



TARIFF ORDER

TRUE UP FOR FY 2016-17

REVIEW FOR FY 2017-18 AND DETERMINATION OF

AGGREGATE REVENUE REQUIREMENT FOR MYT

PERIOD FY 2018-2019 TO FY 2022-2023

&

TARIFF FOR FY 2018-19

FOR

POWER & ELECTRICITY DEPARTMENT

GOVERNMENT OF MIZORAM

Petition (ARR & Tariff) No. 2 of 2018

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
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CWIP	Capital Work in Progress
DPS	Delayed Payment Surcharge
EA, 2003	Electricity Act, 2003
FSA	Fuel Surcharge Adjustment
FY	Financial Year
GFA	Gross Fixed Assets
GOI	Government of India
HT	High Tension
IEGC	Indian Electricity Grid Code
IEX	Indian Energy Exchange
IR	Inter Regional
ISGS	Inter State Generating Station
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
MUs	Million Units
MYT	Multi Year Tariff
NEEPCO	North Eastern Electric Power Corporation
NHPC	National Hydro Electric Power Corporation
NLDC	National Load Despatch Centre
NTI	Non-Tariff Income
NTPC	National Thermal Power Corporation
O&M	Operation and Maintenance
P&ED	Power & Electricity Department, Mizoram
PGCIL	Power Grid Corporation of India Ltd
PLF	Plant Load Factor
PLR	Prime Lending Rate
POSOCO	Power System Operation System

Abbreviation	Description
PPA	Power Purchase Agreement
PWW	Public Water Works
R&M	Repair and Maintenance
RAPDRP	Restructured Accelerated Power Development and Return Programme
RE	Revised Estimate
RoE	Return of Equity
SBAR	State Bank Advance Rate
SLDC	State Load Despatch Centre
T&D	Transmission and Distribution
UI	Unscheduled Interchange
YOY	Year On Year

JOINT ELECTRICITY REGULATORY COMMISSION FOR MANIPUR AND MIZORAM

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

Petition (ARR & Tariff) No. 2 of 2018

In the matter of

True up for FY 2016-17, Annual Performance Review for FY 2017-18 and Determination of Aggregate Revenue Requirement (ARR) for MYT 2nd Control Period FY 2018-2019 to FY 2022-2023 and Tariff for FY 2018-19 for P&ED Mizoram.

AND

Power & Electricity Department, Government of Mizoram----- Petitioner

Present

**Mr. Ngangom Sarat Singh
Chairperson**

ORDER

1. The Power and Electricity Department, Government of Mizoram (herein after referred to as P&ED (Mizoram or petitioner) is a deemed licensee in terms of section 14 of the Electricity Act 2003 (hereinafter referred to as Act), engaged in the business of generation, transmission and distribution of electricity in the State of Mizoram.
2. Regulation 17 of the JERC (M&M) (MYT) Regulations, 2014 specify that the distribution licensee shall file ARR and Tariff Petition with all relevant data along with requisite fee as specified in Commission's Fees, Fines and Charges Regulations on or before 30th November of the preceding year. As per the directive of the Commission, the P&ED Mizoram has filed the ARR and Tariff Petition for true up for FY 2016-17 and Annual Performance review for FY 2017-18 and determination of ARR for MYT Control Period FY 2018-19 to FY 2022-23 and retail tariff for FY 2018-19 as follows. The P & ED has requested for extension of time upto 31.12.2017 vide Letter No.T. 23012/01/17-EC(P)/

Com/13, date 30.11.2017 and the Commission had accorded extension upto 20.12.2017. Again P & ED has requested further extension of time upto 15th January, 2018 vide Letter No B/16012/27/2012/P & E dated 15.12.2017. Accordingly P& ED has filed petition for determination of ARR for Second Control Period of MYT FY 2018-19 to FY 2022-23 and tariff for FY 2018-19 along with true up petition for FY 2016-17 and APR for 2017-18 on 18th January, 2018 vide letter No G.17012/2/10-EE(SLDC)/59.

3. ARR and Tariff Petition for Control period FY 2018-2019 to FY 2022-2023

P&ED, being an integrated utility, is responsible for generation, transmission, and distribution of electricity in the State of Mizoram and also trading functions through its SLDC.

The P&ED has filed the Petition for determination of ARR for 2nd block of Control Period FY 2018-19 to FY 2022-23 and tariff petition for FY 2018-19 along with true up petition for FY 2016-17 and review petition for FY 2017-18. In the petition P&ED estimated ARR and projected a gap of Rs 173.47 Crore for FY2018-19.

Year	2018-19	2019-20	2020-21	2021-22	2022-23
ARR	369.61	395.00	421.25	448.60	476.06

4. Admission of Petition and Public Hearing Process

The Commission observed that the ARR filed by the petitioner was incomplete and lacking crucial and vital information required as specified in Commission’s (MYT) Regulations 2014.

P&ED was asked to submit the required information vide Commission’s letter No.H.20013/20/17-JERC Dated. 18th January, 2018, letter No.H.20013/20/17-JERC Dated 24th January, 2018 and letter No.H.20013/20/17-JERC Dated 1st February, 2018.

Pending receipt of additional information, the ARR and Tariff Petition was admitted on 19th January, 2018 and marked as Petition (ARR & Tariff) No. 2 of 2018 to avoid delay in processing of ARR and directed the P&ED to publish the summary of the ARR and tariff proposal in an abridged form and manner as approved in accordance with section 64 of

the Electricity Act 2003 to ensure public participation vide Commission's letter No.H.20013/20/16-JERC, dt. 19th January, 2018. The P & ED submitted the additional information vide Letter No.T-23035/01/15-EC(P)/Com/35 dated 23rd January, 2018, letter No.T-23035/01/15-EC(P)/Com/37 dated 29th January, 2018 and letter No.T-23035/01/15-EC(P)/Com/40 dated 5th February, 2018

The notification of the proposed ARR for control period FY 2018-2019 to FY 2022-2023 and the tariff schedule for FY 2018-19 was published by the P&ED in the following newspapers.

Sl. No	Name of the newspaper	Language	Date of publication
1	Newslink	English	24 th January 2018 & 25 th January 2018
2	The Zozam Times	Mizo	24 th January 2018 & 25 th January 2018

Through the public notice, the stakeholders/public were invited to file their objections and suggestions on the petition on or before 07.02.2018.

1. Notice for Public Hearing:

The Commission, to ensure transparency in the process of determination of ARR for MYT Control period FY 2018-19 to FY 2022-23 and tariff for FY 2018-19 and providing proper opportunity to all stakeholders and general public and consumers for making suggestions/objections on the (MYT) ARR tariff petition, has decided to hold a public hearing at the headquarters of the state. Accordingly, a notification was published by the Commission in the following leading newspapers giving due intimation to all stakeholders, general public, interested parties, and consumers about the public hearing to be held at Aizawl on 23.02.2018.

Sl. No.	Name of the News-paper	Language	Date of Publication
1	The Aizawl Post	Mizo	15 th February 2018 & 16 th February 2018
2	Highlander	English	15 th February 2018 & 16 th February 2018

2. Public Hearing:

Public hearing was held as scheduled on 23.02.2018 in the Conference Hall of Engineer-in-Chief, Power and Electricity Department, Aizawl. During the public hearing each objector was provided a time slot for presenting his/ her views on the petition of P&ED, Mizoram before the Commission. The main issues raised by the objectors during the public hearing along with response of P&ED and Commission's comments there on are briefly reproduced in Chapter - 4.

3. Meeting of State Advisory Committee

The proposal of the P&ED Mizoram was placed before the State Advisory Committee in its meeting held on 22.02.2018 in the Conference Hall of Engineer-in-Chief ,Power and Electricity Department, Aizawl and discussed the ARR for MYT Control Period FY 2018-2019 to 2022-2023 & Tariff proposal for FY 2018-2019 of P&ED, Mizoram. The minutes of the State Advisory Committee meeting are given in Annexure – I

4. The Commission has reviewed the directives issued earlier to P&ED (the petitioner) in the Tariff orders for FY 2010-11 to FY 2017-18 and noted that some of the directives have already been complied with are dropped. The directives which are partly complied with and the remaining directives are now consolidated and fresh directives also issued.
5. In exercise of the powers vested under section 62(1) read with section 62(3) and 64 3(a) of the Electricity Act 2003 and Regulation 5.2 JERC (M&M) MYT Regulations, 2014 (Notified on 09.06.2014) (hereinafter referred to as "Tariff Regulations 2014", and other enabling provisions in this behalf ,the Commission issues this order for truing up of the ARR and revenues for FY 2016-17 and Annual Performance Review for FY 2017-18 and approval of the ARR for MYT Second Control Period FY 2018-2019 to 2022-2023 and determination of retail Tariffs for FY 2018-2019 for supply of electricity in the State of Mizoram, duly taking into consideration of the facts presented by P&ED Mizoram in its petition and subsequent filings, the suggestions/objections received from stake holders, consumer organizations, general public and the minutes of the State Advisory Committee and the response of the P&ED Mizoram to the suggestions/objections.

6. This Order contains thirteen chapters as detailed below:
 1. Chapter 1: Introduction.
 2. Chapter 2: Summary of ARR for Control Period FY 2018-2019 to 2022-2023 and Tariff petition for FY 2018-2019.
 3. Chapter 3: Power Sector in Mizoram-An over view.
 4. Chapter 4: Public hearing process.
 5. Chapter 5: True up of ARR for FY 2016-17.
 6. Chapter 6: Annual performance Review of ARR for FY2017-18.
 7. Chapter 7: Analysis of ARR for Control Period FY 2018-2019 to 2022-2023 and approvals of the Commission.
 8. Chapter 8: Tariff principles and design and determination of tariffs for FY 2018-2019.
 9. Chapter 9: Wheeling charges for FY 2018-19
 10. Chapter 10: Fuel and Power purchase cost Adjustment.
 11. Chapter 11: ARR of Transmission Function for MYT Control period FY 2018-19 to FY 2020-23 and Transmission charges for FY 2018-19.
 12. Chapter 12: ARR of Generation Function for MYT Control period FY 2018-19 to FY 2022-23.
 13. Chapter 13: Directives.
7. The P&ED 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.
8. This order shall be effective from 1st April, 2018 and shall remain in force till the next Tariff Order of the Commission.



(NGANGOM SARAT SINGH)
Chairperson

Place : Aizawl

Date : 12.03.2018

1. Introduction

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

In exercise of the powers conferred as per Electricity Act 2003, (hereinafter referred to as Act) the Government of India has 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 the 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. 24th January, 2008.

In accordance with the provisions of the Act, the Joint Commission discharges the following functions:

- a. Determine the tariffs for generation, transmission, distribution of power supply whole sale/ bulk or retail and wheeling of electricity, as the case may be, within the State: Provided that where open access has been permitted to a category of consumers under Section 42, the State Commission shall determine the wheeling charges and surcharge thereon, if any, for the said category of consumers;
- b. 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;
- c. Facilitate intra-State transmission and wheeling of electricity;

- d. Issue licenses to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State;
- e. 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;
- f. Adjudicate upon the disputes between the licensees and generating companies; and to refer any dispute for arbitration;
- g. Levy fee for the purposes of this Act;
- h. Specify State Grid Code consistent with the Grid Standards specified under Clause (h) of sub-section(1) of Section 79 of the Act;
- i. Specify or enforce standards with respect to quality, continuity and reliability of service by licensees;
- j. Fix the trading margin in the intra-State trading of electricity, if considered, necessary;
- k. Discharge such other functions as may be assigned to it under the Act.

1.1.1 Further, the Commission shall also advise the State Government on all or any of the following matters namely:

- a) Promotion of competition, efficiency and economy in activities of the electricity industry;
- b) Promotion of investment in electricity industry;
- c) Reorganization and restructuring of electricity industry in the State;
- d) Matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the State Commission by the State Government.

1.1.2 The State Commission shall ensure transparency while exercising its powers and discharging its functions.

1.1.3 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:

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

1.2 Power & Electricity Department (P & ED) and Tariff Petition

P&ED, being an integrated utility, is responsible for generation, Transmission and Distribution of electricity in the State of Mizoram and it also discharges trading functions through its SLDC. As per the Tariff regulations, the utility is required to submit the ARR and the Petition in the month of November for fixing the Tariff for the next financial year.

The objectives of the P&ED are:

1. Focuses on demand and distribution net work growth.
2. Lays emphasis on metering to help reduce distribution losses (100% metering)
3. Focuses on metering to raise correct demand.
4. Focuses on collection of revenue to reduce commercial losses and improve cash flow.
5. Concentrated efforts into computerization of billing for efficient billing and in turn better and faster recovery.
6. Focuses on to arrest power theft and correct metering and energy audit to improve efficiency.

2. Summary of ARR Control period FY 2018-19 & Tariff Petition for FY 2018-19

2.1 Aggregate Revenue Requirement (ARR)

The P&ED Mizoram, in its petition has projected the Aggregate Revenue Requirement (ARR) for Control Period FY 2018-2019 to FY 2022-2023 and Tariff Proposal for FY 2018-19, and expected revenue with the existing tariff and resultant gap. The ARR and revenue gap are shown in Table below.

Table 2.1: Aggregate Revenue Requirement projected by P & ED for the Control Period FY 2018-2019 to FY 2022-2023

(Rs. Crores)

S. No	Item of Expense	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Cost of fuel	0.01	0.01	0.01	0.01	0.01
2	Cost of Generation	8.55	8.91	9.30	9.69	10.02
3	Cost of Power Purchase	196.22	211.61	227.04	242.46	257.72
4	Transmission charges	46.81	49.49	52.32	55.31	58.48
5	Intra state Transmission	28.86	31.00	33.99	37.83	39.36
6	Employee costs	72.67	76.83	81.22	85.87	90.78
7	Repair and Maintenance Expenses	7.10	7.65	7.84	7.87	9.38
8	Administration and General Expenses	4.17	4.41	4.66	4.93	5.21
9	Depreciation	1.79	2.03	2.13	2.25	3.06
10	Interest Charges	1.90	1.54	1.18	0.82	0.46
11	Interest on Working capital	4.10	4.24	4.43	4.59	4.79
12	Provision for bad debts	-	-	-	-	-
13	Return on NFA/ Equity	-	-	-	-	-
14	Total Revenue Requirement	372.18	397.70	424.11	451.63	479.26
15	Less: Non Tariff Income	2.56	2.71	2.86	3.03	3.20
16	Net Revenue Requirement	369.61	395.00	421.25	448.60	476.06
17	Less: Revenue from sale of power at existing tariff	196.14	200.82	205.80	211.13	216.81
18	Net Gap	173.47	194.18	215.44	237.48	259.25

(Source: Table 3.27 & 3.28 of Petition)

2.2 Tariff

The P&ED, Mizoram in its petition has submitted the existing and proposed tariff for the 2018-19 as detailed in the table below.

Table 2.2: Existing V/s. Proposed Tariff for FY 2018-19

Sl. No.	Category	Existing		Category	Proposed	
		Energy Charges (Rs./KWh)	Fixed Charges (Rs./con./contracted load/Billing demand)		Energy Charges (Rs./KWh)	Fixed Charges (Rs./con./contracted load/Billing demand)
		A	B		C	D
1	Kutir Jyoti			Kutir Jyoti		
i)	First 15 KWh	1.50	12/Conn.	First 20Kwh	1.75	15/Conn.
ii)	Next 15 KWh	2.15	12/Conn.	Next 21-35 KWh	2.40	15/Conn.
iii)	Balance above 30 KWh	2.45	12/Conn.			
2	Domestic			Domestic		
A	LT			LT		
i)	First 50 KWh	2.45	35/ KW	First 100 KWh	2.90	40/ KW
ii)	Next 50 KWh	3.40	35/ KW	Next 100Kwh	4.45	40/ KW
iii)	Next 100 KWh	4.45	35/ KW	Balance above 200 KWh	5.05	40/ KW
iv)	Balance above 200 KWh	5.00	35/ KW			40/ KW
B	HT	4.80	35/ KVA	HT	4.80	40/ KVA
3	Commercial			Commercial		
A	LT			LT		
i)	First 100 KWh	3.80	65/KW	First 150 KWh	4.35	70/ KW
ii)	Next 100 KWh	4.80	65/KW	Balance above 150 KWh	5.50	70/ KW
iii)	Balance above 200 KWh	5.80	65/KW			
B	HT	5.50	65/KVA	HT	5.50/KVAH	70/ KVA
4	Public Lighting	5.20	65/KW	Public Lighting	5.30	65/ KW
5	Irrigation & Agriculture			Irrigation & Agriculture		
A	LT	2.00	35/ KW	LT	2.10	40/ KW
B	HT	1.95	35/ KVA	HT	2.00/KVAH	40/ KVA
6	Public Water Works			Public Water Works		
A	LT	5.10	75/ KW	LT	5.20	80/ KW
B	HT	4.90	75/ KVA	HT	4.90/KVAH	80/ KVA
7	Industrial			Industrial		
A	LT			LT		

Sl. No.	Category	Existing		Category	Proposed	
		Energy Charges (Rs./KWh)	Fixed Charges (Rs./con./contracted load/Billing demand)		Energy Charges (Rs./KWh)	Fixed Charges (Rs./con./contracted load/Billing demand)
i)	First 400 KWh	4.00	65/ KW	First 400 KWh	4.10	70/ KW
ii)	Balance above 400 KWh	4.75	65/ KW	Balance above 400 KWh	4.80	70/ KW
B	HT	4.55	65/KVA	HT	4.55	70/ KVA
8	Bulk Supply	4.30	70/ KVA	Bulk Supply	4.30	80/ KVA

(Source: Table 4.1 of Petition)

2.3 Prayer

- Approve True-up Petition for FY 2016-17 and APR for the FY 2017-18, Business plan and ARR for Control Period FY 2018-2019 to FY 2022-2023 & Tariff for FY 2018-19 in respect of distribution function, transmission function and generation function for P&ED, Mizoram formulated in accordance with the guide lines outlined in the regulations of Joint Electricity Regulatory Commission (JERC) and the principles contained therein.
- Condone any inadvertent delay / omissions / errors / rounding off / differences / short comings and the P&ED may please be permitted to add / change / modify / alter the petition during its process.
- Permit P&ED, Mizoram to file additional data / information as may be necessary
- Pass such other orders as the Hon'ble Commission may deem fit and proper keeping in view the facts and circumstances of the case.

3. Power Sector in Mizoram- An over view

3.1 Geographical Reality

The P&ED, Mizoram is responsible for supply and distribution of electricity in the State of Mizoram which has a total area of 21087 Sq KM with eight districts, viz. Aizawl, Mamit, Kolasib, Champhai, Serchhip, Lunglei, Lawngtlai and Saiha. The State shares more than 700 Kms of international boundary with Bangladesh and Myanmar. The total population of Mizoram State is 10.92 Lakhs as per 2011 census. The per capita consumption is about 323 kWh during FY 2016-17. P&ED serves about 2,19,127 consumers of various categories as on 31st of March, 2017.

3.2 Power supply

3.2.1 Own Generation

P&ED has its own generating plants. The total installed capacity of the State-owned generating stations and the actual energy generated during 2016-17 as furnished by P&ED is as in Table below:

Table 3.1: Own Generating Stations as on 31.03.2017

Sl. No.	Station	Installed Capacity (MW)	Net Generation (MU) 2016-17
I	Hydel	29.35	
1	Serlui 'A'	1.00	
2	Tuirivang	0.30	
3	Khawiva	1.05	
4	Tuipui	0.50	
5	Maicham-I	2.00	
6	Teirei	3.00	
7	Tuipanglui	3.00	
8	Kau-Tlabung	3.00	
9	Lamsial	0.50	
10	Maicham-II	3.00	
11	Serlui 'B'	12.00(Not Yet Commissioned)	
II	Diesel		
1	Lengpui	0.50	
III	HFO		
1	Bairabi	22.92	
	Total (I+II+III)	52.77	51.18

(Source Table 3.12 of Petition)

P&ED has stated that out of the installed capacity of generation plants of 52.77 MW the diesel generating set of 0.50 MW is for Lengpui Airport and the heavy fuel plant of 22.92 MW at Bairabi is kept on standby mode for the purpose of meeting the emergency requirements. The rest are mini Hydel plants having seasonal generation.

3.2.2 Power Purchase

The State is dependent on outside sources for meeting its energy requirement. The State has share from Central Sector Generating Stations and total firm share from the Central Sector Generating Stations of NEEPCO, NHPC and NTPC is 87.98 MW. Apart from this, P&ED is also getting power to a tune of 10.5 MW from NEC funded Baramura gas based thermal power plant and 22 MW from Palatana gas based power plant in Tripura state. Therefore the total allocation to Mizoram from its share of power from the generating stations outside the State is 120.48 MW as depicted in the Table below:

Table 3.2: Share from Central Generating Stations (CGS)

(MW)				
Sl. No	Source	Plant Capacity (MW)	Licensee's Share in (%)	Licensee's Share in (MW)
A	Central Generating			
I	NTPC			
1	Bongaigon TPS	250	5.42	13.54
2	Farakka STPS	1600	0.14	2.24
3	Kahalgaon	840	0.14	1.18
4	Talcher STPS	1000	0.14	1.4
	NTPC-Total	3690		18.35
II	NHPC			
1	Loktak HEP	105	5.02	5.27
	NHPC-Total	105		5.27
III	NEEPCO			
1	Kopili HEP	200	4.618	9.24
2	Kopili - II HEP	25	6.04	1.51
3	Khandong HEP	50	3.94	1.97
4	Ranganadi HEP	405	5.7	23.09
5	Doyang HEP	75	5.25	3.94
6	AGBPP	291	5.41	15.74
7	AGTPP	148	6.00	8.88
	NEEPCO-Total	1194		64.36

Sl. No	Source	Plant Capacity (MW)	Licensee's Share in (%)	Licensee's Share in (MW)
IV	TSECL			
1	B'mura - IV	21	.5	5.25
2	B'mura - V	21	25	5.25
	TSECL-Total	42		10.5
V	OTPC			
1	Palatana	726	3.03	22
	OTPC-Total	726		22
VI	Total	5757		120.48

(Source: Format – F1 of ARR Petition)

The energy drawn from various central generating stations and Tripura is given in Table below:

Table 3.3: Energy drawal from Sources outside the State and Own Generation furnished by P & ED for FY 2016-17.

(MU)

Sl. No	Source	FY 2016-17
A	Central Generating Stations	
I	NTPC	
1	Bongaigon TPS	92.62
2	Farakka STPS	15.45
3	Kahalgaon STPS	8.53
4	Talcher STPS	9.13
	NTPC-Total	125.73
II	NHPC	
1	Loktak HEP	28.54
	NHPC-Total	28.54
III	NEEPCO	
1	Kopili HEP	44.39
2	Kopili - II HEP	6.11
3	Khandong HEP	7.46
4	Ranganadi HEP	7.77
5	Doyang HEP	12.94
6	AGBPP	64.44
7	AGTPP	43.28
	NEEPCO-Total	249.40
IV	TSECL	
1	B`mura -IV	40.01
2	B`mura -V	33.52
	TSECL-Total	73.53
V	OTPC	
1	Palatana	123.06
	OTPC-Total	123.06

Sl. No	Source	FY 2016-17
VI	Other Stations/IPPs	1.39
	Others-total	
	State Generating Stations	
1	All Units	51.18
	State Generating Stations-Total	51.18
C	UI/ Deviation	46.40
D	Supplementary Bills	
E	Grand Total	699.23

(Source: Format F1 of Petition)

3.3 Transmission and distribution

For drawing power from CGS and other outside sources, there are 3 (three) Nos. of 132kV transmission lines owned by PGCIL connecting Mizoram as given below.

- i) 132kV S/C Jiribam (Manipur) – Aizawl
- ii) 132kV S/C Badarpur (Assam) – Aizawl
- iii) 132kV S/C Kumarghat (Tripura) – Aizawl

All these lines terminate at 132KV Luangmual SS, Aizawl under PGCIL, from where power is drawn to different load centres through 2 (two) No. 132 kV lines of P&ED. Being a hilly State with its population unevenly dispersed in the remote areas, the State of Mizoram is having large network of HT and LT lines as well as distribution sub-station/transformers.

The details of transmission and distribution network, owned & operated by P&ED as on 31.03.2017 are given in Table below:

Table 3.4: Network Details as on 31.03.2017

Sl. No	Voltage	Transmission & Distribution lines (Ckt. Km)	Substations/ Transformers	Capacity (MVA)
1	132kV	728.961	7	121.80
2	66 KV	117.00	2	12.60
3	33kV	2240.24	61	83.85
4	11kV lines	4905.77		
	LT lines	2334.81		
6	Power Transformers		77	218.25
7	Distribution Transformers		2068	228.69
8	No of Consumer Meters			

Sl. No	Voltage	Transmission & Distribution lines (Ckt. Km)	Substations/ Transformers	Capacity (MVA)
(i)	LT < 5 accuracy			207803
(ii)	HT < 5 accuracy			327
	Total			208130

3.4 Distribution losses

The distribution losses of P&ED system were 26.52% during the year 2016-17. The technical and commercial losses are not segregated.

3.5 Consumer profile and Energy sales

The consumers profile and corresponding energy sales during the year 2016-17 are given in Table below:

Table 3.5: Consumer Profile and Energy Sales for FY 2016-17

Sl. No	Category	FY 2016-17		
		Energy Sales (MU)	No. of Consumers (Nos.)	Connected Load (MW) (MW)
1(a)	Kutir Jyoti - LT	4.41	11627	3.387
1(b)	Domestic - LT	229.73	188718	275.939
1(c)	Domestic - HT	4.17	20	3.008
2(a)	Commercial - LT	26.39	16221	48.29
2(b)	Commercial - HT	7.48	129	8.233
3	Public Lighting - LT	4.89	1259	1.046
4(a)	Irrigation & Agriculture –LT	0.02	20	0.020
4(b)	Irrigation & Agriculture –HT	0.25	1	0.085
5(a)	Public Water Works - LT	4.92	12	4.085
5(b)	Public Water Works - HT	45.04	46	34.358
6(a)	Industrial - LT	1.64	783	4.152
6(b)	Industrial - HT	8.83	18	8.853
7	Bulk Supply - HT	15.28	147	17.636
8	Temp connection & Theft	0.50	129	0.158
9	UI Sales	186.31		
	TOTAL	539.85	219127	409.259

(Source: Form No: R1 of petition)

3.6 Demand

As per Load Generation Balance Report(LGBR) of NERPC for FY 2016-17 the peak power demand of P&ED during FY 2016-17 was 101 MW The allocation of power

(firm and infirm) from various central generating stations and NEC funded Baramura Gas Based Thermal Power Plant is 120.48 MW.

The energy procured by P&ED during the year 2016-17 was 699.23 MU including own generation of 51.18 MU.

3.7 Energy Audit

P&ED is not conducting Energy Audit. At present, the P&ED does the calculation of losses by taking the energy input at 132kV and energy sales at consumer end and the difference is shown as distribution loss, instead conducting energy audit Voltage-wise and computed with standard norms. The distribution licensee shall take action to identify and analyze the losses to bring down them to the permissible limits. To achieve this all the line feeders, transformers and consumer connections should be provided with standard meters.

4. Public Hearing Process

4.1 Introduction:

On admitting the ARR for Control Period FY 2018-2019 to FY 2022-2023 and Tariff Petition for FY 2018-19, the Commission directed the P&ED to make available the copies of the 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.

No Objection is received from the Consumers/ General public

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 Aizawl on 23.02.2018 as scheduled in the Conference Hall of Engineer-in-Chief, Power & Electricity Department., Aizawl from 11:00 A.M. to 1:00 P.M. During the Public Hearing the participants from general public were given an opportunity to offer their views in respect of the ARR for Control Period FY 2018-2019 to FY 2022-2023 and Tariff Petition for FY 2018-19 of P&ED.

The list of stakeholders who attended the Public Hearing is given in Annexure-II.

The Officers of P&ED who attended the Public Hearing have responded on the issues raised by the objectors.

4.3 Proceedings of Public Hearing:

President Central YMA raised the following objections and the response of P & ED, Mizoram against each objection are furnished below.

Objection 1

Huge hike in employee cost from Rs. 45.84 Crore (proposed in APR for FY 2017-18) to proposed figure of Rs. 72.67 Crore for FY 2018-19.

P & ED Reply

P & ED clarified that the employee cost has to be considered based on true up figure Rs. 96.13 Crore for FY 2016-17 instead of APR 2017-18 figure.

Objection 2

Why fuel cost as well as cost of generation is included in ARR components which can be considered as repetition of the same components while employee cost is already included in ARR components as a separate item.

P & ED Reply

P & ED, Mizoram clarified that fuel cost is mainly considered for Lengpui DG set. Employee cost of Rs. 72.67 Crore mainly consists of employee cost in distribution sector only whereas the cost of generation and Intra state transmission charges include employee cost in the generation and transmission sector respectively. Since petition was filed as per JERC for M & M MYT Regulations, 2014 in which Transmission tariff, Generation tariff and Distribution tariff has to be separately dealt. As such petition papers are prepared considering all three entities separately administered to have separate accounting scheme. At the same true up figures are as per audited annual accounts of the department in which transmission generation and distribution are not separated but rather forms an integral part of the own expenditure without any segregation. Hence separate figure cannot be made and NIL figure is reflected in cost of generation and Intrastate transmission charges in the true up figure

Commission's Comments

The objection raised by the stake holder / public and reply of the P & ED are noted.

5. True-up of ARR of 2016-17

5.1 Back ground

The Commission had approved ARR for FY 2016-17 on 29.2.2016 on the petition filed by P&ED. The Commission had carried out the review exercise for FY 2016-17 in Tariff Order for FY 2017-18 dated 28-02-2017 based on revised estimates of P&ED.

Now the P&ED has submitted true-up Petition along with ARR for Control Period FY 2018-2019 to FY 2022-2023 and Tariff Petition for FY 2018-19, together with audited annual accounts for FY 2016-17.

As per Regulation 10.6 (ii) of the MYT Regulations, 2014 the Commission has to undertake true up based on audited accounts and pass an order regarding approved aggregate gain or loss on account of controllable factors and the amount of such gains or losses shall be shared in accordance with Regulation 13 of JERC (MYT) Regulations 2014 and the components of approved costs pertaining to uncontrollable factors which were not recovered during the previous year shall be pass through as per Regulation 12 of JERC (MYT) Regulations 2014 on aggregate gain or loss on account of un controllable factors in the following manner as per MYT Regulations 2014.

“Mechanism for pass through of gains or losses on account of uncontrollable factors.

12.1 The approved aggregate gain or loss to the Generating Company or Transmission Licensee or Distribution Licensee on account of uncontrollable factors shall be passed through as an adjustment in the tariff of the Generating Company or Transmission Licensee or Distribution Licensee over such period as may be specified in the Order of the Commission passed under these Regulations.

12.2 The Generating Company or Transmission Licensee or Distribution Licensee shall submit such details of the variation between expenses incurred and revenue earned and the figures approved by the Commission, to the Commission, along with the detailed computations and supporting documents as may be required for verification by the Commission.

12.3 Nothing contained in this Regulation 12 shall apply in respect of any gain or loss arising out of variations in the price of fuel and purchase, which shall be dealt with as specified by the Commission from time to time.

As per regulations 13 of JERC M & M (MYT) Regulations 2014 the gains or losses on account of controllable factors shall be dealt with the following manner.

13.1 (i) One third of the amount of such gain shall be passed on as a rebate in tariffs over such period as may be stipulated in the order of the Commission under Regulation 10.6

(ii) The balance amount which will amount to two-third of such gains may be utilized at the discretion of the distribution licensee.

13.2 The approved aggregate loss to the Generating Company or Transmission Licensee, Distribution licensee on account of controllable factors shall be dealt with in the following manner.

(i) one third of the amount of such loss may be passed on as an additional charge in tariffs over such period as may be stipulated in the order of the Commission under Regulation 10.6 and

(ii) The balance amount of loss which will amount to two thirds of such loss shall be absorbed by the distribution licensee”.

5.2 True-up Petition for FY 2016-17

The P&ED Mizoram in its petition for true-up for FY 2016-17 has furnished actual energy sales, expenditure based on the audited annual accounts for FY 2016-17.

Accordingly the petitioner claimed revised ARR, Revenue and consequent gap for FY 2016-17.

Commission’s Analysis

The Commission has analyzed all components of actual energy sales, expenses and gap under true-up for FY 2016-17 based on accounts as under: wherever necessary the Commission has considered expenses based on prudence check and after taking into account efficiency parameters like distribution losses etc.

5.3 Number of Consumers and Connected Load

Table 5. 1: Consumer Profile and Energy Sales for FY 2016-17

Sl. No	Category	FY 2016-17		
		Energy Sales (MU)	No. of Consumers (Nos.)	Connected Load (MW) (MW)
1(a)	Kutir Jyoti - LT	4.41	11627	3.387
1(b)	Domestic - LT	229.73	188718	275.939
1(c)	Domestic - HT	4.17	20	3.008
2(a)	Commercial - LT	26.39	16221	48.29
2(b)	Commercial - HT	7.48	129	8.233
3	Public Lighting - LT	4.89	1259	1.046
4(a)	Irrigation & Agriculture –LT	0.02	20	0.020
4(b)	Irrigation & Agriculture –HT	0.25	1	0.085
5(a)	Public Water Works - LT	4.92	12	4.085
5(b)	Public Water Works - HT	45.04	46	34.358
6(a)	Industrial - LT	1.64	783	4.152
6(b)	Industrial - HT	8.83	18	8.853
7	Bulk Supply - HT	15.28	147	17.636
8	Temp connection & Theft	0.50	129	0.158
9	UI Sales	186.31		
	TOTAL	539.85	219127	409.259

As seen from the above table it is observed that in respect of the following categories the average connected load is disproportionate as detailed below.

Sl. No	Category	Average Connected load	Remarks
1	Domestic HT	150.4 KW	Very High
2	Irrigation LT	1000W	Very low
3	PWW LT	340.417 KW	Very High
4	PWW HT	746.913 KW	Very High
5	Industrial HT	491.972 KW	Very High

Owing to furnishing of high connected load the revenue assessment (fixed charges) will be on high side than actual billing. Directive Number 19 was also issued in FY 2014-15 tariff order and it is being repeated every year to physically verify the individual connected load. The Commission has viewed the inaction and lack of seriousness on the part of the Petitioner with much displeasure. The P & ED Mizoram is directed to arrange physical verification of the connections and report compliance in next tariff order. In the mean while a quarterly report on the progress achieved shall be submitted starting from 01.07.2018 onwards.

In the additional information submitted that on 13.01.2018 the P & ED Mizoram has stated that out of 2,18,766 connections only 2,07,803 connections are with meters.

As seen from the above out of 2,18,766 L.T connections only 2,07,803 LT connections are with meters and 10, 963 LT connections are without meters

As per Section 55 (1) of electricity Act 2003 “ No Licensee shall supply electricity after expiry of two years from the appointed date except through installation of a correct meter in accordance with the regulations to be made in this behalf by the authority”.

Directive Number 6 was also issued by the Commission during 2010-11, tariff order in this regard and it is being repeated ever since then.

Continuance of supply without meter in a serious irregularity. This may be attended to immediately and report compliance by 30.06.2018 confirming that all connections to whom power supply is being given are fitted with appropriate capacity and healthy meters.

5.4 Energy sales

The P&ED in its True up Petition has furnished the actual energy sales at 353.54 MU as against 382.11 MU approved by the Commission for the FY 2016-17. The

Category wise actual sales during the FY 2016-17 as reported by the P&ED and now approved by the Commission are given in table below:

Table 5. 2: Energy Sales approved by the Commission for FY 2016-17

(MU)				
Sl. No	Category	Approved by Commission in Tariff Order dated 29.02.2016 (MU)	Actuals furnished by P&ED(MU)	Now approved by Commission
1	(a) Kutir Jyoti	4	4.41	4.41
	(b) Domestic	250	229.73	229.73
	Domestic HT	4	4.17	4.17
2	Commercial	31	26.39	26.39
	Commercial HT	2	7.48	7.48
3	Public lighting	9	4.89	4.89
	Irrigation & Agriculture LT	0.01	0.02	0.02
4	Irrigation & Agriculture HT	0.10	0.25	0.25
	Public Water Works LT	1	4.92	4.92
5	Public Water Works HT	50	45.04	45.04
	LT Industrial	3	1.64	1.64
6	(HT Industrial)	3	8.83	8.83
7	Bulk Supply	25	15.28	15.28
8	Temp. Supply	-	0.50	0.50
9	Total sales within States	382.11	353.54	353.54

Commission's Analysis

There is a steep fall in sales in LT Domestic and bulk supply categories. This should be checked up.

The Commission approves energy sales within the State at 353.54 MU as per actuals for FY 2016-17.

5.5 Distribution Loss

The Commission in its order dated 29.2.2016 had approved Distribution Loss at 19.40% for FY 2016-17. The P&ED has furnished actual distribution losses at 26.29% for FY 2016-17.

Commission’s analysis

The P&ED Mizoram has not furnished detailed calculation as to how the Distribution losses are arrived at. As such the losses are recalculated duly considering the energy availability, average inter-state pool loss at 2.7 % in NER being the average actual weekly transmission losses from 04.04.2016 to 02.04.2017 and the ER transmission loss at 2.25 % being the average weekly transmission loss in ER from 04.04.2016 to 02.04.2017. The intrastate transmission losses are however considered at 3% as furnished by P & ED. Considering the above the Distribution Losses in Mizoram are worked out to 26.52% as detailed in Table below:

Table 5. 3: T&D loss calculation of P&ED for FY 2016-17 approved by the Commission

Sl. No.	Source	Unit	Energy
1	Own generation	MU	51.18
2	Energy from ER		33.11
3	ER Tr. Loss	%	2.25%
4	Less ER Tr. Loss	MU	0.74
5	Net Energy from ER(2-4)	MU	32.37
6	Energy from NER		567.15
7	Total energy in NER(5+6)		599.52
8	NER Tr. Loss	%	2.7%
9	Less NER Tr. Loss	MU	16.19
10	Net energy in NER (8-9)		583.33
11	UI purchases		47.79
12	UI sales		186.31
13	Net energy available at state periphery (1+10+11-12)	MU	495.99
14	Less intra state transmission loss @ 3%		14.88
15	Net energy available for sale (13-14)	MU	481.11
16	Energy sales within the state	MU	353.54
17	Distribution loss(15-16)	MU	127.57
18	Distribution loss	%	26.52%

As seen from the above the P & ED Mizoram failed to achieve the distribution loss of 19.40% approved in tariff order dated 29.02.2016.

As such the Commission retained the already approved distribution loss at 19.40 %for FY 2016-17, after true-up.

5.6 Energy Requirement

The energy requirement approved by the Commission for FY 2016-17 in its order dated 29.02.2016, actuals furnished by P&ED in its true-up petition of FY 2016-17 and now approved by the Commission are detailed in table below:

Table 5.4: Energy Requirement for FY 2016-17 approved by the Commission after true-up

Sl. No.	Particulars	Unit	Approved In T.O dt.29.2.16	Actuals for FY 2016-17	Now approved by Commission
1	Energy Sales	MU	382.11	353.54	353.54
2	Distribution Loss	MU	91.97	126.07	85.10
3	Distribution Loss	%	19.4%	26.29%	19.4%
4	Energy Requirement at State periphery	MU	474.08	479.61	438.64

5.7 Own Generation

The Commission in its order dated 29.02.2016 for FY 2016-17 had approved net own generation at 66.52 MU.

P&ED has furnished net own generation at 51.18 MU for the FY 2016-17.

The Commission now approved P&ED own generation of 51.18 MU for FY 2016-17 as per actuals after true up.

5.8 Purchase of Power

The Commission in its order dated 29.02.2016 had approved power purchase of 443.01 MU for FY 2016-17. The P&ED in its true-up petition for 2016-17 has furnished actual power purchase at 648.05 MU including UI purchase of 47.79 Mu as detailed in table below:

Table 5.5: Power Purchase during FY 2016-17 approved by the Commission in true-up.

Sl. No	Source	Power Purchase Approved in Order dated 29.02.2016	Actuals furnished by P&ED	Now Approved by the Commission
A	Central Generating stations			
I	NTPC- E.R			
1	Farakka STPS	14.37	15.45	15.45
2	Kahalgaon STPS	6.53	8.53	8.53
3	Talcher STPS	9.11	9.13	9.13
	NTPC-Total	30.01	33.11	33.11
II	NTPC -NER			
1	Bongai gaon TPS		92.62	92.62
III	NHPC			
4	Loktak HEP		28.54	28.54
	Sub-Total		28.54	28.54
IV	NEEPCO			
5	Kopili HEP	28.00	44.39	44.39
6	Kopili - II HEP	5.00	6.11	6.11
7	Khandong HEP	4.00	7.46	7.46
8	Ranganadi HEP	55.00	70.77	70.77
9	Doyang HEP	10.00	12.94	12.94
	Sub Total NEEPCO – Gas based	102.00	141.67	141.67
10	AGBPP	90.00	64.44	64.44
11	AGTPP	35.00	43.28	43.28
	Sub-Total	152.00	107.72	107.72
V	TSECL			
12	B'mura - IV	36.00	40.01	40.01
13	B'mura - V	38.00	33.52	33.52
	Sub-Total	74.00	73.53	73.53
VI	OTPC			
14	Palatana	78.00	123.06	123.06
	Sub-Total	78.00	123.06	123.06
B	UI Purchase / RPO	14.00	47.79	47.79
C	Grand Total	443.01	648.05	648.05

The Commission approves power purchase of 648.05 MU including UI purchase of 47.79 MU during FY 2016-17 after true-up as per actuals.

5.9 Energy Balance

The details of energy requirement and availability of power approved by the Commission for FY 2016-17 in its order dated 29.02.2016 and actuals furnished by the P&ED in its true-up petition for FY 2016-17 and now approved by the Commission are furnished in Table below:

Table 5.6: Energy Balance for FY 2016-17 approved by the Commission

Sl. No.	Particulars	Approved in the order dated 29.02.16	Actuals furnished by P&ED	Now approved by Commission
A	Energy Requirement			
1	Energy Sales	382.11	353.54	353.54
2	Distribution Loss %	19.40%	26.29%	19.40%
3	Distribution Loss MU	91.97	126.07	85.10
4	Energy Requirement	474.08	479.61	438.64
B	Energy Availability			
5	Own Generation	66.52	51.18	51.18
6	Energy from ER	30.01	125.73	33.11
7	Less ER Tr loss %	2.20%	2.10	2.25
8	-do (MU)	0.96	2.64	0.74
9	Net Energy for ER	29.05	123.09	32.37
10	Energy from NER	399.00	474.52	567.15
11	Total energy in NER(9+10)	428.37	597.61	599.52
12	Less NER Tr loss %	3.25%	2.65	2.7
13	-do- MU	13.91	15.84	16.19
14	Net energy(11-13)	414.14	581.77	583.33
15	UI Purchases	14.00	47.79	47.79
16	Total energy available(5+14+15)	494.66	680.74	682.30
17	Intrastate transmission loss 3%	14.84	20.42	20.47
18	Energy available for sale (16-17)	480.13	660.32	661.83
19	Surplus (18-4)	5.74	180.71	223.19
20	Surplus grossed-up by 3%	5.91	186.31	230.09

Owing to non achievement of approved distribution loss of 19.40 %, the Licensee sustains a loss of Rs. 8.67 Crore as detailed below.

Surplus power with distribution loss of 19.4 %	230.09 MU
Surplus power with distribution loss of 26.29 %	186.31
Difference	43.78

43.78 MU X 1.98 = Rs. 8.67 Crore

This loss of Rs. 8.67 Crore will be added to the total revenue, in arriving net ARR.

5.9.1 Fuel Cost

The Commission in its tariff Order for FY 2016-17 had approved fuel cost at Rs. 0.07 Crore

Actual Fuel Cost furnished by P&ED and as per audited annual accounts for FY 2016-17 is Rs. NIL Crore during the FY 2016-17.

The Commission accordingly approves fuel cost at Rs. NIL for FY 2016-17.

5.9.2 Power Purchase Cost

Petitioner's submission

The Commission in its order dated 29.2.2016 had approved Rs. 145.86 Crore towards power purchase cost during FY 2016-17 for purchase of 443.01 MU. The P&ED in its true-up petition for FY 2016-17 has furnished actual power purchase cost during FY 2016-17 at Rs. 209.71 Crore for purchase of 648.05 MU including UI purchase of 47.79 MU as detailed in the table below

Table 5.7: Power Purchase Cost

Sl. No	Source	Plant Capacity (MW)	Licensee's share in %	Licensee's share in MW	MU Purchased/generated (ex-bus)	All charges Total (in lakhs)	Average rate (P/kWh)
A	Central Generating Stations						
1	NTPC						
1	Bongaigaon TPS	250.00	5.415	13.54	92.62	4816.54	520
2	Farakka STPS	1600.00	0.140	2.24	15.45	510.28	330
3	Kahalgaon STPS	840.00	0.140	1.18	8.63	283.06	332

Sl. No	Source	Plant Capacity (MW)	Licensee's share in %	Licensee's share in MW	MU Purchased/generated (ex-bus)	All charges Total (in lakhs)	Average rate (P/kWh)
4	Talcher STPS	1000.00	0.140	1.40	9.13	236.28	259
	NTPC Total	3690.00		18.35	125.73	5846.15	465
II	NHPC						
1	Loktak HEP	105.00	5.020	5.27	28.54	995.44	349
	NHPC Total	105.00		5.27	28.54	995.44	349
III	NEEPCO						
1	KopiliHEP	200.00	4.618	9.24	44.39	510.13	115
2	Kopili-II HEP	25.00	6.040	1.51	6.11	109.85	180
3	Khandong HEP	50.00	3.940	1.97	7.46	150.98	202
4	Ranganadi HEP	405.00	5.700	23.09	70.77	1623.89	229
5	Doyang Hep	75.00	5.250	3.94	12.94	644.43	498
6	AGBPP	291.00	5.410	15.74	64.44	2721.21	422
7	AGTPP	148.00	6.000	8.88	43.28	1547.46	358
	NEEPCO-Total	1194.00		64.36	249.40	7307.95	293
IV	TSECL						
1	B'mura-IV	21.00	25.00	5.25	40.01	1205.22	301
2	B'mura-V	21.00	25.00	5.25	33.52	1009.50	301
	TSECL-Total	42.00		10.50	77.53	2214.72	301
V	OTPC						
1	Palatana	726.00	3.030	22.00	123.06	3550.44	289
	OTPC Total	726.00		22.00	123.06	3500.44	289
VI	Other stations/IPPS						
1	Power exchange through IEX				1.39	40.18	289
	Others- Total					40.18	289
B	UI/ Deviation/				46.40	1015.82	219
	UI/ Deviation/ Total				46.40	1015.82	219
	Grand Total	5786.35		120.48	648.05	20970.71	300

Commission's analysis

The Commission accordingly approves power purchase cost of Rs. 209.71 Crore for FY 2016-17 for purchase of 648.05 MU as per actuals based on accounts after true-up.

5.9.3 Inter State Transmission Charges

Petitioner's Submission

The Commission in its order dated 29.02.2016 had approved Inter State Transmission Charges (PGCIL Charges) at 20.46 Cr for FY 2016-17. The P&ED in its True up Petition has furnished Rs. 41.88 Cr as per actual for FY 2016-17.

The Commission approves Inter State Transmission Charges (PGCIL Charges) at Rs. 41.88 Cr for FY 2016-17 as per actuals after True up.

5.9.4 Intra State Transmission Charges

The Commission in its order dated 29-02.2016 had approved Intra State Transmission Charges at Rs. 19.73 Cr for FY 2016-17. The P&ED in its True up Petition has stated that function wise segregated costs are not available and the audited costs are inclusive of transmission and generation.

The Commission approves Intra State Transmission Charges at Rs. NIL for FY 2016-17 after True up.

5.9.5 O & M Expenses

a) Employee Cost

Petitioner's submission

The Honourable Commission had approved employee cost of Rs. 4, 336.00 Lakhs for the FY 2016-17. The employee cost approved as above only relates to the total department. However, the audited accounts for department is not function wise, hence segregated actual employee expenses for distribution function is not available. The actual employee cost provided below is total for the department as a whole.

It is submitted that in view of the fact that the function wise segregated costs are not available and the audited costs are inclusive of the cost of generation and transmission function, P & ED is not claiming the cost of generation and intra –state

transmission charges separately.

The Hon'ble Commission may kindly consider the above submission and true-up the employee cost for the FY 2016-17. The approved employee cost and actual value of employee cost and now approved by the Commission for FY 2016-17 are provide in the table below.

Table 5.8: Employee Cost for FY 2016-17 approved by the Commission after true up (Rs. Crore)

S. No	Particulars	As approved by the Commission	As per Accounts	Approved by the Commission
1	Employee Cost	43.36	93.16	93.16
2	Total	43.36	93.16	93.16

The Commission accordingly approves employee expenses at Rs. 93.16 Crore for the FY 2016-17 as per actuals after True up.

b) Repairs & Maintenance

Petitioner's submission

The Hon'ble Commission had approved repair and maintenance expenses of Rs. 658.00 Lakhs for the FY 2016-17. Repair and maintenance expenses approved as above only relates to the total department. However, the audited accounts for department is not function wise hence, segregated actual repair and maintenance expenses for distribution function are not available. The actual repair and maintenance expenses provided below are total for the department as a whole.

It is submitted that in view of the fact that the function wise segregated costs are not available and the audited costs are inclusive of the cost of generation and transmission function, P & ED is not claiming the cost of generation and intra state transmission charges separately.

The Hon'ble Commission may kindly consider the above submission and true-up the

repair and maintenance expenses for the FY 2016-17.

The approved repair and maintenance expenses and actual value of repair and maintenance expenses now approved by the Commission for FY 2016-17 are provided in the table below.

Table 5. 9: R & M Expenses approved by the Commission for FY 2016-17 after true up

(Rs. Crore)				
S. No	Particulars	As approved by the Commission	As per Accounts	Now Approved by the Commission
1	Repair and Maintenance expenses	6.58	15.54	15.54
2	Total	6.50	15.54	15.54

The Commission accordingly approves the R&M expenses at Rs. 15.54 Crore for the FY 2016-17 as per actuals after True up.

c) Administration & General Expenses

The Hon'ble Commission had approved Administration and General Expenses of Rs. 107.00 Lakhs for the FY 2016-17. Administration and General Expenses approved as above only relates to the total department. However, the audited accounts for department is not function wise hence, segregated actual Administration and General Expenses for distribution function are not available. The actual Administration and General expenses provided below is total for the department as a whole. It is submitted that in view of the fact that the function wise segregated costs are not available and the audited costs are inclusive of the cost of generation and transmission function, P& ED is not claiming the cost of generation and intra state transmission charges separately.

The Hon'ble Commission may kindly consider the above submission and true-up the Administration and General expenses for the FY 2016-17.

The approved Administration and General Expenses and actual value of Administration and General expenses and now approved by the Commission for the FY 2016-17 are provided in the table below:

Table 5. 10: Administration and General Expenses approved by the Commission for FY 2016-17 after true-up

(Rs. Crore)				
S. No	Particulars	As approved by the Commission	As per Accounts	Now approve by the Commission
1	Administration and General expenses	1.07	5.33	5.33
2	Total	1.07	5.33	5.33

The Commission approves Administration and General Expenses at Rs. 5.33 Crore for the FY 2016-17 as per actuals after True up.

d) O&M Expenses

Abstract O&M Expenses are furnished in Table below:

Table 5. 11: O&M Expenses approved by the Commission for FY 2016-17 after true up

(Rs. Crore)		
S. No.	Particulars	Amount
1	Employee Cost	93.16
2	R&M Expenses	15.54
3	Administration and General Expenses	5.33
4	Total O&M Expenses	114.03

5.9.6 Depreciation

The Commission had approved depreciation at Rs. 1.61 Crore for FY 2016-17 in its order dated 28.02.2017.

The P&ED in its true-up petition for FY 2016-17 has furnished depreciation for FY 2016-17 at Rs. 3.26Crore.

Commissions Analysis

As per audited accounts for FY 2016-17 the total depreciation during FY 2016-17 is Rs. 45.39 Crore and 10 % of the depreciation is Rs. 4.54 Crore since 90 % of expenditure funded through grants.

The Commission accordingly now approves depreciation of Rs. 4.54 Crore for the FY 2016-17, being the 10% of depreciation as per actuals.

5.9.7 Interest & Finance Charges

The Commission had approved Rs. 2.68 Crore for the FY 2016-17 in its order dated 29.2.2016. P&ED in its true-up petition for FY 2016-17 has now furnished the Interest & Finance charges at Rs. 2.68 Crore for FY 2016-17 as per actuals.

The Interest and Finance charges furnished by P & ED and now approved by the Commission are furnished in the table below.

Table 5. 12: Interest and Finance Charges furnished by p & Ed Mizoram for FY 2016-17 after true up

(Rs. Lakhs)

Particulars	Gross loan-opening (in lakhs)	Add: drawals during the year	Less: repayment of Loan during the year in lakhs	Closing balance of loans (in lakhs)	Average loan (in lakhs)	Rate of interest on loan % (Average)	Interest on Loan(in lakhs)
LIC loans	733.33	0.00	133.33	600.00	666.67	8.00%	53.30
Rec loans	65.80	0.0	65.80	0.00	32.90	8.35%	5.20
REC (RGGVY) loans	1918.27	0.00	239.78	1678.48	1798.38	11.67%	209.54
Total loans	2717.40	0.00	438.92	2278.48	2497.94	9.86%	268.05
Weighted average rate of interest on loans %						9.86%	

The Commission approves Interest & Finance charges at Rs. 2.68 Crore for the FY 2016-17 as per actuals after true-up.

5.9.8 Interest on Working Capital

Interest on working capital worked out as per Regulation 29(4) of JERC, M&M (Terms and Conditions for determination of Tariff) Regulations 2014, on approved costs as detailed in Table below:

Table 5. 13: Interest on working capital approved by the Commission for FY 2016-17 for true-up

(Rs. Crore)			
Sl. No	Particulars	Total Cost	One Month
1	O&M Expenses	114.03	9.50
2	Maintenance of spares at 1% of Historical cost of GFA escalated by 6%	1139.09	12.07
3	Received one month	150.25	12.52
4	Total		34.09
5	Rate of Interest (SABR As on 01.04.2016)		14.05%
6	Interest on Working Capital		4.94

The Commission approves Interest on Working Capital at Rs. 4.94 Crore for FY 2016-17 after true-up.

5.9.9 Provision for Bad Debts

The Commission had not considered any Provision for Bad Debts for the FY 2016-17, since P&ED has not submitted the amount written off during FY 2016-17.

5.9.10 Return on Equity

Commission had not considered any Return on Equity Capital for the FY 2016-17 as the P&ED is a Government Department.

5.9.11 Non-Tariff Income

The Commission had approved Rs. 2.58 Crore as Non-tariff Income for the FY 2016-17. P&ED has reported the Non-tariff Income at Rs. 2.30Crore for the FY 2016-17 as per accounts.

The Commission accordingly approves Rs. 2.30 Crore towards Non-tariff Income for the FY 2016-17, as per actuals.

5.10 Revenue from approved tariffs

The P&ED has reported the energy sales at 539.85 MU, including UI Sales of 186.31 MU and Revenue from sale of power as per annual accounts is Rs.187.13 Crore including revenue from UI sales amount of Rs. 36.88 Crore as detailed in Table below:

Table 5. 14: Revenue from energy Sales FY 2016-17

Sl. No	Category	Sales (MU)	Amount (Rs. Crore)	Average Revenue (Rs/kWh)
1	a. Kutir Jyoti	4.41	1.17	2.65
	b. Domestic (LT)	229.73	79.53	3.46
	c. Domestic (HT)	4.17	2.49	5.97
2	a. Commercial (LT)	26.39	15.41	5.84
	b. Commercial (HT)	7.48	4.65	6.22
3	Public Lighting	4.89	2.58	5.28
4	a. Irrigation & Agriculture (LT)	0.02	0.005	2.50
	b. Irrigation & Agriculture (HT)	0.25	0.03	1.20
5	a. Public Water Works (LT)	4.92	3.74	7.60
	b. Public Water Works (HT)	45.04	26.76	5.94
6	a. Industrial (LT)	1.64	1.03	6.28
	b. Industrial (LT)	8.83	4.15	4.70
7	Bulk Supply	15.28	8.33	5.45
8	Temporary supply	0.50	0.37	7.40
9	Total Sales within State	353.54	150.25	4.25
10	Outside Sales UI	186.31	36.88	1.98
11	Total	539.85	187.13	3.47

Commission's Analysis

The average revenue realisation from sale of surplus power is very low at 1.98 /KWh while average purchase cost is Rs. 3/ KWh. It is suggested to regulate monthly purchase of costly power like Bongaigoun, AGBPP and AGTPP to the actual requirement and minimise the surplus power by proper planning in SLDC.

The Commission accordingly approves the revenue from sale of energy at 187.13 Crore during FY 2016-17 as per actuals after true-up.

5.11 Summary of ARR after true up with actuals and approvals.

Table 5. 15: Aggregate Revenue Requirement for FY 2016-17 for true-up

(Rs. Crore)				
Sl. No.	ARR Elements	Approved in Order dated 29.02.2016	Actuals Now furnished by P&ED	Now approved by the Commission
1	Fuel Cost	0.07	-	-
2	Cost of Generation	8.45	-	-
3	Power Purchase Cost	145.86	209.71	209.71
4	Inter State Transmission	20.46	41.88	41.88
5	Intra State Transmission	19.73	-	-
6	O&M Expenses	51.01	114.03	114.03
7	Depreciation	1.94	3.26	4.54
8	Interest & Finance charges	2.68	2.68	2.68
9	Interest on Working Capital	3.47	5.22	4.94
10	Provision for Bad Debts	-	-	-
11	Return on Equity	-	-	-
12	Total ARR	255.51	376.78	377.78
13	Less: Non-Tariff Income	2.58	2.30	2.30
14	Net ARR	252.93	374.48	375.48
15	Less: Revenue from sale of power	158.12	150.25	150.25
16	Less Revenue from sale of surplus power	1.88	36.88	36.88
17	Less Revenue loss----due to non achievement of approved distribution loss			8.67
18	Government Subsidy	89.83	201.95	201.95
19	Surplus (14-15-16-17-18)	-	14.60	22.27
20	Energy sales	382.11	353.54	353.54
21	Average Cost of supply (Rs./kWh)	4.79	6.94	6.96
22	Average Realisation (Rs./kWh)	4.14	4.25	4.25

5.12 Revenue gap/surplus after true up

As seen above there is a revenue surplus of Rs. 22.27 Crore during FY 2016-17 after taking into consideration the Government Subsidy of Rs. 201.95 Crore.

As per regulation 13.1(i) of the JERC for M&M (MYT) Regulations, 2014, one third of gain shall be passed on as a rebate in the tariffs.

Accordingly Rs. 7.42 Crore being the one third of the surplus amount of Rs. 22.27 Crore resulted in True Up of FY 2016-17, is being passed on as rebate in the present ARR for FY 2018-19.

6. Annual Performance Review for 2017-18

6.1 Back ground

The Commission had approved the ARR for FY 2017-18 vide Tariff Order dated 28.02.2017 based on the projected data by the P&ED. Now the P&ED in its petition for FY 2017-18 has submitted data as per Revised Estimate for FY2017-18. There are differences in certain items of costs as well as revenue between the approvals granted by the Commission and estimates now furnished by P&ED.

The Commission considers it appropriate and fair to revisit and review the approvals granted by it in the tariff order of FY 2017-18 with reference to estimates now made available by the P&ED but without altering the Principles and norms adopted earlier. These matters are discussed in the succeeding paragraphs.

6.2 Number of Consumers and Connected Load

Table 6.1: Number of Consumers and Connected Load as on 31.03.2018

Sl. No	Category	Consumer (No's)	Connected Load (MW)
1(a)	Kutir Jyoti - LT	12,432	3.276
1(b)	Domestic - LT	193945	296.386
1(c)	Domestic - HT	20	3.008
2(a)	Commercial - LT	18437	53.129
2(b)	Commercial - HT	133	8.233
3	Public Lighting - LT	1322	1.046
4(a)	Irrigation & Agriculture –LT	21	0.021
4(b)	Irrigation & Agriculture –HT	1	0.085
5(a)	Public Water Works - LT	13	4.494
5(b)	Public Water Works - HT	48	34.358
6(a)	Industrial - LT	818	4.152
6(b)	Industrial - HT	19	9.413
7	Bulk Supply - HT	287	19.751
8	Temp connection & Theft		
9	UI Sales		
	TOTAL	227495	437.801

As seen from the above table it is observed that in respect of the following categories the average connected load is disproportionate as detailed below.

Sl. No	Category	Average Connected load	Remarks
1	Domestic HT	150.4 KW	Very High
2	Irrigation LT	1000W	Very low
3	PWW LT	345.692KW	Very High
4	PWW HT	715.792 KW	Very High
5	Industrial HT	495.42 KW	Very High

Owing to furnishing of high connected load the revenue assessment (fixed charges) will be on high side than actual billing. Directive Number 19 was also issued in FY 2014-15 tariff order and being repeated every year to physically verify the individual connected load. The Commission has viewed with much displeasure on the inaction of the petitioner in this regard. The P & ED Mizoram is directed to arrange physical verification of the connections and report compliance in next tariff order. In the mean while a quarterly report on the progress achieved shall be submitted starting from 01.07.2018 onwards.

6.3 Energy sales

The Commission had approved energy sales at 382.12 MU for the FY 2017-18 in Tariff Order dated 28.02.2017. The P&ED has reported the estimated energy sales at 371.66 MU as against 382.12 MU.

Energy sales estimated by P & ED as per RE and now approved by the Commission are furnished in the table below.

Table 6.2: Energy Sales as approved by the Commission for FY 2017-18 after review

(MU)

Sl. No.	Category	Approved by the Commission in T.O dt.28.2.17 (MU)	Estimated by P&ED (MU)	Now approved by the Commission
1	(a) Kutir Jyoti	4.00	4.68	4.68
	(b) Domestic	230.00	240.80	240.80
	Domestic HT	4.00	4.45	4.45
2	Commercial	35.00	28.25	28.25
	Commercial HT	11	7.86	7.86
3	Public lighting	10	4.89	4.89
	Irrigation & Agriculture LT	0.02	0.02	0.02
4	Irrigation & Agriculture HT	0.10	0.26	0.26
	Public Water Works LT	1.00	5.16	5.16
5	Public Water Works HT	59.00	46.88	46.88
	LT Industrial	3.00	1.64	1.64
6	(HT Industrial)	8.00	9.27	9.27
7	Bulk Supply	17.00	17.49	17.49
	Total	382.12	371.66	371.66

The Commission approves energy sales at 371.66 MU for FY2017-18 after review.

6.4 Distribution Losses

The Commission in its order dated 28.2.2017 had approved distribution loss at 18.40% for FY 2017-18. The P&ED has estimated distribution loss at the same level of 18.40% as approved in tariff order dated 28.2.2017.

Commission accordingly approves distribution loss at 18.40% for FY 2017-18 as estimated by the P&ED.

6.5 Energy Requirement

The energy requirement approved by the Commission for FY 2017-18 in its Tariff Order dated 28.2.2017, Revised Estimate furnished by P&ED in its review petition for FY 2017-18 and now approved by the Commission are detailed in table below:

Table 6.3: Energy Requirement as approved by the Commission for FY 2017-18 after review

Sl. No	Particulars	Units	Approved by the Commission	Estimated by P&ED	Now approved by Commission
1	Energy Sales	MU	382.12	371.66	371.66
2	Distribution Loss	MU	86.16	83.81	83.81
3	Distribution Loss	%	18.40%	18.40%	18.40%
4	Energy Requirement at State periphery	MU	468.28	455.47	455.47

6.6 Own Generation

The Commission in its order dated 28.2.2017 had approved own generation at 66.52 MU for FY 2017-18. Now the P&ED has estimated own generation at 51.18 MU for FY 2017-18 as per R.E.

Commission's Analysis

The P & ED Mizoram in its additional information furnished estimated own generation as follows:

Sl. No	Particulars	FY 2017-18
1	Gross Generation from Old station (MU)	18.56
2	Infirm power from Serlui 'B'	37.67
3	Total	56.23
4	Auxiliary Consumption	0.70
5	Net Generation	55.53

The Commission accordingly approves own generation at 55.53 MU for FY 2017-18 as against 51.18 MU estimated by P&ED after review.

6.7 Purchase of Power

Power purchase approved by the Commission in Tariff Order for FY 2017-18, estimated by the P&ED for FY 2017-18 in its review petition for 2017-18 and now approved by the Commission are furnished in table below:

Table 6.4: Power Purchase approved by the Commission for FY 2017-18 after review

(MU)				
Sl. No.	Stations	Approved in the Tariff Order dt.28.2.2017	Estimated by the P&ED	Now approved by Commission
	Bongaigaon	76.39	66.09	66.09
A	NTPC			
1	Farakka	13.1	15.29	15.29
2	Kahalgam	7.62	9.09	9.09
3	Talcher	9.46	9.5	9.5
	Sub Total	106.57	99.97	99.97
B	NEEPCO –Hydro			
4	Koppili I	40.73	36.44	36.44
5	Koppili II	6.28	6.68	6.68
6	Khandong	6.34	8.36	8.36
7	Rangamati	71.06	66.8	66.8
8	Doyang	11.31	12.31	12.31
9	Sub Total	135.72	130.59	130.59
C	NEEPCO – Gas based			
10	AGBPP	79.87	71.13	71.13
11	AGTPP	47.65	41.62	41.62
	Sub Total	127.52	112.75	112.75
	NHPC			
12	NHPC loktak	33.13	30.99	30.99
D	Others			
13	OTPC- Pallatana	114.94	117.21	117.21
14	Baramura – IV	37.62	27.8	27.8
15	Baramura – V	41.72	22.1	22.1
	Sub total	194.28	167.11	167.11
16	UI purchase / RPO		38.22	38.22
17	Grand Total	597.22	579.63	579.63

The Commission approves power purchase of 579.63 MU during FY 2017-18 as estimated by P&ED, including U.I. purchases of 38.22 MU after review:

6.8 Energy Balance

The details of energy requirement and availability of power approved by the Commission for FY 2017-18 in its tariff order dated 28.2.2017, estimated by the P&ED in its review petition for FY 2017-18 and now approved by the Commission are furnished in Table below:

**Table 6.5: Energy Balance of Approved by the Commission for FY 2017-18
after review**

(MU)

Sl. No.	Particulars	Approved by the Commission in to dated 28.2.2017	Estimates by P&ED	Now approved by Commission
A	Energy Requirement			
1	Energy Sales	382.12	371.66	371.66
2	Distribution loss (%)	18.40%	18.40%	18.40%
3	Distribution loss (MU)	86.16	83.81	83.81
4	Energy Requirement	468.28	455.47	455.47
B	Energy Availability			
5	Own Generation	66.52	51.18	55.43
6	Energy from ER	106.57	99.98	33.88
7	Less ER Tr. Loss %	2.10%	2.10%	2.11
8	-do- MU	2.24	2.10	0.71
9	Net energy for ER	104.33	97.88	33.17
10	Energy from NER	490.65	441.44	507.53
11	Sub Total(9+10)	594.99	539.32	540.70
12	Less NER Tr Loss (%)	3.65%	2.65%	2.6%
13	Less NER Tr Loss (MU)	15.77	14.29	14.06
14	Net Energy at NERLDC	579.22	525.03	526.64
15	UI purchases / RPO		38.22	38.22
16	Total energy available(5+14+15)	645.74	614.43	620.49
17	Intra State Tr. Loss (%)	3.00%	3%	3%
18	Intra State Tr. Loss (MU)	19.37	18.43	18.61
19	Energy available for sale (16-18)	626.37	596.00	601.88
20	Surplus	158.09	140.53	146.41
21	Surplus grossed up by 3%	162.83	144.87	150.94

Commission's Analysis

The Commission has considered the latest inter-state transmission losses in ER and NER as follows. As per weekly transmission losses from 03.04.2017 to 12.11.2017, the average weekly transmission loss in ER is 2.11% while in NER the average weekly transmission loss is 2.6 % as per weekly losses from 03.04.2017 to 12.11.2017. Accordingly the energy balance has been modified as detailed in table above, which resulted in surplus power of 150.94 MU to be sold under U.I as against 144.87 MU estimated by P & ED as detailed in the table above.

6.9 Fuel Cost

Petitioner's submission

The Commission in its order dated 28.02.2017 had approved Fuel Cost at Rs. 0.01 Crore for FY 2017-18 for DG set generation at Lengpui. The P&ED has now estimated the same fuel cost of Rs. 0.01 Crore.

Commission's Analysis

The Commission accordingly approves Fuel Cost at Rs. 0.01 Crore for FY 2017-18 after review.

6.10 Generation Cost

Petitioner's submission

The Commission in its order dated 28.02.2017 had approved generation cost at Rs. 9.06 Crore for FY 2016-17.

The P&ED in its review petition has stated that generation costs are not proposed to be revised at this stage.. As such already approved cost of Rs. 9.06Crore is adopted.

The Commission accordingly approves generation cost at Rs. 9.06 Crore for FY 2017-18.

6.11 Power Purchase Cost

Petitioner's submission

The Hon'ble Commission in the tariff order for the FY 2017-18 had approved a power purchase quantum of 597.22 MUs at a total cost of 211.85 Crore. As submitted above the estimate of power purchase quantum for the FY 2017-18 is proposed to be revised to 579.63 MUs. Accordingly, the power purchase cost is also proposed to be revised. Power purchase cost for the FY 2017-18 has been arrived at in following manner

- i. Actual power purchase cost for the first Half year(H1) of the FY 2017-18 has been considered.
- ii. For estimating the power purchase cost of for the second half year(H2), the

estimated quantum of power purchase units for second half year (H2) has been taken and source wise average cost of September, 2017 has been applied.

- iii. Additional supplementary bill 1,000.00 Lakhs has been considered based on the actual bills for the H1 of the year.

The cost towards RPO has been arrived at in accordance with the RPO targets prescribed in the RPO regulations. The target for solar & non-solar for the FY 2016-17 is 10% (9.70% for non-solar & 0.30% for solar). P&ED shall meet the requirement of non-solar RPO from its own hydro generation which is estimated at 51.18 MUs for the FY 2017-18. The RPO for solar has been calculated based on the actual consumption (excluding outside the state sale but including T&D loss). Further, procurement of power from hydro sources has been reduced to arrive at the base figure for calculation of RPO. The prescribed target of 5.50 % has been applied on the base figure of 293.86 MUs. Accordingly, 16162.44 KWh (16.16 MUs) is computed as the solar RPO for the FY 2017-18. The rate as prescribed by CERC has been considered to arrive at the cost of RPO of Rs. 387.90 Lakhs.

The comparison of the approved power purchase cost and the revised estimate as arrived above is given in the table below.

Table 6.6: Power Purchase Cost estimated by P & ED FY 2017-18

(Rs.Crore)

Sl. No.	Particulars	Approved by Commission	As per Revised Estimate
1	Power Purchase Cost	311.85	193.00

Commissions Analysis

As seen from the station-wise power purchase cost estimated by the P&ED, the average cost is about Rs.3.32/KWh as against Rs. 3.55/KWh approved by the Commission .Hence the same is considered reasonable. Accordingly the power purchase cost of Rs. 193 Cr for purchase of 579.63 MU including UI Purchase of 38.22MU is approved as detailed in the table below.

Table 6.7: Power Purchase cost approved by the Commission for FY 2017-18 after review (MU)

Sl. No	Source	Plant capacity (MW)	Licensee's share in %	Licensee's share in MW	MU Purchased/generated (ex-bus)	All charges Total (in Lakhs)	Average Rate (P/KWH)
A	Central Generating Stations						
1	NTPC						
1	Bongaigaon TPS	250.00	5.415	13.54	66.09	3822.97	578
2	Farakka STPS	1600.00	0.140	2.24	15.29	578.74	378
3	Kahalgaoon STPS	840.00	0.140	1.18	9.09	315.59	347
4	Talcher STPS	1000.00	0.140	1.40	9.50	229.19	241
	NTPC Total	3690.00		18.35	99.98	4946.49	495
II	NHPC						
1	Loktak HEP	105.00	5.020	5.27	30.09	962.84	311
	NHPC Total	105.00		5.27	30.99	962.84	311
III	NEEPCO						
1	KopiliHEP	200.00	4.618	9.24	36.44	386.17	106
2	Kopili-II HEP	25.00	6.040	1.51	6.68	83.41	125
3	Khandong HEP	50.00	3.940	1.97	8.36	136.27	163
4	Ranganadi HEP	405.00	5.700	23.09	66.80	1268.65	190
5	Doyang Hep	75.00	5.250	3.94	12.31	523.08	425
6	AGBPP	291.00	5.410	15.74	71.13	2311.75	325
7	AGTPP	148	6.000	8.88	41.62	1143.59	241
	NEEPCO-Total	1194.00		64.36	243.34	5852.92	
IV	TSECL						
1	B'mura-IV	21.00	25.00	5.25	27.80	837.41	301
2	B'mura-V	21.00	25.00	5.25	22.10	665.61	301
	TSECL-Total	42.00		10.50	49.90	1503.03	301
V	OTPC						
1	Palatana	726.00	3.030	22.00	117.21	3848.10	328
	OTPC Total	726.00		22.00	117.21	3848.10	328
VI	Other stations/IPPS						
1	Power exchange through IEX				0.08		3.11
	Others Total				0.08	2.49	3.11
2	UI Purchase				38.14	795.88	209
3	RPO Obligation/ REC Certificate					387.90	1.02
B	Additional Supplementary bills					1000.00	
	Grand Total	5757			579.63	19299.63	3.33

The Commission accordingly approves power purchase cost of Rs. 193 Crore for FY 2017-18 for purchase of 579.63 MU including UI purchase of 38.22 MU and supplementary bills payment of Rs. 10 Crore after review, at an average cost of Rs. 3.16/ kWh excluding supplementary arrear bills of Rs. 10 Crore.

6.12 Inter-state Transmission Charges

The Commission in its order dated 28.02.2017 had approved inter-state transmission charges (PGCIL Charges) at Rs. 30.58 Crore for FY 2017-18. The P&ED in its review petition has estimated the same amount of Rs. 44.28 Crore for FY 2017-18.

The Commission approves inter-state transmission charges (PGCIL charges) at Rs. 44.28 Crore for FY 2017-18 after review.

6.13 Intra-state Transmission Charges

The Commission in its order dated 28.02.2017 had approved intra-state transmission charges at Rs. 20.93 Crore for FY 2017-18. The P&ED in its review petition has estimated an amount of Rs. 20.93 Crore towards intra-state transmission charges for FY 2017-18.

The Commission accordingly approves intra-state transmission charges at Rs. 20.93 Crore for FY 2017-18 after review.

6.14 O & M Expenses**i. Employee Cost:**

The Commission in its order dated 28.02.2017 had approved Rs. 45.84 Crore for the year 2017-18 towards employee expenses of P&ED Mizoram.

P&ED has now estimated the same amount of Rs. 45.84 Crore towards employee expenses for FY 2017-18 in its review petition for FY 2017-18.

The Commission accordingly approves employee expenses at Rs. 45.84 Crore for the FY 2017-18 as estimated by P&ED.

ii. Repairs & Maintenance

The Commission had approved R&M expenses at Rs. 7.08 Crore in its tariff order dated 28.2.2017 for FY 2017-18. P&ED has now estimated R&M expenses at Rs. 7.08 Crore for the FY 2017-18 in its review petition for FY 2017-18.

The Commission accordingly approves the R&M expenses at Rs.7.08 Crore for the FY 2017-18 as estimated by P&ED.

iii. Administration & General Expenses

The Commission had approved Rs. 1.33 Crore for the FY 2017-18 in its Tariff Order dated 28.2.2017. P&ED has now estimated Administration and General Expenses at Rs. 1.33Crore in its review petition for FY 2017-18.

The Commission accordingly approves Administration and General Expenses at Rs. 1.33 Crore for the FY 2017-18 as estimated by P&ED.

iv. O&M Expenses

Abstract of O&M Expenses are furnished in Table below:

Table 6.8: O&M Expenses approved by the Commission for FY 2017-18 after Review

S. No.	Details	Amount
1	Employee Cost	45.84
2	R&M Expenses	7.08
3	Administration. and General expenses	1.33
4	Total	54.25

6.15 Depreciation

The Commission had approved depreciation at Rs. 1.58 Crore for the FY 2017-18.

The P&ED in its review Petition for FY 2017-18 has estimated total depreciation at Rs. 1.78Crore for FY 2017-18.

Commission's Analysis

As per revised estimate for FY 2017-18 and capital investment plan and Capitalization during FY 2017-18 vide Form No. F2C, the depreciation for FY 2017-18 is worked out as under.

Table 6.9: Depreciation approved by the Commission for FY 2017-18 after review**(Rs. Crore)**

S. No	Particulars	
1	Opening GFA as on 01.04.2017	1194.53
2	Additions during the year	171.54
3	Closing GFA as on 31.03.2018	1366.07
4	Average GFA	1280.30
5	Average rates of Petition (As per annual accounts 2016-17)	3.89%
6	Depreciation for FY 2017-18	49.80
7	10 % of Depreciation	4.98

The Commission approves depreciation at Rs. 4.98 Crore for FY 2017-18 as against Rs. 1.78 Crore estimated by P&ED after review.

6.16 Interest & Finance Charges

The Commission had approved Rs. 2.26 Crore for the FY 2017-18 in its Tariff Order dated 28.02.2017.

P&ED in its review petition for FY 2017-18 has estimated Interest & Finance charges at Rs. 2.26 Crore for FY 2017-18.

Commission's Analysis

As verified from the format F 3 b the interest and finance charges are worked out to Rs. 2.26 Crore for FY 2017-18 as detailed in the table below.

Table 6.10: Interest and Finance Charges for FY 2017-18

Particulars	Gross Loan Opening	Add: Drawals during the year	Less: repayment of loan during the year	Closing balance of loan	Average loan	Rate of Interest on loan % (Average)	Interest on Loan
LIC loan	600.00	0.00	100.00	500.00	550.00	8.00%	43.97
REC loan	0.00	0.00	0.00	0.00	0.00	8.35%	0.00
REC (RGGVY) Loans	1678.48	0.00	239.78	1438.70	1558.59	11.67%	181.57
Total loans	2278.48	0.00	339.78	1938.70	2108.59	9.90%	225.53

The Commission accordingly approves Interest & Finance charges at Rs. 2.26 Crore for the FY 2017-18 as estimated by P&ED.

6.17 Interest on Working Capital

Petitioner's Submission

The P&ED has projected interest on working capital at Rs. 3.62 Cr for FY 2017-18 as against Rs. 3.34 Cr approved by the Commission in its Order dated 28.02.2017.

Commission's Analysis

The Commission in its Order dated 28.02.2017 had approved interest on working capital at Rs. 3.34 Crore. Now the State Bank has reduced the interest rates and the SBAR as on 01.04.2017 is 14.05. Accordingly the interest on working capital has been revised based on approved costs as detailed in Table below:

Table 6.11: Interest on working capital approved by the Commission for FY 2017-18

(Rs. Crore)			
S. No.	Particulars	Total Cost	One month Cost
1	O&M Expenses	54.25	4.52
2	Maintenance of Spares at escalation by 6 %	1194.53	12.66
3	Receivables	167.70	13.98
4	Total		31.16
5	Interest at SABR of 14.05%		14.05%
6	Interest on Working Capital		4.37

The Commission approves Interest on Working Capital for FY 2017-18 at Rs. 4.37 Cr. after review.

6.18 Provision for Bad Debts

The Commission had not considered any Provision for Bad Debts for the FY 2017-18, since P&ED has not submitted the amount written off during FY 2017-18.

6.19 Return on Equity

The Commission had not considered any Return on Equity Capital for the FY 2017-18 as the P&ED is a Government Department.

6.20 Non-tariff Income

The Commission had approved Rs. 2.73 Crore as Non-tariff Income for the FY 2017-18. P&ED in his review petition for FY 2017-18 has estimated the Non-tariff Income at Rs.2.73 Crore for the FY 2017-18.

The Commission accordingly approves Rs. 2.73 Crore towards Non-tariff Income for the FY 2017-18.

6.21 Revenue from approved tariffs

The Commission in its order dated 28.2.2017 had approved revenue from approved tariff at Rs.211.79 Crore including revenue from sale of surplus power of 162.83 MU. The P&ED in its review petition estimated a revenue of Rs. 191.78Crore for FY 2017-18 including sale of surplus power of 144.87 MU, as detailed in table below:

Table 6.12: Revenue from sale of power with approved tariff projected by P&ED for FY 2017-18

(Rs. Lakh)				
Sl. No.	Category	As Approved by Commission	As per Revised Estimate	Deviation
	LT Consumers			
1	Domestic	9507.00	9362.52	-144.48
2	Commercial	2855.00	2194.44	-660.56
3	Public Lighting	430.00	361.84	-168.16
4	Agriculture	2.50	6.00	3.50
5	Public Water Works	3307.00	3944.44	-362.56
6	LT Industrial	173.00	101.52	-71.48
	Total LT	16274.50	14870.76	-1403.74
	HT Consumers			
7	HT Industrial	457.00	503.52	46.52
8	Bulk Supply	867.00	936.24	69.24
	Total HT	1324.00	1439.76	115.76
	Outside State	3582.00	2867.82	-714.18
	Total	21179.00	19178.34	-2002.16

(Source Table 1.23 of Petition)

Commission Analysis

Owing to change in inter-state transmission losses the surplus power has been revised to 146.48 MU. Thus the revenue from approved Tariffs worked out to Rs. 197.59 Crore as detailed in table below. When compared the revenue from energy sales within the state there is short assessment of Rs. 4.59 Crore which may be checked up.

Table 6.13: Revenue from approved Tariff approved by the Commission for FY 2017-18 after review

Sl. No	Category	Approved Sales (MU)	Average Revenue (Rs/kWh)	Total Cost (Rs Crore)
A	LT Supply			
1	Kutir Jyoti	4.68	2.33	1.09
2	Domestic	240.80	3.96	95.36
3	Commercial	28.25	6.10	17.23
4	Public Lighting	4.89	5.37	2.63
5	Public water works	5.16	5.17	2.67
6	Agriculture	0.02	2.40	0.005
7	Industrial	1.64	5.76	0.94
	Total	285.44	4.20	119.925
B	HT Supply			
8	Domestic	4.45	5.52	2.46
9	Commercial	7.86	6.55	5.15
10	Public water works	46.88	5.52	25.88
11	Agriculture	0.26	2.28	0.06
12	Industrial	9.27	5.72	5.30
13	Bulk supply	17.49	5.10	8.92
	Total HT	86.21	5.54	47.77
	Total LT + HT	371.66		167.70
14	Sale of Surplus power	150.94	1.98	29.89
15	Grand Total	506.15	3.80	197.59

The Commission accordingly approves revenue from revised tariffs at Rs. 197.59 Crore for FY 2017-18.

6.22 Summary of ARR approved by the Commission.

Table 6.14: Aggregate Revenue Requirement approved by the Commission for FY 2017-18 after review

(Rs. Crore)

Sl. No.	Item of Expense	As Approved by Commission on Tariff Order dated 28.02.2017	As per Revised Estimate	Now Approved by the Commission
1	2	3	4	5
1	Cost of Fuel	0.01	0.01	0.01
2	Cost of Generation	9.06	9.06	9.06
3	Cost of Power Purchase	211.85	193	193
4	Transmission Charges	30.58	44.28	44.28
5	Intra State Transmission	20.98	20.93	20.93
7	O&M Expenses	54.25	54.25	54.25
8	Depreciation	1.58	1.78	4.98
9	Interest charges	2.26	2.26	2.26
10	Interest on Working Capital	3.34	3.62	4.37
11	Provision for bad debts	0.00	0.00	0.00
12	Return on NFA /Equity	0.00	0.00	0.00
13	Total Revenue Requirement	334.86	329.18	333.14
14	Less: Non Tariff Income	2.73	2.73	2.73
17	Net Revenue Requirement	331.18	326.45	330.41
18	Less: Revenue from Sale of Power	211.79	191.78	197.59
	Net Gap	119.34	134.67	132.82

(Source 1.35 of Petition)

As seen from the above, the net ARR for FY 2017-18 works out to Rs. 330.41 Cr with revenue gap of Rs. 132.82 as against P&ED estimation of Rs. 326.45Cr and Rs. 134.67 Cr respectively after review.

6.23 Govt. Subsidy

As against the gap of Rs. 132.82 Crore the P&ED shall generate additional revenue of Rs. 0.82 Crore by improving internal efficiency and the balance Rs. 133 Crore shall be met from Govt. subsidy.

7. Aggregate Revenue Requirement (ARR) for MYT Control Period FY 2018-19 to FY 2022-2023

7.1 Background

As per JERC (MYT) Regulations 2014 & 1st Block of MYT Control Period of three years is completed by FY 2017-2018. Now the 2nd Block of 5year Control Period of 5 years FY 2018-2019 to FY 2022-2023 has started.

P&ED has submitted the MYT Petition seeking determination of ARR for the Second Control Period FY 2018-2019 to FY 2022-2023 and Tariffs for FY 2018-2019

In this chapter the Commission has analysed the energy sales and components of expenditure and revenue projected by P&ED for the Second Control Period FY 2018-2019 to FY 2022-2023 and approvals accorded as detailed below:

7.2 No of Consumers and Connected Load

Petitioner's Submission

P&ED has furnished the projection of category-wise consumers and their connected load and energy sales for FY 2018-19 to FY 2022-23.

The number of consumers for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 are projected by P & ED. The CAGR for the 3 years, 2 years and 1 year has been computed and appropriately applied to arrive at the number of consumers. Based on the audited actuals of FY 2013-14 to FY 2016-17, the growth rate of consumers and the number of consumers is detailed in the table below.

Table 7. 1: Category wise Growth in Number of Consumer Connection

Sl. No	Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CAGR for 3 years	CAGR for 2 years	CAGR for 1 years	Considered	FY 2017-18
1	KJ (Domestic)	12885	10162	12702	11624	-3.37	6.95	-8.49	6.95	122432
2	Domestic LT	173864	179107	185782	188718	2.77	2.65	1.58	2.77	193945
3	Domestic HT	43	43	36	20	-	-	-		20
4	Total Domestic	186792	189312	198520	200362				13.66	206397
5	Commercial LT	7418	11852	14272	16221	29.80	16.99	13.66	2.73	18437
6	Commercial HT	119	133	128	129	2.73	-1.52	0.78		133
7	Total Commercial	7537	11985	14400	16350					18569
8	Public lightning	755	803	1524	1259	18.58	25.21	-	5.00	1322
9	PWS LT	8	6	10	12	14.47	41.42	20.00	5.00	13
10	PWS HT	40	43	47	46	4.77	3.43	-2.13	4.77	48
11	Agriculture LT	18	20	20	20	3.57	0.00	0.00	3.57	21
12	Agriculture HT	1	1	1	1	0.00	0.00	0.00		1
13	Industrial LT	688	777	875	783	0.00	0.39	-	4.41	818
14	Industrial HT	11	18	21	18	4.41	0.00	-	5.00	19
15	Bulk supply HT	349	255	258	276	17.84	4.04	6.98	4.04	287
16	Grand Total	196199	203220	215676	219127	-7.52				227495

The forecast of number of consumers is based on the trends observed in the connections pattern of various categories over the past years, new developments on account of Government Policies, Socio economic changes, industrial growth, etc., that would affect consumption across various categories of consumers. The number of consumers projected for the FY 2018-19, FY 2019-20, FY 2020-21 and FY 2022-23 are tabulated below.

Table 7. 2: Category Wise No. of Connections projected by P & ED for FY 2018-19 to FY 2022-23

(Nos.)						
S. No	Category	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Kutir Jyoti- LT	13296	14220	15208	16265	17396
2	Domestic (HT <)	199338	204859	210533	216364	222357
3	Commercial (HT <)	21091	23958	27215	30917	35124
4	Public Lighting	1388	1457	1530	1607	1687
5	Irrigation (HT <)	22	23	24	25	26
6	PWW (HT & LT)	64	67	70	73	77
7	Industrial (LT)	854	891	931	972	1014
8	Industrial (HT)	20	21	22	23	24
9	Bulk (HT)	299	311	323	336	350
10	Temp. Conn.					
11	Total	236371	245807	255856	266582	278055

7.2.1 Connected Load**Petitioner's Submission**

The connected load for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 are projected by P & ED. The CAGR for the 3 years, 2 years and 1 year has been computed and appropriately applied to arrive at the connected load. Based on the audited actuals of FY 2013-14 to FY 2016-17, the growth rate of connected load and the detailed connected load in the table below.

Table 7. 3: Category wise Growth in Connected Load

S. No	Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CAGR for 3 years	CAGR for 2 years	CAGR for 1 year	Considered	FY 2017-18
1	KJ (Domestic)	1.45	1.26	2.78	3.39	32.54	64.26	21.79	10.00	3.73
2	Domestic LT	222.69	261.63	264.84	275.94	7.41	2.70	4.19	7.41	296.39
3	Domestic HT	8.08	8.09	6.86	3.01	-28.07	-39.02	-56.13		3.01
4	Total Domestic	232.22	270.97	274.48	282.33					303.12
5	Commercial LT	25.05	35.35	40.25	48.30	24.47	16.89	20.01	10.00	53.13
6	Commercial HT	15.77	9.63	11.13	8.23	-19.47	-7.56	-26.01		8.23
7	Total Commercial	40.81	44.98	51.37	56.53					61.36

S. No	Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	CAGR for 3 years	CAGR for 2 years	CAGR for 1 year	Considered	FY 2017-18
8	Public lightning	1.67	1.62	1.61	1.05	-14.41	-19.56	-34.99		1.05
9	PWS LT	0.04	0.04	0.06	4.09	381.60	964.20	7327.27	10.00	4.49
10	PWS HT	35.13	35.96	37.67	34.36	-0.73	-2.26	-8.79		34.36
11	Agriculture LT	0.02	0.02	0.02	0.02	2.78	1.48	5.26	2.78	0.00
12	Agriculture HT	0.09	0.09	0.09	0.09	0.00	0.00	0.00		0.00
13	Industrial LT	4.90	5.86	4.84	4.15	-5.39	-15.82	-14.25		4.15
14	Industrial HT	7.37	10.65	9.85	8.85	6.32	-8.81	-10.10	6.32	9.41
15	Bulk supply HT	13.01	13.03	14.52	17.79	11.00	16.85	22.51	11.00	19.75
16	Grand Total	335.25	382.22	394.50	409.26					437.80

The forecast of connected load is based on the trends observed in the connections pattern of various categories over the past years, new developments on account of Government Policies, socio economic changes, industrial growth etc., that would affect consumption across various categories of consumers. The connected load projected for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 are tabulated below.

Table 7. 4: Category wise connected load projected by P & ED for FY 2018-19 to FY 2022-23

S. No	Category	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Kutir Jyoti- LT	4.098	4.508	4.959	5.455	6.0000
2	Domestic (HT <)	321.356	344.946	370.283	397.499	426.730
3	Commercial (HT <)	66.675	72.519	78.948	86.019	93.798
4	Public Lighting	1.046	1.046	1.046	1.046	1.046
5	Irrigation (HT <)	0.106	0.107	0.107	0.107	0.107
6	PWW (HT & LT)	39.301	39.795	40.339	40.937	41.595
7	Industrial (LT)	4.152	4.152	4.152	4.152	4.152
8	Industrial (HT)	10.007	10.640	11.312	12.027	12.787
9	Bulk (HT)	21.924	24.336	27.013	29.984	33.282
10	Temp. Conn.					
11	Total	468.666	502.049	538.159	577.227	619.500

7.3 Category wise sales Forecast

Petitioner's submission

The energy sales for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 are projected by P & ED. The CAGR for the 3 years, 2 years and 1 year has been computed and appropriately applied to arrive at the energy sales. Based on the audited actuals of FY 2013-14 to FY 2016-17, the growth rate of energy sales and the energy sales is detailed in the table below.

Table 7. 5: Category – wise Growth in energy sales

S. No	Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	CAGR for 3 years	CAGR for 2 years	CAGR for 1 year	Considered
1	KJ (Domestic)	3.69	3.29	4.17	4.41	4.68	6.16	15.87	5.75	6.16
2	Domestic LT	199.50	210.91	214.20	229.73	240.80	4.82	4.36	7.25	4.82
3	Domestic HT	0.65	3.58	3.91	4.17	4.45	85.81	7.90	6.76	6.76
4	Total Domestic	203.84	217.78	222.28	238.31	249.94				
5	Commercial LT	21.51	27.24	29.49	26.39	28.25	7.05	-1.59	-10.52	7.05
6	Commercial HT	2.07	6.77	7.99	7.48	7.86	53.59	5.10	-6.38	5.10
7	Total Commercial	23.57	34.02	37.48	33.87	36.11				
8	Public lightning	7.47	7.20	6.50	4.89	4.89	-13.18	-17.58	-24.80	
9	PWS LT	0.29	0.13	0.23	4.92	5.16	155.73	518.30	2008.27	5.00
10	PWS HT	39.92	46.55	48.96	45.04	46.88	4.10	-1.64	-8.01	4.10
11	Agriculture LT	0.00	0.01	0.01	0.02	0.02	56.17	68.98	49.75	5.00
12	Agriculture HT	0.05	0.03	0.04	0.25	0.26	66.43	181.65	496.46	5.00
13	Industrial LT	2.10	1.87	1.96	1.64	1.64	-7.85	-6.29	-16.38	
14	Industrial HT	4.99	6.77	7.20	8.83	9.27	20.94	14.17	22.57	5.00
15	Bulk supply HT	20.53	12.85	14.21	15.78	17.49	-8.40	10.81	11.06	10.81
16	Grand Total	302.78	327.21	338.88	353.54	371.66				

Based on the methodology outlined above, the projected energy sales of various categories of consumers for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 are provided in the table below.

The Hon'ble Commission is requested to approve the same as projected by P & ED for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2022-23 are provided in the table below.

Table 7. 6: Category wise energy sales projected by P & ED FY 2018-19 to FY 2022-23

S. No	Category	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
		MU	MU	MU	MU	MU
1	Kutir Jyoti- LT	4.97	5.28	5.60	5.95	6.32
2	Domestic (HT <)	257.16	269.65	282.74	296.48	310.88
3	Commercial (HT <)	38.50	41.06	43.78	46.69	49.79
4	Public Lighting	4.89	4.89	4.89	4.89	4.89
5	Irrigation (HT <)	0.30	0.31	0.32	0.34	0.36
6	PWW (HT & LT)	54.23	56.50	58.86	61.33	63.90
7	Industrial (LT)	1.64	1.64	1.64	1.64	1.64
8	Industrial (HT)	9.74	10.22	10.73	11.27	11.83
9	Bulk (HT)	19.38	21.47	23.79	26.36	29.21
10	Temp. Conn.					
11	Total	390.81	411.02	432.36	454.96	478.82

Commission's Analysis

As verified from the above the P & ED has projected year wise growth in category wise number of consumers during MYT period based on appropriate CAGR of arrived on actual number of consumers from FY 2013-14 to FY 2016-17 which appears to be not in order. In respect of connected load the P & ED has adopted appropriate CAGR of actual connected load during FY 2013-14 to FY 2016-17 to project connected load during MYT period of FY 2018-19 to FY 2022-23 Projection of connected load in respect of some categories is lower or high. With regards to Kutir Jyoti it is basically single point supply but connected load is not defined. However, as per CERC guidelines the total consumption for the past 3 months should not exceed 45 KWH.

If the total consumption exceeds 45 KWH in consecutive months the connection shall be classified under LT Domestic. Further as seen from past history during FY 2013-14 and FY 2014-15 , the average connected load is below 130 W. Since FY 2015-16 the connected load recorded is on high side. This should be checked up.

Based on the information given in the format R3 (a) the growth of consumers and connected load during MYT Period of FY 2018-19 to FY 2022-23 with LT & HT breakup is arrived as detailed below.

Table 7. 7: Category Wise Number of Consumers projected by P & ED for FY 2018-19 to FY 2022-23

(Nos.)

S. No	Category	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Kutir Jyoti- LT	13296	14220	15208	16265	17396
2	Domestic LT	199318	304839	210513	216344	222337
3	Domestic HT	20	20	20	20	20
4	Commercial LT	20955	23818	27071	30769	34972
5	Commercial HT	136	140	144	148	152
6	Public Lighting	1388	1457	1530	1607	1687
7	Irrigation LT	21	22	23	24	25
8	Irrigation HT	1	1	1	1	1
9	PWW LT	13	14	15	15	16
10	PWW HT	50	53	55	58	61
11	Industrial LT	854	891	931	972	1014
12	Industrial HT	20	21	22	23	24
13	Bulk HT	299	311	323	336	350
14	Total	236371	245807	255856	266582	278055

Table 7. 8: Category Wise Connected Load projected by P & ED for FY 2018-19 to FY 2022-23

(MW)

S. No	Category	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Kutir Jyoti- LT	4.098	4.508	4.959	5.455	6.0000
2	Domestic LT	318.348	341.938	367.275	394.491	423.722
3	Domestic HT	3.008	3.008	3.008	3.008	3.008
4	Commercial LT	58.442	64.286	70.715	77.786	85.565
5	Commercial HT	8.233	8.233	8.233	8.233	8.233
6	Public Lighting	1.046	1.046	1.046	1.046	1.046
7	Irrigation LT	0.023	0.022	0.022	0.023	0.024
8	Irrigation HT	0.085	0.085	0.085	0.085	0.085
9	PWW LT	4.943	5.437	5.981	6.579	7.237
10	PWW HT	34.358	34.358	34.358	34.358	34.358
11	Industrial LT	4.152	4.152	4.152	4.152	4.152
12	Industrial HT	10.007	10.640	11.312	12.027	12.787
13	Bulk HT	21.924	24.336	27.013	29.984	33.282
14	Total	468.666	502.049	538.159	577.227	619.500

As seen from table 7.2 and 7.4 and read with Table 7.7 and 7.8 supra, it is observed that in respect of the following categories the average connected load is disproportionate as detailed below.

Sl. No	Category	Average Connected load	Remarks
1	Domestic HT	150.4 KW	Very High
2	Irrigation LT	1000W	Very low
3	PWW LT	380KW	Very High
4	PWW HT	687 KW	Very High
5	Industrial HT	500 KW	Very High

Owing to furnishing of high connected load the revenue assessment (fixed charges) will be on high side than actual billing. Directive Number 19 was also issued in FY 2014-15 tariff order and being repeated every year to physically verify the individual connected load. The Commission has viewed with much displeasure on the inaction of the petitioner in this regard. The P & ED Mizoram is directed to arrange physical verification of the connections and report compliance in next tariff order. In the mean while a quarterly report on the progress achieved shall be submitted starting from 01.07.2018 onwards.

As regards to energy sales the petitioner has projected during MYT period based on appropriate CAGR arrived on actual sales during FY 2013-14 to FY 2016-17 keeping in view of the past trends and Government policies, socio economic changes and Industrial growth etc which the Commission considers responsible. But since it is a projection the Commission feels it appropriate to fix the Energy sales in multiples of M.U rather than in fractions of the extent possible. Accordingly category wise energy sales are approved as detailed below.

(a)Kutir Jyoti

In view of restriction of 45 KWH for three months the Commission considers to cap on the total energy sales per annum during MYT period as follows.

Total Energy sales per annum

Years	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Energy sales in MU	2	2	3	3	3

Accordingly the Commission approves energy sales to Kutir Jyoti category during MYT Period as follows.

Years	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Energy sales in MU	2	2	3	3	3

(b) Domestic LT & HT

As per break up furnished in format R3 (a) P & ED projected energy sales to domestic during MYT Period as follows.

Years	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Domestic LT	252.41	264.57	277.33	290.69	304.70
Domestic HT	4.75	5.07	5.42	5.79	6.18
Total	257.16	269.64	282.75	296.48	310.88

The Commission approves energy sales to Domestic Categories as follows.

Years	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Domestic LT(MU)	252	265	278	291	305
Domestic HT(MU)	5	5	5	6	6
Total(MU)	257	270	283	297	311

(c) Commercial LT & HT

As per the break up furnished in format R 3 (a) P & ED has projected energy sales to commercial category during MYT Period as follows.

Years	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Commercial LT(MU)	30.24	32.37	34.65	37.10	39.71
Commercial HT(MU)	8.26	8.69	9.03	9.59	10.08
Total(MU)	38.50	41.06	43.78	46.69	49.79

The Commission approves energy sales for commercial category during MYT period as follows:

Years	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Commercial LT(MU)	31	32	35	37	40
Commercial HT(MU)	8	9	9	10	10
Total(MU)	39	41	44	47	50

Public Lighting

The P & ED has projected 4.89 MU per annum during the MYT Period.

The Commission approves energy sales for public lighting during MYT period as follows.

Years	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Energy sales (MU)	5	5	5	6	6

(d) Irrigation and Agriculture

As per break up furnished in format R 3 (a) P & ED has projected energy sales during MYT period as follows.

Years	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Irrigation and Agriculture LT(MU)	0.02	0.02	0.02	0.02	0.02
Irrigation and Agriculture HT(MU)	0.28	0.29	0.30	0.33	0.34
Total(MU)	0.30	0.31	0.32	0.34	0.36

The Commission approves energy sales to irrigation and Agriculture during MYT period as follows.

Years	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Irrigation and Agriculture LT(MU)	0.02	0.02	0.02	0.02	0.02
Irrigation and Agriculture HT(MU)	0.28	0.29	0.30	0.33	0.34
Total(MU)	0.30	0.31	0.32	0.34	0.36

(e) Public water Works

As per the break up furnished in format R3 (a) P & ED has projected energy sales to PWW during MYT period as follows.

Year	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
PWW LT (MU)	5.42	5.69	5.97	6.27	6.58
PWW HT (MU)	48.81	50.81	52.89	55.06	57.32
Total (MU)	54.23	56.50	58.86	61.33	63.90

The Commission approves Energy sales to PWW during MYT period as follows.

Year	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
PWW LT (MU)	5	6	6	6	7
PWW HT (MU)	49	51	53	55	57
Total (MU)	54	57	59	61	64

(f) Industrial LT

P & ED has projected energy sales to Industrial LT during MYT period as follows.

Year	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Energy sales (MU)	1.64	1.64	1.64	1.64	1.64

The Commission approves Energy sales to Industrial LT during MYT period as follows

Year	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Energy sales (MU)	2	2	2	2	2

(g) Industrial HT

P & ED projected energy sales to Industrial HT during MYT period as follows.

Table : Energy sales to Industrial HT

Year	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Energy sales (MU)	9.74	10.72	10.73	11.27	11.83

The Commission approves energy sales to Industrial HT during MYT period as follows.

Year	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Energy sales (MU)	10	11	11	11	12

(h) Bulk supply (HT)

P & ED has projected Energy sales to Bulk supply during the MYT period as follows.

Year	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Energy sales (MU)	19.38	21.47	23.79	26.36	29.21

The Commission approves energy sales to bulk supply during MYT period as follows.

Year	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Energy sales (MU)	19	21	24	26	29

Thus the total energy sales approved by the Commission during MYT Period is as detailed in the table below.

Table 7. 9: Energy sales approved by the Commission during MYT Period of FY 2018-19 to FY 2022-23

S. No		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
A	LT Supply					
1	Kutir Jyoti	2	2	3	3	3
2	Domestic	252	265	278	291	305
3	Commercial	31	32	35	37	40
4	Public lighting	5	5	5	6	6
5	Irrigation and Agriculture	0.02	0.02	0.02	0.02	0.02
6	PWW	5	6	6	6	7
7	Industrial	2	2	2	2	2
8	Total LT	297.02	312.02	329.02	345.02	363.02
B	HT supply					
1	Domestic	5	5	5	6	6

S. No		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
2	Commercial	8	9	9	10	10
3	Irrigation and Agriculture	0.28	0.29	0.30	0.32	0.34
4	PWW	49	51	53	55	57
5	Industrial	10	11	11	11	12
6	Bulk supply	19	21	24	26	29
7	Total HT	91.28	97.29	102.30	108.32	114.34
8	Grand Total (LT+HT)	388.30	409.31	431.32	453.34	477.36

The Commission approves energy sales during MYT period as follows

Year	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Energy sales	388.30	409.31	431.32	453.34	477.36

7.4 Distribution Loss

Petitioner's submission

P & ED has been trying to reduce the transmission losses during recent years. P & ED submits that the system improvement works executed every year under the plan schemes have also contributed to the reduction of distribution losses. However, it may also be noted that reduction of distribution losses may not be possible beyond a certain level due to topographical conditions and technical limitations. The distribution losses in the P & ED distribution network have been in the range of approximately 25 % to 30 % during the FY 2015-16 to FY 2016-17. For the purpose of FY 2018-19 to FY 2020-23 , the losses have been retained at 17.90% to 18.30%.

Commission's Analysis.

During FY 2017-18 the Commission approved distribution loss at 18.40 % . Now the P & ED has proposed a reduction of 0.1 % p.a over 18.40 % during the MYT period. Accordingly the Commission approves distribution loss during MYT Period as follows:

Table 7. 10: Distribution Losses approved by the Commission for FY 2018-19 to FY 2022-23

Year	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Distribution Loss (%)	18.30%	18.20%	18.10%	18%	17.90%

7.5 Energy Requirement

Petitioner's submission

The P & ED has projected energy requirement based on the retail sales projections, grossed up by estimated loss levels. The energy balance expected for the MYT Control period FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 is as detailed in the table below.

Table 7. 11: Energy Requirement projected by P &ED

Sl. No	Energy Balance	Units	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
A	Energy requirement						
1	Energy sales	MU	383.30	409.31	431.35	453.34	477.36
2	Distribution loss	%	18.30	18.20	18.10	18.00	17.90
3	Distribution loss	MU	85.86	91.07	95.33	99.31	104.08
4	Total energy requirement		469.16	500.38	526.68	552.85	581.44

7.6 Sources of Power

7.6.1 Own Generation

Petitioners submission

The P & ED is having 11 mini hydel stations with an installed capacity of 29.35 MW and one diesel generator of capacity of 0.5 MW and one HFO generator of 22.92 MW totalling to 52.77 MW as detailed in the table below.

Table 7. 12: Details of Hydel stations

S. No	Name of Station	Capacity (MW)	Date of COD
I	Hydel		
1	Serlui 'A'	1.00	24.04.1984
2	Tuirivang	0.30	14.08.1989
3	Khawiva	1.05	08.12.1988
4	Tuipui	0.50	15.12.1991
5	Maicham-I	2.00	05.01.1996
6	Teirei	3.00	12.10.1999
7	Tuipanglui	3.00	17.12.2004
8	Kai-Tlabung	3.00	05.05.2005
9	Lansial	0.50	26.08.2008
10	Maicham-II	3.00	11.11.2009
11	Seruli 'B'	12.00	Not yet Commissioned

S. No	Name of Station	Capacity (MW)	Date of COD
	Sub Total	29.35	
II	Diesel		
12	Lengpui	0.50	
III	HFO		
	Bairabi	22.92	
	Total (I + II + III)	52.77	

P & ED has furnished own generation at 51.18 MU P.A during MYT period from 2018-19 to 2022-23.

P & ED Mizoram in its additional information has furnished the actual gross and net own generation during FY 2016-17 and FY 2017-18 as follows. Out of the 10 generating stations already commissioned only six generating stations are generating power. Besides this 11th generating station i.e. Serlui 'B' which is yet to be commissioned is generating infirm power. The details are as detailed in table below.

Table 7. 13: Generation from Own generating stations during FY 2016-17 & FY 2017-18

Sl. No	Particulars	FY 2016-17			FY 2017-18		
		Gross	Auxiliary	Net	Gross	Auxiliary	Net
1	Six generating stations out of 10	18.59	0.05	18.54	18.56	0.05	18.53
2	Infirm power from serlui'B' (yet to be commissioned)	33.38	0.74	32.64	37.67	0.65	37.02
	Total Generation	51.97	0.79	51.18	56.23	0.7	55.55

The P & ED in its petition for generation function has furnished the gross and net generation from Serlui 'B' (yet to be commissioned) during Control period FY 2018-19 to FY 2022-23 as follows.

Table 7. 14: Energy generation Serlui 'B' during FY 2018-19 to FY 2022-23

(MUs)

Sl. No	Name of the Station	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Gross Generation	47.3	47.3	47.3	47.3	47.3
2	Auxiliary Consumption	0.95	0.95	0.95	0.95	0.95
3	Net Generation	46.35	46.35	46.35	46.35	46.35

So the Commission considered total own generation during Control period FY 2018-19 to FY 2022-23 is as detailed in the table below.

Table 7. 15: Own generation during MYT Control period FY 2018-19 to FY 2022-23 approved by the Commission

(MU)

Own generation during MYT Control period FY 2018-19 to FY 2022-23 approved by the Commission																
Sl. No	Particulars	FY 2018-19			FY 2019-20			FY 2020-21			FY 2021-22			FY 2022-23		
		Gross	Aux	Net	Gross	Aux	Net	Gross	Aux	Net	Gross	Aux	Net	Gross	Aux	Net
1	Generation from Old stations	18.6	0.1	18.5	18.6	0.1	18.5	18.6	0.1	18.5	18.6	0.1	18.5	18.6	0.1	18.5
2	Serlui 'B'	47.3	1	46.4	47.3	1	46.4	47.3	1	46.4	47.3	1	46.4	47.3	1	46.4
3	Total	65.9	1	64.9	65.9	1	64.9	65.9	1	64.9	65.9	1	64.9	65.9	1	64.9

The Commission approves Net Generation from Own generating stations as follows

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Own Generation (MU)	64.85	64.85	64.85	64.85	64.85

7.6.2 Power Purchase

P&ED has allocation of power from various central generating stations in north eastern region of NEEPCO, NHPC and eastern region of NTPC and from Tripura gas based generating stations as given below:

Table 7. 16: Allocation of power from Central Sector and other Generating Stations

Sl. No.	Source	Plant Capacity (MW)	P&ED Share in %	P&ED Share in MW
A	Central Generating			
1	Bongaigaon	250	5.415	13.54

Sl. No.	Source	Plant Capacity (MW)	P&ED Share in %	P&ED Share in MW
2	NTPC			
3	Farakka STPS	1600	0.14	2.24
4	Kahalgaoon STPS	840	0.14	1.18
5	Talcher STPS	1000	0.14	1.40
	NTPC-Total	3690		18.35
II	NHPC			
6	Loktak HEP	105	5.02	5.27
	NHPC-Total	105		5.27
III	NEEPCO			
7	Kopili HEP	200	4.618	9.24
8	Kopili - II HEP	25	6.04	1.51
9	Khandong HEP	50	3.94	1.97
10	Ranganadi HEP	405	5.7	23.09
11	Doyang HEP	75	5.25	3.94
12	AGBPP	291	5.41	15.74
13	AGTPP	148	6.00	8.88
	NEEPCO-Total	1194		64.36
IV	TSECL			
14	B'mura - IV	21	25	5.25
15	B'mura - V	21	25	5.25
	TSECL-Total	42		10.50
V	OTPC			
16	Palatana	726	3.03	22.00
	OTPC-Total	726		22.00
VI	Own Generation	29.35	100	29.35
VI	Total	5786.35		149.83

(Source: Extract of Form F1)

7.6.3 Assumption for Power Purchase Projection:

The merit order dispatch principles are to be adopted while determining the power purchases from various generating stations. However, in a power deficit scenario, these principles do not play a significant role as the utilities will try and purchase all the power that is available at its disposal. Accordingly, P&ED has considered purchase of the entire power available from all the possible sources during the period to meet the demand to the extent possible.

7.6.4 Energy draws from CGS and other Stations:

P & ED has furnished year wise station wise projection of power purchase including own generation as detailed in the table below.

Table 7. 17: Abstract of Power Purchase and Own generation projected by P & ED for FY 2018-19 to FY 2022-23

Energy Balance	(MUs)						
	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Power Purchase	648.05	579.63	579.56	579.56	579.56	579.56	579.56
Own Generation	51.18	51.18	51.18	51.18	51.18	51.18	51.18
Total	699.23	630.81	630.74	630.74	630.74	630.74	579.56

Commission's Analysis

The Commission considered year wise station wise power procurement from Central generating stations as projected by the P & ED. The Commission approves power purchase during MYT Control period from 2018-19 to FY 2022-23 s follows.

Energy Balance	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Power Purchase(MU)	579.56	579.56	579.56	579.56	579.56

Own generation has already approved vide para 7.5.1 at 64.85 MU P.A as against 51.18 MU projected by P & ED during MYT Control Period FY 2018-19 to FY 2022-23.

7.7 Energy Balance:

P & ED has projected the energy balance during Control period FY 2018-19 to FY 2022-23 as detailed in the table below.

Table 7. 18: Energy Balance projected by P & ED during MYT period FY 2018-19 to FY 2022-23

Sl. No.	Energy Balance	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
A	Energy Requirement					
1	Energy Sales	390.80	411.01	432.37	454.95	478.83
2	Distribution Loss (%)	18.30%	18.20%	18.10%	18.00%	17.90%
3	Distribution Loss (MUs)	87.55	91.44	95.56	99.85	104.38
4	Total Energy Requirement	478.35	502.46	527.93	554.80	583.21
B	Energy Availability					
5	Own Generation	51.18	51.18	51.18	51.18	51.18
6	Energy Purchase from ER	99.98	99.98	99.98	99.98	99.98
7	Less: ER Pool Loss (%)	2.10%	2.10%	2.10%	2.10%	2.10%
8	Less: ER Pool Loss (MUs)	2.10	2.10	2.10	2.10	2.10
9	Net Energy for ER	97.88	97.88	97.88	97.88	97.88
10	Energy Purchase from NER	441.44	441.44	441.44	441.44	441.44
11	Sub Total	539.32	539.32	539.32	539.32	539.32
12	Less: NER Pool Loss (%)	2.65%	2.65%	2.65%	2.65%	2.65%
13	Less: NER Pool Loss (MUs)	14.29	14.29	14.29	14.29	14.29
14	Net Energy at NERLDC	525.03	525.03	525.03	525.03	525.03
15	UI / RPO Purchase	38.14	38.14	38.14	38.14	38.14
16	Energy Available	614.35	614.35	614.35	614.35	614.35
17	Less: Outside State - Trading	121.20	96.35	70.09	42.39	13.10
18	Total Energy Available	493.15	518.00	544.26	571.96	601.25
19	Less: Intra State Tr. Loss (%)	3.00%	3.00%	3.00%	3.00%	3.00%
20	Less: Intra State Tr. Loss (%)	14.79	15.54	16.33	17.16	18.04
21	Net Energy Available	478.35	502.46	527.93	554.80	583.21
22	Less: Energy requirement at State Periphery	478.35	502.46	527.93	554.80	583.21
23	ENERGY SURPLUS/(DEFICIT)	0.00	0.00	0.00	0.00	0.00

Commissions' Analysis

Based on the approved energy sales, distribution and Transmission loss, power purchase and own generation the energy balance is compiled in the table below.

**Table 7. 19: Energy Balance Approved by the Commission for MYT Control period
FY 2018-19 to FY 2022-23**

Sl. No	Energy Balance	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
A	Energy requirement					
1	Energy sale(MU)	388.30	409.31	431.32	453.34	477.36
2	Distribution loss (%)	18.30	18.20	18.10	18.00	17.90
3	Distribution Loss(MUs)	87.65	91.07	95.37	99.51	104.08
4	Total energy Requirement(MU)	475.28	500.38	526.69	552.85	581.44
B	Energy availability					
5	Own Generation(MU)	64.85	64.85	64.85	64.85	64.85
6	Energy Purchase from ER	333.38	33.38	33.38	33.38	33.38
7	Less: ER Pool Loss(%)	2.11	2.11	2.11	2.11	2.11
8	Less: ER Pool loss(MUs)	0.71	0.71	0.71	0.71	0.71
9	Net energy from ER(6-8)	33.17	33.17	33.17	33.17	33.17
10	Energy purchase from NER(MU)	507.54	507.54	507.54	507.54	507.54
11	Sub Total (9+10)	540.71	540.71	540.71	540.71	540.71
12	Less: NER Pool Loss(%)	2.60	2.60	2.60	2.60	2.60
13	Less NER Pool Loss(MUs)	14.06	14.06	14.06	14.06	14.06
14	Net Energy at NERLDC (11-13)(MU)	526.65	526.65	526.65	526.65	526.65
15	UI/RPO Purchase(MU)	38.14	38.14	38.14	38.14	38.14
16	Energy available (5+14+15)(MU)	629.64	629.64	629.64	629.64	629.64
17	Less: Intra state transmission loss(%)	3%	3%	3%	3%	3%
18	Less: Intra state transmission loss(MUs)	18.89	18.89	18.89	18.89	18.89
19	Net energy available (16-18)(MU)	610.75	610.75	610.75	610.75	610.75
20	Less: energy requirement (4)(MU)	469.16	500.38	526.69	552.85	581.44
21	Energy surplus/ Deficit (19-20)(MU)	141.59	110.37	84.06	57.90	29.31
22	Surplus at state periphery (grossed up by 3%)(MU)	138.86	113.13	86.21	59.35	30.05

The approved energy balance resulted in surplus power as detailed below.

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Surplus (MU)	138.86	113.13	86.21	59.35	30.05

7.8 Aggregate Revenue Requirement

P&ED has projected Aggregate Revenue Requirement (ARR) for MYT Control period FY 2018-19 to FY 2022-23 as detailed in table below:

Table 7. 20: ARR projected for P & ED for MYT Control period FY 2018-19 to FY 2022-23

(Rs.Lakhs)						
Sl. No.	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Cost of Power Purchase	19621.98	21160.53	22703.51	24245.83	25771.86
2	Cost of Generation	855.41	891.07	929.83	969.08	1002.10
3	Cost of Fuel	1.00	1.00	1.00	1.00	1.00
4	Transmission charges	4681.05	4948.80	5231.87	5531.14	5847.52
5	Intra- state Transmission Charges	2885.66	3100.09	3398.64	3783.37	3936.45
6	Operation & Maintenance Expenses	8393.59	8888.50	9372.04	9866.43	10536.83
7	Interest and Finance charges	189.56	153.59	117.61	81.64	45.66
8	Depreciation	179.40	202.57	212.94	225.35	305.80
9	Interest on Working Capital	409.87	424.13	443.20	459.10	478.72
10	Return on Equity	0.00	0.00	0.00	0.00	0.00
11	Provision for Bad Debt	0.00	0.00	0.00	0.00	0.00
12	Total Revenue Requirement	37217.50	39770.29	42410.64	45162.93	47925.94
13	Less: Non-Tariff Income	256.01	270.65	286.14	302.50	319.81
14	Net Revenue Requirement (12-13)	36961.49	39499.63	42124.51	44860.43	47606.14

(Source Table 3.27 of petition)

Commissions Analysis

Item wise expenses and revenue are analysed as under:

7.8.1 Cost of Fuel

P&ED has projected fuel cost of Rs. 1.00 lakhs per annum for MYT Control period FY 2018-19 to FY 2022-23.

The Commission approves fuel cost at Rs. 0.01 Crore per annum for MYT Control period FY 2018-19 to FY 2022-23 as projected by P & ED Mizoram

7.8.2 Cost of Generation

P&ED has projected cost of generation, for MYT Control period FY 2018-19 to FY 2022-23 at Rs. 8.55 Crore, Rs. 8.91 Crore, Rs. 9.30 Crore, Rs. 9.69 Crore and 10.02 Crore respectively.

Commission’s Analysis

As per approvals granted to generation function the ARR for Control period FY 2018-19 to FY2022-23 are as follows.

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Generation ARR (Rs. Crore)	8.75	8.93	9.18	9.39	9.65

The Commission approves cost of Generation to P & ED during the Control period FY 2018-19 to FY 2022-23 as detailed supra.

7.8.3 Cost of Power Purchase

Petitioner’s submission

For the purpose of estimation of power purchase cost, P&ED has considered the rates at which power was procured through bilateral agreements/other sources during the FY 2017-18 after escalating the same by 5.72% year over year to factor in the rise in the rates. However, in the current high demand-supply gap scenario across the country these rates may further shoot up during the control Period.

Further, the cost towards RPO has been arrived at in accordance with the RPO targets prescribed in the RPO regulations. The percentage for the FY 2021-22 is assumed as same for the FY 2022-23. The target for solar & non-solar percentage is given in the table below:

Table 7. 21: Percentage of Target for Solar & Non-Solar RPO

Sl. No.	FY	Solar	Non-Solar
1	2	3	4
1	2018-19	8.00%	9%
2	2019-20	9.00%	10%
3	2020-21	10.00%	10%
4	2021-22	10.50%	10%
5	2022-23	10.50%	10%

P&ED shall meet the requirement of non-solar RPO from its own hydro generation which is estimated at 51.18 MUs for each year of the control period. The RPO for solar has been calculated based on the actual consumption (excluding outside the state sale but including T&D loss). Further, procurement of power from hydro sources has been reduced to arrive at the base figure for calculation of RPO. The prescribed target of percentage has been applied. Accordingly, unit is computed for solar & Non-solar RPO. The rate as prescribed by CERC has been considered to arrive at the cost of RPO. The Power purchase cost also includes charges towards purchase of REC certificates to meet the RPO obligation. Total cost of REC certificates (for both solar & non-solar) is ` 688.32 Lakhs, 1,143.87 Lakhs, 1,541.90 lakhs, 1,873.76 lakhs & ` 2,120.12 lakhs for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 respectively .Details of projected power purchase, station wise units and cost is provided. Considering the above the Hon’ble Commission is requested to allow the power purchase costs as estimated by P&ED for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23. Summary of the power purchase cost is given in the tables below:

Table 7. 22: Power Purchase Cost projected by the P & ED for the For the FY 2018-19

Sl. No	Source	Total of Other Charges (Rs. in Lakhs)	Total Other Charges per unit (Rs. per unit)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)	Apportioned Inter-State Transmission Losses (MU)	Net energy delivered at State periphery (MU)
A	Central Generating Stations						
I	NTPC						
1	Bongaigaon TPS	0.00	0.00	4041.64	612	3.10	62.99
2	Farakka STPS	0.00	0.00	611.84	400	0.72	14.58
3	Kahalgaon STPS	0.00	0.00	333.65	367	0.43	8.66
4	Talcher STPS	0.00	0.00	242.30	255	0.45	9.06
	NTPC-Total	0.00	0.00	5229.43	523	4.69	95.28
II	NHPC						
1	Loktak HEP	0.00	0.00	1017.91	328	0.82	30.17
	NHPC-Total	0.00	0.00	1017.91	328	0.82	30.17

Sl. No	Source	Total of Other Charges (Rs. in Lakhs)	Total Other Charges per unit (Rs. per unit)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)	Apportioned Inter-State Transmission Losses (MU)	Net energy delivered at State periphery (MU)
III	NEEPCO						
1	Kopili HEP	0.00	0.00	408.26	112	0.97	35.47
2	Kopili - II HEP	0.00	0.00	88.18	132	0.18	6.50
3	Khandong HEP	0.00	0.00	144.06	172	0.22	8.14
4	Ranganadi HEP	0.00	0.00	1341.22	201	1.77	65.03
5	Doyang HEP	0.00	0.00	553.00	449	0.33	11.99
6	AGBPP	0.00	0.00	2443.98	344	1.88	69.24
7	AGTPP	0.00	0.00	1209.00	290	1.10	40.52
	NEEPCO-Total	0.00	0.00	6187.71	254	6.45	236.89
IV	TSECL						
1	B'mura - IV	0.00	0.00	885.31	318	0.74	27.07
2	B'mura - V	0.00	0.00	703.69	318	0.59	21.51
	TSECL-Total	0.00	0.00	1588.99	318	1.32	48.58
V	OTPC						
1	Palatana	0.00	0.00	4068.21	347	3.11	114.10
	OTPC-Total	0.00	0.00	4068.21	347	3.11	114.10
VI	Other Stations/IPPs						
1	Power exchange through IEX	0.00	0.00	0.00	0	0.00	0.00
	Others-Total	0.00	0.00	0.00	0	0.00	0.00
B	State generating Stations						
1	All Units	0.00	0.00	0.00	0	0.00	51.18
	State Generating Stations-Total	0.00	0.00	0.00	0	0.00	51.18
C	UI / Deviation	0.00	0.00	841.40	221	0.00	38.14
	UI / Deviation-Total	0.00	0.00	841.40	221	0.00	38.14
D	RPO Obligation / REC Certificate			688.32			
E	Additional Supplementary Bills						
F	Bilateral Power Purchase						
1	Utility 1						
2	Utility 2						
	Bilateral-Total	0.00	0.00	0.00	0		

Sl. No	Source	Total of Other Charges (Rs. in Lakhs)	Total Other Charges per unit (Rs. per unit)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)	AppORTIONED Inter-State Transmission Losses (MU)	Net energy delivered at State periphery (MU)
G	GRAND TOTAL	0.00	0.00	19621.98	311		
H	Total AppORTIONED Inter-State transmission losses					16.39	
I	Total energy input to Distribution Company system (G-H)						614.35

Table 7. 23: Power Purchase Cost projected by the P & ED for the For the FY 2019-20

Sl. No	Source	Total of Other Charges (Rs. in Lakhs)	Total Other Charges per unit (Rs. per unit)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh.)	AppORTIONED Inter-State Transmission Losses (MU)	Net energy delivered at State periphery (MU)
A	Central Generating Stations						
I	NTPC						
1	Bongaigaon TPS	0.00	0.00	4272.82	647	3.10	62.99
2	Farakka STPS	0.00	0.00	646.84	423	0.72	14.58
3	Kahalgaoon STPS	0.00	0.00	352.73	388	0.43	8.66
4	Talcher STPS	0.00	0.00	256.16	270	0.45	9.06
	NTPC-Total	0.00	0.00	5528.56	553	4.69	95.28
II	NHPC						
1	Loktak HEP	0.00	0.00	1076.13	347	0.82	30.17
	NHPC-Total	0.00	0.00	1076.13	347	0.82	30.17
III	NEEPCO						
1	Kopili HEP	0.00	0.00	431.62	118	0.97	35.47
2	Kopili - II HEP	0.00	0.00	93.23	140	0.18	6.50
3	Khandong HEP	0.00	0.00	152.30	182	0.22	8.14
4	Ranganadi HEP	0.00	0.00	1417.94	212	1.77	65.03
5	Doyang HEP	0.00	0.00	584.63	475	0.33	11.99
6	AGBPP	0.00	0.00	2583.78	363	1.88	69.24
7	AGTTP	0.00	0.00	1278.16	307	1.10	40.52
	NEEPCO-Total	0.00	0.00	6541.65	269	6.45	236.89
IV	TSECL						

Sl. No	Source	Total of Other Charges (Rs. in Lakhs)	Total Other Charges per unit (Rs. per unit)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh.)	Apportioned Inter-State Transmission Losses (MU)	Net energy delivered at State periphery (MU)
1	B'mura - IV	0.00	0.00	935.94	337	0.74	27.07
2	B'mura - V	0.00	0.00	743.94	337	0.59	21.51
	TSECL-Total	0.00	0.00	1679.88	337	1.32	48.58
V	OTPC						
1	Palatana	0.00	0.00	4300.91	367	3.11	114.10
	OTPC-Total	0.00	0.00	4300.91	367	3.11	114.10
VI	Other Stations/IPPs						
1	Power exchange through IEX	0.00	0.00	0.00	0	0.00	0.00
	Others-Total	0.00	0.00	0.00	0	0.00	0.00
B	State generating Stations						
1	All Units	0.00	0.00	0.00	0	0.00	51.18
	State Generating Stations-Total	0.00	0.00	0.00	0	0.00	51.18
C	UI / Deviation	0.00	0.00	889.53	233	0.00	38.14
	UI / Deviation-Total	0.00	0.00	889.53	233	0.00	38.14
D	RPO Obligation / REC Certificate			1143.87			
E	Additional Supplementary Bills						
F	Bilateral Power Purchase						
1	Utility 1						
2	Utility 2						
	Bilateral-Total	0.00	0.00	0.00	0		
G	GRAND TOTAL	0.00	0.00	21160.53	335		
H	Total Apportioned Inter-State transmission losses					16.39	
I	Total energy input to Distribution Company system (G-H)						614.35

Table 7. 24: Power Purchase Cost projected by the P & ED for the For the FY 2020-21

Sl. No	Source	Total of Other Charges (Rs. in Lakhs)	Total Other Charges per unit (Rs. per unit)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)	Apportioned Inter-State Transmission Losses (MU)	Net energy delivered at State periphery (MU)
A	Central Generating Stations						
I	NTPC						
1	Bongaigaon TPS	0.00	0.00	4517.23	684	3.10	62.99
2	Farakka STPS	0.00	0.00	683.84	447	0.72	14.58
3	Kahalgaon STPS	0.00	0.00	372.91	410	0.43	8.66
4	Talcher STPS	0.00	0.00	270.81	285	0.45	9.06
	NTPC-Total	0.00	0.00	5844.79	585	4.69	95.28
II	NHPC						
1	Loktak HEP	0.00	0.00	1137.69	367	0.82	30.17
	NHPC-Total	0.00	0.00	1137.69	367	0.82	30.17
III	NEEPCO						
1	Kopili HEP	0.00	0.00	456.30	125	0.97	35.47
2	Kopili - II HEP	0.00	0.00	98.56	148	0.18	6.50
3	Khandong HEP	0.00	0.00	161.01	193	0.22	8.14
4	Ranganadi HEP	0.00	0.00	1499.04	224	1.77	65.03
5	Doyang HEP	0.00	0.00	618.07	502	0.33	11.99
6	AGBPP	0.00	0.00	2731.57	384	1.88	69.24
7	AGTPP	0.00	0.00	1351.27	325	1.10	40.52
	NEEPCO-Total	0.00	0.00	6915.83	284	6.45	236.89
IV	TSECL						
1	B'mura - IV	0.00	0.00	989.48	356	0.74	27.07
2	B'mura - V	0.00	0.00	786.49	356	0.59	21.51
	TSECL-Total	0.00	0.00	1775.97	356	1.32	48.58
V	OTPC						
1	Palatana	0.00	0.00	4546.92	388	3.11	114.10
	OTPC-Total	0.00	0.00	4546.92	388	3.11	114.10
VI	Other Stations/IPPs						
1	Power exchange through IEX	0.00	0.00	0.00	0	0.00	0.00
	Others-Total	0.00	0.00	0.00	0	0.00	0.00
B	State generating Stations						
1	All Units	0.00	0.00	0.00	0	0.00	51.18
	State Generating Stations- Total	0.00	0.00	0.00	0	0.00	51.18
C	UI / Deviation	0.00	0.00	940.41	247	0.00	38.14
	UI / Deviation-Total	0.00	0.00	940.41	247	0.00	38.14
D	RPO Obligation / REC Certificate			1541.90			
E	Additional Supplementary						

Sl. No	Source	Total of Other Charges (Rs. in Lakhs)	Total Other Charges per unit (Rs. per unit)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)	AppORTIONED Inter-State Transmission Losses (MU)	Net energy delivered at State periphery (MU)
	Bills						
F	Bilateral Power Purchase						
1	Utility 1						
2	Utility 2						
	Bilateral-Total	0.00	0.00	0.00	0		
G	GRAND TOTAL	0.00	0.00	22703.51	360		
H	Total Apportioned Inter-State transmission losses					16.39	
I	Total energy input to Distribution Company system (G-H)						614.35

Table 7. 25: Power Purchase Cost projected by the P & ED for the For the FY 2021-22

Sl No	Source	Total of Other Charges (Rs. in Lakhs)	Total Other Charges per unit (Rs. per unit)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)	AppORTIONED Inter-State Transmission Losses (MU)	Net energy delivered at State periphery (MU)
A	Central Generating Stations						
I	NTPC						
1	Bongaigaon TPS	0.00	0.00	4775.62	723	3.10	62.99
2	Farakka STPS	0.00	0.00	722.96	473	0.72	14.58
3	Kahalgaoon STPS	0.00	0.00	394.24	434	0.43	8.66
4	Talcher STPS	0.00	0.00	286.31	301	0.45	9.06
	NTPC-Total	0.00	0.00	6179.11	618	4.69	95.28
II	NHPC						
1	Loktak HEP	0.00	0.00	1202.77	388	0.82	30.17
	NHPC-Total	0.00	0.00	1202.77	388	0.82	30.17
III	NEEPCO						
1	Kopili HEP	0.00	0.00	482.40	132	0.97	35.47
2	Kopili - II HEP	0.00	0.00	104.20	156	0.18	6.50
3	Khandong HEP	0.00	0.00	170.22	204	0.22	8.14
4	Ranganadi HEP	0.00	0.00	1584.79	237	1.77	65.03
5	Doyang HEP	0.00	0.00	653.43	531	0.33	11.99
6	AGBPP	0.00	0.00	2887.82	406	1.88	69.24
7	AGTPP	0.00	0.00	1428.56	343	1.10	40.52
	NEEPCO-Total	0.00	0.00	7311.41	300	6.45	236.89

P&ED Tariff Order for FY 2018-19

SI No	Source	Total of Other Charges (Rs. in Lakhs)	Total Other Charges per unit (Rs. per unit)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)	Apportioned Inter-State Transmission Losses (MU)	Net energy delivered at State periphery (MU)
IV	TSECL						
1	B'mura - IV	0.00	0.00	1046.08	376	0.74	27.07
2	B'mura - V	0.00	0.00	831.48	376	0.59	21.51
	TSECL-Total	0.00	0.00	1877.56	376	1.32	48.58
V	OTPC						
1	Palatana	0.00	0.00	4807.01	410	3.11	114.10
	OTPC-Total	0.00	0.00	4807.01	410	3.11	114.10
VI	Other Stations/IPPs						
1	Power exchange through IEX	0.00	0.00	0.00	0	0.00	0.00
	Others-Total	0.00	0.00	0.00	0	0.00	0.00
B	State generating Stations						
1	All Units	0.00	0.00	0.00	0	0.00	51.18
	State Generating Stations-Total	0.00	0.00	0.00	0	0.00	51.18
C	UI / Deviation	0.00	0.00	994.20	261	0.00	38.14
	UI / Deviation-Total	0.00	0.00	994.20	261	0.00	38.14
D	RPO Obligation / REC Certificate			1873.77			
E	Additional Supplementary Bills						
F	Bilateral Power Purchase						
1	Utility 1						
2	Utility 2						
	Bilateral-Total	0.00	0.00	0.00	0		
G	GRAND TOTAL	0.00	0.00	24245.83	384		
H	Total Apportioned Inter-State transmission losses					16.39	
I	Total energy input to Distribution Company system (G-H)						614.35

Table 7. 26: Power Purchase Cost projected by the P & ED for the FY 2022-23

Sl No	Source	Total of Other Charges (Rs. in Lakhs)	Total Other Charges per unit (Rs. per unit)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)	Apportioned Inter-State Transmission Losses (MU)	Net energy delivered at State periphery (MU)
A	Central Generating Stations						
I	NTPC						
1	Bongaigaon TPS	0.00	0.00	5048.78	764	3.10	62.99
2	Farakka STPS	0.00	0.00	764.31	500	0.72	14.58
3	Kahalgaon STPS	0.00	0.00	416.79	458	0.43	8.66
4	Talcher STPS	0.00	0.00	302.68	319	0.45	9.06
	NTPC-Total	0.00	0.00	6532.56	653	4.69	95.28
II	NHPC						
1	Loktak HEP	0.00	0.00	1271.56	410	0.82	30.17
	NHPC-Total	0.00	0.00	1271.56	410	0.82	30.17
III	NEEPCO						
1	Kopili HEP	0.00	0.00	510.00	140	0.97	35.47
2	Kopili - II HEP	0.00	0.00	110.16	165	0.18	6.50
3	Khandong HEP	0.00	0.00	179.96	215	0.22	8.14
4	Ranganadi HEP	0.00	0.00	1675.44	251	1.77	65.03
5	Doyang HEP	0.00	0.00	690.80	561	0.33	11.99
6	AGBPP	0.00	0.00	3053.00	429	1.88	69.24
7	AGTPP	0.00	0.00	1510.27	363	1.10	40.52
	NEEPCO-Total	0.00	0.00	7729.63	318	6.45	236.89
IV	TSECL						
1	B'mura - IV	0.00	0.00	1105.92	398	0.74	27.07
2	B'mura - V	0.00	0.00	879.04	398	0.59	21.51
	TSECL-Total	0.00	0.00	1984.95	398	1.32	48.58
V	OTPC						
1	Palatana	0.00	0.00	5081.97	434	3.11	114.10
	OTPC-Total	0.00	0.00	5081.97	434	3.11	114.10
VI	Other Stations/IPPs						
1	Power exchange through IEX	0.00	0.00	0.00	0	0.00	0.00
	Others-Total	0.00	0.00	0.00	0	0.00	0.00
B	State generating Stations						
1	All Units	0.00	0.00	0.00	0	0.00	51.18
	State Generating Stations-Total	0.00	0.00	0.00	0	0.00	51.18

SI No	Source	Total of Other Charges (Rs. in Lakhs)	Total Other Charges per unit (Rs. per unit)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)	AppORTIONED Inter-State Transmission Losses (MU)	Net energy delivered at State periphery (MU)
C	UI / Deviation	0.00	0.00	1051.07	276	0.00	38.14
	UI / Deviation-Total	0.00	0.00	1051.07	276	0.00	38.14
D	RPO Obligation / REC Certificate			2120.12			
E	Additional Supplementary Bills						
F	Bilateral Power Purchase						
1	Utility 1						
2	Utility 2						
	Bilateral-Total	0.00	0.00	0.00	0		
G	GRAND TOTAL	0.00	0.00	25771.86	409		
H	Total AppORTIONED Inter-State transmission losses					16.39	
I	Total energy input to Distribution Company system (G-H)						614.35

Table 7. 27: Summary of Power Purchase Expenses

(Rs. Lakhs)

SI. No.	FY	Units purchased (MUs)	Total Cost
1	2	3	4
1	2018-19	579.56	19621.98
2	2019-20	579.56	21160.53
3	2020-21	579.56	22703.51
4	2021-22	579.56	24245.83
5	2022-23	579.56	25771.86

Commission's analysis

As verified from the power purchase cost projected by P & ED Mizoram, during MYT Control period FY 2018-19 to FY 2022-23, it is observed that for FY 2018-19 P & ED has projected at an escalation of 5% over FY 2017-18, but from 2019-20 to 2022-23, the power purchase cost is projected at an escalation of 6% to 8% which is considered on high side.

Generally it is observed that CGS are not revising generation tariff frequently. However the Commission considers an escalation of 4.5% per annum over tariffs for FY 2017-18.

Accordingly the Power purchase cost is revised as follows during Control period FY 2018-19 to FY 2022-23 as detailed in the tables below:

Table 7. 28: Power Purchase Cost approved by the Commission for the FY 2018-19

Sl. No	Source	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	MU Purchased / generated (ex-bus)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)
A	Central Generating Stations						
I	NTPC						
1	Bongaigaon TPS	250.00	5.415	13.54	66.09	3937.66	596
2	Farakka STPS	1600.00	0.140	2.24	15.29	596.10	390
3	Kahalgaoon STPS	840.00	0.140	1.18	9.09	325.06	358
4	Talcher STPS	1000.00	0.140	1.40	9.50	236.07	248
	NTPC-Total	3690.00		18.35	99.98	5094.89	510
II	NHPC						
1	Loktak HEP	105.00	5.020	5.27	30.99	991.72	320
	NHPC-Total	105.00		5.27	30.99	991.72	320
III	NEEPCO						
1	Kopili HEP	200.00	4.618	9.24	36.44	397.76	109
2	Kopili - II HEP	25.00	6.040	1.51	6.68	85.91	129
3	Khandong HEP	50.00	3.940	1.97	8.36	140.35	168

Sl. No	Source	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	MU Purchased / generated (ex-bus)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)
4	Ranganadi HEP	405.00	5.700	23.09	66.80	1306.71	196
5	Doyang HEP	75.00	5.250	3.94	12.31	538.77	438
6	AGBPP	291.00	5.410	15.74	71.13	2381.10	335
7	AGTPP	148.00	6.000	8.88	41.62	1177.90	283
	NEEPCO-Total	1194.00		64.36	243.34	6028.51	248
IV	TSECL						
1	B'mura - IV	21.00	25.000	5.25	27.80	862.53	310
2	B'mura - V	21.00	25.000	5.25	22.10	685.58	310
	TSECL-Total	42.00		10.50	49.90	1548.11	310
V	OTPC						
1	Palatana	726.00	3.030	22.00	117.21	3963.54	338
	OTPC-Total	726.00		22.00	117.21	3963.54	338
B	UI / Deviation				38.14	819.75	215
	UI / Deviation-Total				38.14	819.75	215
C	RPO Obligation / REC Certificate					688.32	
	GRAND TOTAL	5757.00		120.48	579.56	19134.84	3.30

Table 7. 29: Power Purchase Cost approved by the Commission for the FY 2019-20

Sl. No	Source	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	MU Purchased / generated (ex-bus)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)
A	Central Generating Stations						
I	NTPC						
1	Bongaigaon TPS	250.00	5.415	13.54	66.09	4055.79	614
2	Farakka STPS	1600.00	0.140	2.24	15.29	613.98	401
3	Kahalgaoon STPS	840.00	0.140	1.18	9.09	334.81	368
4	Talcher STPS	1000.00	0.140	1.40	9.50	243.15	256
	NTPC-Total	3690.00		18.35	99.98	5247.74	525
II	NHPC						
1	Loktak HEP	105.00	5.020	5.27	30.99	1021.47	330
	NHPC-Total	105.00		5.27	30.99	1021.47	330
III	NEEPCO						
1	Kopili HEP	200.00	4.618	9.24	36.44	409.69	112
2	Kopili - II HEP	25.00	6.040	1.51	6.68	88.49	132
3	Khandong HEP	50.00	3.940	1.97	8.36	144.57	173

Sl. No	Source	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	MU Purchased / generated (ex-bus)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)
4	Ranganadi HEP	405.00	5.700	23.09	66.80	1345.91	201
5	Doyang HEP	75.00	5.250	3.94	12.31	554.93	451
6	AGBPP	291.00	5.410	15.74	71.13	2452.54	345
7	AGTPP	148.00	6.000	8.88	41.62	1213.23	291
	NEEPCO-Total	1194.00		64.36	243.34	6209.37	255
IV	TSECL						
1	B'mura - IV	21.00	25.000	5.25	27.80	888.40	320
2	B'mura - V	21.00	25.000	5.25	22.10	706.15	320
	TSECL-Total	42.00		10.50	49.90	1594.55	320
V	OTPC						
1	Palatana	726.00	3.030	22.00	117.21	4082.45	348
	OTPC-Total	726.00		22.00	117.21	4082.45	348
B	UI / Deviation				38.14	844.35	221
	UI / Deviation-Total				38.14	844.35	221
C	RPO Obligation / REC Certificate					1143.87	
	GRAND TOTAL	5757.00		120.48	579.56	20143.79	347

Table 7. 30: Power Purchase Cost approved by the Commission for the FY 2020-21

Sl. No	Source	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	MU Purchased / generated (ex-bus)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)
A	Central Generating Stations						
I	NTPC						
1	Bongaigaon TPS	250.00	5.415	13.54	66.09	4177.46	632
2	Farakka STPS	1600.00	0.140	2.24	15.29	632.40	413
3	Kahalgaon STPS	840.00	0.140	1.18	9.09	344.86	379
4	Talcher STPS	1000.00	0.140	1.40	9.50	250.45	264
	NTPC-Total	3690.00		18.35	99.98	5405.17	541
II	NHPC						
1	Loktak HEP	105.00	5.020	5.27	30.99	1052.12	339
	NHPC-Total	105.00		5.27	30.99	1052.12	339
III	NEEPCO						
1	Kopili HEP	200.00	4.618	9.24	36.44	421.98	116
2	Kopili - II HEP	25.00	6.040	1.51	6.68	91.15	136

Sl. No	Source	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	MU Purchased / generated (ex-bus)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)
3	Khandong HEP	50.00	3.940	1.97	8.36	148.90	178
4	Ranganadi HEP	405.00	5.700	23.09	66.80	1386.29	208
5	Doyang HEP	75.00	5.250	3.94	12.31	571.58	464
6	AGBPP	291.00	5.410	15.74	71.13	2526.11	355
7	AGTPP	148.00	6.000	8.88	41.62	1249.63	300
	NEEPCO-Total	1194.00		64.36	243.34	6395.65	263
IV	TSECL						
1	B'mura - IV	21.00	25.000	5.25	27.80	915.06	329
2	B'mura - V	21.00	25.000	5.25	22.10	727.34	329
	TSECL-Total	42.00		10.50	49.90	1642.39	329
V	OTPC						
1	Palatana	726.00	3.030	22.00	117.21	4204.92	359
	OTPC-Total	726.00		22.00	117.21	4204.92	359
B	UI / Deviation				38.14	869.68	228
	UI / Deviation-Total				38.14	869.68	228
C	RPO Obligation / REC Certificate					1541.90	
	GRAND TOTAL	5757.00		120.48	579.56	21111.82	364

Table 7. 31: Power Purchase Cost approved by the Commission for the FY 2021-22

Sl. No	Source	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	MU Purchased / generated (ex-bus)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)
A	Central Generating Stations						
I	NTPC						
1	Bongaigaon TPS	250.00	5.415	13.54	66.09	4302.78	651
2	Farakka STPS	1600.00	0.140	2.24	15.29	651.38	426
3	Kahalgaon STPS	840.00	0.140	1.18	9.09	355.20	391
4	Talcher STPS	1000.00	0.140	1.40	9.50	257.96	271
	NTPC-Total	3690.00		18.35	99.98	5567.32	557
II	NHPC						
1	Loktak HEP	105.00	5.020	5.27	30.99	1083.68	350
	NHPC-Total	105.00		5.27	30.99	1083.68	350

Sl. No	Source	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	MU Purchased / generated (ex-bus)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)
III	NEEPCO						
1	Kopili HEP	200.00	4.618	9.24	36.44	434.64	119
2	Kopili - II HEP	25.00	6.040	1.51	6.68	93.88	141
3	Khandong HEP	50.00	3.940	1.97	8.36	153.37	183
4	Ranganadi HEP	405.00	5.700	23.09	66.80	1427.88	214
5	Doyang HEP	75.00	5.250	3.94	12.31	588.73	478
6	AGBPP	291.00	5.410	15.74	71.13	2601.89	366
7	AGTPP	148.00	6.000	8.88	41.62	1287.12	309
	NEEPCO-Total	1194.00		64.36	243.34	6587.52	271
IV	TSECL						
1	B'mura - IV	21.00	25.000	5.25	27.80	942.51	339
2	B'mura - V	21.00	25.000	5.25	22.10	749.16	339
	TSECL-Total	42.00		10.50	49.90	1691.66	339
V	OTPC						
1	Palatana	726.00	3.030	22.00	117.21	4331.07	370
	OTPC-Total	726.00		22.00	117.21	4331.07	370
C	UI / Deviation				38.14	895.77	235
	UI / Deviation-Total				38.14	895.77	235
D	RPO Obligation / REC Certificate					1873.77	
	GRAND TOTAL	5757.00		120.48	579.56	22030.79	380

Table 7. 32: Power Purchase Cost approved by the Commission for the FY 2022-23

Sl. No	Source	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	MU Purchased / generated (ex-bus)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)
A	Central Generating Stations						
I	NTPC						
1	Bongaigaon TPS	250.00	5.415	13.54	66.09	4431.87	671
2	Farakka STPS	1600.00	0.140	2.24	15.29	670.92	439
3	Kahalgaoon STPS	840.00	0.140	1.18	9.09	365.86	402
4	Talcher STPS	1000.00	0.140	1.40	9.50	265.70	280
	NTPC-Total	3690.00		18.35	99.98	5734.34	574
II	NHPC						
1	Loktak HEP	105.00	5.020	5.27	30.99	1116.19	360

Sl. No	Source	Plant Capacity (MW)	Licensee's Share in %	Licensee's Share in MW	MU Purchased / generated (ex-bus)	All Charges Total (Rs. in Lakhs)	Average rate (P/kWh)
	NHPC-Total	105.00		5.27	30.99	1116.19	360
III	NEEPCO						
1	Kopili HEP	200.00	4.618	9.24	36.44	447.68	123
2	Kopili - II HEP	25.00	6.040	1.51	6.68	96.70	145
3	Khandong HEP	50.00	3.940	1.97	8.36	157.97	189
4	Ranganadi HEP	405.00	5.700	23.09	66.80	1470.72	220
5	Doyang HEP	75.00	5.250	3.94	12.31	606.39	493
6	AGBPP	291.00	5.410	15.74	71.13	2679.95	377
7	AGTPP	148.00	6.000	8.88	41.62	1325.73	319
	NEEPCO-Total	1194.00		64.36	243.34	6785.14	279
IV	TSECL						
1	B'mura - IV	21.00	25.000	5.25	27.80	970.78	349
2	B'mura - V	21.00	25.000	5.25	22.10	771.63	349
	TSECL-Total	42.00		10.50	49.90	1742.41	349
V	OTPC						
1	Palatana	726.00	3.030	22.00	117.21	4461.00	381
	OTPC-Total	726.00		22.00	117.21	4461.00	381
B	UI / Deviation				38.14	922.64	242
	UI / Deviation-Total				38.14	922.64	242
C	RPO Obligation / REC Certificate					2120.12	
	GRAND TOTAL	5757.00		120.48	579.56	22881.85	395

Table 7. 33: Abstract of power purchase cost approved by the Commission for MYT Control period

Year	Power Purchase quantities (MU)	Power purchase Cost (Rs. In Crore)	Average Cost Rs/KWh
2018-19	579.56	191.35	3.30
2019-20	579.56	201.44	3.47
2020-21	579.56	211.12	3.64
2021-22	579.56	220.31	3.80
2022-23	579.56	228.82	3.95

The commission approves power purchase cost during Control period FY 2018-19 to FY 2022-23 as detailed supra.

7.8.4 Transmission Charges

Petitioner's submission

The Transmission charges payable to PGCIL are estimated based on the quantum of power proposed for wheeling for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 based on cost actually incurred in FY 2016-17 after escalating the same by 5.72% year over year to factor in the rise in the rates. Based on the above the transmission charges for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 are provided in the table below.

Table 7. 34: Transmission Charges

(Rs. Lakhs)

Particulars	FY	FY	FY	FY	FY
	2018-19	2019-20	2020-21	2021-22	2022-23
Transmission Charges	4681.05	4948.80	5231.87	5531.14	5847.52

7.8.5 Intra State Transmission Charges

The intra-state transmission system is being operated & maintained by P&ED and transmission charges have been calculated as per the Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014 and attached in Part - IV of this petition. Details of Annual Transmission charges are provided in the table below.

Table 7. 35: Intra-State Transmission Charges projected by P & ED for Control period FY 2018-19 to FY 2022-23

(Rs. Lakhs)

Particulars	FY	FY	FY	FY	FY
	2018-19	2019-20	2020-21	2021-22	2022-23
Intra-State Transmission Charges	2885.66	3100.09	3398.64	3783.37	3936.45

Commission's Analysis

The Commission considers Inter-state transmission charges as projected by P & ED Mizoram. But Intra state transmission charges are considered as approved for transmission function as detailed in the table below.

Table 7. 36: Transmission charges approved by the Commission for Control period FY 2018-19 to FY 2022-23

(Rs. Crore)						
Sl. no	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Inter-state Transmission charges	46.81	49.49	52.32	55.31	58.48
2	Intra state Transmission charges	28.88	30.87	33.56	36.97	38.88

The Commission approves Inter-state, Intra state Transmission charges for Control period as detailed above.

7.8.6 O&M Expenses

Operation & maintenance expense comprise of the following heads of expenditure viz.

- (a) Employee Expenses
- (b) Administration & General Expenses
- (c) Repairs & Maintenance Expenses

The operation & maintenance expense have been arrived at in accordance with the Regulation 89.6 of The JERC for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014. Details of Employee Expenses, Administration & General Expenses and Repairs & Maintenance Expenses are provided in the subsequent sections.

(a) Employee Expenses

The expense head of employee cost consists of salary and allowance, bonus, Leave Travel Concession (LTC) & Honorarium etc. P&ED has projected the employee cost in accordance with the Regulation 89.6 of The Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014. Accordingly, the employee expense for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 based on cost actually incurred in FY 2016-17 after

escalating the same by 5.72% year over year to factor in the rise in the rates. However, the actual employee cost for the FY 2017-18 (H1) i.e. 1st April, 2017 to 30th September, 2017 is ` 5,274.94 Lakhs for P&ED as a whole (Distribution, Transmission & Generation). Based on the above the employee cost for Distribution utility for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022- 23 are projected in the table below:

Table 7. 37: Employee Expenses projected by P&ED

(Rs. Lakh)

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Employee Expenses	7266.86	7682.52	8121.96	8586.54	9077.69

Commission's Analysis

The P & ED Mizoram has projected at 58.53% over estimated employee cost during FY 2017-18. The petitioner has not furnished any specific reason for escalation of 58.53 %. As per regulation 76.4(ii) of JERC for M & M (MYT) Regulations 2014 O & M expenses shall be determined at an escalation factor of 5.72% to arrive at permissible O & M Expenses for each year of Control period. Accordingly the Employee Cost for FY 2017-18 has been escalated by 5.72 % to arrive at employee cost for FY 2018-19 which works out to be Rs. 48.46 Crore and for subsequent years the same escalation factor of 5.72% is applied.

Thus the Commission has approved Employee expenses for MYT Control period as detailed below.

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Employee cost Rs. Cr	48.46	51.23	54.16	57.23	60.53

(b) Administrative and General Expenses**Petitioner's submission**

A&G expenses comprise of the following broad subheads of expenditure, viz.

Domestic Travelling Expenses, Office Expenses Legal, Regulatory & Consultancy Fees, Insurance etc.

The P&ED has projected the A&G expenses in accordance with the Regulation 89.6 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014. Accordingly, the A&G expenses for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 based on cost actually incurred in FY 2016-17 after escalating the same by 5.72% year over year to factor in the rise in the rates. However, the actual A&G expenses for the FY 2017-18 (H1) i.e. 1st April, 2017 to 30th September, 2017 is ` 468.84 Lakhs for P&ED as a whole (Distribution, Transmission & Generation). Based on the above the A&G expenses for Distribution utility for the FY 2018-19, FY 2019- 20, FY 2020-21, FY 2021-22 and FY 2022-23 are projected in the table below:

Table 7. 38: Administration & General Expenses projected by P & ED for Control period FY 2018-19 to FY 2022-23

(Rs. Lakh)

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Administration & General Expenses	416.87	440.72	465.92	492.58	520.75

Commission's Analysis

The actual Administration and General expenses during FY 2016-17 are Rs. 5.33 Crore which are for the department as a whole and the estimated expenses for FY 2017-18 are Rs. 1.33 and by escalating by 5.72 % the A & G expenses for FY 2018-19 works out to Rs. 1.41 Crore and for the subsequent years the same escalation factor of 5.72 % is applied to arrive at A & G expenses for balance control period as detailed below:

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
A&G expenses (Rs. Cr)	1.41	1.49	1.57	1.66	1.76

The Commission approves A & G expenses for Control period as detailed supra.

c) Repairs and Maintenance Expenses

Petitioner's submission

P&ED has been undertaking various Repairs and Maintenance activities as a step towards improvement of systems, reduction in breakdowns, reduction in response time and increasing preventive maintenance.

P&ED has projected the R&M expenses in accordance with the Regulation 89.6 of The Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014. Accordingly, the R&M expenses for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 based on cost actually incurred in FY 2016-17 after escalating the same by 5.72% year over year to factor in the rise in the rates. Based on the above the R&M expenses for Distribution utility for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 are projected in the table below:

Table 7. 39: Repairs and Maintenance Expenses projected by P & ED

(Rs. Lakh)

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Repair & Maintenance Expenses	709.86	765.26	784.16	787.32	938.39

Commission's Analysis

The Commission approves R & M expenses for FY 2018-19 as projected and for subsequent years of Control period FY 2018-19 to FY 2022-23. R & M expenses are escalated by 5.72 % over the expenses for FY 2018-18 as detailed below:

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
R & M expenses (Rs. Cr)	7.10	7.50	7.94	8.39	8.87

The Commission approves R & M expenses for Control period as detailed supra.

d) Abstract of O&M Expenses

Table 7. 40: O & M expenses projected by P & ED for FY 2018-19 to FY 2022-23

(Rs. Lakh)

Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Employee Expenses	7266.86	7682.52	8121.96	8586.54	9077.69
2	Administration & General Expenses	416.87	440.72	465.92	492.58	520.75
3	Repair & Maintenance Expenses	709.86	765.26	784.16	787.32	938.39
4	Total O&M Expenses	8393.59	8888.50	9372.04	9866.43	10536.83

Summary of O&M Expenditure projected by P & ED Mizoram for Control period FY 2018-19 to FY 2022-23:

It is submitted that P&ED is now gearing up for meeting the operational requirement of servicing existing and additional new consumers in line with the Standards of Performance which the licensees have to adhere to. Hence there would be an increase in O&M expenditure to support full-fledged distribution business operations.

Commission's Analysis

The abstract of O & M expenses approved by the commission are as detailed in the Table below:

Table 7. 41: O & M expenses approved by the Commission for FY 2018-19 to FY 2022-23

(Rs. Crore)						
Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Employee Expenses	48.46	51.23	54.16	57.23	60.53
2	Administration & General Expenses	1.41	1.49	1.57	1.66	1.76
3	Repair & Maintenance Expenses	7.10	7.50	7.94	8.39	8.87
4	Total O&M Expenses	56.97	60.22	63.67	67.28	71.16

7.8.7 Gross Fixed Assets & Depreciation

Petitioner's submission

P&ED has projected the depreciation in accordance with the Regulation 28 of The Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014. It is submitted that opening value of gross fixed assets (GFA) & opening accumulated depreciation for the FY 2017-18 has been taken from Fixed Asset Register as on 31.03.2017 & the audited accounts for the FY 2016-17. Further, depreciation for the FY 2017-18 onwards has been calculated at the rates prescribed in the regulations on estimated addition during the FY 2017-18. Thereafter, planned additions during the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 have been considered for the calculating the depreciation for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 respectively.

It is submitted that the State of Mizoram 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 Mizoram, including those of P&ED are being supported by issue of Grants through various Central Government Ministries and Agencies like Ministry of Power (MoP) through schemes of APDRP and RGGVY, Ministry of New and Renewable Energy (MNRE), Ministry of Development of North Eastern Region (DONER) and North Eastern Council (NEC).

Asset wise funding pattern is not available for each and every asset put in service since inception of the Department. However, in majority of the cases, the portion of grants is 90% of the total project cost. In view of the above, it is assumed that the 90% of the total Gross Fixed Assets are being funded through Grants. Accordingly, the proportionate amount to the extent of 90% of the total depreciation is deducted from the total depreciation to arrive at the amount of depreciation chargeable in the ARR. The table below indicates the depreciation of the assets calculated at 10% of total depreciation and the same has been considered while projecting the ARR for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23. Details of category wise Assets & Depreciation is provided in the Format F2 & F2a. Summary of Year wise depreciation is depicted in the table below:

Table 7. 42: Depreciation projected by P & ED for Control period

(Rs. Lakh)

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Depreciation	1793.97	2025.73	2129.35	2253.49	3058.05
10% of Depreciation	179.40	202.57	212.94	225.35	305.80

Commission’s analysis

Based on Annual accounts for FY 2016-17, the closing balance of GFA is Rs. 1194.53 Crore and average rate of depreciation is 3.89 %. With this information the depreciation for Control period FY 2018-19 to FY 2022-23 is computed as detailed in the table below.

Table 7. 43: Depreciation approved by the Commission for Control period FY 2018-19 to FY 2022-23

(Rs. Crore)

Sl. No	Particulars	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Opening GFA	1194.53	1366.07	1413.47	1509.60	1622.81	1799.47
2	Additions	171.54	47.40	96.13	113.21	176.66	171.58
3	Closing GFA	1366.07	1413.47	1509.60	1622.81	1799.47	1971.05
4	Average GFA	1280.30	1389.77	1461.54	1566.21	1711.14	1885.26
5	Average Rate of Depreciation	3.89%	3.89%	3.89%	3.89%	3.89%	3.89%
6	Total depreciation	49.80	54.06	56.85	60.93	66.56	73.34
7	10 % of Depreciation	4.98	5.41	5.69	6.09	6.66	7.33

The Commission approves depreciation for MYT Control period FY 2018-19 to FY 2022-23 as detailed in the table below.

Table 7. 44: Depreciation for Control period FY 2018-19 to FY 2022-23 approved by the Commission

Particulars	(Rs. Crore)				
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
10 % Depreciation	5.41	5.69	6.09	6.66	7.33

7.8.8 Interest and Finance Charges

Petitioner's submission

Regulation 27 of The Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014 provides the methodology for calculation of the Interest & Finance charges. It provides that 30% of the capital employed shall be considered as equity and balance 70% is to be considered as loan. The regulation provides for normative loan irrespective of actual loan availed by the utility. Repayment of loan and interest are also to be considered on normative basis.

In this regard it is submitted that the P&ED being a Government Department, the entire capital employed till date has been funded through fund infusion by the Government in the form of budgetary support which are generally in the nature of grants. Apart from this in order to fund the capital projects, P&ED has also availed various loans through the State Govt. from LIC, REC and PFC.

It is also submitted that the loans under RGGVY Scheme & RAPDRP are convertible into grants at a future date subject to fulfillment of certain stipulations.

In view of the above, the financial principal of debt-equity ratio of 70:30 as provided in regulation 27 read with regulation 22 may not be applicable to the P&ED. Therefore P&ED has only considered the actual loans which are repayable for calculation of interest & finance charges. The total flow of loans from the above mentioned financial institutions as well as the annual interest payments in respect of

these loans is provided in Format - F3a & F3b. The below table shows year-wise interest on the loans.

Table 7. 45: Interest on Load projected by P & ED

(Rs. Lakh)

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Interest on Loan	189.56	153.59	117.61	81.64	45.66

Commission's Analysis

Interest and Finance charges approved by the Commission are as detailed in the table below:

Table 7. 46: Interest and Finance Charges approved by the Commission for FY 2018-19 to FY 2022-23

(Rs. Crore)

Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	LIC	5.00				
2	REC (RGGVY)	14.39				
3	Total	19.39	14.00	10.61	7.22	3.83
4	Repayment	3.39	3.39	3.39	3.39	3.39
5	Balance Loan	14.00	10.61	7.22	3.83	0.44
6	Average Loan	16.70	12.31	8.92	5.53	2.14
7	Average Rate of Interest	11.38	11.67	11.67	11.67	11.67
8	Interest	1.90	1.44	1.04	0.64	0.25

The Commission approves Interest and Finance charges for FY 2018-19 to FY 2022-23 as follows.

	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Interest and Finance charges (Rs. Cr)	1.90	1.44	1.04	0.64	0.25

7.8.9 Interest on Working Capital

Petitioner's Submission

The P&ED has computed the Interest on Working Capital for the FY 2018-19, FY 2019- 20, FY 2020-21, FY 2021-22 and FY 2022-23 in accordance with the

Regulation 29.4 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014.

As per the Regulations, for the purpose of computation of normative working capital and Interest on working capital, the components of working capital are as follows:

- (a) Operation and maintenance expenses for one month; plus
- (b) Maintenance spares at one (1) per cent of the historical cost escalated at 6% from the date of commercial operation; plus
- (c) Receivables equivalent to one (1) month of the expected revenue from sale of electricity at the prevailing tariffs; minus
- (d) Amount held as security deposits under clause (a) and clause (b) of sub-section (1) of Section 47 of the Act from consumers except the security deposits held in the form of Bank Guarantees;

Interest is required to be calculated at a rate equal to the State Bank Advance Rate (SBAR) as on 1st April of the financial year, in which the Petition is filed i.e. 1st April, 2017.

Interest on working capital has been calculated accordingly and detailed in the table below:

Table 7. 47: Interest on Working Capital projected by P & ED for Control period FY 2018-19 to FY 2022-23

(Rs. Lakh)

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Interest on Working Capital	409.87	424.13	443.20	459.10	478.72

Commission's Analysis

Based on approved costs the Commission computed Interest on working Capital as detailed in the table below.

Table 7. 48: Interest on working Capital approved by the Commission for the control period FY 2018-19 to FY 2022-23

(Rs. Crore)

Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	O & M expenses one month	4.75	5.02	5.31	5.61	5.93
2	Maintenance of spares at 1% of GFA escalated by 6%	14.48	14.98	16.00	17.20	19.07
3	Receivables one month	14.68	15.49	16.32	17.15	18.06
4	Total	33.91	35.49	37.63	39.96	43.06
5	Rate of Interest	14.05%	14.05%	14.05%	14.05%	14.05%
6	Interest on working capital	4.76	4.99	5.29	5.61	6.05

The Commission approves Interest on working Capital for the Control period as detailed supra.

7.8.10 Bad Debts**Petitioner's submission**

Regulation 89.8 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014 provides that bad debts written off may be allowed as a pass through in the ARR. P&ED is not proposing any provision for bad debts and the same shall be claimed on actual while truing-up exercise.

Commission's Analysis

In view of the above the Commission has not considered provision for bad debts during control period FY 2018-19 to FY 2022-23.

7.8.11 Return on Equity

Petitioner's submission

Regulation 26 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014 read with Regulation 22 provides the methodology for calculation of the Interest & Finance charges. It provides that 30% of the capital employed shall be considered as equity and balance 70% is to be considered as loan.

In this regard it is submitted that the P&ED being a Government Department, the entire capital employed till date has been funded through fund infusion by the Government in form of budgetary support which are generally in the nature of grants and aids through financial institutions under various schemes like APDRP, RGGVY etc.

In view of the above, the financial principal of debt-equity ratio of 70:30 and return on equity thereon as provided in regulation 26 read with regulation 22 may not be applicable to the P&ED. Therefore P&ED has not considered return on equity while computing the ARR.

Commission's Analysis

Since P & ED is a Government Department Return on Equity is not considered during MYT Control period FY 2018-19 to FY 2022-23.

7.8.12 Non Tariff Income

Petitioner's submission

Regulation 90 of the Joint Electricity Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014 provides that the Non-tariff income shall be deducted from the ARR in calculating the Tariff. Non- Tariff income includes revenue of Supervision Charges, Meter rent, Meter testing Charge, Disconnection/ Reconnection Charge and other departmental charges. The Non – tariff income for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 has been

projected by escalating the estimated Non tariff income of the FY 2017-18 by 5.72% year over year. Accordingly, Non-tariff income for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 is provided in the table below.

Table 7. 49: Non – Tariff Income projected by P & ED for Control period

(Rs. Lakh)

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Non Tariff Income	256.01	270.65	286.14	302.50	319.81

Commission’s Analysis

The Commission approved Non-Tariff Income as projected by P & ED for the Control period as detailed in the table below.

Table 7. 50: Non Tariff Income approved by the Commission for the Control period

	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Non tariff Income (Rs. Cr)	2.56	2.71	2.86	3.03	3.20

7.9 Aggregate Revenue Requirement

Based on the above estimates and projections, the ARR for P&ED for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 works out as under:

Table 7. 51: Annual Revenue Requirement projected by P & ED for Control period FY 2018-19 to FY 2022-23

(Rs. Lakh)

Sl. No.	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Cost of Power Purchase	19621.98	21160.53	22703.51	24245.83	25771.86
2	Cost of Generation	855.41	891.07	929.83	969.08	1002.10
3	Cost of Fuel	1.00	1.00	1.00	1.00	1.00
4	Operation & Maintenance Expenses	8393.59	8888.50	9372.04	9866.43	10536.83
5	Transmission charges	4681.05	4948.80	5231.87	5531.14	5847.52
6	Intra- state Transmission Charges	2885.66	3100.09	3398.64	3783.37	3936.45
7	Interest on Loan	189.56	153.59	117.61	81.64	45.66

Sl. No.	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
8	Depreciation	179.40	202.57	212.94	225.35	305.80
9	Interest on Working Capital	409.87	424.13	443.20	459.10	478.72
10	Return on Equity	0.00	0.00	0.00	0.00	0.00
11	Prior period expenses	0.00	0.00	0.00	0.00	0.00
12	Provision for Bad Debt	0.00	0.00	0.00	0.00	0.00
13	Total Revenue Requirement	37217.50	39770.29	42410.64	45162.93	47925.94
14	Less: Non-Tariff Income	256.01	270.65	286.14	302.50	319.81
15	Less: Revenue from Sale of Power-Exchange	0.00	0.00	0.00	0.00	0.00
16	Net Revenue Requirement (13-14-15)	36961.49	39499.63	42124.51	44860.43	47606.14

Commission's Analysis

Based on the approved costs the approved Aggregate Revenue Requirement for the Control Period FY 2018-19 to FY 2022-23 is shown in table below:

Table 7. 52: Aggregate Revenue Requirement approved by the Commission for the Control period FY 2018-19 to FY 2022-23

(Rs. Crore)

Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Cost of Power Purchase	191.35	201.44	211.12	220.31	228.82
2	Fuel Cost	0.01	0.01	0.01	0.01	0.01
3	Cost of Generation	8.75	8.93	9.18	9.39	9.65
4	Interstate transmission charges	46.81	49.49	52.32	55.31	58.48
5	Intra state transmission charges	28.88	30.87	33.56	36.97	38.88
6	Operation & Maintenance Expenses	56.97	60.22	63.67	67.28	71.16
7	Depreciation	5.41	5.69	6.09	6.66	7.33
8	Interest and Finance charges	1.9	1.44	1.04	0.64	0.25
9	Interest on Working Capital	4.76	4.99	5.29	5.61	6.05
10	Return on Equity	-	-	-	-	-

Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
11	Provision for Bad Debt	-	-	-	-	-
12	Total Revenue Requirement	344.84	363.08	382.28	402.18	420.63
13	Less: Non-Tariff Income	2.56	2.71	2.86	3.03	3.2
14	Less 1/ 3 of surplus resulted in true up FY 2016-17	7.42				
14	Net Revenue Requirement	334.86	360.37	379.42	399.15	417.43

7.10 Revenue from existing Tariff for FY 2018-19

Petitioner's submission

Based on the Aggregate Revenue Requirement and net revenue from existing tariffs for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23, the resultant GAP are shown in the table below:

Table 7. 53: Revenue at Existing Tariff projected by P & ED for Control period FY 2018-19 to FY 2022-23

(Rs. Lakhs)

Sl. No.	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Net Revenue Requirement	36961.49	39499.63	42124.51	44860.43	47606.14
2	Revenue from Retail Sales at Existing Tariff	19614.47	20081.94	20580.33	21112.72	21680.75
3	Net Gap (1-2)	17347.03	19417.69	21544.17	23747.71	25925.38

Commission's Analysis

Based on approved energy sales for FY2018-19, revenue from existing tariff is worked out including revenue from sale of surplus energy as detailed in the table below.

Table 7. 54: Revenue from existing Tariff of FY 2017-18 for FY 2018-19 approved by the Commission

Sl. No	Category	Approved Sales (MU)	Average Revenue (Rs/kWh)	Total Cost (Rs/Crore)
A	LT Supply			
1	Kutir Jyoti	2	2.66	0.53
2	Domestic	252	3.97	99
3	Commercial	31	6.04	18.72
4	Public Lighting	5	5.35	2.67
5	Public water works	5	5.99	2.99
6	Agriculture	0.02	2.40	0.005
7	Industrial	2	5.93	1.18
	Total	297.02	4.25	121.095
B	HT Supply			
8	Domestic	5	5.03	2.56
9	Commercial	8	6.30	5.04
10	Public water works	49	5.53	27.10
11	Agriculture	0.28	2.06	0.057
12	Industrial	10	5.33	5.33
13	Bulk supply	19	5.27	10.01
	Total HT	91.28	5.48	50.097
	Total LT + HT	388.30	4.54	171.19
14	Sale of Surplus power	138.86	1.98	27.49
15	Grand Total	527.16	191.99	198.68

Note: Detailed calculation is given in Annexure – III

7.11 Revenue Gap

Table 7. 55: Revenue Gap for FY 2018-19 approved by the Commission

S.no	Particulars	Units	Projected by P & ED	Approved by the Commission
1	Net ARR	Rs. Cr	369.61	334.86
2	Revenue from sale of power at existing Tariff	Rs. Cr	172.14	171.19
3	Revenue from sale of surplus power	Rs. Cr	24.00	27.49
4	Total Revenue	Rs. Cr	196.14	198.68
5	Revenue Gap	Rs. Cr	173.47	136.18
6	Energy sales	MU	390.80	388.30
7	Surplus power	MU	121.20	138.86

7.12 Recovery of Revenue Gap for FY 2018-19

As seen from the Para 7.11 supra as against revenue gap Rs. 173.47 Crore projected by P & ED, after Commission analysis the revenue gap works out to Rs. 136.18 Crore which is about 41% of Net ARR for FY 2018-19. Previous tariffs are revised from 01.04.2017. P & ED does not propose to recover the entire gap as this may result in huge burden on the consumers. Tariff is a sensitive subject having substantial impact on social, economic and financial well being of public at large as well as the viability and growth of power sector. Recovery of entire gap through tariff increase is not feasible as this would make power unaffordable to the general consumers.

P & ED being a government department is funded by budgetary support from State Government. Hence P & ED does not propose to absorb the unrecovered gap but proposed an average increase in tariff by 5.90% to bridge the gap partially.

Commissions Analysis

As discussed in detail at Chapter 8 the Commission has decided to revise the existing Tariff with 5.90% escalation as proposed by P&ED.

Accordingly the revenue from approved tariff works to be Rs 209.01 as detailed in the table below.

Table 7. 56: Revenue from the approved tariff of FY 2018-19

Sl. No	Particulars	Approved sales (MU)	Average Revenue (Rs/KWH)	Total Cost (Rs. Cr)
A	LT supply			
1	Kutir Jyoti	2	2.98	0.60
2	Domestic	252	4.15	104.66
3	Commercial	31	5.99	18.56
4	Public Lighting	5	5.46	2.73
5	Public Water works	5	6.15	3.07
6	Agriculture	0.02	3.00	0.006
7	Industrial	2	6.13	1.23
8	Sub Total	297.02		130.86
B	HT Supply			
1	Domestic	5	5.09	2.54
2	Commercial	8	6.36	5.09
3	Public Water works	49	5.57	27.31
4	Agriculture	0.28	3.00	0.06
5	Industrial	10	5.39	5.39

Sl. No	Particulars	Approved sales (MU)	Average Revenue (Rs/KWH)	Total Cost (Rs. Cr)
6	Bulk supply	19	5.41	10.27
7	Total HT	91.28		50.66
8	Total LT + HT	388.30	4.67	181.52
9	Sale of surplus power	138.86	1.98	27.49
10	Grand Total (8+9)	527.16	3.96	209.01

With the revised tariff the P & ED will generate additional revenue of Rs. 10.33 (209.01-198.68).

Thereby the revenue gap is reduced to Rs.125.85 Cr (i.e. Rs. 136.18 Cr – Rs. 10.33 Cr).

7.13 Government Subsidy/ support

As seen from the above it is clear that the revenue from sale of power is not sufficient to meet the expenditure and the P&ED shall continue to depend upon the subsidy/support from Government of Mizoram. So, the net revenue gap of Rs. 125.85 Crore arrived in para 7.12 supra shall be met from Government subsidy/ support as against Rs. 149.38 Crore projected by P&ED.

Table 7. 57: Average Cost of electricity supply within Mizoram

Sl. No	Particulars	Units	Projected by P & ED	Approved by the Commission
1	Net overall ARR	Rs. Cr	369.61	334.86
2	Sale of surplus power	Rs. Cr	24.00	27.49
3	Net ARR within the state (1-2)	Rs. Cr	345.61	307.37
4	Govt. subsidy/ Support	Rs. Cr	149.38	125.85
5	Net ARR after Govt. subsidy (3-4)	Rs. Cr	196.23	181.52
6	Energy sale within the state	MU	390.80	388.30
7	Average cost of supply before Govt. subsidy/ support (3/6)	Rs/KWH	9.46	7.92
8	Average cost of supply after Govt. subsidy (5/6)	Rs/KWH	5.02	4.67

8 Tariff Principles and Design

8.1 Background

The Commission, while determining the revenue requirement and retail tariff of P&ED, Mizoram for the year 2018-19 has been guided by the provisions of the Electricity Act, 2003, the National Tariff Policy (NTP), CERC Regulations on Terms and Conditions of Tariff and JERC Regulations for Manipur and Mizoram (Multi Year Tariff) Regulation, 2014. Section 61 of the Act lays down the broad principles, which shall guide determination of retail tariff. As per these statutory provisions, the tariff shall “Progressively reflect cost of supply” and also reduce cross subsidies “within the period to be specified by the Commission”. The Act also lays special emphasis on safeguarding consumer interests and 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 and also in 2011 provides comprehensive guidelines for determination of tariff and working out the revenue requirement of power utilities. The Commission has endeavoured to follow these guidelines as far as possible.

NTP mandates that the Multi-Year-Tariff (MYT) framework be adopted for determination of tariff from 1st April 2006. Accordingly the Commission has introduced MYT Regime in the State from 2015-16.

The mandate of the NTP on cross subsidy is that the tariff should be within plus / minus 20% of the average cost of supply by 2010-11. This could not be achieved due to high cost of power, low paying capacity of the consumers and lack of industrialization in the state. The P&ED has not furnished the voltage-wise cost of supply. A directive has been issued to build up data to arrive at the cost of supply at various voltage levels etc. Hence, in working out the cost of supply, the Commission has taken the average cost of supply as basis in the absence of relevant data to work

out consumer category wise cost of supply. In this tariff order an element of performance target has been indicated to maintain the set target for distribution loss reduction for the year 2018-19. The P&ED shall show better performance by reduction of loss level, which will result in substantial reduction in average cost of supply. The existing and proposed tariff of P&ED is a two-part tariff under telescopic billing.

8.2 Section 8.3 of National Tariff Policy lays down the following principles for tariff design:

1. 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 group of consumers will be at least 50% of the average cost of supply. This provision will be re-examined after five years.
2. For achieving the objective that the tariff shall progressively reflect 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 2018-19 that the 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.
3. For example if the average cost of service is Rs.3 per unit, at the end of year 2010-11 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.
4. 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.”

NEP aims at increased access to electricity, supply of reliable and quality power at reasonable rates, minimum lifeline consumption and financial turnaround of consumer interest. The Commission has considered factors as far as possible which aim at achieving the objectives of NEP while determining the revenue requirement of the P&ED and designing the retail tariff for its consumers. The Commission considered for special treatment to Kutir Jyoti connection and agricultural sector. It has also aimed at to raise the per capita consumption of the State from the existing level of 323 kWh to 350 kWh by the end of 2018-19. The Commission endeavours that the tariff progressively reflects cost of supply in a shortest period and the government subsidy is reduced gradually. The tariff has been rationalized with regards to inflation, paying capacity of consumers and avoid tariff shock.

8.3 Tariff Proposed by P&ED and Approved by the Commission

8.3.1 Tariff Categories

In the ARR and Tariff Petition of FY 2018-19, P&ED has not proposed any changes in the existing categories of consumers.

The Commission considers to retain the existing categories as follows:

1. (a) Kutir Jyoti LT (b) Domestic LT (c) Domestic HT
2. (a) Non-domestic/Commercial LT (b) Non-domestic/Commercial HT
3. Public Lighting LT
4. (a) Irrigation & Agriculture LT (b) Irrigation & Agriculture HT
5. (a) Public Water Works LT (b) Public Water Works HT
6. (a) Industrial LT (b) Industrial HT
7. Bulk Supply HT

However P & ED proposed reduction in billing in respect of the following categories

Sl. No	Category	Existing Billing slabs	Proposed billing slabs
1	Kutir jyoti	First 15 KWH	First 20 KWH
		Next 15 KWH	Above 20 KWH
		Balance above 30 KWH	

2	Domestic LT	First 50 KWH	First 100 KWH
		Next 50 KWH	Next 100 KWH
		Next 100 KWH	Balance above 200 KWH
		Balance above 200 KWH	
3	Commercial LT	First 100 KWH	First 150 KWH
		Next 100 KWH	Balance above 150 KWH
		Balance above 200 KWH	

4. In respect of all HT Categories, KVAH billing is proposed in place of KWH of Energy charges as follows:

Category	Existing billing system	Proposed billing system
Domestic HT	KWH Billing in Energy charges	KVAH billing in Energy charges
Commercial HT		
PWW HT		
Agriculture HT		
Industrial HT		
Bulk supply HT		

The Commission has approved the reduction in energy charges billing slabs in respect of Kutir Jyoti, Domestic LT and Commercial LT Categories and kVAh billing in respect of all HT Categories as indicated supra with effect from 01.04.2018, as proposed by P & ED.

8.3.2 Existing & Proposed Tariff

P&ED in its tariff petition for FY 2018-19 has proposed for revision of the existing two part retail tariffs to various categories of consumers to earn additional revenue of Rs. 10.33 Crore to meet the revenue gap partially.

The P&ED has proposed tariff revision of both energy charges and Fixed Charges, which are in existence since 1.4.2017 with an average increase of 5.90% over the existing charges.

The summary of the tariff proposal by P&ED for FY 2018-19 is furnished in table below:

Table 8.1: Existing v/s Proposed Tariff for FY 2018-19

Sl. No.	Category	Existing		Category	Proposed	
		Energy Charges (Rs./KWh)	Fixed Charges (Rs./con./contracted load/Billing demand)		Energy Charges (Rs./KWh)	Fixed Charges (Rs./con./contracted load/Billing demand)
		A	B		C	D
1	Kutir Jyoti			Kutir Jyoti		
i)	First 15 KWh	1.50	12/Conn.	First 20Kwh	1.75	15/Conn.
ii)	Next 15 KWh	2.15	12/Conn.	Next 21-35 KWh	2.40	15/Conn.
iii)	Balance above 30 KWh	2.45	12/Conn.			
2	Domestic			Domestic		
A	LT			LT		
i)	First 50 KWh	2.45	35/ KW	First 100 KWh	2.90	40/ KW
ii)	Next 50 KWh	3.40	35/ KW	Next 100KWh	4.45	40/ KW
iii)	Next 100 KWh	4.45	35/ KW	Balance above 200 KWh	5.05	40/ KW
iv)	Balance above 200 KWh	5.00	35/ KW			40/ KW
B	HT	4.80	35/ KVA	HT	4.80	40/ KVA
3	Commercial			Commercial		
A	LT			LT		
i)	First 100 KWh	3.80	65/KW	First 150 KWh	4.35	70/ KW
ii)	Next 100 KWh	4.80	65/KW	Balance above 150 KWh	5.50	70/ KW
iii)	Balance above 200 KWh	5.80	65/KW			
B	HT	5.50	65/KVA	HT	5.50/KVAH	70/ KVA
4	Public Lighting	5.20	65/KW	Public Lighting	5.30	65/ KW
5	Irrigation & Agriculture			Irrigation & Agriculture		
A	LT	2.00	35/ KW	LT	2.10	40/ KW
B	HT	1.95	35/ KVA	HT	2.00/KVAH	40/ KVA
6	Public Water Works			Public Water Works		
A	LT	5.10	75/ KW	LT	5.20	80/ KW
B	HT	4.90	75/ KVA	HT	4.90/KVAH	80/ KVA
7	Industrial			Industrial		
A	LT			LT		
i)	First 400 KWh	4.00	65/ KW	First 400 KWh	4.10	70/ KW

Sl. No.	Category	Existing		Category	Proposed	
		Energy Charges (Rs./KWh)	Fixed Charges (Rs./con./contracted load/Billing demand)		Energy Charges (Rs./KWh)	Fixed Charges (Rs./con./contracted load/Billing demand)
ii)	Balance above 400 KWh	4.75	65/ KW	Balance above 400 KWh	4.80	70/ KW
B	HT	4.55	65/KVA	HT	4.55	70/ KVA
8	Bulk Supply	4.30	70/ KVA	Bulk Supply	4.30	80/ KVA

8.3.3 Tariffs Approved by the Commission

(a) Approved Tariff for FY2018-19

The Commission works out the average rate of the existing tariff of FY2017-18 to be Rs. 4.41 per unit for the FY 2018-19 on the basis of increased number of consumers and energy consumption during the FY 2018-19. Having considered the petition of P&ED Mizoram for approval of Aggregate Revenue Requirement (ARR) and determination of Retail Tariff for supply of energy and having approved the Aggregate Revenue Requirement (ARR) with a gap of Rs. 125.85 Crore vide para 7.13 of Chapter-7, the Commission considers to revise the tariffs under Telescopic billing with an average increase of 5.90% as proposed by P&ED as detailed below:

Table 8.2: Category wise Tariff approved by the Commission for FY 2018-19

Sl. No	Category	Approved	
		*** Fixed Charges per month (Rs/kW or kVA)	Variable Charges (Rs/kWh or kVAH)
1	Kutir Jyoti		
i)	First 20 kWh	15/Connection	1.75
ii)	Balance above 20 kWh	15/Connection	2.40
2	Domestic LT		
i)	First 100 Units	40	2.90
ii)	Next 100 Units	40	4.45
iv)	Balance above 200 Units	40	5.05
3	Domestic HT	40	4.80
4	Non-domestic/ Commercial LT		
i)	First 150 Units	70	4.35
iii)	Balance above 150 Units	70	5.40
5	Commercial HT	70	5.50

Sl. No	Category	Approved	
		*** Fixed Charges per month (Rs/kW or kVA)	Variable Charges (Rs/kWh or kVAH)
6	Public Lighting	65	5.30
7	PWW LT	80	5.20
8	PWW HT	80	4.90
9	Irrigation & Agriculture LT	40	2.10
10	Irrigation & Agriculture HT	40	2.00
11	Industrial LT		
i)	First 400 Units	70	4.10
ii)	Balance above 400 Units	70	4.80
12	Industrial HT	70	4.55
13	Bulk Supply HT	80	4.30

*** Fixed charge is per kW of contracted load in LT supply except kJ and per kVA of Billing Demand in HT supply, energy charge is per kWh in LT supply and per kVAh in HT supply.

Note: The above table depicts fixed and energy charge only. Detail Charges are given in the Tariff Schedule Appended.

(b) Miscellaneous Charges and Important Conditions of Supply

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

9 Wheeling Charges

9.1 Background

The net distribution expenses as approved in Chapter 7 table 7.18 is Rs 59.52 Crore. The distribution ARR needs to be segregated into wire business and retail supply business in accordance with the matrix prescribed in Regulation 3.3 of JERC for Manipur and Mizoram (Multi Year Tariff) Regulation, 2014. The allocation matrix is detailed in table below.

Table 9. 1: Allocation Matrix

Sl. No	Particulars	Wire Business	Retail Supply Business
1	2	3	4
1	Cost of Power Purchase	0%	100%
2	Stand by Charges	0%	100%
3	Employee Expenses	60%	40%
4	Administration & General Expenses	50%	50%
5	Repair & Maintenance Expenses	90%	10%
6	Depreciation	90%	10%
7	Interest & Finance Charges	90%	10%
8	Interest on Working Capital	10%	90%
9	Provision for Bad Debt	0%	100%
10	Income Tax	90%	10%
11	Intra- state Transmission Charges	0%	100%
12	Contribution to contingency reserves	100%	0%
13	Return on Equity	90%	10%
14	Non-Tariff Income	10%	90%

The net distribution expenses are segregated into wire business and retail supply business as per the above matrix as detailed in table below.

Table 9. 2: Segregated of wires and Retail Supply costs for FY 2018-19

(Rs. Crore)				
Sl. No	Particular	Total Cost	Wire cost	Retail supply cost
1	Power purchase cost	191.35	-	191.35
2	Interstate Transmission Charges	46.81	-	46.81
3	Intra state transmission charges	28.88	-	26.88
4	Employee cost	48.46	29.08	19.38
5	R&M cost	7.10	6.39	0.71
6	Administration & General expenses	1.41	0.71	0.70
7	Depreciation	5.41	4.87	0.54

Sl. No	Particular	Total Cost	Wire cost	Retail supply cost
8	Interest & Fin. Charges	1.90	1.71	0.19
9	Int. on working capital	4.76	0.48	4.28
10	Less Non-tariff income	2.56	0.26	2.30
	Total	338.64	43.50	295.14

9.2 Wheeling Tariff

The wheeling charges have been computed on the basis of approved costs of Discom for its distribution wire business and the total energy expected to be wheeled through its network. In the absence of segregated data on costs of operation of 33kV and 11kV networks the wheeling charges are not segregated voltage wise.

Combined wheeling charges approved are given in table below:

The Commission has calculated wheeling tariff on approved wire cost and energy sales as detailed in table below.

Table 9. 3: Wheeling Tariff approved by the Commission

Sl. No	Particular	FY 2018-19
1	ARR for wheeling function approved by the Commission (Rs. Crore)	43.50
2	Total Energy available for Distribution(MU)	475.28
3	Wheeling Tariff (Rs/kWh)	0.92

The Commission approves wheeling Tariff at Rs.0.92/kWh for FY 2018-19.

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 a financial year, except in respect of any changes expressly permitted under the terms of any fuel surcharge formula as may be specified. This provision in 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 terms and conditions for levy of FPPCA. Accordingly, the Commission has directed the distribution licensee to recover the FPPCA charges as per the formula specified below.

FAC (Rs./kWh)	=	$Q_c(RC_2 - RC_1) + Q_o(RO_2 - RO_1) + Q_{pp}(R_{pp2} - R_{pp1}) + V_z + A$					X	100
		$(Q_{Pg1} + Q_{pp1} + Q_{pp2})$	X	[1	-	$\frac{L}{100}$]	

Where,

Q _c	=	Quantity of coal consumed during the adjustment period in Metric Tons (MT).
	=	(SHR X Q _{pg}) (1+TSL)/GCV, or actual whichever is less.
R _{c1}	=	Weighted average of 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 of 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 of base rate of oil ex-power station (Rs./KL) approved by the Commission for the adjustment period.
R_{o2}	=	Weighted average of 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 of 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 of Transit and Stacking Loss as approved by the Commission
GCV	=	Weighted average of 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 factors not envisaged at the time of Tariff fixation as approved by the Commission (Rs.)
A	=	Adjustment, if any, to be made in the current period for any excess / shortfall in recovery of fuel of Power Purchase cost in the past adjustment period, as approved by the Commission (Rs.)

PSE = Power sold to exempted categories (Presently Agriculture and BPL- Kutir Jyoti Consumers).

If there are more than one power stations owned by the Licensee Qc, Rc1, Rc2, Qo, Ro1, Ro2, Qpg and Qpg1 the cost will be computed separately for each power station and the sum of the increase/ decrease in cost of all power stations shall be taken into consideration. Discom can levy FPPCA charges with prior approval of the Commission. Levy of FPPCA charges which shall be subject to the following terms and conditions detailed here under.

10.2 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 to the consumer, 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 the ceiling shall be carried forward to be included in the 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 to the satisfaction of the Commission.
- 5) Any cost increase by the licensee by way of penalty, interest due to delayed payments, etc. 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 the power stations in the state 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 through an affidavit supported with the certified copy of energy bills of power purchase, transmission charges, RLDC charges, 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 up to a maximum ten (10) paise per unit. If it is less than 10 (ten) paise/unit, the same shall be carried forward for adjustment in the next month.
- 10) The Incremental cost per kWh due to the FPPCA arrived at for a month 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 to be billed.
- 11) The Generating Company and the Distribution Companies shall provide along with the proposal of FPPCA (as applicable to them) for a month, a compliance report of the previous order of the Commission in respect of levy of FPPCA.

11 Aggregate Revenue Requirement of Transmission function for MYT Control Period FY 2018-19 to FY 2022-23

11.1 Introduction

The Transmission capacity requirement and allocation to the long term & medium term users of the license area is determined based on the expected transmission of energy in the area during the period under consideration. The Transmission function of P & ED primarily handles power required by the Distribution function and hence the forecast/ projection would completely depend on the sales/ energy transmission projection of the distribution function. Accordingly, the transmission system requirement projection by the P & ED for the Control Period i.e. FY 2018-19 to FY 2022-21 is as given in the succeeding paragraphs.

11.2 Capacity allocation and Energy Requirement

The energy requirement of the state is mainly met from outside Generating sources as the state's HEPs generations are seasonal in nature. The share allocation of Mizoram from various Central Sector Generating Stations and Own Generation capacity is provided in the tables below. Apart from the allocation from the Central Sector generating Stations & own sources, Mizoram has to resort to additional short-term purchases through other sources i.e. over drawal & IEX.

Table 11.1: Power Availability

Sl. No	Source	Plant Capacity (MW)	P&ED Share in %	P&ED Share in MW
A	Central Generating Stations			
I	NTPC Bongaigaon	250	5.41	13.54
1	Farakka STPS	1600	0.14	2.24
2	Kahalgaon STPS	840	0.14	1.18
3	Talcher STPS	1000	0.14	1.40
	NTPC-Total	3690		18.35
II	NHPC			
1	Loktak HEP	105	5.02	5.27
	NHPC-Total	105		5.27

Sl. No	Source	Plant Capacity (MW)	P&ED Share in %	P&ED Share in MW
III	NEEPCO			
1	Kopili HEP	200	4.618	9.24
2	Kopili - II HEP	25	6.04	1.51
3	Khandong HEP	50	3.94	1.97
4	Ranganadi HEP	405	5.7	23.09
5	Doyang HEP	75	5.25	3.94
6	AGBPP	291	5.41	15.74
7	AGTPP	148	5.98	8.88
	NEEPCO-Total	1194		64.36
IV	TSECL			
1	B'mura - IV	21	25	5.25
2	B'mura - V	21	25	5.25
	TSECL-Total	42		10.50
V	OTPC			
1	Palatana	726	3.03	22.00
	OTPC-Total	726		22.00
VI				
	Total	5757		120.484

Table 11.2: Power Sources- Own Generation

Sl. No	Name of the Station	Installed Capacity (MW)
1	Serlui 'A'	1.00
2	Tuirivang	0.30
3	Khawiva	1.05
4	Tuipui	0.50
5	Maicham-I	2.00
6	Teirei	3.00
7	Tuipanglui	3.00
8	Kau-Tlabung	3.00
9	Lamsial	0.50
10	Maicham-II	3.00
11	Serlui'B'	12.00
	Total	29.35

To transmit power within the State, P&ED has the following transmission network:

Table 11.3: Transmission Network as on 31.03.2017

Sl. No	Particulars	Ckt KM	Sub stations	Capacity (MVA)
1	132 kV	728.961	7	121.80
2	66 kV	117.00	2	12.60
3	33 kV	1240.24	61	218.25

11.3 Transmission Loss

P & ED has been trying to reduce the transmission losses during recent years. P & ED submits that the system improvement works executed every year under the plan schemes have also contributed to the reduction of transmission losses. However, it may also be noted that reduction of transmission losses may not be possible beyond a certain level due to topographical conditions and technical limitations. The Department is currently not equipped to measure the exact energy flowing into and out of the state grid at various levels due to inadequate metering equipment. Therefore, State

Transmission losses have been calculated on the basis of the net input energy in the State Transmission system periphery. The transmission losses have been considered at 3% as approved by the Hon'ble Commission in the Tariff Order for the FY 2017-18. The table below provides the calculation of transmission loss for the Control period FY 2018-19 to FY 2022-23.

Table 11.4: Transmission Losses for the Control period FY 2018-19 to FY 2022-23 projected by P & ED

Sl. No	Description	Unit (MU%)	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Energy available at State Transmission Grid including local Generation	MU	493.14	517.99	544.25	571.95	601.25
2	Transmission loss% (as approved in Tariff Order for FY 2017-18)	%	3	3	3	3	3
3	Transmission Loss(1X2)	MU	14.79	15.54	16.33	17.16	18.04
4	Net Energy available for sale at Transmission Level (1-3)	MU	478.35	502.45	527.92	554.79	583.21

Commission’s Analysis

Under the circumstances explained by P & ED the Commission considers transmission losses during MYT period from 2018-19 to 2022-23 at 3% as projected by P & ED.

The Commission approves transmission loss at 3 % during control period for FY 2018-19 to FY 2022-23.

11.4 Aggregate Revenue Requirement

Based on the provisions of the tariff regulations, the Aggregate Revenue Requirement (ARR) will comprise of the following elements.

- Operation and maintenance expenses.
- Depreciation
- Interest and Finance charges on Loan Capital.
- Interest on working capital.
- Return on equity.

The Aggregate Revenue Requirement (ARR) is netted off with non- tariff income for determining net ARR.

Aggregate Revenue Requirement during MYT Period from 2018-19 TO 2022-23 projected by P & ED is as detailed in table below.

Table 11.5: Aggregate Revenue Requirement projected by P & ED During FY 2018-19 to FY 2022-23

(Rs. Lakhs)						
SI No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Return on equity	0.00	0.00	0.00	0.00	0.00
2	Interest and Finance charges	0.00	0.00	0.00	0.00	0.00
3	Depreciation	134	148	174	218	248
4	O & M expenses	2640.10	2187.02	3047.18	3324.26	3460.02
5	Interest on working capital	113.85	136.38	158.56	191.63	203.12
6	Contribution to Contingency Reserve	0.00	0.00	0.00	0.00	0.00
7	Non Tariff Income	0.00	0.00	0.00	0.00	0.00
8	Income from other Business	0.00	0.00	0.00	0.00	0.00
9	Total	2887.95	3100.09	3398.64	3783.37	3936.45

Commission's analysis

Item wise expenses are discussed here under.

11.5 Return on Equity

Petitioner's submission

Regulation 26 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014 read with Regulation 22 provides the methodology for calculation of the Interest and Finance charges . It provides that 30 % of the capital employed shall be considered as equity and balance 70 % is to be considered as loan.

In this regard it is submitted that the P & ED being a Government Department, the entire capital employed till date has been funded through fund infusion by the Government in form of budgetary support which are generally in the nature of grants and aids through financial institutions.

In view of the above, the financial principal of debt- equity ratio of 70 : 30 and return on equity theorem as provided in regulation 26 read with regulation 22 may not applicable to the P & ed. Therefore P & ED has not considered return on equity while computing ARR.

Commission's analysis

In view of the above the Commission has not considered for ROE for transmission function for MYT period FY 2018-19 to FY 2022-23.

11.6 Interest and Finance charges

Petitioner's submission

Regulation 27 of the Joint Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014 provides the methodology for calculation of the Interest and Finance charges. It provides that 30 % of the capital employed shall be considered as equity and balance 70 % is to be considered as loan. The regulation provides for normative loan irrespective of actual loan availed by the utility. Repayment of loan and Interest are to be considered on normative basis.

In this regard it is submitted that the P & ED being a Government Department, the nature

capital employment till date has been funded through fund infusion by the Government inform of budgetary support which are generally in nature of grants.

In view of the above, the financial principal of debt-equity ratio of 70: 30 as provided in regulation 27 read with regulation 22 may not applicable to the P & Ed. Therefore P & ED has not considered Interest and Finance charges while computing the ARR.

Commission's analysis

In view of the above the Commission has not considered Interest and Finance charges for transmission function for MYT Period FY 2018-19 to FY 2022-23.

11.7 Gross Fixed Assets

Petitioner's submission

P & ED has projected the Gross Fixed asset in accordance with the Regulation 23 of the Joint Electricity regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014.

It is submitted the opening value of gross fixed assets (GFA) for the FY 2016-17 has been taken from Fixed Asset Register as on 31.03. 2017 & the audited accounts for the FY 2016-17 and the same has been increased by addition of assets during the FY 2016-17 and estimated addition during FY 2017-18. Therefore, planned additions during the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 have been considered and accordingly. GFA has been computed for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23. The GFA movement is given in the table below:

Table 11.6: GFA for MYT FY 2018-19 to 2022-23 projected by P & ED

(Rs. Lakhs)			
Financial year	Opening Balance	Addition during year	Closing Balance
FY 2016-17	21128.03	169.44	21297.48
FY 2017-18	21297.48	11708.00	33005.48
FY 2018-19	33005.48	2727.00	35732.48
FY 2-19-20	35732.48	4533.00	40265.48
FY 2020-21	40265.48	8716.42	48981.90
FY 2021-22	48981.90	14229.96	63211.86
FY 2022-23	63211.86	1149.00	64360.86

Commission's analysis

The commission approves the growth of GFA for MYT period as detailed in the table below.

Table 11.7: Growth of GFA for Transmission function for Control period FY 2018-19 to FY 2022-23

Financial year	Opening Balance	Addition During year	Closing Balance
FY 2018-19	330.05	27.27	357.32
FY 2019-20	357.32	45.33	402.65
FY 2020-21	402.65	87.16	498.81
FY 2021-22	489.81	142.30	632.11
FY 2022-23	632.11	11.49	643.60

11.7.1 Depreciation**Petitioner's submission**

P & ED has projected the depreciation in accordance with the Regulation 28 of the Joint Electricity regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014.

It is submitted that opening value of Gross Fixed assets (GFA) and Opening accumulated depreciation fro 2016-17 has been taken from Fixed Asset register as on 31.03.2017 and the audited accounts for the FY 2016-17. Further, depreciation for FY 2016-17 has been calculated at the rates prescribed in the regulations on addition of assets during the FY 2016-17 and estimated addition during the FY 2017-18. Thereafter, planned additions during the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 have been considered for calculating the depreciation for FY 2017-18, FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 respectively. It is submitted that the State of Mizoram has been granted a special assistance for the development of infrastructure facilities in these states. Accordingly, the infrastructure projects of the state of Mizoram, including those of P & ED are being supported by issue of Grants through various Central Government Ministries and Agencies like Ministry of Power (MoP) through schemes of APDRP and RGGVY , Ministry of New and Renewable Energy (MNRE), Ministry of Development

of North eastern region (DONER) and North eastern Council. Asset wise funding pattern is not available. However, in majority of the case, the portion of grant is 90 % of the total project cost. In view of the above, it is assumed that the 90% of the Total gross Fixed Asset are being funded through Grants, accordingly, the proportionate amount to the extent of 90% of the total depreciation is deducted from the total depreciation to arrive at the amount of depreciation chargeable in the ARR. The table below indicates the depreciation of the assets calculated at 10% of total depreciation and the same has been considered while protecting the ARR of Transmission function for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23. Accordingly the depreciation for the control period is depicted below.

Table 11.8: Depreciation for the MYT Control period FY 2018-19 to FY 2022-23 projected by P & ED

(Rs. Lakhs)

Financial year	Opening as on 1 st April	Additions during the year	Discarded	Closing Balance as on 31 st March	Depreciation	10 % of Total depreciation
2018-19	33005.48	2727.00	0.00	35732.48	1235.71	123.57
2019-20	35732.48	4533.00	0.00	40265.48	1466.93	146.69
2020-21	40265.48	8716.42	0.00	48981.90	1926.00	192.60
2021-22	48981.90	14229.96	0.00	63211.86	2674.79	267.48
2022-23	63211.86	1149.00	0.00	64360.86	2733.06	273.31

Commission’s analysis

As per regulation 28 of JERC for Mizoram and Manipur (MYT) Regulations 2014 depreciation shall be calculated on straight line method at the rates specified depreciation rates approved by CERC. Depreciation shall be allowed upto a maximizing of 90% of the allowable capital cost of the asset . In case of capital additions during the year depreciation shall be calculated on the average of opening and closing value of asset, approved by the Commission. Since function wise data is not available average rate of depreciation of 3.89 % as per annual accounts for FY 2016-17 is adopted and recalculated depreciation as detailed in the table below.

Table 11.9: Depreciation for Control period FY 2018-19 to FY 2022-23 approved by the Commission

		(Rs.Crore)				
Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Opening GFA	330.05	357.32	402.65	489.81	632.11
2	Additions during the year	27.27	45.33	87.16	142.30	11.49
3	Closing GFA	357.32	402.65	489.81	632.11	643.60
4	Average GFA	343.69	379.99	446.23	560.96	637.86
5	Average rate of Depreciation	3.89	3.89	3.89	3.89	3.89
6	Total Depreciation	13.37	14.78	17.35	21.82	24.81
7	10 % of Depreciation	1.34	1.48	1.74	2.18	2.48

The Commission approves depreciation for MYT Control period FY 2018-19 to FY 2022-23 as detailed supra.

11.7.2 Operation and Maintenance expenses

Petitioner's submission

Operation and Maintenance expenses comprise of the following heads of expenditure viz.

- Employee expenses
- Administration & General expenses
- Repairs and Maintenance expenses

The operation and maintenance expenses have been arrived at in accordance with the Regulation 62.5 of the Joint electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014. It is submitted that the P & ED is an integrated utility carrying out three functions of Generation, Transmission and Distribution and the complete segregation of function wise accounts has not been done yet. In view of the above the operation and Maintenance expenses has been allowed among various functions on the principle allowed by the Hon'ble Commission in the Tariff Order from the FY 2014-15, The allocation matrix is attached as Annexure. The allocated actual expenses for the FY 2016-17 has been considered as the operation & maintenance expenses and the same has been escalated at the escalation

factor of 5.72 % to arrive at the operation and maintenance expenses for the FY 2017-18. The operation and maintenance expenses for each subsequent year has been determined by further escalating the estimated operation and maintenance expenses for the FY 2017-18 by the escalation factor of 5.72 % YOY.

Accordingly, details of operation and maintenance expenses viz. Employee Expenses Administration & General Expenses & Repairs & Maintenance Expenses are provided in the subsequent sections.

11.7.3 Employee expenses

The expense head of employee cost consists of salary and allowance, bonus, Leave Travel Concession (LTC) & Honorarium etc. P&ED has projected the employee cost in accordance with the Regulation 62.5 of The Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014 and the methodology described in the para 11.4. It is therefore kindly requested that Hon'ble Commission may approve the employee expenses as projected.

Table 11.10: Employee Expenses projected by P & ED for Control period FY 2018-19 to FY 2022-23

Particulars	(Rs. Lakhs)				
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Employee Expenses	2076.25	2195.01	2320.56	2453.30	2593.63

Commission's analysis

The Commission approves employee expenses as projected by P & ED for MYT Period FY 2018-19 to FY 2022-23 as detailed in the table below.

Table 11.11: Employee expenses approved by the Commission for MYT period FY 2018-19 to FY 2022-23

Sl. No	Particulars	(Rs. Crore)				
		2018-19	2019-20	2020-21	2021-22	2022-23
	Employee expenses	20.76	21.95	23.21	24.53	25.94

Commission approved employee expenses to P & ED transmission function on MYT Control period for FY2018-19 to FY 2022-23.

11.7.4 Administration and General Expenses

Petitioner's submission

A & G expense comprise of the following broad subheads of expenditure, viz.

- Domestic Travelling Expenses
- Office Expenses
- Legal, Regulatory & Consultancy Fees.
- Insurance etc.

The expense head of a & g expense consists of Domestic Travelling Expenses, Office Expenses, Legal, Regulatory & Consultancy Fees & Insurance etc. P & ED has projected the A & G expenses in accordance with the Regulation 89.6 of the Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014 and the methodology described in the para 4.4 . I is therefore kindly requested that Hon'ble Commission may approve the A & G expenses as projected.

Table 11.12: A & G expenditure projected by P & ED for Control period FY 2018-19 to FY 2022-23

Particulars	(Rs. Lakhs)				
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Administration & General expenses	119.11	125.92	133.12	140.74	148.79

Commission's analysis

The Commission approves Administration and GENERAL expenses for MYT Period FY 2018-19 to FY 2022-23 as projected by P & ED detailed in the table below.

Table 11.13: Administration & General expenses for MYT Period FY 2018-19 to FY 2022-23 approved by the Commission

Sl. No	Particulars	(Rs.Crore)				
		2018-19	2019-20	2020-21	2021-22	2022-23
1	Administration and General expenses	1.19	1.26	1.33	1.41	1.49

The Commission approves Administration and General expenses for P & ED transmission function for MYT Control period FY 2018-19 to FY 2022-23 as detailed supra.

11.7.5 Repairs and Maintenance expenses

Petitioner's submission

P & ED has been undertaking various Repairs and maintenance activities as a step towards improvement of systems, reduction in breakdowns, reduction in response time and increasing preventive maintenance.

P & ED has projected the R & M expenses in accordance with the regulation 89.6 of The Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year tariff) Regulations, 2014 and the methodology described in the Para 11.4. It is therefore kindly requested that Hon'ble Commission may approve the R & M expenses as projected.

Table 11.14: Repairs and Maintenance Expenses projected by P & ED for Control period FY 2018-19 to FY 2022-23

(Rs. Lakhs)						
Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Repair & Maintenance expenses	444.75	496.09	593.49	730.23	717.61

Commission's analysis

The Commission approves R & M expenses for MYT Control period FY 2018-19 to FY 2022-23 as projected by the Commission as detailed in the table below.

Table 11.15: R & M expenses approved by the Commission for MYT Control period FY 2018-19 to FY 2022-23

(Rs. Crore)						
Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	R & M expenses	4.45	4.96	5.93	7.30	7.18

Table 11.16: Summary of O & M expenses for MYT period FY 2018-19 to FY 2022-23 approved by the Commission

Sl. No	Particulars	(Rs. Crore)				
		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Employee expenses	20.76	21.95	23.21	24.53	25.94
2	Administration and General expenses	1.19	1.26	1.33	1.41	1.49
3	R & M expenses	4.45	4.96	5.93	7.30	7.18
4	Total O & M expenses	26.40	28.17	30.47	33.24	34.61

Interest on Working Capital

Petitioner’s submission

The P & ED has computed the Interest on Working Capital for the FY 2018-19 to FY 2022-23 in accordance with the Regulation 29.2 of The Joint Electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014.

As per the Regulations, for the purpose of computation of normative working capital and Interest on working Capital, the components of working capital are as follows.
Operation and maintenance expenses for one month, plus.

Maintenance spares at one (1) percent of the historical cost escalated at 6 % from the date of commercial operation , plus.

Receivables equivalent to one (1) month of the expected revenue from sale of electricity at the prevailing tariffs minus.

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

Interest is required to be calculated at a rate equal to the State Bank Advance Rate (SABR) as on 1st April of the financial year in which petition is filed.

Interest on working capital has been calculated accordingly and detailed in the table below.

Table 11.17: interest on Working Capital projected by P & ED for Control period FY 2018-19 to FY 2022-23

(Rs Lakhs)						
Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	O & M expenses for 1 month	220.01	234.75	253.93	277.02	288.33
2	Maintenance Spares @ 1% of Historical Cost escalated @ 6% from COD	349.85	378.76	426.80	519.20	670.04
3	One month Receivables	240.07	258.34	283.22	315.28	328.04
4	Security Deposit (if any)	0.00	0.00	0.00	0.00	0.00
5	Rate of Interest as on 01/04/2017	14.05	14.05	14.05	14.05	14.05
6	Interest for one year	113.85	136.68	158.86	191.63	203.12

Commission’s Analysis

P & ED has not worked out the Interest on working capital is correctly. As such the Commission recalculated as detailed in the table below.

Table 11.18: Interest on Working Capital for MYT period FY 2018-19 to FY 2022-23 approved by the Commission

(Rs. Crore)							
Sl. No	Particulars	Unit	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	O & M expenses for 1 month	Rs. Cr	2.20	2.35	2.54	2.77	2.88
2	Maintenance Spares @ 1% of Historical Cost escalated @ 6% from COD	Rs. Cr	3.50	3.79	4.247	5.19	6.70
3	One month Receivables	Rs. Cr	2.41	2.57	2.80	3.08	3.24
4	Total	Rs. Cr	8.11	8.71	9.61	11.04	12.82
5	Rate of Interest as on (SBAR 01/04/2017)	%	14.05	14.05	14.05	14.05	14.05
6	Interest on working capital	Rs. Cr	1.14	1.22	1.35	1.55	1.80

The Commission approves Interest on Working Capital for MYT period FY 2018-19 to FY 2022-23 as detailed supra.

Non- Tariff Income

Petitioner’s Submission

Regulation 63 of the Joint electricity Regulatory Commission for Manipur and Mizoram (Multi Year Tariff) Regulations, 2014 provides that the Non –Tariff Income shall be deducted from the ARR in calculating the Tariff. Non- Tariff income includes revenue from rent on land and building, statutory investments, interest on delayed payments and other charges. The P & ED has not considered Non- Tariff income for computing the ARR of the transmission function for the FY 2018-19, FY 2019-20, FY 2020-21, FY 2021-22 & FY 2022-23.

Commission’s Analysis

P & ED is an integrated utility. As such Non- Tariff income is being accounted for under distribution business. As such Non- Tariff income is not considered for transmission business for MYT period FY 2018-19 to FY 2022-23

Aggregate Revenue Requirement

Based on the approved expenses the ARR for transmission function approved by the Commission for MYT period 2018-19 to 2022-23 is given in table below.

Table 11.19: Aggregate Revenue Requirement approved by the Commission for MYT Period FY 2018-19 to FY 2022-23

(Rs. Crore)						
Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Return on Equity	-	-	-	-	-
2	Interest and Finance Charges	-	-	-	-	-
3	Depreciation	1.34	1.48	1.74	2.18	2.48
4	O & M expenses	26.40	28.17	30.47	33.24	34.60
5	Interest on working capital	1.14	1.22	1.35	1.55	1.80
6	Non tariff income	-	-	-	-	-
7	Total ARR	28.88	30.87	33.56	36.97	38.88

12 ARR of Generation Function for MYT Control Period FY 2018-19 to FY 2022-23

12.1 Background

The Power and Electricity Department, Government of Mizoram owns 10 small Hydro Projects with installed capacity below 25 MW. Accordingly the P& ED has submitted the proposal for determination of tariff as per The Joint Electricity Regulatory Commission for Manipur and Mizoram (Terms and Conditions for Tariff determination from Renewable Energy sources) Regulations, 2010 read along with First Amendments Regulations, 2014.

12.2 Details of SHPS

Details of SHPS are provided in the table below.

Table12. 1: Details of SHPS projected by P & ED

Sl. No.	Name of Station	Installed Capacity (MW)	Date of COD
1	Serlui 'A'	1.00	24.04.1984
2	Tuirivang	0.30	14.08.1989
3	Khawiva	1.05	08.12.1988
4	Tuipui	0.50	15.12.1991
5	Maicham-I	2.00	05.01.1996
6	Teirei	3.00	12.10.1999
7	Tuipanglui	3.00	17.12.2004
8	Kau-Tlabung	3.00	05.05.2005
9	Lamsial	0.50	26.08.2008
10	Maicham-II	3.00	11.11.2009
11	Serlui 'B'		Not yet Commissioned

In this regard it is submitted that since the Serlui 'B' SHP has not been commissioned till date the same has not been considered for the calculation of Capital Cost , ARR and Generation tariff here of in accordance with the Joint electricity Regulatory Commission for Manipur and Mizoram (Terms and conditions for Tariff determination from Renewable Energy sources) Regulations, 2010 read along with First Amendments regulations, 2014.

However, the SHP is generating infirm power and the same is being injected in the state grid. The rate at which the energy supplied by the SHP is to be considered while arriving at the total cost of generation has been dealt with separately in the subsequent section of this submission.

12.3 Aggregate Revenue Requirement

This section outlines the Aggregate Revenue Requirement of the P&ED for control period i.e. FY 2018-19 to FY 2022-23, which takes into consideration:

- i. Actual Performance in FY 2015-16 & FY 2016-17;
- ii. Estimated Performance for FY 2017-18 based on the Actual performance for the period 01.04.2017 to 30.09.2017;
- iii. Projection based on the Actual performance in FY 2015-16, FY 2016-17 and estimated performance in FY 2017-18;
- iv. Principles outlined in Tariff Regulations of JERC.

Past trends have been taken into cognizance in case of certain elements as deemed necessary. The present section has been structured in the following manner

Determination of Energy to be transmitted

- Energy input Projections
- Loss Trajectory
- Energy Balance

Proposed Capital Expenditure and capitalization

- Scheme wise details
- Capital Expenditure
- Asset Capitalization
- Determination of the Aggregate Revenue Requirement
 - Power Generation/Purchase Costs
 - Transmission Charges
 - Operation and Maintenance Expenses

- Depreciation
- Interest charges (including interest on working capital)
- Return on NFA
- Provision for Bad and Doubtful Debts
- Return on Equity

12.4 Capital Cost

- (1) Regulation 28 of the JERC for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2010 provides that the capital cost of Small Hydro Projects shall be determined as per the normative parameters defined in the regulation. The extract of the regulation is reproduced below:

The normative capital cost for small hydro projects during first year of Control Period (FY 2012-13) shall be as follows:

Table 12. 2: Normative Capital Cost

Sl. No	Project Size	Capital Cost (Rs. in Lakh /MW)
1	Below 5 MW	770
2	5 MW to 25 MW	700

- (2) The capital cost for subsequent years shall be determined on the basis of indexation formula as outlined under Regulation 29.

Further, regulation 29 provides the Capital Cost Indexation Mechanism. The provisions of the regulation are reproduced below:

- “The following indexation mechanism shall be applicable in case of small hydro power projects for adjustments in capital cost over the Control Period with the changes in Wholesale Price Index for Steel and Electrical Machinery.

$$CC(n) = P\&M(n) * (1+F1+F2+F3)$$

$$P\&M(n) = P\&M(0) * (1+d(n))$$

$$d(n) = [a*\{(SI(n-1)/SI(0)) - 1\} + b*\{(EI(n-1)/EI(0)) - 1\}]/(a+b)$$

Where,

CC(n) = Capital Cost for nth year

P&M(n) = Plant and Machinery Cost for nth year P&M(0) =

Plant and Machinery Cost for the base year

Note. P&M(0) is to be computed by dividing the base capital cost (for the first year of the control period) by (1+F1+F2+F3) i.e.

Table 12. 3: Base Capital cost

Small hydro Project	Base Capital Cost (Rs. Lakh/MW)	Factor (1+F1+F2+F3)	P&M (0) (Rs. Lakh/MW)
SHP (<5MW)	770	1.40	550
SHP (5 - 25 MW)	700	1.40	500

$d(n)$ = Capital Cost escalation factor for year (n) of Control Period

$SI(n-1)$ = Average WPI Steel Index prevalent for calendar year (n-1) of the Control Period

$SI(0)$ = Average WPI Steel Index prevalent for calendar year (0) at the beginning of the Control Period i.e. April,2011 to December March,2012

$EI(n-1)$ = Average WPI Electrical Machinery Index prevalent for calendar year (n-1) of the Control Period

$EI(0)$ = Average WPI Electrical and Machinery Index prevalent for calendar year at the beginning of the Control Period i.e. April

a = Constant to be determined by Commission from time to time, (In default it is 0.6), for weight age to Steel Index

b = Constant to be determined by Commission from time to time, (In default it is 0.4), for weight age to Electrical Machinery Index

F1 = Factor for Land and Civil Work (0.16)

F2 = Factor for Erection and commissioning (0.10)

F3 = Factor for IDC and Financing Cost (0.14)

Capital Cost of the SHPS has been calculated in accordance with the above defined norms and mechanism. The calculation of index capital cost is detailed below.

Table 12. 4: Indexed Capital Cost

Sl. No.	Factors	Reference Year	Value
i	d(n)	2017-18	
ii	SI(n-1)	2016-17	105.80
iii	SI(0)	2011-12	100.00
iv	EI (n-1)	2016-17	108.20
v	EI (0)	2011-12	100.00
vi	a		0.60
vii	b		0.40
viii	F1+F2+F3		0.40
ix	P&M(0)		550.00

$$d(n) = [a*\{(SI(n-1)/SI(0))-1\}+b*\{(EI(n-1)/EI(0))-1\}]/(a+b)$$

$$= [0.6*\{(105.80/100.00)-1\}+0.40*\{(108.20/100.00)-1\}]/(0.60+0.40)$$

$$= 0.068$$

$$P\&M(n) = P\&M(0)*\{1+d(n)\}$$

$$= 550\{1+0.068\}$$

$$= 587.18$$

$$CC(n) = P\&M(n)*(1+F1+F2+F3)$$

$$= 587.18(1+0.40)$$

$$= 822.05$$

Therefore the indexed cost of project per MW is Rs. 822.05 Lakhs. The indexed capital cost of the 10SHPs are accordingly calculated below.

Table 12. 5: Capital Cost projected by P & ED FOR SHPS

(Rs. Lakhs)

Sl. No.	Name of Station	Installed Capacity (MW)	Capital Cost (@ ` 822.05 Lakhs/MW)
1	Serlui 'A'	1.00	822.05
2	Tuirivang	0.30	246.62
3	Khawiva	1.05	863.15
4	Tuipui	0.50	411.03
5	Maicham-I	2.00	1644.10
6	Teirei	3.00	2466.16
7	Tuipanglui	3.00	2466.16
8	Kau-Tlabung	3.00	2466.16
9	Lamsial	0.50	411.03
10	Maicham-II	3.00	2466.16

Commission's Analysis

Barring the above four stations not in operation the Commission considers the capital cost of 6 Hydro Stations already in operation as projected by P & ED as follows

**Table 12. 6: Capital Cost approved by the Commission
(Rs. Crore)**

Sl. No	Name of Station	Installed Capacity (MW)	Capital Cost (@ ` 822.05 Lakhs/MW)
1	Khawiva	1.05	8.63
2	Tuipui	0.50	4.11
3	Maicham-I	2.00	16.44
4	Kau-Tlabung	3.00	24.66
5	Lamsial	0.50	4.11
6	Maicham-II	3.00	24.66

12.5 O & M expenses

Petitioner's Submission

Operation and Maintenance Expenses has been calculated in accordance with the regulation 18 of the JERC for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2010 along with amendments. The Operation and Maintenance Expenses of the SHPs for the control period is provided below:

Table12. 7: Operation and Maintenance Expenses for SHPS projected by P & ED for Control period FY 2018-19 to FY 2022-23

Sl. No.	Name of Station	Capacity (MW)	Normative O&M Expense	Normative O&M Expense /MW	Escalation Rate / Annum	Escalated O&M Exp				
				At base FY 2012-13		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Serlui 'A'	1.00	25	25	5.72%	34.90	36.90	39.01	41.24	43.60
2	Tuirivang	0.30	25	7.5	5.72%	10.47	11.07	11.70	12.37	13.08
3	Khawiva	1.05	25	26.25	5.72%	36.65	38.75	40.96	43.31	45.78
4	Tuipui	0.50	25	12.5	5.72%	17.45	18.45	19.51	20.62	21.80
5	Maicham-I	2.00	25	50	5.72%	69.81	73.80	78.02	82.49	87.21
6	Teirei	3.00	25	75	5.72%	104.71	110.70	117.04	123.73	130.81
7	Tuipanglui	3.00	25	75	5.72%	104.71	110.70	117.04	123.73	130.81
8	Kau-Tlabung	3.00	25	75	5.72%	104.71	110.70	117.04	123.73	130.81
9	Lamsial	0.50	25	12.5	5.72%	17.45	18.45	19.51	20.62	21.80
10	Maicham-II	3.00	25	75	5.72%	104.71	110.70	117.04	123.73	130.81

Commission's Analysis

P & ED Mizoram in its additional information has stated that Serlui A SHP is defunct. Tuirivang SHP, Teirei SHP, Tuipanglui SHP are under R & M . As such the Commission has not considered O & M expenses to above 4 stations. For the balance 6 stations normative O & M expenses projected by the P & ED are approved as detailed in table below.

Table 12. 8: O & M expenses approved by the Commission for Control Period FY 2018-19 to FY 2022-23

(Rs. Crore)

Sl. No.	Name of Station	Capacity (MW)	Normative O&M Expense /MW	Normative O&M Expense /MW	Escalation Rate / Annum	Escalated O&M Exp				
				At base FY 2012-13		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Khawiva	1.05	0.25	26.25	5.72%	0.37	0.39	0.41	0.43	0.46
2	Tuipui	0.50	0.25	12.5	5.72%	0.37	0.39	0.41	0.43	0.46
3	Maicham-I	2.00	0.25	50	5.72%	0.70	0.74	0.78	0.82	0.87
4	Kau-Tlabung	3.00	0.25	75	5.72%	1.05	1.11	1.17	1.24	1.31
5	Lamsial	0.50	0.25	12.5	5.72%	0.17	0.18	0.20	0.21	0.22
6	Maicham-II	3.00	0.25	75	5.72%	1.05	1.11	1.17	1.24	1.31
7	Total	10.05	1.50	251.25	0.34	3.71	3.92	4.14	85.55	4.63

The Commission approves normative O & M expenses as detailed supra during the MYT Control period FY 2018-19 to FY 2022-23

12.6 Depreciation

Petitioner's Submission

Depreciation has been calculated in accordance with the regulation 15 of the JERC for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2010 along with amendments. The depreciation of the SHPs for the control period is provided below:

Tables 12. 9: Calculation of Depreciation for FY 2018-19 projected by P & ED Mizoram
(Rs. Lakhs)

Sl. No.	Name of Station	Date of COD	Capital Cost	No. of Years since COD	Balance Useful Life	Depreciation /year upto 12th Year	Depreciation from 13th Year	Depreciation for 2018-19
1	Khawiva	08.12.1988	863.15	30	5	45.29	10.15	10.15
2	Tuipui	15.12.1991	411.03	27	8	21.57	4.83	4.83
3	Maicham-I	05.01.1996	1644.10	22	13	86.27	19.33	19.33
4	Kau-Tlabung	05.05.2005	2466.16	13	22	129.40	28.99	28.99
5	Lamsial	26.08.2008	411.03	10	25	21.57	4.83	21.57
6	Maicham-II	11.11.2009	2466.16	9	26	129.40	28.99	129.40

**Table 12. 10: Calculation of Depreciation for FY 2019-20 projected by P & ED Mizoram
(Rs. Lakhs)**

Sl. No.	Name of Station	Date of COD	Capital Cost	No. of Years since COD	Balance useful Life	Depreciation /year upto 12th yr	Depreciation from 13th yr	Depreciation for 2019-20
1	Khawiva	08.12.1988	863.15	31	4	45.29	10.15	10.15
2	Tuipui	15.12.1991	411.03	28	7	21.57	4.83	4.83
3	Maicham-I	05.01.1996	1644.10	23	12	86.27	19.33	19.33
4	Kau-Tlabung	05.05.2005	2466.16	14	21	129.40	28.99	28.99
5	Lamsial	26.08.2008	411.03	11	24	21.57	4.83	21.57
6	Maicham-II	11.11.2009	2466.16	10	25	129.40	28.99	129.40

**Table 12. 11: Calculation of Depreciation for FY 2020-21 projected by P & ED
(Rs. Lakhs)**

Sl. No.	Name of Station	Date of COD	Capital Cost	No. of Years since COD	Balance useful Life	Depreciation /year upto 12th yr	Depreciation from 13th yr	Depreciation for 2020-21
1	Khawiva	08.12.1988	863.15	32	3	45.29	10.15	10.15
2	Tuipui	15.12.1991	411.03	29	6	21.57	4.83	4.83
3	Maicham-I	05.01.1996	1644.10	24	11	86.27	19.33	19.33
4	Kau-Tlabung	05.05.2005	2466.16	15	20	129.40	28.99	28.99
5	Lamsial	26.08.2008	411.03	12	23	21.57	4.83	21.57
6	Maicham-II	11.11.2009	2466.16	11	24	129.40	28.99	129.40

**Table 12. 12: Calculation of Depreciation for FY 2021-22 projected by P & ED
(Rs. Lakhs)**

Sl. No.	Name of Station	Date of COD	Capital Cost	No. of Years since COD	Balance useful Life	Depreciation /year upto 12th yr	Depreciation from 13th yr	Depreciation for 2021-22
1	Khawiva	08.12.1988	863.15	33	2	45.29	10.15	10.15
2	Tuipui	15.12.1991	411.03	30	5	21.57	4.83	4.83
3	Maicham-I	05.01.1996	1644.10	25	10	86.27	19.33	19.33
4	Kau-Tlabung	05.05.2005	2466.16	16	19	129.40	28.99	28.99
5	Lamsial	26.08.2008	411.03	13	22	21.57	4.83	4.83
6	Maicham-II	11.11.2009	2466.16	12	23	129.40	28.99	129.40

Table 12. 13: Calculation of Depreciation for FY 2022-23 projected by P & ED
(Rs. Lakhs)

Sl. No.	Name of Station	Date of COD	Capital Cost	No. of Years since COD	Balance useful Life	Depreciation /year upto 12th yr	Depreciation from 13th yr	Depreciation for 2022-23
1	Serlui 'A'	24.04.1984	822.05	38	0	43.13	9.66	0.00
2	Tuirivang	14.08.1989	246.62	33	2	12.94	2.90	2.90
3	Khawiva	08.12.1988	863.15	34	1	45.29	10.15	10.15
4	Tuipui	15.12.1991	411.03	31	4	21.57	4.83	4.83
5	Maicham-I	05.01.1996	1644.10	26	9	86.27	19.33	19.33
6	Teirei	12.10.1999	2466.16	23	12	129.40	28.99	28.99
7	Tuipanglui	17.12.2004	2466.16	18	17	129.40	28.99	28.99
8	Kau-Tlabung	05.05.2005	2466.16	17	18	129.40	28.99	28.99
9	Lamsial	26.08.2008	411.03	14	21	21.57	4.83	4.83
10	Maicham-II	11.11.2009	2466.16	13	22	129.40	28.99	28.99

Commission's Analysis

As verified in respect of Maichen II SHP total depreciation for FY 2018-19 to FY 2021-22 is erroneously furnished as Rs. 129.40 Lakhs instead Rs. 28.99 Lakhs and 10 % of depreciation is furnished Rs. 12.94 Lakhs instead Rs. 2.90 Lakhs. The mistake is now rectified. Further the P & ED Mizoram in its additional information has furnished that Selui A SHP is defunct; Tuirivang SHP, Teirei SHP and Tuipanglui SHP are under R & M since a long time. As such depreciation is not considered to the above four stations. So the 10 % depreciation to balance six stations for FY 2018-19 to FY 2022-23 is as detailed in the table below.

Table 12. 14: Depreciation approved by the Commission for FY 2018-19 to FY 2022-23

Sl. no	Name of the station	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Khawiva	0.010	0.010	0.010	0.010	0.010
2	Tuipui	0.005	0.005	0.005	0.005	0.005
3	Maicham –I	0.019	0.019	0.019	0.019	0.019
4	Kan-Tlabung	0.029	0.029	0.029	0.029	0.029
5	Lamsial	0.022	0.022	0.022	0.022	0.022
6	Maicham-II	0.029	0.029	0.029	0.029	0.029
7	Total	0.114	0.114	0.114	0.114	0.114

The Commission approves depreciation Rs. 0.114 Crore P.A during Control period FY 2018-19 to FY 2022-23

12.7 Return on equity Petitioner's submission

The Fixed Assets of P&ED are funded through the budgetary support by the Government of Mizoram and Grants and Aids through Financial Institutions under various schemes like RGGVY, APDRP etc. Approximately 90% of the funding is done through the Government funding/Grants. However, in line with the previous orders of the Hon'ble Commission in this regard Return on Equity has not been considered for computing the ARR for the control period.

Commission's Analysis

Under the circumstances explained supra the Commission has not considered return on equity during MYT Control period FY 2018-19 to FY 2022-23

The Commission approves ROE at Rs. NIL during Control period FY 2018-19 to FY 2022-23.

12.8 Interest on Working Capital

Petitioner's submission

Interest on working capital has been calculated in accordance with the regulation 17 of the JERC for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2010 along with amendments. The Interest on working capital of the SHPs for the control period is provided below:

**Table 12. 15 : Interest on Working Capital for the FY 2018-19 projected by P & ED
(Rs. Lakhs)**

Sl. No.	Name of Station	Operation & Maintenance Exp. For one Month	Receivables for two months	Maintenance Spares - 15% of O&M	Total	Interest (14.05%)
1	Serlui 'A'	2.91	6.47	5.24	14.62	2.05
2	Tuirivang	0.87	1.94	1.57	4.39	0.62
3	Khawiva	3.05	6.80	5.50	15.35	2.16
4	Tuipui	1.45	3.24	2.62	7.31	1.03

Sl. No.	Name of Station	Operation & Maintenance Exp. For one Month	Receivables for two months	Maintenance Spares - 15% of O&M	Total	Interest (14.05%)
5	Maicham-I	5.82	12.94	10.47	29.23	4.11
6	Teirei	8.73	19.42	15.71	43.85	6.16
7	Tuipanglui	8.73	19.42	15.71	43.85	6.16
8	Kau-Tlabung	8.73	19.42	15.71	43.85	6.16
9	Lamsial	1.45	3.53	2.62	7.60	1.07
10	Maicham-II	8.73	21.17	15.71	45.61	6.41

Table 12. 16: Interest on Working Capital for the FY 2019-20 projected by P & ED

(Rs. lakhs)

Sl. No.	Name of Station	Operation & Maintenance Exp. For one Month	Receivables for two months	Maintenance Spares - 15% of O&M	Total	Interest (14.05%)
1	Serlui 'A'	3.08	6.66	5.54	15.27	2.15
2	Tuirivang	0.92	2.05	1.66	4.63	0.65
3	Khawiva	3.23	7.17	5.81	16.22	2.28
4	Tuipui	1.54	3.42	2.77	7.72	1.08
5	Maicham-I	6.15	13.67	11.07	30.89	4.34
6	Teirei	9.23	20.50	16.61	46.33	6.51
7	Tuipanglui	9.23	20.50	16.61	46.33	6.51
8	Kau-Tlabung	9.23	20.50	16.61	46.33	6.51
9	Lamsial	1.54	3.71	2.77	8.01	1.13
10	Maicham-II	9.23	22.25	16.61	48.09	6.76

Table 12. 17 : Interest on Working Capital for the FY 2020-21 projected by P & ED

(Rs. Lakhs)

Sl. No.	Name of Station	Operation & Maintenance Exp. For one Month	Receivables for two months	Maintenance Spares - 15% of O&M	Total	Interest
		One Month	Two Months	15%		14.05%
1	Serlui 'A'	3.25	7.05	5.85	16.15	2.27
2	Tuirivang	0.98	2.16	1.76	4.90	0.69
3	Khawiva	3.41	7.57	6.14	17.13	2.41
4	Tuipui	1.63	3.61	2.93	8.16	1.15
5	Maicham-I	6.50	14.43	11.70	32.63	4.59
6	Teirei	9.75	21.64	17.56	48.95	6.88
7	Tuipanglui	9.75	21.64	17.56	48.95	6.88
8	Kau-Tlabung	9.75	21.64	17.56	48.95	6.88
9	Lamsial	1.63	3.90	2.93	8.45	1.19
10	Maicham-II	9.75	23.40	17.56	50.71	7.12

Table12. 18: Interest on Working Capital for the FY 2021-22 projected by P & ED
(Rs. Lakhs)

Sl. No	Name of Station	Operation & Maintenance Exp. For one Month	Receivables for two months	Maintenance Spares - 15% of O&M	Total	Interest (14.05%)
1	Serlui 'A'	3.44	7.45	6.19	17.07	2.40
2	Tuirivang	1.03	2.29	1.86	5.17	0.73
3	Khawiva	3.61	8.00	6.50	18.10	2.54
4	Tuipui	1.72	3.81	3.09	8.62	1.21
5	Maicham-I	6.87	15.23	12.37	34.48	4.84
6	Teirei	10.31	22.85	18.56	51.72	7.27
7	Tuipanglui	10.31	22.85	18.56	51.72	7.27
8	Kau-Tlabung	10.31	22.85	18.56	51.72	7.27
9	Lamsial	1.72	3.81	3.09	8.62	1.21
10	Maicham-II	10.31	24.61	18.56	53.48	7.51

Table12. 19 : Interest on Working Capital for the FY 2022-23 projected by P & ED
(Rs. Lakhs)

Sl. No.	Name of Station	Operation & Maintenance Exp. For one Month	Receivables for two months	Maintenance Spares - 15% of O&M	Total	Interest
		One Month	Two Months	15%		14.05%
1	Serlui 'A'	3.63	7.87	6.54	18.05	2.54
2	Tuirivang	1.09	2.41	1.96	5.47	0.77
3	Khawiva	3.82	8.45	6.87	19.13	2.69
4	Tuipui	1.82	4.02	3.27	9.11	1.28
5	Maicham-I	7.27	16.09	13.08	36.43	5.12
6	Teirei	10.90	24.13	19.62	54.65	7.68
7	Tuipanglui	10.90	24.13	19.62	54.65	7.68
8	Kau-Tlabung	10.90	24.13	19.62	54.65	7.68
9	Lamsial	1.82	4.02	3.27	9.11	1.28
10	Maicham-II	10.90	24.13	19.62	54.65	7.68

Commission's Analysis

Since Serlui A, Tuirivang, Teirei and Tuipanglui are not in operation, the Commission has not considered Interest on working capital for these four stations. For the balance six stations Interest on Working Capital is allowed as detailed in the table below.

**Table 12. 20: interest on Working Capital approved by the Commission for Control period
FY 2018-19 to FY 2022-23**

(Rs. Crore)

Sl. No	Station	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Khawiva	0.022	0.023	0.024	0.025	0.027
2	Tuipui	0.010	0.011	0.012	0.012	0.013
3	Maicham-I	0.041	0.043	0.046	0.048	0.051
4	Kau-Tlabung	0.062	0.065	0.069	0.073	0.073
5	Lamsial	0.011	0.011	0.012	0.012	0.013
6	Maicham-II	0.064	0.068	0.071	0.075	0.077
7	Total	0.210	0.221	0.234	0.245	0.254

The Commission approves interest on working capital during the Control period FY 2018-19 to FY 2022-23 as detailed supra.

12.9 Aggregate Revenue Requirement (ARR)

Petitioner's submission

The ARR of the SHPs has been arrived at based on the components of tariff as detailed in the previous sections. The table below provides the ARR of 10 SHPs.

Table 12. 21: Annual Revenue Requirement for FY 2018-19 projected by P & ED

(Rs lakh)

Head of Expense	Serlui 'A'	Tuirivang	Khawiva	Tuipui	Maicham-I	Teirei	Tuipanglui	Kau-Tlabung	Lamsial	Maicham-II	Total
O&M Expense	34.90	10.47	36.65	17.45	69.81	104.71	104.71	104.71	17.45	104.71	605.60
Return on Equity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	0.97	0.29	1.01	0.48	1.93	2.90	2.90	2.90	2.16	12.94	28.48
Interest on Working Capital	2.05	0.62	2.16	1.03	4.11	6.16	6.16	6.16	1.07	6.41	35.92
Total	37.92	11.38	39.82	18.96	75.85	113.77	113.77	113.77	20.68	124.06	669.99

Table 12. 22: Annual Revenue Requirement for FY 2019-20 projected by P & ED

(Rs. lakh)

Head of Expense	Serlui 'A'	Tuirivang	Khawiva	Tuipui	Maicham-I	Teirei	Tuipanglui	Kau-Tlabung	Lamsial	Maicham-II	Total
O&M Expense	36.90	11.07	38.75	18.45	73.80	110.70	110.70	110.70	18.45	110.70	640.24
Return on Equity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	0.00	0.29	1.01	0.48	1.93	2.90	2.90	2.90	2.16	12.94	27.51
Interest on Working Capital	2.15	0.65	2.28	1.08	4.34	6.51	6.51	6.51	1.13	6.76	37.91
Total	39.05	12.01	42.04	20.02	80.07	120.11	120.11	120.11	21.73	130.40	705.66

Table 12. 23: Annual Revenue Requirement for FY 2020-21 projected by P & ED

(Rs lakh)

Head of Expense	Serlui 'A'	Tuirivang	Khawiva	Tuipui	Maicham-I	Teirei	Tuipanglui	Kau- Tlabung	Lamsial	Maicham-II	Total
O&M Expense	39.01	11.70	40.96	19.51	78.02	117.04	117.04	117.04	19.51	117.04	676.86
Return on Equity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	0.00	0.29	1.01	0.48	1.93	2.90	2.90	2.90	2.16	12.94	27.51
Interest on Working Capital	2.27	0.69	2.41	1.15	4.59	6.88	6.88	6.88	1.19	7.12	40.04
Total	41.28	12.68	44.38	21.14	84.54	126.81	126.81	126.81	22.85	137.10	744.41

Table 12. 24: Annual Revenue Requirement for FY 2021-22 projected by P & ED

(Rs lakhs)

Head of Expense	Serlui 'A'	Tuirivang	Khawiva	Tuipui	Maicham-I	Teirei	Tuipanglui	Kau- Tlabung	Lamsial	Maicham-II	Total
O&M Expense	41.24	12.37	43.31	20.62	82.49	123.73	123.73	123.73	20.62	123.73	715.57
Return on Equity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	0.00	0.29	1.01	0.48	1.93	2.90	2.90	2.90	0.48	12.94	25.84
Interest on Working Capital	2.40	0.73	2.54	1.21	4.84	7.27	7.27	7.27	1.21	7.51	42.25
Total	43.64	13.39	46.86	22.32	89.26	133.90	133.90	133.90	22.32	144.18	783.66

Table 12. 25: Annual Revenue Requirement for FY 2022-23 projected by P & ED

(Rs.Lakh)

Head of Expense	Serlui 'A'	Tuirivang	Khawiva	Tuipui	Maicham-I	Teirei	Tuipanglui	Kau- Tlabung	Lamsial	Maicham-II	Total
O&M Expense	43.60	13.08	45.78	21.80	87.21	130.81	130.81	130.81	21.80	130.81	756.50
Return on Equity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	0.00	0.29	1.01	0.48	1.93	2.90	2.90	2.90	0.48	2.90	15.80
Interest on Working Capital	2.54	0.77	2.69	1.28	5.12	7.68	7.68	7.68	1.28	7.68	44.38
Total	46.14	14.14	49.48	23.56	94.26	141.38	141.38	141.38	23.56	141.38	816.69

Commission's analysis

Since the following four stations are either defunct or under R & M and hence not generating power the Commission has not considered ARR for following stations.

Serlui-A	Defunct
Tuirivang	R & M
Teirei	R & M
Tuipanglui	R & M

In respect of Maicham-II there is error in depreciation. So the correct ARR for this station during MYT Control period FY 2018-19 to FY 2022-23 is as detailed in the table below.

Table 12. 26: ARR of Maicham II approved by the Commission**(Rs. Crore)**

Sl. No	Head of expenditure	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	O & M EXPENSES	1.050	1.111	1.170	1.270	1.310
2	Depreciation	0.029	0.029	0.029	0.029	0.029
3	Interest on working capital	0.064	0.068	0.071	0.0750	0.077
4	Total	1014	1021	1.27	1.34	1.42

Thus considering this ARR by P & ED Mizoram barring the ARR of the above four stations and the revised ARR of Maicham-II

The consolidated ARR of the six working stations are as detailed below in the table.

Table 12. 27: ARR of six Generating stations, approved by the Commission during Control period FY 2018-19 to FY 2022-23**(Rs. Crore)**

Sl. No	Station	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Khawiva	0.40	0.42	0.44	0.47	0.50
2	Tuipui	0.19	0.20	0.21	0.22	0.24
3	Maicham-I	0.76	0.80	0.85	0.89	0.94
4	Kau-Tlabung	1.14	1.20	1.27	1.34	1.41
5	Lamsial	0.21	0.22	0.23	0.22	0.24
6	Maicham-II	1.14	1.20	1.27	1.34	1.42
7	Total	3.84	4.04	4.27	4.48	4.75

The Commission approves ARR for the above six generating stations for the Control period FY 2018-19 to FY 2022-23 as detailed supra.

12.10 Capacity Utilization factor

Petitioner’s submission

Capacity Utilisation Factor has been calculated in accordance with the regulation 30 of the JERC for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2010 along with amendments. The extract of the regulation is reproduced below:

Capacity Utilisation factor for the small hydro projects in Manipur and Mizoram shall be 45%. Explanation: For the purpose of this Regulation normative CUF is net of free power to the home state if any, and any quantum of free power if committed by the developer, over and above the normative CUF shall not be factored into the tariff

Generation of SHP at the CUF of 45% is provided in the table below:

Table 12. 28: Total Generation

Sl. No.	Name of Station	Installed Capacity (MW)	Generation at 45% CUF
1	Serlui 'A'	1.00	3.942
2	Tuirivang	0.30	1.1826
3	Khawiva	1.05	4.1391
4	Tuipui	0.50	1.971
5	Maicham-I	2.00	7.884
6	Teirei	3.00	11.826
7	Tuipanglui	3.00	11.826
8	Kau-Tlabung	3.00	11.826
9	Lamsial	0.50	1.971
10	Maicham-II	3.00	11.826

Commission’s Analysis

The P & ED Mizoram in its additional information states that the following stations are not in operation for the reasons notified against each

Sl. No	Stations	Remarks
1	Serlui-A	Defunct
2	Tuirivang	R & M
3	Teirei	R & M
4	Tuipanglui	R & M

Since the above four SHPS are not generating power barring the 4 stations the Commission approves capacity utilization factor of 4.5% for Generation for the six stations in operation for Control period FY 2018-19 to FY 2022-23.

12.11 Auxiliary Consumption

Petitioner's submission

Auxiliary Consumption has been calculated in accordance with the regulation 30 of the JERC for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2010 along with amendments. The extract of the regulation is reproduced below:

Normative auxiliary consumption for the small hydro projects shall be 1.0%

Normative Auxiliary consumption and Net generation is calculated in the table below:

Table 12. 29: Normative Auxiliary Consumption projected by P & ED

Sl. No.	Name of Station	Generation at 45% CUF	Auxiliary Consumption @1%	Net Generation
1	Serlui 'A'	3.942	0.039	3.903
2	Tuirivang	1.183	0.012	1.171
3	Khawiva	4.139	0.041	4.098
4	Tuipui	1.971	0.020	1.951
5	Maicham-I	7.884	0.079	7.805
6	Teirei	11.826	0.118	11.708
7	Tuipanglui	11.826	0.118	11.708
8	Kau-Tlabung	11.826	0.118	11.708
9	Lamsial	1.971	0.020	1.951
10	Maicham-II	11.826	0.118	11.708

Commission's analysis

The P & ED Mizoram in its additional information states that the following stations are not in operation for the reasons notified against each

Sl. No	Stations	Remarks
1	Serlui-A	Defunct
2	Tuirivang	R & M
3	Teirei	R & M
4	Tuipanglui	R & M

The Commission approves auxiliary consumption and net generation for the balance six stations in operation for the Control period FY 2018-19 to FY 2022-23

12.12 Generation Tariff

Petitioner's submission

Generation tariff of the SHPs has been calculated on the basis of the ARR and net generation of the SHPs. Tariff per unit for the 10 SHPs for the FY 2018-19 is provided in the table below:

Table 12. 30 Tariff for Generation projected by P & ED

Sl. No.	Name of Station	Net Generation (In MUs)	ARR (Rs. in Lakhs)	Tariff
1	Serlui 'A'	3.903	37.92	0.97
2	Tuirivang	1.171	11.38	0.97
3	Khawiva	4.098	39.82	0.97
4	Tuipui	1.951	18.96	0.97
5	Maicham-I	7.805	75.85	0.97
6	Teirei	11.708	113.77	0.97
7	Tuipanglui	11.708	113.77	0.97
8	Kau-Tlabung	11.708	113.77	0.97
9	Lamsial	1.951	20.68	1.06
10	Maicham-II	11.708	124.06	1.06

Commission's Analysis

The P & ED Mizoram in its additional information states that the following stations are not in operation for the reasons notified against each

Sl. No	Stations	Remarks
1	Serlui-A	Defunct
2	Tuirivang	R & M
3	Teirei	R & M
4	Tuipanglui	R & M

Barring the above four stations Tariff for generation for the balance six stations are considered as detailed in table below.

Table 12. 31: Tariff for Generation

Sl. No.	Name of Station	Net Generation (In MUs)	ARR (Rs. Rs. Cr)	Tariff Rs/KWH
1	Khawiva	4.098	0.40	0.97
2	Tuipui	1.951	0.19	0.97
3	Maicham-I	7.805	0.76	0.97
4	Kau-Tlabung	11.708	1.14	0.97
5	Lamsial	1.951	0.21	1.06
6	Maicham-II	11.708	1.24	1.06

The Commission approves Tariff for generation for the above six generating stations as noted against each during FY 2018-19 to FY 2022-23.

12.13 Infirm power from Serlui 'B' SHP

Petitioner's submission

As submitted in para 4.1 above since the Serlui has not commissioned till date the same has not been considered for the calculation of Capital cost, ARR & Generation Tariff thereof in accordance with The Joint Electricity Regulatory Commission for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2010 read along with First Amendments Regulations, 2014.

However, the SHP is generating infirm power and the same is being injected in the state grid. The details of energy supplied from the SHP & the rate for the energy charge considered for arriving at the total cost of generation of the generation function is detailed in the subsequent sections.

The energy generated from the Serlui B SHP is provided in the table below.

Table 12. 32: Generation from Serlui 'B' projected by P & ED for Control period FY 2018-19 to FY 2022-23 (In MUs)

Sl. No.	Name of Station	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Gross Generation	47.30	47.30	47.30	47.30	47.30
2	Auxiliary Consumption	0.95	0.95	0.95	0.95	0.95

3	Net Generation	46.35	46.35	46.35	46.35	46.35
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Tables 12. 33: Charges for Serlui 'B' projected by P & ED for Control period FY 2018-19 to FY 2022-23

(Rs. Lakhs)

Sl. No.	Name of Station	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Net Generation	46.35	46.35	46.35	46.35	46.35
2	Rate	4.00	4.00	4.00	4.00	4.00
3	Total Energy Charge	185.42	185.42	185.42	185.42	185.42

Commission's Analysis

The projection of P & ED Mizoram that the Serlui B which is not yet commissioned but generating infirm power of 47.30 MU P.A (gross) and Auxiliary consumption of 0.95 MU and 46.35 MU (net) Per Annum are considered by the Commission. But the energy charges of Rs. 185.42 Lakhs projected by P & ED shall be Rs. 1854 Lakhs but not 185.42 which is an error in calculation. The tariff of Rs. 4/KWH projected by P & ED is on high side. The Commission considers it reasonable to consider the highest tariff among the six stations in operation i.e. Rs 1.06/KWH. Accordingly the total energy charges to Serlui 'B' are as detailed in table below.

Table 12. 34: Energy charges for Serlui 'B' for FY 2018-19 to FY 2022-23 approved by the Commission

(Rs. Crore)

Sl. No	Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Net Generation (MU)	46.35	46.35	46.35	46.35	46.35
2	Tariff (Rs/KWH)	1.06	1.06	1.06	1.06	1.06
3	Total E.C (Rs. Cr)	4.91	4.91	4.91	4.91	4.91

The Commission approves energy charges from Serlui B during MYT Control period FY 2018-19 to FY 2022-23 at Rs. 4.91 Cr Per Annum as against Rs. 1.85 Cr projected by P & ED.

12.14 Aggregate Revenue Requirement (ARR)**Petitioner's submission**

Total ARR of the Generation function comprising of the 10 commissioned SHPs and Serlui 'B' SHP which is generating infirm power is detailed in the table below:

Table 12. 35: ARR of Generation Function projected by P & ED for Control period FY 2018-19 to FY 2022-23

(Rs. Lakhs)

Sl. No.	Name of Project	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Serlui 'A'	37.92	39.05	41.28	43.64	46.14
2	Tuirivang	11.38	12.01	12.68	13.39	14.14
3	Khawiva	39.82	42.04	44.38	46.86	49.48
4	Tuipui	18.96	20.02	21.14	22.32	23.56
5	Maicham-I	75.85	80.07	84.54	89.26	94.26
6	Teirei	113.77	120.11	126.81	133.90	141.38
7	Tuipanglui	113.77	120.11	126.81	133.90	141.38
8	Kau- Tlabung	113.77	120.11	126.81	133.90	141.38
9	Lamsial	20.68	21.73	22.85	22.32	23.56
10	Maicham-II	124.06	130.40	137.10	144.18	141.38
11	Serlui 'B'	185.42	185.42	185.42	185.42	185.42
	Total	855.41	891.07	929.83	969.08	1002.10

Commission's Analysis

The P & ED Mizoram in its additional information states that the following stations are not in operation for the reasons notified against each

Sl. No	Stations	Remarks
1	Serlui-A	Defunct
2	Tuirivang	R & M
3	Teirei	R & M
4	Tuipanglui	R & M

Barring the above four stations the ARR for the balance six stations in operation and Serlui 'B' (not yet commissioned) approved by the Commission are as detailed below:

Table 12. 36: ARR for Generation Function projected by P & ED for Control period FY 2018-19 to FY 2022-23

(Rs. Crore)

Sl. No	Name of the station	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
1	Khawiva	0.40	0.42	0.44	0.47	0.50
2	Tuipui	0.19	0.20	0.21	0.22	0.24
3	Maicham-I	0.76	0.80	0.85	0.89	0.94
4	Kau- Tlabung	1.14	1.20	1.27	1.34	1.41
5	Lamsial	0.21	0.22	0.23	0.22	0.24
6	Maicham-II	1.14	1.20	1.27	1.34	1.41
7	Serlui 'B'	4.91	4.91	4.91	4.91	4.91
	Total	8.75	8.93	9.18	9.39	9.65

13 Directives

13.1 General

While examining the information and data contained in the proposed ARR and Tariff Petition for the FY 2018-19, 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 P&ED require substantial improvement within a specified time frame.

Similar situation was noticed in the ARR & Tariff petition for the FY 2018-19. The Commission had observed that while there is ample scope for reducing cost and increasing internal efficiency in the operation of the department, serious efforts appear to be lacking. It is in the above context that 14 directives were given for compliance in the Tariff Order 2010-11 out of which some directives were fully complied with. Seven fresh Directives were issued in tariff order for FY 2012-13. The Commission expected that P&ED 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 seriousness with which the directives were issued by the Commission does not appear to have been realized by the P&ED Mizoram.

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

Directive 4: Management Information System

The PED has not maintained proper data in respect of sales, revenue and revenue expenses as also the category wise / slab wise number of consumers, connected load / demand etc. for proper analysis of the past data based on actual and estimate

of proper projections for consideration in the ARR and Tariff Petition.

The PED is directed to take steps to build credible and accurate data base and management information system to meet the requirements for filing ARR & Tariff Petition as per regulatory requirement and also suit the Multi Year Tariff principles which the Commission may consider at the appropriate time under Regulation 11 of JERC (Terms and Conditions for Determination of Tariff) Regulations, 2008. The formats software and hardware may synchronize with the Regulatory Information and Management System (RIMS) circulated by Central Electricity Regulatory Commission (CERC).

The PED should get a study conducted on computerized data base, on electronic media and shall give a proposal as to how the department proposes to achieve this.

The PED is directed to provide age wise analysis before the next ARR and initiate measures to liquidate the arrears by 31/03/2011.

Compliance:

Manual data collection is being practised by the Department. Moreover, Customer Care Centre established under R-APDRP is expected to function as Call Centre as well as Data collecting centre for the whole state of Mizoram. After making the Customer Call Centre functioning, Management Information System is expected to come into existence automatically.

Commission's comment

The object of MIS is to know about the amount billed and collected and replacement of defective meters, new connection released etc should come to the Head quarters through online. Unless this is developed, the purpose will not be served. The directive is not fully complied.

Directive 5: Pilferage of Energy

The PED has furnished the T&D losses at 41.7% during 2009-10 and projected the losses at 39.5% for 2010-11. The Department has not segregated the losses into technical and commercial losses. It is feasible that the losses projected may include commercial losses on account of pilferage.

Pilferage of energy may be by illegal tapings from electrical lines, tampering meters etc. The Commission feels that there is need to launch an extensive drive to revoke illegal connections, if any, check meter tampering replacement of defective meters proper account of consumer of un-metered services and keep constant vigil so that corrective measures could be taken to reduce the AT & C losses. Requisite action may be taken as per the provisions under sections 135 and 138 of Electricity Act, 2003.

The PED is directed to furnish an action plan to arrest the pilferage.

Compliance

Theft report for FY 2016-17 and along with 1st and 2nd quarter of FY 2017-18 is reproduced below

<u>DETAILS OF THEFT OF ENERGY for FY 2016-17</u>		
No of cases where inspection were carried out		2359
No of cases where theft or misuse detected		100
a)	Meter by-pass	68
b)	Hooking	12
c)	Unauthorized extension	12
d)	Tampering	8
Total (a+b+c+d)		100
Estimate quantity of energy pilfered		8172
No of cases where sentences were imposed		0
Quantity of energy for which cost were recovered (kWh)		8172
Amount realized (Rs)		6537 6
<u>DETAILS OF THEFT OF ENERGY for 1st & 2nd QUARTER for FY 2017-18</u>		
No of cases where inspection were carried out		7954
No of cases where theft or misuse detected		24
a)	Meter by-pass	4
b)	Hooking	2
c)	Unauthorized extension	7
d)	Tampering	0
Total (a+b+c+d)		13
Estimate quantity of energy pilfered		670
No of cases where sentences were imposed		0
Quantity of energy for which cost were recovered (kWh)		670
Amount realized (Rs)		3795

To reduce theft and unauthorised use of energy, Vigilance Committee was constituted

covering 234 no of areas, villages, towns and cities as per minutes of 19th State Advisory Meeting on 08.02.2017 in which Chairman and Secretary are from the Department and other members are from Non-Government Organisation and prominent citizens. But, unfortunately, Central YMA issued an instruction to all its Branch offices that such participation in Vigilance Committee without the consent from the Central YMA must not be done. As such, the Vigilance Committee cannot function at present as expected. It is intended to liaise Central YMA to allow its members to participate in the Committee for successful functioning.

Commission's comment

Action may be initiated under Section 35 of Electricity Act 2003.

The directive is not fully complied with

Directive 6: Metering of Consumer installations / Replacement of non- functional defective meters and providing meters to un-metered connections.

It is observed that there are several defective meters remained unchanged for years together and 4023 services are without meters. The PED must not encourage un-metered supply.

Under section 55 (1) of Electricity Act, 2003, no licensee shall supply electricity after expiry of two years from the appointed date except through installation of correct meter in accordance with the regulation to be made in this behalf by the Authority. Accordingly metering is required to be done in line with Central Electricity Authority (installations and operation of meters) Regulations 2006 to all consumers.

Power & Electricity Department is directed to provide meters to all un-metered consumers.

The present status of metering and action plan to meter the un-metered services and replacement of defective meters shall be reported to the Commission before 31st March 2011.

In addition the electromagnetic meters in service, particularly, in high value domestic, commercial and industrial consumers shall be replaced with static meters as per the

Regulations of CEA to have correct consumption recorded.

The number and category of consumer installations in which the electromagnetic meters are in service and the action plan to replace such meters with static meters shall be reported by 31st March 2011.

Power & Electricity Department is directed to report to the Commission by 31st March 2011 the details of such defective meters category-wise in the system as on 31.12.2010, with an action plan to replace them.

Compliance

To reduce unmetered supply and to achieve 100% metering, all non-MDI consumer meters under RAPDRP towns are decided to be replaced by MDI meters procured under R-APDRP scheme free of cost. However, it is not insisted to use MDI meter to consumers of rural area at present. Replaced working electronic consumer meter within R-APDRP town area will be set aside for replacement of damaged meters of rural consumers and street light meter for the time being to achieve higher percentage on consumer metering. Notice to this effect has already been circulated vide this office letter No T-23037/01/16-EC (P)/Com/32 dated, 17.09. 2017.

Commission's comments

As against 2,18,766 LT connections as on 31.03.2017 only 207, 303 connections are having meters and 10,963 connections are without meters. During 2017-18 only 420 meters fixed. Connections of supply without meters are a serious lapse. This may be attended on priority and report compliance by 30.06.2018.

Directive 7: Contribution by Consumers for Capital investment

It is submitted that the cost of Asset reflected in the petition and for calculation of depreciation does not include any consumer contribution. Further while calculating depreciation for ARR in the petition, consumer's contribution has to be excluded and only net cost to be considered. Appropriate action may be taken to maintain books of accounts as per ARR Format-23.

Compliance

It is submitted that P&ED has already submitted earlier that Assets reflected in the

petition and for calculation of depreciation does not include any consumer contribution. If any asset is created in future out of contribution of consumers the same shall be submitted to the Hon'ble Commission.

In view of the above it is requested that the directive may dropped.

Commission's comment

The directive is fully complied with

Directive 8: Transmission and Distribution Losses

The PED has projected the transmission and distribution loss at 39.5% (35% Distribution loss + 4.5% Transmission losses) for the year 2010-11.

The PED is directed to get Energy Audit conducted by providing meters on all the feeders (132 kV, 66 kV, and 11 kV) and at distribution transformers to identify the high loss areas and take appropriate measures to reduce both technical and commercial losses to the level fixed by the Commission. The PED shall also comply with loss reduction trajectory for T&D losses for the next three years.

The investment required to reduce the losses shall be included in the investment plan for augmentation of T&D system be submitted to the Commission. Effective technical and administrative measures shall be taken to reduce the commercial losses. The action plan for energy audit and loss reduction measures shall be furnished to the Commission by June 2011.

Compliance

To locate feeders having high losses, the Department took initiative steps by introducing Circle-wise Energy Audit and Accounting in which all circles input points and output points are metered. But, it is noted with surprise that some of the meter readings show doubtful figures and hence considered not reliable enough for proper analysis of Circle performance.

A remedial action to solve the above problem is proposed in which reliability and healthiness of all feeder meters and metering equipments must be ensured from 11kV above. By giving constant effort in analysing the performance of all feeder meters and metering equipments, it is expected to have reliable analysis on the energy consumption not only Circles-wise, but also feeder-wise, which will ultimately enable

the Department in narrowing high loss area so that reduction of T&D loss can be achieved with proper approach.

To initiate the remedial measures mentioned above, circular has been made vide this office letter No T-23037/01/16-EC(P)/Com/20 dated 19.09.2017 to collect all damaged system meter and metering equipment from all Sub-stations. After receiving required information from site offices, all damaged system meters and metering equipments are to be replaced step by step depending upon the availability of fund so as to achieve reliable 100% system metering.

Commission's comments

The directive is not fully complied with.

Directive 9: Consumers bills

At present current Month consumption bill is being served to the consumer while taking meter reading of next Month, thereby collection postponed by one Month. It is high time to introduce spot billing with handheld computers and advance revenue realization by one Month. PED is directed to take action accordingly and report action taken by June 2011.

Commission should establish the consumer grievances redressal forum immediately And give wide publicity of functioning of the said forum and report compliance.

Compliance

It is intended to introduce spot billing system at Kolasib town as a pilot project in which spot billing machine compatible with optical port communication will be used to minimize human interface in meter reading. After successful implementation of spot billing at Kolasib, the same will be introduced throughout the state.

Commission's comments

Speedy action is required to introduce 100 % spot billing. The directive is partially attended.

Directive 10: Investment and Capping of Capital Expenditure

Annual Investment Plan should submit to the Commission. And approval of Commission should be obtained for all major capital works costing ₹5.00 crore

and above before execution of the works.

Compliance

P&ED has submitted actual capital expenditure & asset details for the last control period along with True-up petition, it is requested that the Hon'ble Commission may consider the actual capital expenditure during the period.

Commission's comments

The P & ED Mizoram has not fully understood the directive. The DPRS of major works costing above 5 Crore shall be submitted to Commission to accord approval.

The directive is not complied with

Directive 11: High Employee Cost of the Department

The employee cost projected by the PED is on very high side and alarming. PED is therefore directed to take measures to control the high.

Compliance

Despite constant expansion of power system network and implementation of new project which ultimately increase maintenance work within the department, the department is still striving to decrease number of working staff to reduce employee cost. It is now reduced to 4409 by the end of 2017-2018 which is likely to be further reduced to 4401 by the end of 2018-19 as tabulated below:

Sl. No	Particulars	No of employees at the beginning of		
		FY 2016-17 (Actual)	2017-18 (Actual)	2018-19 (Projected)
1	Regular Employees	1728	1675	1663
2	Contract Employees	2	2	NIL
3	Work charge	484	478	468
4	Muster Roll	2188	2253	2270
Total Employees		4402	4409	4401

As compared to 2011 figure, the number of staff is reduced by 241 in 2017-18. Also, the Department is trying to judiciously utilise the workforce by establishing its own Training Centre to increase the efficiency of the existing working staff.

Commission's comments

The directive is not complied fully.

Directive 12: Metering of H.T services with MD Indicators

Maximum Demand Meters should be provided for HT Consumers.

Compliance

As pointed out in response to Directive 6, it is intended that all non-MDI consumer meters under RAPDRP towns are to be replaced by MDI meters procured under R-APDRP scheme free of cost not only for HT consumers but also for all LT consumers.

Commission's comments

Installation of 100 % MDI meters to eligible connections should be completed on priority.

Directive 15: Contract Demand

With the introduction of two-part tariff in the Tariff Order of 2010-11 the consumers feel the impact of connected load in the Electricity bill is high. The PED stated that connected load and contract demand are the same in Mizoram. If so, the Commission has observed that the contract demand is high. PED is therefore directed to reassess the contract demand by December, 2014 and submit a report.

Compliance

Survey of all Consumers' Contract Demand has been newly initiated again with fresh instruction from head office of the Department vide letter No.T.23014/01/15-EC(P)/Com/78 dated 10.07. 2017, in which all consumers are informed in writing to submit application for fresh Contracted Load whoever is willing to do so. Time limit is also extended upto 31st December 2017 for submission of application for this purpose.

Commission's comments

This may be pursued on priority. The directive is partially complied.

Directive 16: Restructuring of Staff

PED has stated that the number of employee as on 31st March, 2012 is 4575. It is very

high. The Department however, has pleaded shortage of staff for poor performance. The Commission has observed that deployment of the existing staff is not rational. PED is directed to prepare a restructuring plan by 31st December, 2014 and submit a report.

Compliance

The Department is actively pursuing for the restructuring of the Department with segregation and placement of staff to facilitate on functional basis of the organisation into two entities namely Distribution wing for the first entity and Generation and Transmission wing for second entity. Rs 600.00 lakhs has been earmarked under NEDP scheme. The proposal for such approach has been submitted to Government of Mizoram and approval is being awaited.

Commission's comments

The directive is partially complied.

Directive 19: Survey and physical verification of consumer's connections.

To conduct survey and physical verifications to find out their actual connected load and category in which supply is being availed and to analyse category wise single phase and 3 phase connections with their annual energy consumption and status of meters. This work should be completed by 31.10.2014 and details be furnished in next tariff petition invariably.

Compliance

Constant effort has been given by the Department in checking consumer's connection. However, action taken report has not been received from field offices. The same may be submitted to the Commission after receiving the report in this regard.

Commission's comments

This should be attended on priority

Directive 20: Introduction of spot billing system

P&ED should introduce spot billing system at least in 9 (nine) towns covered under R-APDRP. This will also enable the consumers to pay up-to- date consumption bill.

Compliance

As pointed out under Directive 9, it is intended to introduce spot billing system at Kolasib town as a pilot project in which spot billing machine compatible with optical port communication will be used to minimize human interface in meter reading. After successful implementation of spot billing at Kolasib, the same will be introduced throughout the state.

Commission Comments

Since the directive is covered in directive 9. This is dropped

Directive 21: Introduction of Energy meter with MDI facility

By introducing MDI facility, consumer fixed charge can be levied based on the recorded maximum demand. It can avoid physical verification of connected load and to initiate action to regularise unauthorised loads if any.

Compliance

As pointed out under Directive 6, it is intended that all non-MDI consumer meters under RAPDRP towns are to be replaced by MDI meters procured under R-APDRP scheme free of cost for consumers. It is also intended to take same action for other towns under IPDS scheme.

Commission's Comments

The directive is partially complied.

Directive 23: To introduce Instrumental reading system of Energy Meter.

Most of the billing complaints are attributable to the reliability of Reader. P&ED is advised to introduce a system to avoid human interface in meter readings.

Compliance

As pointed out under Directive 9, it is intended to introduce spot billing system at Kolasib town as a pilot project in which spot billing machine compatible with optical port communication will be used to minimize human interface in meter reading. After successful implementation of spot billing at Kolasib, the same will be introduced throughout the state.

Commission's Comments

The directive is partially complied .

Directive 24: Scraping of Heavy fuel plants lying idle :-

Heavy fuel plant of capacity 22.93 MW at Bairabi is lying idle. P&ED is advised either to operate the generator or write off the plant and utilise the man power elsewhere in the Department for better output.

Compliance

As stated earlier, the Department has submitted its petition to CEA to declare Bairabi HFO based power plant as non operational. Response/approval has not been received till now. However, as per CEA bulletin published on 31.01.2017 for Installed Capacity of Power Utilities for Mizoram brought out zero (0) figure under Thermal. Copy of the bulletin is enclosed for reference.

Therefore, P&ED, Mizoram considered that an authority lies within the Central Government either to include or exclude from the statistical data. However, being an incoming point for Bairabi town with 3.15 MVA, 132/33 kV Transformer feeding 33/11kV Bairabi Sub-station, complete abandonment of the generating plant is considered not convenient at present.

Commission's Comments

If it is not desirable for abandonment the P & ED may operate the plant.

Directive 26: Power & Electricity Department should formulate Terms and Conditions (Guidelines) for levy of pole / tower usage charges for supporting or stringing of telephone cable, internet cable, visual media cable and placing of advertisement hoardings for approval of the Commission.

Compliance

The proposal is on the final stage of completion for obtaining approval from the State Government. The same will be submitted to the Commission after due approval from the Government.

Commission's Comments

The directive is partially complied with

Directive 27: Reconciliation of value of Gross Fixed Assets

As verified from schedule 19 of Annual accounts, the growth of GFA is as detailed in table below.

Growth of GFA gap of P&ED (Schedule 19)

(Rs. Crore)				
Sl. No	Particulars	FY 2010-11	FY 2011-12	FY 2012-13
1	Opening GFA	734.80	947.84	963.36
2	Additions during the year	213.04	155.17	59.06
3	Closing GFA	947.84	963.36	1022.42

But as verified from function wise break up of Net fixed Assets of P&ED as per schedule 20, the position is as detailed in table below.

Function wise breakup of Net fixed Assets of P&ED (Schedule 20)

(Rs. Crore)				
Sl. No	Assets	FY2010-11	FY2011-12	FY2012-13
1	Generation	329.98	306.81	286.30
2	Transmission	55.37	51.24	72.06
3	Distribution	146.40	149.36	166.72
4	Total	531.75	507.41	525.08

**The above discrepancies may be reconciled
Compliance**

It is submitted that P&ED has been submitting function wise audited fixed assets register for each financial year along with the audited accounts. In view of the same, it is requested that the directive may kindly be dropped.

Commission's Comments

The directive is fully complied with. Hence, dropped.

Directive 28: Segregation of expenses among generation, transmission and distribution.

From annual accounts of FY 2015-16 onwards all expenses such as employee cost, R&M expenses and Administration & General expenses and interest charges and depreciation shall be segregated among the three functions, viz. generation,

transmission and Distribution.

Compliance

It is submitted that P&ED has not been able to segregate the employee expense function wise. As pointed out under Directive 16, restructuring is being under process. After successful implementation of this restructuring scheme, it is expected that this Directive is automatically implemented. As such it is requested that the Hon’ble

Commission’s comment

The directive is not complied with

Directive 30: Reduction of billing slabs.

The Power & Electricity Department, Mizoram is directed to reduce the billing slabs of the following categories as indicated in the next ARR Petition for FY 2017-18.

1. Kutir Jyoti category from three to two slabs
2. LT Domestic category from four to three slabs
3. LT Non-domestic/commercial category from three to two slabs
4. LT Industrial category from two to one slab

Compliance

It is submitted that billing slabs are reduced in the present petition as follows:

Sl. No	Category	Existing Slabs	Proposed Slabs
1	KJ	1) First 15 kWh	1) First 20 kWh
		2) Next 15 kWh	2) 21-35 kWh
		3) Above 30 kWh	
2	Domestic (LT)	1) First 50 kWh	1) First 100 kWh
		2) Next 50 kWh	2) Next 100 kWh
		3) Next 100 kWh	3) Balance above 200 kWh
		4) Above 200 kWh	
3	Non Domestic/ Commercial (LT)	1) First 100 kWh	1) First 150 kWh
		2) Next 100 kWh	2) Balance above 150 kWh
		3) Above 200 kWh	

Commission's comment

The directive is partially complied with

Directive 32: Metering of all incoming and outgoing feeders from 132 kV to 11 kV

The P&ED, Mizoram is directed to provide meters to all feeders right from 132 kV to 11 kV both at incoming and outgoing ends before submission of next tariff petition for FY 2017-18. In respect of towns covered under RAPDRP metering of all the DT's and 11 kV feeders be completed by 30.09.2016. Sample study should be conducted to know the highest feeder loss and highest DT loss and report compliance. This will facilitate to measure the energy flow and to arrive at actual transmission losses. In the next ARR petition the actual transmission loss arrived based on feeder readings should be furnished.

Compliance

Compliance of the above is as mentioned under Directive 8.

Commission's comment

The directive is partially complied with

Directive 33: Installation of meters with MDI facility

P&ED should start using meters having MDI facility as CEA Meter Regulation, 2006. Contracted load/demand as well as connected load/demand should be recorded for consumers and fixed charge billed based on contracted load/demand. Contracted load/demand should be reviewed annually based on MDI record and supply code, 2013. All consumers under RAPDRP towns should be completed by 30.09.2016. Quarterly progress should be submitted to the Commission.

Compliance

It is submitted that total quantity of MDI meter installed so far is 9769 upto June 2017. The new approach of the department in installing MDI meter is as elaborated under Directives 6.

Commission's comment

The directive is partially complied with.

Directive 34: Updating of software programmes

P&ED should update computerised billing programmes to facilitate adoption of power factor rebate/surcharge as indicated in the tariff schedule.

Compliance

P&ED is taking steps for updating computerised billing programmes to facilitate adoption of power factor rebate/surcharge as indicated in the tariff schedule. The status report shall be submitted after the completion of the exercise.

Commission's comment

The directive is partially complied with.

Directive 37

The P&ED Mizoram is directed to conduct energy audit and AT&C Loss calculation division wise and furnish the data in the formats P2, P3 and P4 of JERC (M&M)(MYT) Regulations, 2014. If division wise is not feasible, circle wise may be submitted from next ARR.

Compliance:

Format P4 is being included in the MYT petition. Regretfully, format P2 and P3 are excluded unintentionally. It is hereby enclosed as additional information. Inadvertent omission in the petition is deeply regretted.

Commission's Comments

The Directive is fully complied with.

Directive 38

As per Form No.11 of JERC (M&M) (MYT) regulations, 2014, non tariff income comprises of:

Sl. No	Particulars
A	Income from Investment, Fixed and Call Deposits
1	Interest income from Investments other than Contingency Reserve
2	Interest on fixed deposits

Sl. No	Particulars
3	Interest from Banks other than Fixed Deposits
4	Interest on (any other items)
	Sub-Total
B	Other Non Tariff Income
1	Interest on loans and Advances to staff
2	Interest on loans and Advances to other Licensee
3	Interest on loans and Advances to Leasers
4	Interest on Advances to Suppliers / Contractors
5	Gain on Sale of Fixed Assets
6	Income/Fee/Collection against staff welfare activities
7	Miscellaneous receipts
8	Meter Rent
9	Recovery from theft of energy
10	Surcharge and Additional Surcharge
11	Incentive due to Securitisation of CPSU Dues
12	Misc. charges from consumers
13	Delayed payment surcharge from consumers
14	Any other subsidies / grants other than those u/s 65
15	Commission on collection of Electricity Duty for MCD
	Sub-Total
	Total (A+B)

The P&ED is directed to account for the income relating to above heads in the respective heads and furnish the information in the format without omissions from next ARR.

Compliance

It is submitted that while efforts were made to compile the details in the above prescribed format, the records were not maintained in the required format during the past years. P&ED shall maintain the records & compile the details in the required format from the next financial year and report the same from the next petition. The Hon'ble Commission may kindly consider the same.

Commission's Comment

The Directive is partially complied with.

Directive 40

The P&ED is directed to examine the feasibility of installation of pre-paid meters/smart

meters in a phased manner so as to improve revenue collection and reduce leakages in power consumption which will cause reduction in distribution losses.

Compliance:

Introduction of Prepaid-meter and Smart meter as per MOP Guideline is under consideration of the Department. DPR for pilot project in Aizawl city (Vaivakawn, Zarkawt and Babutlang Feeders) amounting to Rs 495.502 lakh was submitted to the Govt. of Mizoram on 20th November, 2017. Action is being taken for preparation of DPR for the whole state of Mizoram.

Commission's Comments

The Directive is partially complied.

NEW DIRECTIVES FOR FY 2018-19

Directive 41

P & ED is directed to submit Annual Performance Review (APR) for the whole year based on actuals for the first half year (i.e. from April to September) .

Directive 42

P&ED should request the State Govt. to allocate different heads of account for (i) Generation, (ii) Transmission and (iii) Distribution. Projection /Estimated expenditure should be classified accordingly or segregate the accounts by Department itself . Audited figure should also be in line with the allocated heads of account.

Directive 43

P & ED is directed to complete the system metering (metering at all voltage level) by Sept., 2018 to know the actual loss at various voltage levels i.e.

- 1) Transmission (above 33 kV)
- 2) Sub-Transmission (33 kV level)
- 3) Distribution (11 kV level)
- 4) Low tension (level).

Directive 44

In respect of Kurti Jyoti, Domestic, Non-Domestic/Commercial and Industry under LT Categories, P&ED is directed to submit reliable average slab-wise monthly energy consumption per consumer and number of consumer in each slab during the FY 2017-18 (Actual), FY 2018-19 (Revised Estimate based on last 6 months) and FY 2019-20

(Projected) alongwith the Petition for determination of ARR & Tariff for FY 2019-20 positively. The P&ED should take necessary action immediately to make available the above requisite data at the time of submission of the Petition mentioned above.

Directive 45

The P & ED is directed to submit from next petition onwards the energy in M.U and amounts in Rs. Crore invariably.

Directive 46

P&ED should strive to achieve AT&C Loss set in UDAY Scheme signed under nilateral agreement.

TARIFF SCHEDULE

Tariff Schedule

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

1.1 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

1.2 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.

1.3 Due date: Due date for bill payment through cheques shall be **3 days** in advance of the normal due date for bill payment, and the due date for bill payment through online bank transfer/credit card shall be **1 day** in advance of the normal due date for bill payment. The licensee shall ensure that the bill is delivered to the consumer by hand/post/courier at **least 10 days** prior to the due date of payment. (Clause 6.1 & 6.5 of the JERC for Manipur & Mizoram (Electricity Supply Code) Regulations, 2013 with latest amendments.)

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 staid period, shall be withdrawn and credited in next month’s bill.

1.8 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:

$$\text{Average transformer loss} = \frac{730 \times 1.0 \times C}{100} \text{ kVAh per month}$$

where C = KVA rating of the transformer. For conversion of kVAh to kWh or vice versa, latest power factor as per JERC (M&M) (Electricity Supply Code) Regulations, 2013 with latest amendment is to be used.

where C = KVA rating of the transformer. For conversion of kVAh to kWh or vice versa, latest power factor as per JERC (M&M) (Electricity Supply Code) Regulations, 2013 with latest amendment is to be used.

- (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.

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) / 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 35.00 per kW of contracted load. Sample 1;- Fixed charge = $1.24 \times 40 = \text{Rs } 49.60 = \text{Rs } 50.00$. Sample 2 ;- Fixed charge = $0.36 \text{ kW} (=0.50 \text{ kW after rounding}) \times 40 = \text{Rs. } 20.00$. Note Fraction of rupees is rounded as per clause 1.9 of this tariff schedule and load below 0.5 kW is rounded to 0.5 kW as per clause 1.8 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 LT 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 upto 50 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:- 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 recorded 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: KutirJyoti

Applicability: Applicable to all household who has been given connection under KutirJyoti Scheme or similar connection under any scheme of the State Government or Central Government for the benefit of poorer section for domestic purpose. If the total consumption in three months exceed 45 kWh, as per existing norms of KJS unless superseded by other new norms, 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 norms specified by the competent authority from time to time.

Tariff Rates:

a) Fixed charge : Rs 15.00 per month per connection.

b) Energy charge per month:-

1) First 20 kWh	:	@ Rs 1.75 per kWh
2) >20 kWh	:	@ Rs 2.40 per kWh

Note: 1- if the total consumption of any consecutive three months is more than 45 kWh, the consumer shall be re-categorized/converted under normal domestic category permanently from the very 1st/2nd/3rd month of that consecutive three months, if the total unit consumed exceeds the specified limit of 45 kWh from that instance and the bill be served as domestic category. (clause 4.90 of the JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013 with latest amendments may be referred to)

Note 2: In case a Kutir Jyoti /BPL consumer gets converted to a domestic consumer, the re-categorised/converted consumer shall be required to deposit load security/meter security as applicable for domestic consumers but should not contradict clause 5.9 of the JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013 with latest amendments.

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 tariff is also applicable to orphanage/recognized charitable institutions where no fees/rental of any kind are charged whatsoever. This will not be applicable to institutions conducting commercial activities of any nature.

Tariff Rates:

a) Fixed charge : Rs 40.00 per month per kW of contracted load.

b) Energy charge per month:-

1)	First 100 kWh	:	@ Rs 2.90 per kWh.
2)	Next 100 kWh	:	@ Rs 4.45 per kWh.
3)	>200 kWh	:	@ Rs 5.05 per kWh.

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 centres, 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/YMA 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 houses, public halls, show rooms, centrally air-conditioning units, commercial establishments, X-ray plants, diagnostic centres, 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 multi-storeyed 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 telecommunication system/towers and others applications not covered under any other categories.

Tariff Rates:

- a) Fixed charge : Rs 70.00 per month per kW of contracted load.
 b) Energy charge per month:-

1)	First 150 kWh	:	@ Rs 4.35 per kWh
2)	>150 kWh	:	@ Rs 5.40 per kWh

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 and 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:-

All kWh : @ Rs 5.30 per kWh.

2.5 LT Category - 5: Public Water Works

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

Tariff Rates:

- a) Fixed charge : Rs 80.00 per month per kW of contracted load.
 b) Energy charge per month:-

All kWh : @ Rs 5.20 per kWh

2.6 LT Category - 6: Irrigation & Agriculture

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

Tariff Rates:

a) Fixed charge : Rs 40.00 per month per kW of contracted load.

b) Energy charge per month:-

All kWh : @ Rs 2.10 per kWh

2.7 LT Category - 7: Industrial

Applicability: Applicable for supply of energy for Industrial purposes, such as manufacturing/ processing / preserving of goods as such, cold storage plants/units, all types of workshops using electrical energy for such works, power looms, weaving houses, carpentry works, steel fabrication works, tyre rethreading works, black-smithy, Gold-smithy, saw mills, flour/rice mills, oil mills, re-rolling mills, motor body building works, coffee/ginger/turmeric processing units, winery plants, fruits processing plants, Ice candy units, fodder cutting units, poultry farming/ hatchery units, silk rearing/processing units, pisciculture, prawn culture units, mushroom production units, floriculture in green houses, sugarcane crushing, milk/meat processing units, bamboo processing units, paper/steel/aluminium recycling units, construction of power generating stations/substations and power supply to any generating stations.

Tariff Rates:

a) Fixed charge : Rs 70.00 per month per kW of contracted load.

b) Energy charge per month:-

1) First 400 kWh	:	@ Rs 4.10 per kWh
2) > 400 kWh	:	@ Rs 4.80 per kWh

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 HT Category - I: Domestic

Applicability: This tariff is applicable to similar purposes as defined in LT category- 2 as below:

Tariff Rates:

a) Demand charge : Rs40.00 per month per kVA of Billing demand.

b) Energy charge per month:-

All kVAh : @ Rs 4.80 per kVAh

3.2 HT Category - 2: Non- domestic/Commercial

Applicability: This tariff is applicable to similar purposes defined in LT Category-3 as below:

Tariff Rates:

a) Demand charge : Rs 70.00 per month per kVA of Billing demand.

b) Energy charge per month:-

All kVAh : @ Rs 5.50 per kVAh

3.3 Category 3 : Public Water Works(PWW)

Applicability: This tariff is applicable to similar purposes defined in LT Category-5 as below:

Tariff Rates:

a) Demand charge : Rs 80.00 per month per kVA of Billing demand.

b) Energy charge per month:-

All kVAh : @ Rs 4.90 per kVAh

3.4 HT Category - 4: Irrigation & Agriculture

Applicability: This Tariff is applicable to irrigation / pumping for agricultural purpose only as below:

Tariff Rates:

a) Demand charge : Rs 40.00 per month per kVA of Billing demand.

b) Energy charge per month:-

All kVAh : @ Rs 2.00 per kVAh

3.5 HT Category - 5: Industrial

Applicability: This Tariff is applicable to similar purpose defined in LT Category – 7 as below:

Tariff Rates:

- a) Demand charge : Rs 70.00 per month per kVA of Billing demand.
 b) Energy charge per month:-

All kVAh : @ Rs 4.55 per kVAh

3.6 HT Category - 6: Bulk supply within the State

Applicability: Applicable for HT Consumers having single point metering of mixed load of housing complex, multi-storeyed building, Military Engineering Service (MES), Border Road Task Force (BRTF), etc. where the supply is used predominantly for domestic purpose (with domestic load not less than 85 % of the total load) and internal maintenance of power supply is carried out by the bulk consumers. Tariff Rates are as below:

Tariff Rates:

- a) Demand charge : Rs 80.00 per month per kVA of Billing demand.
 b) Energy charge per month:-

All kVAh : @ Rs 4.30 per kVAh

4. Temporary 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 with latest amendments. If the applicant provides the materials for service line, it shall be treated as per clause 4.133 of the JERC for Manipur & Mizoram (Electricity Supply Code) Regulations, 2013 with latest amendments **If the licensee/Discom desired to delegated to power to various level of officers, it may be done through an executive order within the licensee/Discom. However, in all cases, overall duration should not violate the supply code mentioned above.** If the service line is arranged by consumer, it shall be treated as per clause 4.133 of the JERC for Manipur & Mizoram (Electricity Supply Code) Regulations, 2013 with latest amendments and be returned to the consumer after the period is over. 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 un-metered energy:

5.1 This formula shall be applicable for computation of unmetered consumption of street lightings only. The monthly energy consumption shall be computed as below:-

$$\text{Energy Consumption} = L \times H \times F \times D$$

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

H = Total number of hours in a month during which power is actually supplied to street lights through that feeder / through that DT concerned.(12 Hrs per day in Gregorian calendar month or 365 hrs per month on average basis. However, number of hours where power supply is not made due to interruptions available shall be deducted.

(Note:- Interruption shall mean breakdowns of Feeders, Part of feeder, Distribution Transformer, load shedding , all types of shut downs which occurs between dawn to dusk,. 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.	Street light	50%

D = Demand factor which shall be taken as (100 % in case of street lighting).

5.2 P&ED has achieved 100% metering of all consumers as per report on 18th State Advisory Committee meeting. Hence, separate computation methodology is no longer required and it is deleted. **(5.1 above shall not be applicable).** Billing under defective, burnt, lost meter shall be as per the JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013 with latest amendment.

5.3 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.

6. Miscellaneous Charges (Part of Non-Tariff Income)

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

6.1.1 LT Metering:

a)AC ,Single phase Energy meter whole current	: Rs.20.00 per month
b)AC, Three phase Energy meter, whole current	: Rs.35.00 per month.
c)AC, Three phase Energy meter, CT operated	: Rs.50.00 per month
d)Any other type of meter/indicator	: Rs.100.00 per month

6.1.2 HT Metering:

a) AC, Three phase Energy meter, CT & PT operated	: Rs.200.00 per month.
b) Any other type of meter/indicator	: Rs.300.00 per Month.

6.2. Pole/Tower usage charge per month**6.2.1 For supporting of internet/media/telephone cables:-**

This charge shall be borne by Operator/Distributor of visual media network.

- a) Rs 2.50 per pole per cable per month in case of internet cable/ media cables/visual media cables
- b) Rs 3.00 per pole per month per cable in case of landline telephone cable. (a cable having up to 5 pair of lines shall be taken as one cable for this purpose) Telephone cable having more than 5 pairs shall be considered as 2, 3 etc, by dividing actual number of pairs by 5 to arrive at equivalent number of cables. Any fraction shall be rounded to next higher integer.

6.2.2 For Hoarding for display of Advertisement (Maximum size 3'x2').

This charge shall be borne by the interested party.

- a) Commercial area of city/town @ Rs 60.00 per hoarding per month per pole/tower.
- b) Residential area of city/town @ Rs 30.00 per hoarding per month per pole/tower.
- c) National/State highway (outside city/town limit) @ Rs 20.00 per hoarding per month per pole/tower.

6.3. Other charges for meter:**(a) Meter shifting charge:**

- i) Rs. 200.00 per shifting if resulted from reconstruction/modification of building by consumer or at consumer's request.

- ii) 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.

(b) The cost of replacement and execution charge:

Utility 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.

i) Execution charge for re-installation/installation of meter:-

- a) For existing consumer shall be Free of cost.
 b) For disconnected consumer with meter removed:-Rs.100.00
 c) For new consumer, it shall be included in the cost of service connection as under execution charges.

ii) Cost of Energy Meters supplied by Licensee:

As per the Licensee's purchase rate 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.

c) Testing charge of Meter 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.75.00 per meter per testing.
 ii) For AC three phase LT energy meter, whole current: Rs.100.00 per meter per testing.
 iii) For AC three phase LT energy meter, CT operated: Rs.200.00 per meter per testing.
 iv) For energy meter AC three phase, CT & PT operated: Rs.300.00 per meter per testing.
 v) For any other type of meter HT supply : Rs.300.00 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 charge of Consumer's Installation:

The first test and inspection will be carried out free of cost as per Clause 4.47 of JERC 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.150.00 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:

(1) **Disconnection:**-Disconnection of an installation in all cases will be free of charges.

(2) **Reconnection;**-Reconnection charge shall be as follow:-

(a) Disconnected consumer due to safety measures shall be free of charge.

(b) is connection due to non-payment any kind of liabilities shall be:-

(i) For AC single phase LT supply : Rs.100.00

(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 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 Mutation Fee:-Mutation fee i.e. fee for change of name shall be Rs 50.00 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.

6.8 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 if the Licensee supplies the materials, or the consumer may arranged required materials as per the required specifications of the Licensee. The execution charge shall be as follows:

(1) For Cable and wire:-

- (a) Single phase connection : Rs.250.00 per connection.
- (b) LT three phase connection : Rs.400.00 per connection.
- (c) HT three phase connection : Rs.700.00 per 100 meters of the HT line.

(2) For Cut out & Fuse:-

- (a) Rs 10.00 per cut out.
- (b) Rs 3.00 per fuse

Works shall be executed only on production of payment receipt from concerned office.

6.9 Meter Security (if Licensee's meter is used):

The amount of Security deposit for meter security shall normally be the price of the meter as fixed by the licensee from time to time in line with **section 55 of Electricity Act 2003**.

6.10 Charges for Replacement of temper proof Meter Housing Box:

For AC single phase LT or three phases LT without CT or with CT, the energy meter box if replaced from Licensee's store: The charge will be as per Licensee's purchase rate

6.11 Charges for Testing of Transformer Oil:

- (a) For first sample of oil: Rs.150.00 per sample.
- (b) For the next additional sample of oil of the equipment received at the same time of the first sample: Rs.100.00 per sample.

6.12 Service Lines & Service Connection:

(a) 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 JERC for Manipur and Mizoram (Electricity Supply Code) Regulations, 2013.

(b) Cost of Service Connection: As stipulated in Clause 4.37 & 4.131 of the JERC for

Manipur and Mizoram (Electricity Supply Code) Regulations, 2013. If the consumer desires to arrange service connection materials, the Licensee (not below rank of Junior Engineer concerned) will check all the materials.

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 Load Security:

The amount of load 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. **However, consumer with prepaid meter shall not be required to pay load security deposit.**

6.15 Re-rating charge of Consumer's Installation:

This charge is for meeting expenses toward spot verification of load and other connected recording works. Charge for re-rating of the consumer's installation at the request of the consumer shall be Rs.150.00 per rerating per connection.

This charge 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 (like additional load security, etc. However excess security paid by consumer should be returned by way of adjustment in monthly bill in one instalment). 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.

ANNEXURES

**MINUTES OF THE 20TH MEETING OF THE STATE ADVISORY COMMITTEE OF
MIZORAM**

**Venue :P&E Department Conference Hall, New Secretariat Complex, Khatla,
Aizawl, Mizoram**

Date & Time:22nd February, 2018, 11:00 a.m.

The Chairman of the Committee, Mr. Ngangom Sarat Singh and Chairperson of the JERC for Manipur & Mizoram chaired the meeting. He started the programme by welcoming new Members and all other members of the State Advisory Committee and the invitees.

The list of Members and Participants attending the meeting is appended.

Agenda 1: Confirmation on the Minutes of the SAC Mizoram held on 8thFebruary,2017.

The Chairman requested the Members to give their comments on the minutes of the Meeting and after obtaining nods from the Members, the minutes were declared as confirmed.

Agenda 2: Determination of Multi Year ARR for the 2nd control period for FY 2018 – 19 to FY 2022 – 23 and Retail Tariff for FY 2018 – 19 for P&E Department.

The Chairman requested the P&E Department to highlight the main points of their tariff petition. The P&E Department stated that their proposal to hike the average tariff is only Rs 0.62 per unit from the present Rs 4.6 per unit. And further, stated that they could not give the exact correct figure on their accounts due to difficulty in compiling of accounts and further stated that every measures has been taken not to further brden to the consumers. The Chairman requested the Members to give their views on the tariff petition of P&E Department. Er. Vanlalruata, President, CYMA stated that the Department needs to come up with for proper accounting and compilation of income and expenditure which is to be updated. He further stated that the Department seems

not enthusiastic in giving out updated bills to the consumers which is the right to the consumers. Prof. H. Lalramnghinglova, Department of Environment and Science also stated that the Department needs to show better efficiency in their management for providing uninterrupted power to the consumers. Dr. Chawngsailova, General Secretary, Mizoram Consumers' Union, General Headquarters, Aizawl represented by the President also stated that the yearly increase of tariff at a nominal rate is justified but care should be taken to the people who have low income. After close examination of the tariff petition, it was agreed that the hike in tariff to a reasonable rate was agreed.

Agenda 3.Reduction of Commercial Losses.

The P&E Department give a detailed report on theft of power within 2017 – 18 as below:

Detail of theft Report within 2017-18

SI No	Items of Report	CE(D) upto 2 nd quarter	CE(SO) upto 3 rd quarter	Total
1	No of cases where inspection were carried out	4175	5738	9913
2	No of cases where theft or misuse was detected	21	3	24
	a) Meter bypass	13	0	13
	b) Hooking	47	0	47
	c) Unauthorised extension	129	0	129
	d) Tampering	0	0	0
	Total (a+b+c+d)	189	0	189
3	Estimated qty of energy considered as pilferage (kWh)	2247	0	2247
4	No of cases where sentences were imposed	7	0	7
5	Qty of energy for which cost were recovered (kWh)	670	0	670
6	Amount realized (Rs)	18015	0	18015

The Department further informed that to reduce theft and unauthorized use of power, Vigilance Committee was constituted covering 234 nos. of areas villages and towns to which the Central YMA did not allow its members of Branch Office to

participate in the Vigilance Committee. Franchisee system was introduced at Sangau and Phullen to handle energy billing and related works as pilot projects. The Department is examining more improved and efficient system to impart in other areas. Er. Vanlalruata stated that there was a misunderstanding on the concept of Vigilance Committee and that the Organisation is ever committed for the further improvement of power sector in Mizoram, and every assistance will be given. Professor (Rtd.) Tlanglawma also stated that the Department is to streamline payment of bills. Professor H. Ramnghinglova also stated that there is difficulty in payment of electricity bills and that a proper mechanism be made for consumers for online payment.

Er. Vanlalruata, President, CYMA and President, Mizoram Consumers Union is requested to extend helping hand.

Agenda 4. Energy Accounting.

The Department informed that all feeders are 100% metered but due to long years of use, accuracy and reliability has deteriorated. There are 100 nos of unreliable / damaged system meters which are to be replaced. A detailed project report is being prepared and after implementation of the scheme, losses at all levels can be determined and proper energy accounting could be done.

P&ED should replace damaged meter as per JERC (M&M) Supply Code Regulations.

Agenda 5. Status of Plan Work.

The members of the committee were of the view that works that are to be completed should be completed within the expected date.

P&ED is urged to work closely with PGCI and see that 400 kV line is completed before schedule.

Agenda 6. Fixed Charge on Contracted Load.

The Department issued notification to every consumer to opt for new contracted load or to use existing load as contracted load. As per application received from Mizoram Consumers Union, time limit is extended upto December 2017 for

submission of application from consumer. As per report received from field offices, all the applications received are dealt as required. However, data has not yet collected from head offices to mention the total quantity.

P&ED is requested to indicate contracted load and connected load in the bill body as per JERC (M&M) Supply Code Regulations.

Agenda 7: Extra charge on Bank Transaction Charges

The P&E Department has stated that the matter has to be dealt with Finance Department so as not to levy Bank's transaction charges on consumer. Instead, payment gateway may deduct transaction charge from the Government Account for which permission from Finance Department will be required. In this regard, Prof H. Lalramnghinglova and other members of the Committee were of the opinion that easy bill payment through internet should be made for the benefit of the Department and the consumers.

P&ED is requested to pursue with Finance Department.

Agenda 8: Miscellaneous.

The Chairman requested the members if they have any Agenda to be discussed and he himself proposed 2 (two) items for discussion

a) RPO : The Chairman informed the Committee that Government of India has taken deep interest in green energy and that one is Renewable Purchase Obligation which is to be fulfilled by the P&E Department and informed the Department to take steps for fulfillment of their RPO to which target has been fixed.

b) Re-structuring of the Department : Mr. Lalramliana, Chief Engineer informed the Committee that re-structuring of the Department has been proposed to the Government and they are waiting the approval. The Chairman further stated that for better efficiency of the Department, a proper demarcation within the Department is necessary where-in energy accounting, bill payment and receipt, compilation of

accounts and better utilization of man power could be made and expressed his happiness that the matter is being under consideration.

The Meeting ended at 1:55 p.m. with the vote of thanks from the Chair.

**Sd/- Ngangom Sarat Singh
Chairperson**

Memo No.H.11019/27/12-JERC

Dated Aizawl, the 5th March, 2018

Copy to:

1. P.S to Hon'ble Chief Minister, Govt. of Mizoram for kind information to the Hon'ble Chief Minister.
2. P.S to Hon'ble Minister, i/c P&E Department Govt. of Mizoram for kind information to Hon'ble Minister, i.c P&E Department.
3. PS to Secretary, P&E Department, Govt. of Mizoram for kind information to the Secretary and for taking necessary action on the Minutes of the Meeting.
4. All Members / Invitees of the State Advisory Committee for kind information and for taking necessary action on the Minutes of the Meeting.
5. Guard File.

**List of Members and Participants who attended the 19th Meeting of State Advisory
Committee of Mizoram.**

Date & Time : 22nd February, 2018 (Thursday) 11:00 a.m.

Venue : P&E Department Conference Hall, Kawlphetha Building,
Secretariat Complex, Khatla, Aizawl, Mizoram.

Sl. No.	Name	Designation
1	Ngangom Sarat Singh	Chairperson, JERC (M&M)
2	Lalramliana	C.E., P&E Deptt., Govt. of Mizoram
3	Prof. H. Lalramnghinglova	Member, SAC
4	Prof. Tlanglawma	Member, SAC
5	Vanlalruata	President, CYMA
6	C. Lalramliana	S.E. (Com), P&E Deptt., Govt. of Mizoram
7	J.H. Laithangliana	E.E. (Com), P&E Deptt., Govt. of Mizoram
8	Sanjib Mahji	Consultant, P&E Deptt., Govt. of Mizoram
9	Vanlalhlengliana	J.E. (Comml), P&E Deptt., Govt. of Mizoram
10	C.C. Lalrimawia	A.E. (Comml), P&E Deptt., Govt. of Mizoram
11	Thanchungnunga	Sr. E.E., PHE Deptt., Govt. of Mizoram (for E-in-C, PHE)
12	C. Lalbiakthanga	Addl. Director, Commerce & industries Deptt., Govt. of Mizoram
13	Laltlanthangi	Under Secy (Tech.), P&E Deptt., Govt. of Mizoram
14	Richard Zothankima	Asst. Secy., JERC (M&M)
15	Dr. Chawngsailova	General Secy., Mizoram Consumers Union
16	H. Thanthianga	Asst. Chief (Engg.), JERC (M&M)
17	Lallianzuala	P.A.O., JERC (M&M)
18	Lalchharliana Pachuau	Chief (Engg.), JERC (M&M)
19	Michael Lalthanmawia	Secy., Mizoram Chamber of Industries

ANNEXURES - II

**LIST OF PERSONS WHO ATTENDED PUBLIC HEARING ON
MULTI YEAR ARR & TARIFF PETITION FOR FY 2018-19 IN RESPECT OF
POWER & ELECTRICITY DEPARTMENT, GOVT. OF MIZORAM**

**Venue :Conference Hall of Engineer-in-Chief, Power & Electricity Deptt.,
Government of Mizoram, Aizawl, Mizoram.**

Date & Time: 23rd February, 2018 (Friday) from 10:30 a.m. to 12:30 p.m.

Sl. No.	NAME	DESIGNATION & ORGANISATION
1	Ngangom Sarat Singh	Chairperson, JERC(M&M)
2	Lalchharliana Pachuau	Chief (Engg.), JERC (M&M)
3	H. Thanthianga	Asst. Chief (Engg.), JERC (M&M)
4	Y. Satyanarayana	Consultant, ASCI
5	G.R.S. Gowtham	Consultant, ASCI
6	Vanlalruata	President, CYMA
7	J.H. Laithangliana	E.E. (Comml), P&ED
8	Richard Zothankima	Asst. Secretary, JERC (M&M)
9	Sankib Majhi	Consultant, P&ED
10	C.C. Lalrinmawia	A.E. (Comml), P&ED
11	Vanlalthlengliana	J.E. (Comml), P&ED
12	C. Lalramliana	S.E. (Comml), P&ED
13	Lallianzuala	P.A.O., JERC (M&M)
14	Lala Khobung	Consultant (Legal), JERC (M&M)
15	Lalramliana	C.E., P&ED
16	V.Z. Thara	LPS News
17	Lawmzira	DDK News

Mizoram - Expected Revenue during FY2018-19 from Existing Tariff effective from 01.04.2017													
Sl. No.	Category	Consumers	Contracted Load (in kW)	Annual energy Sales (in MU)	Sales/Consumer/Month (in kWh)	Existing Tariff		Revenue /month				Annual Revenue (in Rs lakh)	Av. realisation (Rs/kWh)
						Fixed Charge (Rs/kW)	Energy charge (Rs./kWh)	Total Fixed Charges (in Rs lakh)	Energy charge per 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	KJ(Domestic)												
i)	First 15 kWh	5554		0.01	0.15		1.50		0.23	0.01			
ii)	Next 15 kWh	4636		0.85	15.28		2.15		23.10	1.07			
iii)	Balance above 30 kWh	3106		1.14	30.59		2.45		56.20	1.75			
	Sub Total	13296	4098	2.00	12.54	12/connection		1.60	79.53	2.83	4.43	53.16	2.66
2	Domestic												
i)	First 50 kWh	79164		44.00	46.32		2.45		113.48	89.84			
ii)	Next 50 kWh	53290		62.00	96.95		3.40		282.13	150.35			
iii)	Next 100 kWh	39670		74.00	155.45		4.40		536.48	212.82			
iv)	Balance above 200 kWh	27194		72.00	220.64		5.00		835.70	227.26			
	Sub Total	199318	318348	252.00	105.36	35		111.42	1767.79	680.27	791.69	9500.28	3.77
3	Domestic HT	20	3008	5.00	20833.33	35	4.80	1.05	99999.98	20.00	21.05	252.60	5.05
	Total Domestic	212634	325454	259.00	101.50			114.07	101847.3	703.10	817.17	9752.88	3.77
4	Commercial												
i)	First 100 kWh	12992		6.20	39.77		3.80		151.13	19.63			
ii)	Next 100 kWh	4191		7.10	141.18		4.80		577.66	24.21			
iii)	Balance above 200 kWh	3772		17.70	391.04		5.80		1968.03	74.23			
	Sub Total	20955	58442	31.00	123.28	65		37.99	2696.82	118.07	156.06	1872.72	6.04
5	Commercial HT	136	8233	8.00	4901.96	65	5.50	5.35	26960.78	36.67	42.02	504.24	6.30
	Total Commercial	21091	66675	39.00	154.09			43.34	29657.6	154.74	198.08	2376.96	6.09
6	Public Lighting	1388	1046	5.00	300.19	60	5.20	0.63	1560.99	21.67	22.30	267.60	5.35
7	PWS LT	13	4943	5.00	32051.28	75	5.10	3.71	163461.53	21.25	24.96	299.52	5.99

8	PWS HT	50	34358	49.00	81666.67	75	4.90	25.77	400166.68	200.08	225.85	2710.20	5.53
9	Agriculture LT	21	21	0.02	79.37	35	2.00	0.01	158.74	0.03	0.04	0.48	2.40
10	Agriculture HT	1	85	0.28	23333.33	35	1.95	0.03	45499.99	0.45	0.48	5.76	2.06
11	Industrial LT												
i)	First 400 kWh	778		0.70	74.98		4.00		299.92	2.33			
ii)	Balance above 400 kWh	96		1.30	1128.47		4.75		5060.23	4.86			
	Total Industrial	874	4152	2.00	190.69	65		2.70	5360.15	7.19	9.89	118.68	5.93
12	Industrial HT	20	10007	10.00	41666.67	65	4.55	6.50	189583.35	37.92	44.42	533.04	5.33
13	Bulk Supply HT	299	21924	19.00	5295.43	70	4.30	15.35	22770.35	68.08	83.43	1001.16	5.27
	Grand Total	236391	468665	388.30	136.88			212.11	960066.68	1214.51	1426.62	17119.44	4.41

ANNEXURES - IV

Mizoram - Expected Revenue during FY2018-19 from Approved Tariff effective from 01.04.2018

Sl. No.	Category	Consumers	Contracted Load (in kW)	Annual energy Sales (in MU)	Sales/Consumer/Month (in kWh)	Approved Tariff		Revenue /month				Annual Revenue (in Rs lakh)	Av. realisation (Rs/kWh)
						Fixed Charge (Rs/kW)	Energy charge (Rs./kWh)	Total Fixed Charges (in Rs lakh)	Energy charge per 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	KJ(Domestic)												
i)	First 20 kWh	9618		1.00	8.66		1.75		15.16	1.46			
ii)	Balance above 20 kWh	3678		1.00	22.66		2.40		41.38	1.52			
	Sub Total	13296	4098	2.00	12.54	15/connection		1.99	56.54	2.98	4.97	59.64	2.98
2	Domestic												
i)	First 100 kWh	132447		75.00	47.19		2.90		136.85	181.25			
ii)	Next 100 kWh	39664		90.00	189.09		4.45		686.45	272.27			
iii)	Balance above 200 kWh	27207		87.00	266.48		5.05		1070.72	291.31			
	Sub Total	199318	318348	252.00	105.36	40		127.34	1894.02	744.83	872.17	10466.04	4.15
3	Domestic HT	20	3008	5.00	20833.33	40	4.80	1.20	99999.98	20.00	21.20	254.40	5.09
	Total Domestic	212634	325455	259.00	101.50			130.53	101950.54	767.81	898.34	10720.44	4.14
4	Commercial												
i)	First 150 kWh	11959		13.00	90.59		4.35		394.07	47.13			
ii)	Balance above 150 kWh	9132		18.00	164.26		5.40		729.50	66.62			
	Sub Total	20955	58442	31.00	123.28	70		40.91	1123.57	113.75	154.66	1855.92	5.99
5	Commercial HT	136	8233	8.00	4901.96	70	5.50	5.76	26960.78	36.67	42.43	509.16	6.36
	Total Commercial	21091	66675	39.00	154.09			46.67	28084.35	150.42	197.09	2365.08	6.06
6	Public Lighting	1388	1046	5.00	300.19	65	5.30	0.68	1591.01	22.08	22.76	273.12	5.46
7	PWS LT	13	4943	5.00	32051.28	80	5.20	3.95	166666.66	21.67	25.62	307.44	6.15
8	PWS HT	50	34358	49.00	81666.67	80	4.90	27.49	400166.68	200.08	227.57	2730.84	5.57
9	Agriculture LT	21	21	0.02	79.37	40	2.10	0.01	166.68	0.04	0.05	0.60	3.00

10	Agriculture HT	1	85	0.28	23333.33	40	2.00	0.03	46666.66	0.47	0.50	6.00	2.14
11	Industrial LT												
i)	First 400 kWh	822		0.94	95.30		4.10		390.73	3.21			
ii)	Balance above 400 kWh	52		1.06	1698.72		4.80		7873.86	4.09			
	Total Industrial	874	4152	2.00	190.69	70		2.91	8264.59	7.30	10.21	122.52	6.13
12	Industrial HT	20	10007	10.00	41666.67	70	4.55	7.01	189583.35	37.92	44.93	539.16	5.39
13	Bulk Supply HT	299	21924	19.00	5295.43	80	4.30	17.54	22770.35	68.08	85.62	1027.44	5.41
	Grand Total	236391	468666	388.30	136.88			236.82	965910.87	1275.87	1512.69	18152.28	4.67



**JOINT ELECTRICITY REGULATORY COMMISSION
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