



**ARUNACHAL PRADESH STATE ELECTRICITY REGULATORY  
COMMISSION (APSERC)**

**Tariff Order for FY 2015-16  
For  
Deptt. of Hydro Power Development  
Govt. of Arunachal Pradesh**

**Issued on 12<sup>th</sup> May'2015**

**Arunachal Pradesh State Electricity Regulatory Commission  
अरुणाचल प्रदेश राज्य विद्युत नियामक आयोग**

**A.P. ELECTRICAL CIRCLE OFFICE COMPLEX, A-SECTOR, OPPOSITE INDUSTRIAL  
AREA, NAHARLAGUN – 791110**

एपी विद्युत अंचल कार्यालय परिसर में ए- क्षेत्र, औद्योगिक क्षेत्र के सामने, नाहरलगुन - 791110

Telephone No: 0360-2350586, Fax No: 0360-2350985 , Website : [www.apserc.in](http://www.apserc.in)

टेलीफोन नः 0360-2350985, 0360-2350586 , फैक्स नः 0360-2350985

वेबसाइट : Website [www.apserc.in](http://www.apserc.in)



## Contents

1. Introduction .....	9
1.1 Arunachal Pradesh State Electricity Regulatory Commission. ....	9
1.2 Arunachal Pradesh - Geographical Reality.....	12
1.2.1 Arunachal Pradesh Department Hydro Power Development.....	12
1.2.2 Installed Capacity of APDHPD .....	14
1.3 Tariff Petition for FY 2015-16 : Filing.....	14
1.4 Admission of Petition and public Hearing Process .....	14
1.5 Meeting of State Advisory Committee .....	15
1.6 Commission's Observation .....	16
2. Petition's Summary for ARR & Tariff Determination .....	17
2.1 Gross Fixed Assets (GFA) and Depreciation- Petitioner's Submission.....	17
2.2 Return on Equity (ROE) - Petitioner's Submission .....	17
2.3 Employees' Expenses- Petitioner's Submission.....	18
2.4 Productivity / Comparative Parameters- Petitioner's Submission .....	19
2.5 Repair & Maintenance Expenses- Petitioner's Submission .....	19
2.6 Administrative & General Expenses - Petitioner's Submission .....	21
2.7 O&M Expenses – Petitioner's Submission .....	21
2.8 Interest on Working Capital- Petitioner's Submission.....	22
2.9 Work in Progress - Petitioner's Submission.....	22
2.10 Interest Capitalized -Petitioner's Submission .....	23
2.11 Annual Fixed Costs FY 2015-16 Petitioner's Submission .....	23
2.12 Indicative Tariff - Petitioner's Submission .....	24
2.13 Petitioner's Prayer .....	24
3. Analysis: ARR for FY 2015-16 and Tariff Determination .....	25
3.1 Assets and Depreciation.....	25
3.2 O&M Expenses .....	26
3.3 Return on Equity .....	29
3.4 Interest on Loan Capital .....	31
3.5 Interest on Working Capital .....	32
3.6 Commission's Analysis & Approval of ARR.....	33
3.7 Hydro Power Generation Tariff for FY 2015-16- Commission's Analysis .....	33
4. Compliance of Directives and New Directives .....	36
4.1 Status of Compliance of Directives issued for FY 2013-14.....	36
4.2 Directives issued for FY 2015-16 .....	38
ANNEXURE-I Details of Hydro Electric Power Station of APDHP .....	42

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### List of Tables

Table 1 : Gross Fixed Asset - Petitioner's Submission .....	17
Table 2: Return on Equity- Petitioner's Submission.....	17
Table 3: Employees' Expenses- Petitioner's Submission.....	18
Table 4: Productivity Parameters.....	19
Table 5: Repair & Maintenance Expenses- Petitioner's Submission .....	20
Table 6: Administrative & General Expenses - Petitioner's Submission .....	21
Table 7: O&M Expenses-Petitioner's Submission .....	22
Table 8 : Interest on Working Capital- Petitioner's Submission .....	22
Table 9 : Work in Progress - Petitioner's Submission .....	22
Table 10: Interest Capitalized -Petitioner's Submission .....	23
Table 11: Annual Fixed Costs and Net Power Generation - Petitioner's Submission .....	23
Table 12: Indicative Tariff - Petitioner's Submission.....	24
Table 13 Goss Fixed Assets-Commission's Analysis .....	25
Table 14 Employees' Costs FY 2015-16 Commission's Analysis.....	26
Table 15 R&M Expenses FY 2015-16- Commission's Analysis .....	27
Table 16 Administrative & General Expenses- Commission's Analysis.....	27
Table 17: Total O&M Expenses for FY 2015-16 and Comparison with Previous Years- Petitioner's Submission.....	27
Table 18: O&M EXPENSES FOR FY 2015-16 – COMMISSION'S ANALYSIS.....	29
Table 19: Return on Equity- Commission's Analysis .....	29
Table 20: Interest on Working Capital FY 2015-16 Commission's Analysis .....	32
Table 21: Annual Fixed Charges for FY 2015-16- Commission's Analysis .....	33
Table 22: Hydro Power considered for sale for FY 2015-16- Commission's Summary .....	34
Table 23: FY 2015-16 Hydro Power Generation Tariff - Commission's Approval .....	35

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**Abbreviations**

<b>Abbreviation</b>	<b>Description</b>
A&G	Administration & General
AC	Alternating Current
ACT	Electricity Act, 2003
APSERC	Arunachal Pradesh State Electricity Regulatory Commission
ARR	Aggregate Revenue Requirement
ATE	Appellate Tribunal For Electricity
CAGR	Compound Annual Growth Rate
CD	Contract Demand
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CGS	Central Generating Stations
CoS	Cost of Supply
CPSU	Central Power Sector Undertakings
Cr./ Crs	Crore/ Crores
D/E	Debt Equity
DOP, AP	Department of Power, Govt. of Arunachal Pradesh
EHT	Extra High Tension
ER	Eastern Region
FAC	Fuel Adjustment Costs
FDR	Fixed Deposits Receipts
FSTPS	Farakka Super Thermal Power Station
FY	Financial Year
GFA	Gross Fixed Assets
HP	Horse Power
HT	High Tension
KhSTPS	Kahalgaon Thermal Power Station
KV	Kilovolt
kVA	Kilo Volt Amps
kWh	Kilo Watt hour
L.T.M.D	Low Tension Maximum Demand
LNG	Liquefied Natural Gas
LT	Low Tension
LTC	Leave Travel Concession
MU	Million Units
MVA	Million Volt Amps
MW	Mega Watt
NHPC	National Hydroelectric Power Corporation
NTPC	National Thermal Power Station
O&M	Operation & Maintenance
ROE	Return On Equity
RoR	Rate of Return

Abbreviation	Description
Rs.	Rupees
S/s	Sub Station
SBI	State Bank of India
SBAR	State Bank of India Advance Rate
SBI-PLR	State Bank of India- Prime Lending Rate ( Short Term)
SERC	State Electricity Regulatory Commission
SPV	Special Purpose Vehicle
T&D	Transmission & Distribution
TSTPS	Talcher Super Thermal Power Station
UI	Unscheduled Interchange
UMPP	Ultra Mega Power Projects
NEEPCO	North Eastern Electric Power Corporation
NTI	Non-Tariff Income
RLDC	Regional Load Despatch
SLDC	State Load Despatch Centre
R&M	Repairs and Maintenance
PGCIL	Power Grid Corporation of India Limited
YoY	Year on Year

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**Before**

**The Arunachal Pradesh State Electricity Regulatory Commission**

**(APSERC)**

**Naharlagun, Arunachal Pradesh**

**Petition No. TP 2 of 2015**

**In the matter of:**

**Determination of Aggregate Revenue Requirement (ARR) and Tariff for generation and supply of electricity by Department of Hydro Power Development of Arunachal Pradesh for the FY 2015-16**

**AND**

**Department of Hydro Power Development,**

**Government of Arunachal Pradesh, Itanagar ..... Petitioner**

**Present :**

**Digvijai Nath, Chair person**

**ORDER**

**Passed on 12<sup>th</sup> May' 2015**

The Commission in exercise of the powers vested in it under section 62(1)(d) read with Section 62(3) and Section 64 (3)(a) of the Electricity Act, 2003 and Terms and Conditions for Tariff Determination from Renewable Energy Sources Regulations, 2012 issued by Arunachal Pradesh State Electricity Regulatory Commission (APSERC) and other enabling provisions in this behalf, issues this order, determining the Aggregate Revenue Requirement (ARR) and generation Tariff for the Financial Year 2015-16 for supply of electricity by the Department of Hydro Power Development, Arunachal Pradesh (APDHPD) to the Department of Power for distribution in the State of Arunachal Pradesh. The Regulations state that the Generating Agency shall file the tariff petition

for Aggregate Revenue Requirement (ARR), complete in all respects, along with requisite fee as prescribed in the Commission's Fee, Regulations, 2011 on or before 30th November of the preceding year. The tariff petition for the financial year 2015-16 should have been filed by the Licensee in the month of November 2014.

But the APDHPD filed the petition for 2015-16 before the Commission on 24<sup>th</sup> Feb'2015. The Commission admitted the petition on 11<sup>th</sup> March'2015 though it had certain data gaps.

This order is in 4 (four) chapters which include detailed analysis of the Aggregate Revenue Requirement (ARR) and approved Generation Tariff Rate for the financial year 2015-16. The Commission directs the APDHPD to take all necessary steps for implementation of this order from the effective date.

The directives contained in Chapter-4 should be strictly adhered to and compliance thereof, as desired by the Commission must be placed before it within the stipulated time.

**This order shall be effective from 1st April'2015 and shall remain in force till the next tariff order is issued by the Commission.**

**Date: 12-5-2015**  
**Place: Naharlagun**

**sd/-**  
**(DIGVIJAI NATH)**  
**Chairperson**



## 1. Introduction

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### 1.1 Arunachal Pradesh State Electricity Regulatory Commission.

In exercise of the powers conferred by the Electricity Act, 2003, (hereinafter referred to as Act) the Government of Arunachal Pradesh constituted the Electricity Regulatory Commission for the State of Arunachal Pradesh to be known as **“Arunachal Pradesh State Electricity Regulatory Commission” (APSERC)** as notified on 07.05.2010 (hereinafter referred to as Commission). The Commission constituted is a one-member body designated to function as an autonomous authority responsible for regulation of the power sector in the State of Arunachal Pradesh. The powers and functions of the Commission are as prescribed in the Act. The head office of the Commission is presently located at Naharlagun Arunachal Pradesh. The Commission started to function with effect from 02.03.2011 with the objective and purpose for which the commission has been established.

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

- (a) Determines the Tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State: Provided that where open access has been permitted to a category of consumers under Section 42, the State Commission shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers;
- (b) Regulates 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) Facilitates Intra-State transmission and wheeling of electricity;
- (d) Issues licenses to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State;
- (e) Promotes 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) Adjudicates upon the disputes between the licensees and generating companies; and to refer any dispute for arbitration;
- (g) Levies fee for the purpose of this Act;
- (h) Specifies State Grid Code consistent with the Grid Code specified under
- (i) Clause of sub-section (1) of Section 79;
- (j) Specifies or enforce standards with respect to quality, continuity and reliability of services by licensees;
- (j) Fixes the trading margin in the Intra-State trading of electricity, if considered, necessary;
- (k) Discharges such other function as may be assigned to it under the Act.
- (l) Under takes promotion of Energy Efficiency.

1.1.2 Further, the Commission also advises 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 that Government.

1.1.3 The Arunachal Pradesh State Commission ensures transparency while exercising its powers and discharging its functions.

1.1.4 In discharge of its functions, the State Commission is guided by the National Tariff Policy (NTP) 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 operation and improvement in quality of supply.

1.1.5 The Commission has so far notified the following Regulations to facilitate its functioning.

- i. State Advisory Committee (SAC) Notification – 2011& 2013
- ii. Conduct of Business Regulations- 2011
- iii. Redressal of Grievances and Ombudsmen Regulations-2011
- iv. Fee Regulations-2011

- v. Grant of Intra State trading License Regulations-2011
- vi. Determination of ARR and retail tariffs Regulations-2011
- vii. Terms and Conditions for Tariff Determination from Renewable Energy Sources Regulations-2012
- viii. Renewable Power Purchase Obligations and its Compliance Regulations-2012
- ix. Redressal of Grievances and Ombudsman Regulation (1st Amendment) 2012
- x. State Grid Code Regulations-2012
- xi. Terms and Conditions of Intra-state Open Access Regulations-2012
- xii. Electricity Supply Code Regulation-2013
- xiii. Multi Year Tariff Regulation - 2013 superseding the Regulation of 2011 on Determination of ARR and Retail Tariff Regulation.

## **1.2 Arunachal Pradesh - Geographical Reality**

The total area of the State of Arunachal Pradesh is 83573 sq.kms.. The State is having a population of around 13.82 lakhs (2011 census). The State of Arunachal Pradesh is bounded by Assam in South, Bhutan in West, China in North, and Nagaland and Mayanmar in East. It's Capital Itanagar is about 380 kms. from Guwahati.

### **1.2.1 Arunachal Pradesh Department Hydro Power Development**

In order to oversee, co-ordinate and monitor the development of hydro power in the State of Arunachal Pradesh, the State Government created a separate department namely "Department of Hydro Power Development" on 12.11.2003. It is a full-fledged department with four Chief Engineers. The Department is entrusted with the development of micro/mini/small hydro projects, improvement of existing hydro projects including renovation & modernization works, operation and maintenance of existing hydel stations,

survey & investigation of new potential sites, and construction of residential and non-residential buildings for the Department. The Department is foremost concentrating on the urgent need of bridging the existing demand supply gap in order to make the State self-reliant, so far as power needs of the State are concerned and to help achieve the target of electrification of all villages and electrification of all households.

The Department at present has to its credit 114-small/micro hydel power stations with an installed capacity of 62.02 MW. Department is also undertaking construction of Hydel Stations in various districts of the State which are under different stages of development. Completion of these ongoing schemes shall lead to a further capacity addition. In addition to above, Department is also carrying out Survey & Investigation of new schemes with the objective of identifying more potential sites for tapping the estimated 2000 MW small hydro power potential in the State for developing hydro power.

The Department has a dedicated work force of 2820 Nos. staff comprising of experienced engineers, technical staff and other supporting staff. The Department of Hydro Power Development has also been assigned the very important responsibility of acting as nodal agency for coordinating and overseeing the allotment and development of Mega Hydro Electric Projects in the State by IPPs and CPSUs as per the State's Mega & Small Hydro Power policy. Department is looking forward to transforming the long awaited dream of the people of the State into reality that Arunachal Pradesh shall be the "FUTURE POWER HOUSE OF THE COUNTRY".

### 1.2.2 Installed Capacity of APDHPD

#### **Hydro Electric Power Stations.**

The Department has 114 small/ micro hydel power stations consisting a total installed capacity of 62.02 MW. The list of Hydro Power stations of DHPD are given in Annexure –1 at the end of this Tariff Order.

### 1.3 Tariff Petition for FY 2015-16 : Filing

The Chief Engineer(EM) entrusted with the responsibility of Operation & Maintenance of the hydro stations of the Department has filed the tariff Petition for the FY 2015-16 on 24<sup>th</sup> Feb'2015.

In the petition, APDHP has suggested an indicative Tariff of Rs.5.07/ kWh based on Annual Fixed Charges of Rs. 129.29 Crs. with saleable Power as 254.95 MUs at 50% PLF of design energy of the Hydro plants for FY 2015-16.

### 1.4 Admission of Petition and public Hearing Process

The Commission observed that:

- i The Petition was submitted in line with APSERC Conduct of Business Regulation No. APSERC/NOTIFICATION/2/2011 dated 8th November 2011.
- ii The Petitioner has deposited the requisite Petition fee in line with Schedule of the Fees prescribed in the APSERC's Fee Regulations-2011, No. APSERC/NOTIFICATION/4/2011 dated 8th November, 2011
- iii However, the Petition filed by the Petitioner was lacking in many important required data

The Commission admitted the Petition on 11-3-2015 and numbered it as Petition no TP 2 of 2015 in line with regulation 16(13) "Presentation, Scrutiny and admission of the petitions" of the Conduct of Business Regulation No. APSERC/NOTIFICATION/2/2011 dated 8th November 2011.

## 1.5 Meeting of State Advisory Committee

proposal for FY 2015-16 of APDHPD. All the Members were requested to participate in the discussion and express their views and suggestions on the proposal. The outcome of the Advisory Committee meeting concerning DHPD is mentioned below.

### a) **Aggregate Revenue Requirement of DHPD & Generation from State Owned**

**Hydropower Stations:** It was felt by the members that since Department of Hydro Power Development is purely a Government Department, there is no need to discuss on the figures projected by it in detail. As regards generation of power by it, all the members were of the unanimous view that the DHPD should make all out efforts to increase the generation from its small/mini/micro hydro stations so as to reduce the dependence of the APDOP on purchase of power from out side the state. The AP DHPD was also advised to start raising the bills to AP DoP for the energy consumed by them at the tariff fixed by the Commission w.e.f 2013-14 onwards in compliance to the directives of the Commission.

### b) **Reassessment of the installed capacity of the hydro stations maintained by**

**DHPD:** All the members of the SAC felt that the generation from the hydro stations does not commensurate with the installed capacity of the projects. As clarified by the DHPD, one of the reasons for this is that the many of the projects are very old and the capacity of the machinery has got de-rated. Moreover over a period of time the hydrology of the project has also changed leading to reduction in water discharge and hence reduction in the generating capacity. In view of the above the members felt that the DHPD need to reassess the generating capacity of all such projects and re-fix the installed capacity afresh.

The list of participants in the SAC Meeting is given below:

#### **LIST OF PARTICIPANTS IN THE SAC MEETING**

<b>Sl. No.</b>	<b>Name</b>	<b>Organization</b>
1.	Sh. Digvijai Nath	Chairman, APSERC
2.	Sh. Kaling Tayeng, IAS	Commissioner(Power), Govt. of A.P.

3	Sh. Pura Tupe	Chief Engineer, DHPD
4	Sh. Anong Perme	Chief Engineer(Power), TPM, APDOP
5.	Sh. Takar Mara	Chief Engineer(Power), CEZ, APDOP
6.	Sh. Marki Loya	Director, APEDA
7.	Sh. O. Darung	Labour Commissioner, Govt. of A.P.
8.	Sh. Toko Anuj	MD, HPDCAPL
9.	Sh. Sang Phuntsok	CE(Monitoring), DHPD
10.	Sh.J. Tato	CE(Power), WEZ, DoP
11.	Sh. O. Moyong	CE(Power), EEZ, DoP
12.	Sh. J. Kamdak	CE, DHPD
13.	Sh. Tamiyo Tatak	Director, Industries, GoAP
14.	Sh. A. Ketan	CE(EM), DHPD- Special Invitee
15.	Sh. Rakesh Kumar	Secretary, APSERC – Convener SAC

### 1.6 Commission's Observation

The Commission has taken note of the comments and suggestions made by the members of SAC and response from DHPD, AP while analyzing and finalizing different components of ARR and Tariff proposal. Keeping in view the suggestions made by the SAC members and also to meet norms of the requirements of the Act, National Electricity Policy and National Tariff Policy, the Commission has also given certain directions to the department as an integral part of this Order.

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## 2. Petition's Summary for ARR & Tariff Determination

The APDHPD in its petition for FY 2015-16 has submitted the details of various expenses that constitute the Annual Fixed Cost for determination of the tariff. The details are given in the following paras in this chapter. Where ever, there is a data mismatch in previous year, the same has been updated as per present Petition for FY 2015-16.

### 2.1 Gross Fixed Assets (GFA) and Depreciation- Petitioner's Submission

The Petitioner submitted the Gross Fixed Assets as under. The Petitioner has indicated that there is no addition in FY 2015-16. Depreciation on GFA @2.57% per Annum has been calculated by the Petitioner which also has been indicated here under:

Table 1 : Gross Fixed Asset - Petitioner's Submission (Rs. Crs.)

Sl.	Year	Opening Balance of GFA	Addition of Assets	Closing Balance of GFA	Rate of Depreciation %	Depreciation in absolute Amount.
1	FY 2012-13	826.17	0.00	826.17	2.57 %	21.23
2	FY 2013-14	826.17	0.00	826.17	2.57 %	21.23
3	FY 2014-15	826.17	0.00	826.17	2.57 %	21.23

### 2.2 Return on Equity (ROE) - Petitioner's Submission

The Petitioner has indicated an amount towards RoE @ 14% on 30 % equity considering 70:30 % as Debt Equity on the amount of GFA.

Table 2: Return on Equity- Petitioner's Submission

Rs. Crs.

Sl.	Particulars	FY 2013-14	FY 2014-15	FY 2015-16
a	b	c	d	e
1	GFA	826.17	826.17	826.17
2	Equity 30%	247.85	247.85	247.85
3	Loan 70%	578.32	578.32	578.32
4	ROE	34.70	34.70	34.70

**Employees' Expenses- Petitioner's Submission**

The Petitioner submitted that the commercial accounts are not being presently maintained by the Department. Accordingly, records of Operation & Maintenance expenses for individual HEPs for the period required by the regulations are not available and therefore actual O&M expenses for the department has been considered for determination of Annual Fixed Charges. The amount for FY 2013-14 to FY 2015-16 are as under:

**Table 3: Employees' Expenses- Petitioner's Submission**

Rs. Crs.				
Sl.	Particulars	FY 2013-14 Actual	FY 2014-15 Estimated	FY 2015-16 Projected
a	b	c	d	e
1	Salaries & Allowances	35.02	37.11	39.33
2	Wages	11.59	12.28	13.02
3	OTA	0.03	0.03	0.03
4	Medical Treatment	0.16	0.17	0.18
5	Other allowances (O.E+ POL+ Minor Work).	1.51	1.60	1.70
6	LTC	0.09	0.10	0.10
7	<b>Sub-Total</b>	<b>48.41</b>	<b>51.29</b>	<b>54.36</b>
<b>Terminal Benefits</b>				
8	Leave encashment, Gratuity, Commutation of Pension, Workman compensation, Ex - gratia	0.00	0.00	0.00
9	<b>Sub - total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Pension Payment</b>				
10	Basic Pension, Dearness Pension, Dearness allowance, Any other expenses	0.00	0.00	0.00
11	<b>Sub - Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
12	<b>Total (7+13+17)</b>	<b>48.41</b>	<b>51.29</b>	<b>54.36</b>
13	Amount capitalized	0.00	0.00	0.00
14	Net Amount	48.41	51.29	54.36
15	Add prior period expenses	0.00	0.00	0.00
16	<b>Grand Total</b>	<b>48.41</b>	<b>51.29</b>	<b>54.36</b>

**2.3 Productivity / Comparative Parameters- Petitioner's Submission**

The Petitioner has also submitted the Productivity Parameters as under:

**Table 4: Productivity Parameters**

Sl.	Particulars	2013-14	2014-15	2015-16
		Actual	Estimated	Projected
a	b	c	d	e
1	Number of consumers in million	Not Applicable		
2	Connected load in kW	Not Applicable		
3	Line circuit in KM (LT + HT)	Not Applicable		
4	Energy sold in MUs	52.84	52.54	52.54
5	Employees per MU of energy sold	53.37	53.68	53.68
6	Employees per 1000 consumers	Not Applicable		
7	Share of employees cost in total expenses	0.40	0.41	0.42
8	Employees cost : paise / kWh of energy sold	916	976	1035
9	Line circuit in KM (EHT Lines)	Not Applicable		
10	Employees per KM of EHT line (Transmission related)	Not Applicable		
11	Power station installed capacity own generation (MW)	60.90	62.02	62.02
12	Employees per MW of capacity for generating company	46.30	45.47	45.47

**2.4 Repair & Maintenance Expenses- Petitioner's Submission**

The Petitioner also submitted the expenses towards R&M for FY 2013-14 to FY 2015-16 are as under:

**Table 5: Repair & Maintenance Expenses- Petitioner's Submission**

Rs. Crs.				
Sl.	Particulars	2013-14 Actual	2014-15 Estimated	2015-16 Projected
a	b	c	d	e
1	<b>Plant &amp; Machinery</b>			
	Plant and Apparatus, EHV Sub-Stations, 33 KV Sub-Stations, 11 kV Sub- Stations, Switch gear and cable connections, Others	0.00	0.00	0.00
	<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
2	Building	0.14	0.14	0.15
3	Hydraulic works & Civil Works	7.45	7.90	8.37
4	Line cable & Net work	0.00	0.00	0.00
	EHV Lines, 33 kV Lines, 11 kV lines, LT Lines, Meters and metering equipment, Others	0.00	0.00	0.00
	<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
5	Vehicles	0.90	0.95	1.01
6	Furniture & Fixture			
7	Office Equipment			
8	Operating expenses			
9	Maintenance(includes expenses under various heads)	0.08	0.08	0.09
10	<b>Total</b>	<b>8.57</b>	<b>9.08</b>	<b>9.62</b>
11	Add / Deduct share of others (To be Specified, if any)	0	0	0
12	Total expenses	8.57	9.08	9.62
13	Less Capitalized	0	0	0
14	<b>Net expenses</b>	<b>8.57</b>	<b>9.08</b>	<b>9.62</b>
15	Add prior period's expenses	0	0	0.00
16	<b>Total expenses charged to revenue as R&amp;M expenses</b>	<b>8.57</b>	<b>9.08</b>	<b>9.62</b>

**2.5 Administrative & General Expenses - Petitioner's Submission**

The expenses towards A&G for FY 2013-14 to FY 2015-16 submitted by the Petitioner is as under:

**Table 6: Administrative & General Expenses - Petitioner's Submission**

Rs. Crs.				
Sl.	Particulars	2013-14 Actual	2014-15 Estimated	2015-16 Projected
a	b	c	d	e
1	Rent, rates & taxes	0.00	0.00	0.00
2	<b>Office Expenses</b>			
	Telephone, postage & Telegrams			
	Consultancy fees	2.10	2.23	2.36
	Advertising & Publicity			
	Other professional charges			
	Conveyance & travel expenses	1.34	1.42	1.51
8	Electricity & water charges	0.00	0.00	0.00
9	Others ( Please specify) , if any	0.00	0.00	0.00
10	Freight	0.00	0.00	0.00
11	Other material related expenses	0.00	0.00	0.00
12	Total expenses	<b>3.45</b>	<b>3.65</b>	<b>3.86</b>
13	Less Capitalized	0.00	0.00	0.00
14	Net expenses	<b>3.45</b>	<b>3.65</b>	<b>3.86</b>
15	Add Prior period	0.00	0.00	0.00
16	Total expenses charged to revenue	<b>3.45</b>	<b>3.65</b>	<b>3.86</b>

**2.6 O&M Expenses – Petitioner's Submission**

Expenses Projected by the Petitioner towards O&M for FY 2015-16 along with similar data for FY 2013-14 and FY 2014-15 is as under. The Petitioner also submitted under the heading of “Assumptions” of the Petitioner that an Escalation 5.98 % is applied on the expenses of FY 2014-15 under this head

**Table 7: O&M Expenses-Petitioner's Submission**

Rs. Crs.					
Sl.	Financial Year (FY)	Employees Cost Rs. Crs.	R&M Expenses Rs. Crs.	Administrative & General Expenses Rs. Crs.	Total Rs. Crs.
a	b	c	d	e	f
1	2013-14	48.41	8.57	3.45	60.43
2	2014-15	51.29	9.08	3.65	64.02
3	2015-16	54.36	9.62	3.86	67.84

**2.7 Interest on Working Capital- Petitioner's Submission.**

The Petitioner has considered an Interest @ 14.75 % per annum on working capital which is the Prime Lending Rate (PLR) of State Bank of India as on 01-04-2014. The calculation of interest on working capital, as submitted by the Petitioner is summarized below

**Table 8 : Interest on Working Capital- Petitioner's Submission**

Rs. Crs.				
Sl.	Particulars	FY 2013-14	FY 2014-15	FY 2015-16
1	Interest on Loan	0.00	0.00	0.00
2	Depreciation	21.23	21.23	21.23
3	Return on Equity	34.70	34.70	34.70
4	O&M Expenses	60.43	64.02	67.85
5	Interest on Working Capital	5.06	5.28	5.51
6	Total Annual Fixed Cost	121.42	125.23	129.29

**2.8 Work in Progress - Petitioner's Submission**

The following data has been submitted by the Petitioner

**Table 9 : Work in Progress - Petitioner's Submission**

Rs. Crs				
Sl.	Particulars	FY 2013-14 Actual	FY 2014-15 Estimated	FY 2015-16 Projected
1.	Opening Balance	398.5148	398.5148	410.5148
2.	Add: New Investments	0.00	12.00	12.00
3.	Total Sl.1+ Sl.2	398.5148	410.5148	422.5148
4.	Less: Investment Capitalized	0.00	0.00	0.00
5.	Closing Balance Sl.3- Sl.4	398.5148	410.5148	422.5148

**2.9 Interest Capitalized -Petitioner's Submission**

The Petitioner has not capitalized any Interest, as detailed below:

**Table 10: Interest Capitalized -Petitioner's Submission**

Rs. Crs

Sl.	Interest Capitalized on	2013-14 Actual	2014-15 Estimated	2015-16 Projected
a	b	c	d	e
1	Work in Progress	398.51	410.51	422.51
2	GFA at the end of the Year	826.17	826.17	826.17
3	WIP+GFA at the end of the Year	1224.68	1236.68	1248.68
4	Interest @ 14.75% ( Without Interest on Working Capital )	180.64	182.41	184.18
5	Interest Capitalized	0.00	0.00	0.00

**2.10 Annual Fixed Costs FY 2015-16 Petitioner's Submission**

The Petitioner submitted in the Petition format HG3, Annual Fixed Charges (AFC) based on various elements of costs contributing to AFC along with net Power Generation for FY 2015-16 after adjusting for Auxiliary Consumption. The HG3 format of the Petition included similar data for FY 2013-14 and FY 2014-15:

**Table 11: Annual Fixed Costs and Net Power Generation - Petitioner's Submission**

Sl.	Particulars	FY 2013-14 Actual	FY 2014-15 Estimated	FY 2015-16 Projected
1	Gross Generation (MU)	53.66	53.17	53.17
2	Auxiliary Consumption (MU)	0.82	0.64	0.64
3	Net Generation (MU)	52.84	52.54	52.54
4	Free Energy to home state (MU)	0.00	0.00	0.00
5	Royalty (Rs.)	0.00	0.00	0.00
6	Water Charges (Rs.)	0.00	0.00	0.00
7	<b>Capacity Charges (Rs.)</b>			
a)	Interest on Loan capitals (Rs.)	0.00	0.00	0.00
b)	Depreciation (Rs.)	21.23	21.23	21.23
c)	Advance against depreciation (Rs.)	0.00	0.00	0.00
d)	O&M Expenses (Rs.)	60.43	64.02	67.85
e)	Interest on working capital (Rs.)	5.06	5.28	5.51
f)	Foreign exchange Rate (%)	Not Applicable		
g)	Return on Equity	34.70	34.70	34.70
h)	Income Taxes (Rs.)	Not Applicable		
	<b>Total fixed expenses (7b+7d+7e+7g)</b>	121.42	125.23	129.29

Sd/-

SECRETARY

State Electricity Regulatory Commission  
Arunachal Pradesh

.....Page 23

Petitioner has indicated that the cumulative plants design energy is 516.09 MUs, the projected Gross Generation is shown above.

#### 2.11 Indicative Tariff - Petitioner's Submission

Based on the Annual Fixed Charges and Net Generation of Hydro Power, the Petitioner has worked out the indicative Tariff here under:

**Table 12: Indicative Tariff - Petitioner's Submission**

Sl.	Particulars	For FY 2015-16
a	b	c
1	Annual Fixed Costs Rs. Crs.	129.29
2	Design Energy at 50% CUF(Saleable Energy) MUs	254.95
3	Indicative Tariff Rs. / kWh	5.07

#### 2.12 Petitioner's Prayer

The Petitioner has requested in the petition that the Commission to:

- (a) Approve the Annual Fixed Charges as mentioned in Para 3 (of the Petition)
- (b) Pass necessary orders in the light of Additional submissions made in Para 5 above (of the Petition).
- (c) Approve reimbursement of Tariff Petition filing fee of Rs. 5,00,000/-
- (d) Pass such other and further order(s) as are deemed fit and proper in the facts and circumstances of the case.

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### 3. Analysis: ARR for FY 2015-16 and Tariff Determination

#### Fixed Costs

The DHPD has provided O&M expenses, the details of GFA, Depreciation etc. for the FY 2014-15 and FY 2015-16. The details of FY 2010-11, FY 2011-12 FY 2012-13 have been added by the Commission from the Previous Petition /records to have a comprehensive view of the ARR. The DHPD has requested the Commission to consider the Tariff Petition for determination of ARR and Tariff for based on projections made towards FY 2015-16 made on the basis of various components of expenses. As per the furnished data the following details are arrived.

#### 3.1 Assets and Depreciation

Based on the Petitioner's Submission in respect of Gross Fixed Assets (GFA) the Commission has analyzed the same in the following table. While analyzing the Commission has also considered the data of FY 2010-11 to FY 2012-13 submitted by the Petitioner in earlier Petition.

**Table 13 Goss Fixed Assets-Commission's Analysis**

Rs. Crs.					
Year	Opening Balance of GFA	Addition of Assets	Closing Balance of GFA	Rate of Depreciation %	Depreciation in absolute Amount. Rs. Crs.
FY 2010-11	823.42	0.00	823.42	2.57 %	21.16
FY 2011-12	823.42	2.75	826.17	2.57 %	21.23
FY 2012-13	826.17	0.00	826.17	2.57 %	21.23
FY 2013-14	826.17	0.00	826.17	2.57 %	21.23
FY 2014-15	826.17	0.00	826.17	2.57 %	21.23
FY 2015-16	826.17	0.00	826.17	2.57 %	21.23

#### Commission's Analysis

DHPD has not provided asset wise detailed values for the purpose of working out the depreciation. As mentioned in the petitioner, the assets are created by

DHPD with the funds provided by State Government and GOI. As per underlying principle, depreciation is admissible on the opening balance excluding contributions and capital subsidy/grants provided by Government. In the absence of details of these particulars, Commission does not consider any depreciation for FY 2015-16.

### 3.2 O&M Expenses

The DHPD has provided the Operation and Maintenance Expenses covering

- i) Employees' costs,
- ii) R&M expenses and
- iii) A&G expenses

as below:

While analyzing these costs, the Commission has also tracked the historic values of previous years ( from earlier Petition) and examined the YoY change for any unusual distortion.

#### i) Employees' costs

**Table 14 Employees' Costs FY 2015-16 Commission's Analysis**

and Comparison with Previous Years

Sl.	Year	Employees Cost Rs. Crs.	YoY Change
a	b	c	d
1	FY 2010-11	36.25	-
2	FY 2011-12	42.02	115.9%
3	FY 2012-13	45.18	107.5%
4	FY 2013-14	48.41	107.1%
5	FY 2014-15	51.29	105.9%
6	FY 2015-16	54.36	106.0%

**ii) R & M Expenses****Table 15 R&M Expenses FY 2015-16- Commission's Analysis and Comparison with Previous Years**

Sl.	Year	R&M Expenses Rs. Crs.	YoY Change
a	b	c	d
1	FY 2010-11	2.96	
2	FY 2011-12	5.92	200.00%
3	FY 2012-13	6.36	107.43%
4	FY 2013-14	8.57	134.75%
5	FY 2014-15	9.08	105.95%
6	FY 2015-16	9.62	105.95%

**iii) Administrative & General Expenses****Table 16 Administrative & General Expenses- Commission's Analysis**

and Comparison with Previous Years

Sl.	Year	Administrative & General Expenses Rs. Crs.	YoY Change Petitioner's Projections
1	FY 2010-11	2.00	
2	FY 2011-12	2.24	112.00%
3	FY 2012-13	2.41	107.59%
4	FY 2013-14	3.45	143.15%
5	FY 2014-15	3.65	105.80%
6	FY 2015-16	3.86	105.75%

**iv) Total O&M Expenses for FY 2015-16****Table 17: Total O&M Expenses for FY 2015-16 and Comparison with Previous Years- Petitioner's Submission**

Sl.	Year	Total O&M Rs. Crs. as per the Petitioner	Commission's Approval in 2013-14 Rs. Crs
1	FY 2010-11	40.50	
2	FY 2011-12	50.19	
3	FY 2012-13	53.95	
4	FY 2013-14	60.43	15.20
5	FY 2014-15	64.02	
6	FY 2015-16	67.84	

**Commission's Analysis**

DHPD have stated that they have work force of 2820 including all cadres of employees. The cadre-wise number of employees, project wise details of employees, employees going to retire, employees going to be

recruited /engaged etc. are not provided. Maintaining strength of 2820 employees for 114 small/micro projects seems to be very high and expensive. Moreover it is also not clear as to how much of them are engaged in ongoing construction projects and other activities of the APDHPD and how much is actually involved on Operation & Maintenance works. In absence of relevant data in respect of the Employees' Cost and that the Employees' cost is the major component of the O&M cost, the Commission has thus not considered the data in the tables 14 to 17 above.

In this regard there are necessary guidelines in CERC Regulations for Terms & Conditions for tariff Determination from Renewable Energy Sources, 2012 (Regulation 32) for deciding the normative O&M cost. Moreover, to determine the O&M expenses, the Commission has also issued its Regulation No. 28 of the Regulations notified by it regarding terms & conditions for tariff determination from renewable energy sources, 2012 which is in line with the above mentioned CERC Regulation. According to these Regulations, the norms for Operation & Maintenance (O&M) expenses for FY 2012-13 are fixed for the State of Arunachal Pradesh as follows:

For Projects below 5 MW - Rs. 25 Lakhs/MW

For Projects of 5 MW to 25 MW - Rs. 18 Lakhs/MW

The above charges shall be escalated at the rate of 5.72% per annum from FY 2012-13 to FY 2015-16(i.e. three such escalations on annual basis). Accordingly the O&M Expenses for FY 2015-16 shall be as below:

**Table 18: O&M EXPENSES FOR FY 2015-16 – COMMISSION'S ANALYSIS**

Rating of Hydro unit	Norms for O&M expenses for 2012-13 in Rs. Lakh/MW	Rate of escalation per year	O&M expenses for 2015-16 Lakh/MW	DHPD's capacity as on date in MW	O&M expenses for 2015-16 in Rs. Lakh
a	b	c	d	e	f
Below 5 MW	25.00	5.72 %	29.54	50.02	1477.59
5 MW & above	18.00	5.72 %	21.27	12.00	255.24
			Total	62.02	1732.83

**Say Rs. 17.33 Crore**

**As such, Commission approves O&M expenses of Rs. 17.33 crores for FY 2015-16.**

### **3.3 Return on Equity**

DHPD has considered total Gross Fixed Assets for calculation of ROE at 14%. The Department has not provided the details of assets and costs. The total GFA costs and ROE worked out by the Petitioner is depicted in the table below:

**Table 19: Return on Equity- Commission's Analysis and Comparison with Previous Years****Rs. Crs.**

Sl.	Particulars	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
a	b	c	d	e	f	g	h
1	GFA	823.42	826.17	828.91	826.17	826.17	826.17
2	Equity 30%	247.03	247.85	248.67	247.85	247.85	247.85
3	Loan 70%	576.39	578.32	580.24	578.32	578.32	578.32
4	ROE	34.58	34.70	34.81	34.70	34.70	34.70

**Commission analysis:**

The Commission cannot consider the GFA projected at Rs. 826.17 Crs. in the Petition for FY 2015-16 in respect of 114 Hydro power stations in the state. The details of project wise costs are also not provided by the Department for the hydro stations and related assets.

In this regard, the Regulations notified by this Commission regarding the terms & conditions for tariff determination for renewable energy sources, 2012(Regulation 16) state that:

1. The value base for the equity shall be 30% of the capital cost or actual equity (in case of project specific tariff determination) as determined under Regulation 13; and
2. The normative Return on Equity shall be:
  - (a) 20% per annum for the first 10 years;
  - (b) 24% per annum 11<sup>th</sup> year onwards.

Regulation 25 of the same Regulations specifies the norms for determination of the Base Capital Cost for FY 2012-13 as follows; viz.

- a) For SHP less than 5 MW = Rs. 7.00 Crore per MW
- b) For SHP 5 MW to 25 MW = Rs. 6.30 Crore per MW

For the purpose to derive a generic asset value, it has been considered that most of the projects of DHPD are commissioned before 2012-13. As such, to arrive at Base Capital Cost the normative value as per the CERC's and this Commission's relevant regulations have been considered.

Thus in the present case to determine the Debt Equity Ratio of the capital cost to calculate the Return on Equity, the capital cost of the of the projects which are less than 10 years old and those which are more than 11 years old has been worked out in accordance to the above mentioned norms as follows:

Capacity of the projects that have completed less than 10 years:

Projects Less than 5 MW= 22.265 MW @ Rs.7.00 Cr/MW= Rs. 155.855 Cr.

Projects of 5-25 MW = 6.00 MW @ Rs.6.30 Cr/MW =Rs. 37.800 Cr.

Total cost = Rs. 193.655 Cr.-(A)

Capacity of the projects that have completed more than 11 years:

Projects Less than 5 MW= 27.75 MW @ Rs.7.00 Cr/MW= Rs. 194.25 Cr.

Projects of 5-25 MW = 6.00 MW @ Rs.6.30 Cr/MW =Rs. 37.80 Cr.

Total cost = Rs. 232.05 Cr. -(B)

Debt-Equity Ratio for (A) : Debt = 70% of Rs. 193.655 Cr = Rs. 135.559 Cr.

Equity= 30% of Rs.193.655 Cr= Rs. 58.096 Cr. - (C)

Debt-Equity Ratio for (B) : Debt = 70% of Rs. 232.05 Cr = Rs. 162.435 Cr.

Equity= 30% of Rs.232.05 Cr= Rs. 69.615 Cr. - (D)

Return on Equity for projects up to 10 years old @ 20% of Rs.58.096 Cr.=Rs.11.62 Cr.

Return on Equity for projects more than 10 years@24% of Rs.69.615Cr=Rs.16.71 Cr.

Total amount of Return on Equity = Rs. 28.33 Crore.

**In view of the Commission approves an amount of Rs.28.33 Crore as Return on Equity for the FY 2015-16.**

### **3.4 Interest on Loan Capital**

It is submitted by DHPD that project cost has been funded by the budgetary support of State/ Central Government. The Department has not availed any loan and in view of this interest has not been claimed.

#### **Commission's view:**

**Commission accepts the views of DHPD and does not approve any interest on loan capital.**

### 3.5 Interest on Working Capital

DHPD has computed working capital as under.

- i. One month of O&M expenses
- ii. Maintenance of spares (15% of O&M costs)
- iii. Receivables (2 months of fixed costs)
- iv. Interest is claimed at 14.75%.

#### Commission analysis:

For working out the Interest on working capital, the Commission has taken into consideration its regulation no. 17 of the Regulations notified by it for determining the tariff from Renewable Energy Sources, 2012 according to which the working capital for SHPs would be sum total of:

- a) O&M expenses for one month.
- b) Receivables equivalent to two months of energy charges for sale of electricity on the normative CUF which has been fixed at 45% for the SHPs as per the regulation no. 26 of above mentioned Regulations of the Commission.
- c) Maintenance spares @15% of O&M expenses.

Interest on the working capital worked out as above shall be at the interest rate equivalent to the average SBI Base Rate prevailing during the first six months of previous year plus 350 basis points. In the present case the SBI Base rate shall be 10% to which additional 3.5% shall be added on account of 350 basis points. Thus the applicable interest rate would be 13.5% i.e. 10% + 3.5%. Considering the above approved O&M expenses at Rs. 17.33 Cr/annum vide Table 18 and interest rate at 13.5%, the Working Capital and Interest on Working Capital will be as follows.

**Table 20: Interest on Working Capital FY 2015-16 Commission's Analysis**

Rs. Crs.

Sl.	Particulars	FY 2015-16
1	O&M expenses for one month	$17.33/12 = 1.44$
2	Maintenance spares (15% of O&M)	$15\% \text{ of } 17.33 = 2.60$
3	Receivables (2 months of energy charges calculated at 45% CUF)	$2 * (229.92 \text{ MU} * \text{Rs. } 2.09 / \text{unit}) / 12 = \text{Rs. } 8.00 \text{ Cr}$
4	<b>Total Working Capital</b>	$1.44 + 2.60 + 8.00 = \text{Rs. } 12.04 \text{ cr.}$
5	<b>Interest at 13.5% on Sl. 4 above</b>	Rs. 1.63 Cr.



**Commission approves Interest on Working Capital at Rs. 1.63 Crore for the FY 2015-16.**

### **3.6 Commission's Analysis & Approval of ARR**

With the above data, the Commission analyzed the AFC as under:

**Table 21: Annual Fixed Charges for FY 2015-16- Commission's Analysis**

Rs. Crore

Sl.	Particulars	Amount for FY 2015-16
a	b	d
1	Interest on Loan	0.00
2	Depreciation	0.00
3	Return on Equity	28.33
4	O&M Expenses	17.33
5	Interest on Working Capital	1.63
6	Total Annual Fixed Charges (AFC) Total Sl. 1 to Sl. 5 As analyzed by the Commission	47.29
7	Fee for Tariff Petition Filing	0.05
8	Total amount Approved ( Sl.6 to Sl.8)	47.34

#### **Annual Fixed charges (AFC)- Commission's Approval**

Based on the above analysis, the Commission approves the annual fixed cost as **Rs.47.34 Crs.**

### **3.7 Hydro Power Generation Tariff for FY 2015-16- Commission's Analysis**

Regulation 27 of the APSERC Regulation on "The Terms and Conditions For Determining Of Tariff Determination from Renewable Energy Sources – 2012" dated 9<sup>th</sup> April'2012 specifies the Auxiliary Energy Consumptions Norms of Operation in respect of the Hydro Plants at 1% for SHPs.

The APDHPD has requested the Commission in its tariff petition to consider 50% of the presently projected designed energy of 516.09 MUs against the national average PLF of 37.64%. In view of this factual information furnished by the APDHPD and the operational working conditions of the smaller capacities of number of hydel stations spread over the remote

parts of the state, it is reasonable to request to consider 50% of designed energy as saleable energy. However, the norm for CUF is fixed at 45% for SHPs as per the Regulation no.26 of the Commission's Regulations on Terms & Conditions for Tariff Determination from Renewable Energy Sources, 2012 for working out the saleable energy from the SHPs. Having said that, the Commission has also noted that the actual generation versus design energy ratio of DHPD since many years has been around 10% only which is far below than the national average of 37.64% for SHPs. As a first step towards improvement of efficiency, DHPD is expected to increase the percentage of saleable energy at least to the national average.

In view of the above ground realities, the Commission considers that even 45% CUF as per norms of above stated Regulations are not achievable by DHPD at this stage.

As such, the Commission considers a realistic view that the national average of 37.64% PLF be taken for the purpose of the tariff calculations.

The details of the Installed Capacity of DHPD (for which petition has been filed for Tariff determination), design energy and saleable energy are summarized as under:

**Table 22: Hydro Power considered for sale for FY 2015-16- Commission's Summary**

Sl.	Particulars	FY 2015-16
a	b	d
1	Installed Capacity (MW)	62.015
2	Design Energy (MU)	516.09
3	CUF Considered %	37.64%
4	Gross Energy (MU)	194.26

Sl.	Particulars	FY 2015-16
a	b	d
5	Auxiliary Power Consumption %	1.0%
6	Auxiliary Consumption (MU)	1.94
7	Saleable Energy (MU)	192.32

The Tariff is worked out as under:

**Table 23: FY 2015-16 Hydro Power Generation Tariff - Commission's Approval**

Sl.	Net Energy after accounting for Auxiliary Power Consumption	Fixed Charges Rs. Crs	Approved Tariff Rs./ kWh
a	b	c	d
1	192.32 MU	47.34	<b>2.46</b>

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## 4. Compliance of Directives and New Directives

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### General

Commission has observed from the tariff petition submitted by DHPD that there are deficiencies, data gaps and there is need to improve efficiency in O&M of power stations, reducing O&M costs, to generate more power etc. In this context Commission considered it necessary to issue certain directives to the Department of Hydro Power Development.

### 4.1 Status of Compliance of Directives issued for FY 2013-14

#### 4.1.1 Asset Registers

Project wise Asset registers, containing land details, civil structures, dams, spill ways, power house Buildings, Office Buildings, the Machinery and Equipment together with costs shall be arranged to be prepared and submitted to the Commission.

#### Commission's Comments:

The Commission has still not received the same along with Petition for FY 2015-16.

#### 4.1.2 Data Deficiencies and submission of Tariff Petition.

The formats provided by the Commission for submission of data along with Tariff Petition are not filled in complete shape. In HG1 format even Technical particulars of equipment are not filled up.

Details of R&M costs, A&G expenses are to be furnished in the Tariff Petition.

#### Commission's Comments:

The Commission still awaits the data as above and has not been submitted even now along with Petition for FY 2015-16.

#### 4.1.3 Filing of the Petition in time

**Tariff petition with all the required data in the formats shall be submitted by 30th November of every year.**

#### Commission's Comments:

The Directive has not been complied with even for the FY 2015-16 Petition.

#### 4.1.4 Manpower Costs

The Department is having 2820 employees of different cadres – Employees costs are shown at Rs. 45.19 crore for FY 2012-13.

Station wise man power working may be analyzed and the need based man power assessed. Extra man power found can be utilized at new stations. Details of man power costs under different sub heads viz. pay, Dearness Allowance, Welfare expenses etc. are to be indicated in the tariff petition.

**Commission's Comments:**

The Commission still awaits the above information. The same has not been provided even for Petition for FY 2015-16.

#### 4.1.5 Generation

DHPD has generated and supplied only 60 MU during FY 2012-13 against net design saleable energy of 250.18 MU which is just 24%. It indicates that the Performance is poor. DHPD shall take necessary steps to improve the performance of the stations and generate additional power. **The DHPD shall make an all-out effort to increase the present generation at least by 5% (i.e. about 12.50 MU) of the net design saleable energy i.e. 250.18 MU in each year.** This will facilitate the additional generation with non-conventional source within the state. Further this low cost energy shall not only reduce the burden of APDOP of buying energy at higher cost but shall also give relief to the consumers of the state. The DHPD shall submit a report to the Commission on the steps proposed to be taken in this regard with improvements carried out, within Six months.

**Commission's Comments:**

No action Plan has been submitted even along with the Petition for FY 2015-16. In fact the generation hasn't increased during the last two years. The investments to increase the Power Generation to as near as the Design Energy have to be attempted by the department seriously and investment plan to be submitted to the Commission.

## **4.2 Directives issued for FY 2015-16**

### **4.2.1 Business Plan:**

DHPD is directed to submit its annual business plan consisting of the works i/c the renovation and life extension works planned to be taken up during the year along with the sources of funding, annual targets, time lines of completion, up to date physical achievements of ongoing works. Justification of the works planned be also incorporated in the business plan.

### **4.2.2 Hydro Power Stations with" Nil" Power Generation**

It is noticed from the data provided that there are certain power stations with nil generation that are ranging from small rating to big rating units. Reasons are not indicated. The Department shall examine such stations and find out the reasons, carry out any improvements required and ensure the stations generate power. A report shall be submitted to the Commission on these stations about the plan of action to make them operational.

### **4.2.3 Project wise Costs**

Project wise costs are not furnished with the petition. The same shall be arranged and provided to the Commission.

### **4.2.4 Electricity Regulatory Cell**

APDHPD shall create an Electricity Regulatory Cell (under a senior Officer) from the existing staff strength. The Cell so created shall be provided with necessary authority and resources so as to look after all the Tariff and Regulatory matters primarily to keep an vigil on the parameters approved and directives issued by the Commission and also to provide correct and timely information to the Commission. The said officer shall be the primary source of all data and submissions being filed before the Commission, so as to ensure consistency and timelines of the data submitted and proper co-ordination with the Commission in the tariff determination process.

### **4.2.5 Reassessment of Installed Capacity of the existing stations**

All the members of the SAC had felt that the generation from the hydro stations does not commensurate with the installed capacity of the projects. As

clarified by the DHPD, one of the reasons stated for this was that many of the projects are very old and the capacity of the machinery has got de-rated due to ageing. Moreover over a period of time the hydrology of the project has also changed leading to reduction in water discharge and hence reduction in the generating capacity. It was also stated that during earlier days one machine in the station used to be only as standby but whose capacity is added in the installed capacity. In view of the above the DHPD is directed to reassess the actual generating capacity of all such projects afresh and re-fix the installed capacity afresh and get it approved.

#### **4..2.6 Raising of bills to Deptt. of Power**

The AP DHPD directed to immediately start raising the bills to AP DoP for the energy consumed by them at the tariff fixed by the Commission w.e.f 2013-14 onwards. With effect from April'2015, bills should be raised project wise on monthly basis. Modalities for the process of raising the bills i.e. regarding date of joint meter readings, persons authorized to sign the joint meter reading, format of the bill etc. should be worked out between the Chief Engineer(EM) of DHPD and Chief Engineer(Commercial) DOP to avoid any kind of disputes.

#### **4.2.7 Training and skill development of the employees of the DHPD**

The Deptt. is directed to give top most priority to training and skill development of O&M staff and the supervisory staff(JEs and AEs) of the generating stations so as to increase the longevity & efficiency of the machines. The Deptt. should work out a well thought plan of imparting training in phased manner and allocate necessary fund in its annual budget for the same.

#### **4.2.8 Preparation of yardstick of O&M Staff**

The Deptt. is directed to prepare a yardstick for deployment of O&M staff in its hydro stations of different capacities and get it approved. The existing staff should be redeployed as per the yardstick enabling optimum utilization of the existing staff strength.

#### **4.2.9 Accounting of O&M expenses**

The Deptt. is directed to maintain project wise accounting of expenses in respect of the following:

- a) Expenses on salary and wages of the staff working in that generating station.
- b) Expenses incurred on repair & maintenance of that generating station.
- c) Any other general expenses incurred on the staff of that generating station.

These project wise details should be provided in the tariff Petition from next year onwards as these are regulatory requirements.

#### **4.2.10 Reassessment of the value of the existing assets of the Deptt.**

The Deptt. hasn't provided the supporting details of the gross asset value projected in the tariff petition. Prima-facie the asset value seems to be on the higher side. The Deptt. is directed to reassess the value of its assets once again and provide the correct asset value to the Commission in the next petition. If the Deptt. feels proper and necessary, it is suggested that Deptt. may seek the services of professional valuers & estimators in this field for assessing the proper value of the assets of the Deptt. as it is a one time exercise and it is in the benefit of the Deptt. that it should be done with fair amount of accuracy.



#### **4.2.11 Scheduling of generation from the Deptt.'s Hydro Stations**

The Deptt. is directed to start scheduling the generation from its generating stations for proper and optimum utilization of the generation by the Deptt. of Power.

#### **4.2.12 Fixing of project wise generation target**

The Deptt. is also directed to fix monthly/quarterly target of generation project wise based on various factors like the seasonal availability of the water, condition of the machines etc. This will also help the Deptt. in self-assessment of its performance. Details of Project wise target and actual generation should be incorporated in the next tariff petition of the Deptt.

#### **4.2.13 Compliance of directives of 2013-14**

The Commission is concerned that the Deptt. has not complied with any of the directives issued by it in the tariff order for FY 2013-14 as mentioned under Para 4.1(4.1.1 to 4.1.5) of this Chapter. The Deptt. is once again directed to comply with those directives as well at the earliest.

**Date: 12-5-2015**

**Place: Naharlagun**

**sd/-**

**Digvijai Nath  
Chairman**

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**ANNEXURE-I**  
**Details of Hydro Electric Power Station of APDHP**

SL. No.	Name of the Stations	Units	Installed Capacity (in KW)	Firm Capacity (in KW)	Year of Commissioning
<b>Tawang District</b>					
1	Kitpi Ph-I	3 x 500	1500	1000	1977-78
2	Nuranang	3 x 2000	6000	4000	1996-97
3	T. Gompa	5 0	50	50	2001-02
4	Dudunghar	3 0	30	30	2004-05
5	Bramdhongchung	2 x 50	100	50	2008-09
6	Shakti Nallah	2 x 50	100	50	2008-09
7	Kitpi MHSPH-II	2 x 1500	3000	3000	2008-09
8	Chellengkang Ph-II	3 0	30	30	2008-09
9	Bongleng	2 x 50	100	50	2009-10
10	Thimbu	2 x 50	100	50	2009-10
11	Bramdhongchung Ph-II	2 x 50	100	50	2010-11
12	Tsechu Nallah	2 x 50	100	50	2010-11
13	Mago	2 x 50	100	100	Trial Run
<b>West Kameng District</b>					
14	Rahung	3 x 250	750	500	1972-73
15	Dirang	4 x 500	2000	1500	1977-78
16	Sessa	3 x 500	1500	1000	1992-93
17	Rupa	2 x 100	200	200	1997-98
18	Dokumpani	3 0	30	30	2000-01
19	Domkhong	2 x 1000	2000	500	2008-09
20	Sinchung	5 0	50	30	2008-09
21	Ankaling	3 0	30	20	2009-10
22	Khet	2 x 50	100	50	2009-10
23	Dikshi	3 0	30	20	2010-11
24	Khadiyabey	2 x 100	200		2011-12
<b>East Kameng District</b>					
25	Seppa	3 x 100	300	200	1980-81
26	Pakke Kessang	3 0	30	30	2001-02
27	Pacha MHS	2 x 1500	3000	3000	2008-09
28	Pakoti	2 x 50	100	100	2010-11
29	Patta Nallah	2 x 50	100	100	2010-11
30	Watte Mame	5 0	50	50	2010-11
31	Kade Nallah	5 0	50	40	2010-11
<b>Kurung Kumey District</b>					
32	Patte MHS at Tali	3 0	30	35	2004-05
33	Koye	1 x 50	50	40	2009-10

SL. No.	Name of the Stations	Units	Installed Capacity (in KW)	Firm Capacity (in KW)	Year of Commissioning
34	Chambang	3 0	30	25	2009-10
35	Paya MHS at Hiya	2 x 50	100		2011-12
<b>Lower Subansiri District</b>					
36	Mai Ph-I	4 x 500	2000	1500	1977-78
37	Mai Ph-II	2 x 500	1000	1000	1982-83
38	Tago	3 x 1500	4500	3000	1992-93
<b>Upper Subansiri District</b>					
39	Dulom (Daporijo)	4 x 100	400	300	1981-82
40	Maro	3 0	30	25	2002-03
41	Sippi	2 x 2000	4000	4000	2008-09
42	Pinto Karo MHS	2 5	25		2011-12
43	Sikin Karo	2 x 100	200		2011-12
44	Sinyum Koro	2 x 50	100		2011-12
45	Kojin Nallah	2 x 50	100		2011-12
46	Ayingmuri	2 x 125	250	250	2012-13
47	Limeking	30	30	30	2012-13
<b>West Siang District</b>					
48	Pagi (Basar)	2 x 50	100	50	1972-73
49	Along	4 x 100	400	200	1975-76
50	Ego-Echi (Dali)	4 x 100	400	300	1987-88
51	Mechuka	2 x 50 + 1 x 250	350	150	1989-90 2005-06
52	Yomcha	5 0	50	30	2001-02
53	Tato	5 0	50	50	2004-05
54	Beye	3 0	30	20	2004-05
55	Kambang	3 x 2000	6000	6000	2008-09
56	Liromoba	2 x 1000	2000	2000	2008-09
57	Yingko Sikong - Rapum	5 0	50	50	2009-10
58	Angu	5 0	50	30	2010-11
59	Solegomang MHS	5 0	50		2011-12
60	Borong MHS	5 0	50		2011-12
61	Siri Korong	2 x 250	500	500	2013-14
<b>Upper Siang District</b>					
62	Yingkiong Ph-I	3 x 50	150	100	1980-81
63	Sikut/ Tuting	2 x 50	100	70	1984-85
64	Yingkiong Ph-II	2 x 100	200	100	1992-93
65	Selli at Geku	2 x 250	500	500	1994-95
66	Sirnyuk	2 x 1000	2000	2000	1996-97
67	Kopu at Tuting	50 + 250	300	250	2004-05 2007-08
68	Silingri	5 0	50	50	2008-09
69	Singa	3 0	30	30	2008-09
70	Ngaming	5 0	50	50	2008-09

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SECRETARY

State Electricity Regulatory Commission  
Arunachal Pradesh

.....Page 43

SL. No.	Name of the Stations	Units	Installed Capacity (in KW)	Firm Capacity (in KW)	Year of Commissioning
71	Sika	1 5	15	15	2008-09
72	Mayung	5	5	5	2009-10
73	Gosang	2 x 250	500	500	2011-12
74	Kote MHS	5 0	50		2011-12
75	Sijen MHS at Adi pasi	5 0	50		2011-12
76	Pyabung MHS	2	25		2011-12
<b>East Siang District</b>					
77	Pasighat	2 x 100	200	200	1974-75
78	Yembung	4 x 500	2000	1500	1994-95
79	Silli	30	30	30	2001-02
80	Rina	2 x 1000	2000	2000	2008-09
81	Deopani Ph-I	3 x 250	750	500	1986-87
82	Abhapani	250+2x100	450	300	1994-95
83	Deopani Ph-II	3 x 250	750	500	2004-05
<b>Dibang Valley District</b>					
84	Anini/ Awapani Ph-I	3 x 50	150	150	1994-95
85	Tah Ahfra Ph-I & Ph-II	50 + 50	100	50	2001-02 2009-10
86	Chini Afra	2 5 0	250	250	2001-02
87	Echi Ahfra	2 x 200	400	200	2005-06
88	Awapani Ph-II	2 x 250	500	500	2005-06
89	Echito Nallah	2 x 20	40	30	2010-11
90	Rupapani	2 x 20	40	30	2010-11
91	Chu Nallah	2 x 15	30		2011-12
<b>Lohit District</b>					
92	Dura Nallah	5 x 100	500	300	1976-77
93	Tafragram	2 5 0	250	150	1984-85
<b>Anjaw District</b>					
94	Kaho	1 0	10	10	2004-05
95	Kebitho	3 0	30	30	2004-05
96	Mati Nallah	2 x 250	500	150	2004-05
97	Yapak Nallah	2 x 100	200	200	2005-06
98	Teepani	2 x 250	500	500	2009-10
99	Krawti Nallah	2 x 50	100	100	2009-10
100	Hathipani	2 x 50	100	100	2009-10
101	Tah Nallah	2 x 50	100	100	2009-10
102	Maipani	2 x 30	60	60	2010-11
103	Ashapani	2 x 30	60		2011-12
104	Langpani	2 x 200	400		2011-12
105	Kachopani	2 x 100	200	200	Trial Run
<b>Changlang District</b>					

SL. No.	Name of the Stations	Units	Installed Capacity (in KW)	Firm Capacity (in KW)	Year of Commissioning
106	Tissue	4 x 100	400	300	1986-87
107	Jongkey Nallah	2 5	25	25	2011-12
108	Ngonalo at Vijaynagar	2 x 50	100	75	2010-11
109	Tinning	2 x 30	60	30	2010-11
110	Chicklong	3 x 50	150		2011-12
<b>Tirap District</b>					
111	Thiratju	4 x 250	1000	500	1978-79
112	Charju	3 x 200	600	400	1984-85
113	Sumhok Nallah	2 x 50	100	50	2009-10
114	Tahin Nallah	2 x 50	100		2011-12
	<b>TOTAL</b>		<b>62015</b>		

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