL
36	M. Jadumani	OSD (MSPCL)
37	Shimthangambi	DDK, Imphal
38	Niranthangbam	Emingsel
39	N. Deben Singh	DDK, Imphal
40	L.N. Sharma	Impact TV
41	Nimol Ningombam	Naharol Thoudang
43	M. Budha Chandra Sharma	GM, MSPCL
44	A. Birendra Kumar	DGM , MSPCL
45	M. Singh	Imphal college
46	A. Rajendra Sharma	D.G.M.



**JOINT ELECTRICITY REGULATORY COMMISSION
JOINT ELECTRICITY REGULATORY COMMISSION
FOR MANIPUR AND MIZORAM
AIZAWL : MIZORAM**

**LIST OF PERSON WHO ATTENDED PUBLIC HEARING ON ARR & TARIFF PROPOSAL
FOR FY 2016-17 IN RESPECT OF MSPDCL, MANIPUR.**

Venue : Hotel Classic, Regency Hall, Imphal, Manipur.
Date & Time : 19th February, 2016 (Friday) from 10:30 a.m to 12:30 p.m.

Sl. No.	NAME	DESIGNATION / PROFESSION
1	Kartir Singh	DGM, MSPDCL
2	L. Joychandra Singh	G.M. (MSPDCL)
3	K. Jila Singh	G.M.-II (MSPDCL)
4	Th. Jibanhr	DGM-III (MSPDCL)
5	I, Sarab Singh	DGM (Com-Tariff)
6	Piyush Lohia	Consultant to MSPdcl,PNC
7	N.Purnima	D.M, MSPDCL
8	T.J.Khongthang	Manager (II & PS) (MSPDCL)
9	Y.Satyanarayana	Consultant, ASCI, Hyderabad
10	K.Sanatomba	AMPCA
11	K.Miri	Emingsel
12	Sanatombi	Emingsel
13	Yaiphabi Chamu Ngashepan	Emingsel
14	Nilachandra Hodam	Naharolai Thoudang
15	Sagolsem Bigyan Singh	Paknapham
16	Babie Shirin	Pchel Express
17	Th. Aton Singh	GM / plg.

ANNEXURE - III

18	P.Birendra Singh	DGM
19	Niren Thugban	Reputu Imphal Times
20	KL. Khamba Singh	GM-EC-I/ MSPDC
21	M.Rustum	Sangai Express
22	Nengpole	Sanalibak
23	R.K.Prashanta	Liaison Asst.(JERC)
24	Kopham	Reporter
25	S.Ch	President AMPCA
26	R. Sudhan	MD /MSPDC

Manipur - Expected Revenue from Existing Tariff effective from 01.04.2015

Sl. No.	Category	Consumers	Contracted Load (in kW)	Annual energy Sales (in MU)	Sales/Consumer/Month (in kWh)	Revised Tariff		Revenue /month				Annual Revenue (in Rs lakh)	Average realisation (Rs/kWh)
						Fixed Charge (Rs/kW)	Energy charge (Rs./kWh)	Total Fixed Charges (in Rs lakh)	Energy charge /Consumer (in Rs)	Total energy charge (in Rs lakh)	Total Revenue (in Rs lakhs)		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Domestic												
1)	KJ												
	i) First 15 kWh	579		0.10	14.39		1.00		14.39	0.08			
	iii) Balance above 15 kWh	28368		14.90	43.77		1.50		58.16	16.50			
	Sub Total KJ	28947	1852	15.00	43.18	20/connect		5.79	72.55	16.58	22.37	268.44	1.79
2)	Normal Domestic LT												
	i) First 100 kWh	12898		7.00	45.23		2.90		131.17	16.92			
	ii) Next 100 kWh	206374		270.00	109.03		3.50		321.61	663.72			
	iii) Balance above 200 kWh	38695		129.00	277.81		4.40		982.36	380.12			
	Sub Total LT	257967	339674	406.00	131.15	60		203.80	1435.14	1060.76	1264.56	15174.72	3.74
	Total Domestic	286914	341526	421.00	122.28			209.59	1507.69	1077.34	1286.93	15443.16	3.67
2	Commercial												
a)	LT												
	i) First 100 kWh	657		0.76	96.40		3.90		375.96	2.47			
	ii) Next 100 kWh	1971		4.50	190.26		4.65		809.71	15.96			
	iii) Balance above 200 kWh	10513		44.74	354.64		5.50		1705.52	179.30			
	Sub Total LT	13141	35005	50.00	317.07	80		28.00	2891.19	197.73	225.73	2708.76	5.42
	b) Commercial HT	11	862	4.00	30303.03	100	5.40	0.86	163636.36	18.00	18.86	226.32	5.66
	Total Commercial	13152	35867	54.00	342.15			28.86	166527.55	215.73	244.59	2935.08	5.44
3	Public Lighting	452	1056	6.00	1106.19	65	5.15	0.69	5641.57	25.50	26.19	314.28	5.24
4	Public Water Works												
a)	PWW LT	8	190	3.00	31250.00	100	5.15	0.19	160937.50	12.88	13.07	156.84	5.23
b)	PWW HT	167	20213	15.00	7485.03	90	4.85	18.19	36302.40	60.63	78.82	945.84	6.31
	Total PWW	175	20403	18.00	8571.43			18.38	197239.90	73.51	91.89	1102.68	6.13
5	Irrigation & Agri												
a)	Irr. & Agl LT	44	170	1.00	1893.94	60	3.05	0.10	5776.52	2.54	2.64	31.68	3.17
b)	Irr. & Agl HT	20	993	3.00	12500.00	100	2.85	0.99	35625.00	7.13	8.12	97.44	3.25
	Total Irr. & Agl LT	64	1163	4.00	5208.33			1.09	41401.52	9.67	10.76	129.12	3.23
6	Industrial												
a)	Micro & Small LT	2780	17384	28.00	839.33	65	3.05	11.30	2559.96	71.17	82.47	989.64	3.53
b)	Medium HT	87	8614	4.00	3831.42	100	4.00	8.61	15325.68	13.33	21.94	263.28	6.58
c)	Large HT	34	2385	16.00	39215.69	100	4.65	2.39	182352.96	62.00	64.39	772.68	4.83
	Total Industrial	2901	28383	48.00	1378.83			22.30	200238.60	146.50	168.80	2025.60	4.22
7	Bulk Supply HT	836	54197	156.00	15550.24	100	4.20	54.20	65311.01	546.00	600.20	7202.40	4.62
	Grand Total	304494	482595	707.00	193.49			335.11	677867.84	2094.25	2429.36	29152.32	4.12

Manipur - Expected Revenue from Revised Tariff effective from 01.04.2016

Sl. No.	Category	Consumers	Contracted Load (in kW)	Annual energy Sales (in MU)	Sales/Consumer/Month (in kWh)	Revised Tariff		Revenue /month				Annual Revenue (in Rs lakh)	Average realisation (Rs/kWh)
						Fixed Charge (Rs/kW)	Energy charge (Rs./kWh)	Total Fixed Charges (in Rs lakh)	Energy charge /Consumer (in Rs)	Total energy charge (in Rs lakh)	Total Revenue (in Rs lakhs)		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Domestic												
1)	KJ												
	i) First 15 kWh	579		0.10	14.39		1.40		20.15	0.12			
	iii) Balance above 15 kWh	28368		14.90	43.77		2.50		92.93	26.36			
	Sub Total KJ	28947	1852	15.00	43.18	20/connect		5.79	113.08	26.48	32.27	387.24	2.58
2)	Normal Domestic LT												
	i) First 100 kWh	12898		7.00	45.23		3.20		144.74	18.67			
	ii) Next 100 kWh	206374		270.00	109.03		3.80		354.31	731.20			
	iii) Balance above 200 kWh	38695		129.00	277.81		4.70		1065.71	412.38			
	Sub Total LT	257967	339674	406.00	131.15	60		203.80	1564.76	1162.25	1366.05	16392.60	4.04
	Total Domestic	286914	341526	421.00	122.28			209.59	1677.84	1188.73	1398.32	16779.84	3.99
2	Commercial												
a)	LT												
	i) First 100 kWh	657		0.76	96.40		4.20		404.88	2.66			
	ii) Next 100 kWh	1971		4.50	190.26		5.00		871.30	17.17			
	iii) Balance above 200 kWh	10513		44.74	354.64		5.90		1832.38	192.64			
	Sub Total LT	13141	35005	50.00	317.07	80		28.00	3108.56	212.47	240.47	2885.64	5.77
	b) Commercial HT	11	862	4.00	30303.03	100	5.70	0.86	172727.27	19.00	19.86	238.32	5.96
	Total Commercial	13152	35867	54.00	342.15			28.86	175835.83	231.47	260.33	3123.96	5.79
3	Public Lighting	452	1056	6.00	1106.19	65	5.50	0.69	6028.74	27.25	27.94	335.28	5.59
4	Public Water Works												
a)	PWW LT	8	190	3.00	31250.00	100	5.50	0.19	171875.00	13.75	13.94	167.28	5.58
b)	PWW HT	167	20213	15.00	7485.03	100	5.00	20.21	37425.15	62.50	82.71	992.52	6.62
	Total PWW	175	20403	18.00	8571.43			20.40	209300.15	76.25	96.65	1159.80	6.44
5	Irrigation & Agri												
a)	Irr. & Agl LT	44	170	1.00	1893.94	60	3.25	0.10	6155.31	2.71	2.81	33.72	3.37
b)	Irr. & Agl HT	20	993	3.00	12500.00	100	3.00	0.99	37500.00	7.50	8.49	101.88	3.40
	Total Irr. & Agl LT	64	1163	4.00	5208.33			1.09	43655.31	10.21	11.30	135.60	3.39
6	Industrial												
a)	Micro & Small LT	2780	17384	28.00	839.33	65	3.25	11.30	2727.82	75.83	87.13	1045.56	3.73
b)	Medium HT	87	8614	4.00	3831.42	100	4.30	8.61	16475.11	14.33	22.94	275.28	6.88
c)	Large HT	34	2385	16.00	39215.69	100	5.00	2.39	196078.45	66.67	69.06	828.72	5.18
	Total Industrial	2901	28383	48.00	1378.83			22.30	215281.38	156.83	179.13	2149.56	4.48
7	Bulk Supply HT	836	54197	156.00	15550.24	100	4.60	54.20	71531.10	598.00	652.20	7826.40	5.02
	Grand Total	304494	482595	707.00	193.49			337.13	723310.35	2288.74	2625.87	31510.44	4.46



**JOINT ELECTRICITY REGULATORY COMMISSION
FOR MANIPUR AND MIZORAM**

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