Jharkhand State Electricity Regulatory Commission

Order on

approval of Business plan

and

determination of ARR for the control period

FY 2016-17 to FY 2020-21

(including True up for the period

6th Jan 2014 - 31st Mar 2014, FY 2014-15 and FY 2015-16)

for

Jharkhand Urja Utpadan Nigam Limited

(JUUNL)

Ranchi

25th September 2018

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List of Abbreviations

Abbreviation	Description
A&G	Administrative and General
ARR	Aggregate Revenue Requirement
ATE	Appellate Tribunal for Electricity
COD	Date of Commercial Operation
FY	Financial Year
GFA	Gross Fixed Assets
GoI	Government of India
JSERC	Jharkhand State Electricity Regulatory Commission
JUUNL	Jharkhand Urja Utpadan Nigam Limited
kCal	Kilocalorie
kg	Kilogram
kWh	Kilowatt-hour
MAT	Minimum Alternative Tax
Ml	Millilitre
MT	Million Tonnes
MUs	Million Units
MW	Megawatt
O&M	Operations and Maintenance
PLF	Plant Load Factor
PPA	Power Purchase Agreement
R&M	Repair and Maintenance
RoE	Return on Equity
Rs	Rupees
SBI	State Bank of India
SERC	State Electricity Regulatory Commission
SLM	Straight Line Method
UoM	Units of Measurement

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BEFORE

Jharkhand State Electricity Regulatory Commission, Ranchi

Case (T) No. 01 of 2018

In the matter of:

Approval of Business plan and Determination of ARR for the Control period FY 2016-17 to FY 2020-21;

(including True up for the period 6th January 2014 - 31st March 2014, FY 2014-15 & FY 2015-16)

In the matter:

Jharkhand Urja Utpadan Nigam Limited (JUUNL), Dhurwa, HEC, Ranchi

PRESENT

Hon'ble Dr Arbind Prasad	**Chairperson**
Hon'ble Mr R. N. Singh	**Member (T)**

Order dated 25th September 2018

In this Petition, Jharkhand Urja Utpadan Nigam Limited (hereinafter referred to as JUUNL) has prayed for Order of Approval of Business plan and Determination of ARR for the MYT control period FY 2016-17 to FY 2020-21 (including True up for 6th January 2014- 31st March 2014, FY 2014-15 & FY 2015-16)

A1: INTRODUCTION

Jharkhand State Electricity Regulatory Commission

1.1 The Jharkhand State Electricity Regulatory Commission (hereinafter referred to as "JSERC" or "the Commission") was established by the Government of Jharkhand under Section 17 of the Electricity Regulatory Commission Act, 1998 on August 22, 2002. The Commission became operational with effect from April 24, 2003.

1.2 The Government of Jharkhand vide its notification dated August 22, 2002 had defined the functions of JSERC as per Section 22 of the Electricity Regulatory Commission Act, 1998 to be the following, namely:-

a) to determine the tariff for electricity, wholesale, bulk, grid or retail, as the case may be, in the manner provided in section 29;

b) to determine the tariff payable for the use of the transmission facilities in the manner provided in section 29;

c) to regulate power purchase and procurement process of the transmission utilities and distribution utilities including the price at which the power shall be procured from the generating companies, generating stations or from other sources for transmission, sale, distribution and supply in the State;

d) to promote competition, efficiency and economy in the activities of the electricity industry to achieve the objects and purposes of this Act.

1.3 After the Electricity Act, 2003 came into force, the earlier Electricity Regulatory Commission Act of 1998 stands repealed and the JSERC is discharging its functions as prescribed in Section 86 of the Act.

1.4 In accordance with provisions of the said Act, the JSERC discharges the following functions: -

a) determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State;

b) 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;

c) 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;

d) facilitate intra-state transmission and wheeling of electricity;

e) issue licences to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State;

f) promote cogeneration 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;

g) adjudicate upon the disputes between the licensees and generating companies; and to refer any dispute for arbitration;

h) levy fee for the purposes of this Act;

i) specify State Grid Code consistent with the Grid Code specified under Clause (h) of sub-section (1) of Section 79;

j) specify or enforce standards with respect to quality, continuity and reliability of service by licensees;

k) fix the trading margin in the intra-state trading of electricity, if considered, necessary;

l) discharge such other functions as may be assigned to it under this Act.

1.5 The Commission 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) reorganisation 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.

1.6 The State Commission ensures transparency while exercising its powers and discharging its functions.

1.7 In discharge of its functions, the State Commission is guided by the National Tariff Policy framed and published by Government of India under the provisions of Section 3 of the Act. The objectives of the present National Tariff Policy 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.

The Petitioner – Jharkhand Urja Utpadan Nigam Limited

1.8 The erstwhile Jharkhand State Electricity Board ("Board" or "JSEB") is a statutory body constituted under Section 5 of the Electricity (Supply) Act, 1948 and was engaged in electricity generation, transmission, distribution and related activities in the State of Jharkhand.

1.9 Jharkhand Urja Vikas Nigam Ltd. (herein after to be referred to as "JUVNL" or "the Holding company") has been incorporated under Indian Companies Act, 1956 pursuant to decision of Government of Jharkhand to reorganize erstwhile Jharkhand State Electricity Board (herein after referred to as "JSEB"). The Petitioner submits that the said reorganization of the JSEB has been done by Government of Jharkhand pursuant to "Part XIII – Reorganization of Board" read with section 131 of the Electricity Act 2003. The holding company has been incorporated on 16th September 2013 with the Registrar of Companies, Jharkhand, Ranchi and has obtained Certificate of Commencement of Business on 12th November 2013.

1.10 Jharkhand Urja Utpadan Nigam Ltd. (herein after to be referred to as "JUUNL" or "the Petitioner" or erstwhile "JSEB-Generation function" has been incorporated on 23rd October 2013 with the Registrar of Companies, Jharkhand, Ranchi and has obtained Certificate of Commencement of Business on 28th November 2013. The Petitioner is a Company constituted under the provisions of Government of Jharkhand, General Resolution as notified by transfer scheme vide notification no. 8, dated 6th January 2014. The Generation Company - Jharkhand Urja Utpadan Nigam Ltd. is duly registered with the Registrar of Companies, Ranchi on 23rd October 2013.

1.11 Pursuant to the enactment of the Electricity Act, 2003, every utility is required to submit its Aggregate Revenue Requirement (ARR) for control period and Tariff Petitions as per procedures outlined in section 61, 62 and 64, of Electricity Act 2003, and the governing regulations thereof.

1.12 The present petition is being filed before the Hon'ble Commission for the true-up of the ARR components for the period from 6th Jan 2014 to 31st Mar 2016, for approval of the projected ARR for FY 16-17 to FY 20-21 of the MYT Control period as per the Electricity Act, 2003 and as per the provisions of the regulations issued by the Hon'ble Jharkhand State Electricity Regulatory Commission (JSERC) (Terms and Conditions For Determination of Generation Tariff) Regulations, 2015.

The Petitioner's prayers

1.13 The Petitioner in the Petition for Approval of Business plan and Determination of ARR for the MYT control period FY 2016-17 to FY 2020-21 including True-up for the period from 6th January 2014 to 31st March 2016 has prayed before the Commission:

a) To approve the submissions and approve the true-up figures as per actuals, projections of Capital expenditure, Aggregate Revenue Requirement for MYT Control Period FY 16-17 to FY 20-21.

b) To approve the revenue gap as per the submitted True Up petition for FY 2013-14 to FY 2015-16 and appropriate tariff increase as detailed in the enclosed proposal.

c) To pass suitable orders for implementation of the tariff for year FY 2017-18 with applicability from April 1, 2017.

d) To condone any inadvertent omissions/ errors/ shortcomings and permit JUUNL to add/ change/ modify / alter this filing and make further submissions as may be required at a future date.

e) To pass such orders as the Hon'ble Commission may deem fit and proper, keeping in view the facts and circumstances of the case;

1.14 The Petitioner filed for the truing up based on the actual information and audited accounts.

Scope of the Present Order

1.15 The Commission in this order has approved the Business plan, Multi Year Tariff for the Control period FY 2016-17 to FY 2020-21 (including truing up for the period 6th January 2014 - 31st March 2014, FY 2014-15 & FY 2015-16).

1.16 While conducting the review the Commission has taken into consideration:

a) Material placed on record by the Petitioner

b) Provisions of the Electricity Act, 2003;

c) Principles laid down in the National Electricity Policy;

d) Principles laid down in the National Tariff Policy;

e) Provisions of the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010 (hereinafter referred to as 'JSERC Generation Tariff Regulations, 2010');

f) Provisions of the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2015 (hereinafter referred to as 'JSERC Generation Tariff Regulations, 2015');

1.17 Accordingly, the Commission has scrutinized the Petitions in detail and hereby issues the Order on the Business Plan and determination of ARR for the Control Period FY 2016-17 to FY 2020-21 (including truing up for the period 6th January 2014 - 31st March 2014, FY 2014-15 & FY 2015-16).

A2: PROCEDURAL HISTORY

Filing of the Petition by the Petitioner

2.1 The Petitioner filed the following Petitions before the Commission

a) Business plan for the period FY 2016-17 to FY 2020-21

b) MYT tariff petition for the control period FY 2016-17 to FY 2020-21

c) True up for the period from 6th Jan 2014- 31st Mar 2014 (85 days), FY 2014-15 & FY 2015-16

2.2 The Petitioner in the petitions has requested to approve the following:

a) To approve the submissions and approve the true-up figures as per actuals, projections of Capital expenditure, Aggregate Revenue Requirement for MYT Control Period FY 16-17 to FY 20-21.

b) To approve the revenue gap as per the submitted True Up petition for FY 2013-14 to FY 2015-16 and appropriate tariff increase as detailed in the enclosed proposal.

c) To pass suitable orders for implementation of the tariff for year FY 2017-18 with applicability from April 1, 2017.

d) To condone any inadvertent omissions/ errors/ shortcomings and permit JUUNL to add/ change/ modify / alter this filing and make further submissions as may be required at a future date.

e) To pass such orders as the Hon'ble Commission may deem fit and proper, keeping in view the facts and circumstances of the case;

Information Gaps in the APR Petition

2.3 In accordance with Section 64(3) of the Act, the State Electricity Regulatory Commission, within one hundred and twenty days of the filing of application for determination of tariff, is required to either accept it and issue a tariff order or reject the application for reasons to be recorded in writing. The Commission accepted the application submitted by the Petitioner for determination of tariff. As part of tariff determination exercise for the Control Period, several deficiencies/information gaps were observed in the tariff petition submitted by the Petitioner.

2.4 Those information were pointed out and communicated to the Petitioner vide letter nos.

a) JSERC/Case (Tariff) No. 01 of 2017/668 dated 18.01.2018

b) JSERC/Case (Tariff) No. 01 of 2017/668 dated 11.04.2018

c) Meeting with JUUNL officials on 11.07.2018 in office of JSERC

2.5 The Petitioner submitted its response to the previously mentioned letters and furnished additional data/information vide letter nos.

a) Letter No. 51/CE (Gen) dated 21.02.2018

b) Letter No. 155/CE (Gen)/ dated 11.07.2018

c) Letter No. 171/CE (Gen) dated 30.07.2018

2.6 The Commission scrutinized the said additional data/ information and considered the same while passing this Order on the petition filed by the Petitioner.

Inviting Public Comments/Suggestions

2.7 The Commission directed the Petitioner to make copies of the petition available to the members of public on request. Also, a public notice was issued inviting comments/ suggestions on the petition for Business Plan and determination of ARR for the Control Period FY 2016-17 to FY 2020-21 (including truing up for the period 6th January 2014 - 31st March 2014, FY 2014-15 & FY 2015-16).

2.8 The Petitioner in various newspapers issued the aforesaid public notice and a period of twenty one (21) days was given to the members of the general public for submitting their comments/suggestions.

Table 1: List of newspapers and dates on which the public notice by JUUNL appeared

Sl. No.	Newspaper	Date of Publication
1.	Hindustan Times	18.04.2018
2.	The Times of India	18.04.2018
3.	Dainik Bhaskar	18.04.2018
4.	Prabhat Khabar	18.04.2018
5.	Pionear	19.04.2018
6.	Hindustan	20.04.2018
7.	Dainik Jagran	20.04.2018

2.9 Subsequently, the Commission also issued a notice on its website www.jserc.org and various newspapers for conducting the public hearing on the Petition. The details of the newspapers publishing the notice by the Commission are as under:

Table 2: List of newspapers and dates on which the public notice by JSERC appeared

Sl. No.	Newspaper (Jharkhand edition)	Date of Publication
1	Prabhat Khabar	31.05.2018
2	Hindustan	31.05.2018
3	The Times of India	31.05.2018
4	Hindustan Times	31.05.2018

Submission of Comments/Suggestions and Conduct of Public Hearing

2.10 A public hearing was held on June 08, 2018 at Shram Kalyan Kendra, Swarnrekha Jal Vidyut Pariyojna, Near Bank of India, Sikidri, Ranchi and respondents voiced their views on the ARR and tariff petition filed by the Petitioner. The comments/suggestions voiced by the respondents and the Petitioner's response thereon along with the Commissions analysis on the response provided by the Petitioner are detailed in the **Section 4** of this Order.

A3: SUMMARY OF THE PETITIONS FOR APPROVAL OF BUSINESS PLAN AND DETERMINATION OF ARR FOR THE MYT CONTROL PERIOD FY 2016-17 TO FY 2020-21 INCLUDING TRUE-UP FOR THE PERIOD FROM 6TH JAN 2014 TO 31ST MARCH 2014, FY 2014-15 AND FY 2015-16

Overview of the Thermal Stations

3.1 The Petitioner currently operates two units at the Sikidiri power plant. The two units are the subject of ARR and tariff determination in the petition filed by it. The following table summarizes the information pertaining to both the units.

Table 3: Overview of Units of SHPS

S. No.	Installed Capacity(MW)	Status of Operation
1	65	Operational
2	65	Operational

Truing up for the period from 06th Jan 2014 to 31st March 2014, FY 2014-15 and FY 2015-16

3.2 In its petition the Petitioner has requested for the Truing up for the given period based on the actual information and audited accounts. The details of the Petitioner's submission are shown in the table below:

Table 4: Summary of the True-up Petition submitted by the Petitioner

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
Gross Generation	MU	1.98	33.71	51.29
Aux Power Consumption	%	0.70%	0.71%	0.46%
Ex-Bus Generation	MU	1.96	33.47	51.05
Availability	%	100%	90%	60%
Depreciation	Rs Cr	0.40	1.70	1.62
Interest on Loan	Rs Cr	-	-	-
O&M Expenses	Rs Cr	5.25	22.63	12.65
Return on Equity	Rs Cr	1.37	5.89	5.89
Interest on working Capital	Rs Cr	0.08	1.56	0.95
(Less) Non-Tariff income	Rs Cr	-0.01	-0.05	-0.03
Annual Fixed Charges	Rs Cr	**7.10**	**31.73**	**21.10**
Cumulative Gap/ Surplus				
Opening revenue gap	Rs. Cr	-	2.07	6.82

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
Addition in revenue gap during year	Rs. Cr	2.03	4.14	-11.04
Closing revenue gap	Rs. Cr	2.03	6.21	-4.22
Interest rate	Rs. Cr	3.37%	14.75%	14.75%
Interest on surplus/ deficit amount	Rs. Cr	0.03	0.61	0.19
Cumulative gap/ (surplus)	Rs. Cr	2.07	6.82	-4.03

Approval of Business plan and Determination of ARR for the MYT control period FY 2016-17 to FY 2020-21

3.3 In its petition, the Petitioner has requested for the Approval of Business plan and determination of ARR for the MYT control period FY 2016-17 to FY 2020-21. The submission of the Petitioner are shown in the table below:

Table 5 Summary of Business Plan and ARR petition for the MYT control period

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	159.43	159.43	159.43	159.43	159.43
Auxiliary Consumption	%	0.70%	0.70%	0.70%	0.70%	0.70%
Ex-Bus Generation	MU	158.32	158.32	158.32	158.32	158.32
Availability	%	50%	50%	50%	50%	50%
Fixed Charges						
Depreciation	Rs Cr	1.62	1.71	1.83	2.01	2.22
Interest on Loan	Rs Cr	-	0.07	0.23	0.45	0.71
O&M expenses	Rs Cr	19.51	21.15	22.92	24.84	26.93
Return on Equity	Rs Cr	5.89	5.94	6.05	6.19	6.38
Interest on Working Capital	Rs Cr	1.12	1.21	1.30	1.41	1.53
(less) Non-tariff income	Rs Cr	-0.04	-0.04	-0.04	-0.04	-0.04
Annual Fixed Charges	Rs Cr	**28.11**	**30.04**	**32.29**	**34.86**	**37.73**
Add: Past revenue Gap/ (surplus) from True up	Rs. Cr	**-4.03**	**-**	**-**	**-**	**-**
Net ARR	Rs. Cr	**24.08**	**30.04**	**32.29**	**34.86**	**37.73**

A4: PUBLIC CONSULTATION PROCESS

4.1 The public hearing on the tariff petition filed by the Petitioner was held on June 08, 2018 at Shram Kalyan Kendra, Swarnrekha Jal Vidyut Pariyojna, Near Bank of India, Sikidri, Ranchi. The list of participants is enclosed as **Annexure-I**.

4.2 The comments and suggestion of the members of the public along with the response thereon of the Petitioner and the views of the Commission are detailed hereunder:

Petitioner's submission

4.3 The Petitioner during the course of the Public hearing has highlighted that on several occasions, SHPS was not scheduled by SLDC even though the plant was capable of generating power.

Commission's view

4.4 The Commission is concerned about the submission of the petitioner and hereby directs the Petitioner to submit details of the days when such scheduling was disallowed even when the plant had permissible water availability for operation. The Commission will review the data and take necessary actions.

A5: TRUING UP FOR THE PERIOD FROM 06TH JANUARY TO 31ST MARCH 2014, FY 2014-15 AND FY 2015-16

5.1 The Commission has analysed the submission of the Petitioner with respect to the ARR for the period from 06th January 2014 to 31st March 2016 and has undertaken the true up exercise of ARR components. The component wise description of the Petitioner's submission and the Commission's analysis thereof is provided hereunder.

Operational Performance

Plant Availability

Petitioner's submission

5.2 The Petitioner submitted the actual plant availability of the plant at 100% for 06th Jan'14 to 31st Mar'14, 90% for FY 2014-15 and 60% for FY 2015-16.

5.3 The Petitioner highlighted that Sikidiri Hydel Power Station (SHPS) is designed for peak load generation only i.e. to operate for 3-5 hours in a day and have 14% of the load factor as per the operating manual details of BHEL. So, the design energy of the plant is 159.43 million units on annual basis.

5.4 Moreover, the normative plant availability factor approved by the commission is 75% in the order dated August 02, 2012, which is high given the water constraints and issues such as same reservoir is used for irrigation and drinking purposes. Therefore, the Petitioner requested the Hon'ble commission to consider the plant availability factor excluding the incidences of water shortage or lack of generation due to lower water level.

Commission's analysis

5.5 The Commission vide a discrepancy note had directed the Petitioner to submit data on plant availability. The petitioner vide letter no. 155/CE(Gen) dated 11.07.2018 submitted the details of actual plant availability. The details are given in the following table.

Table 6: Actual PAF submitted by the Petitioner

Average PAF (%)	PH I	PH II	Average of PH I & PH II
06th Jan'14 to 31st Mar'14	100%	100%	100%
FY 2014-15	80.89%	82.25%	81.57%
FY 2015-16	99.48%	22.10%	60.79%

5.6 The Petitioner submitted that the reason for decrease in overall PAF is due to non-availability of water for electricity generation in the Getalsud reservoir. The water in the reservoir is primarily used for drinking water purposes for Ranchi city and balance is used for electricity generation. The minimum water level to be maintained in the reservoir is 1910.00 feet. In FY 2015-16, since the water level was near the minimum level, it was not sufficient to run two plants and hence the PAF of PH II is low. The Petitioner has also submitted letters from Water Resources Department, Ranchi in support of the same.

5.7 The Commission in the MYT Order dated August 02, 2012 had considered the availability for the period from FY 2012-13 to FY 2015-16 as equal to the Normative Annual Plant Availability Factor (NAPAF) of 75% as specified in the JSERC Generation Tariff Regulation, 2010.

5.8 In view of the reasons highlighted above and after review of the data and supporting documents, the Commission has considered the actual availability as per the submitted data and has approved the same for the true-up period.

Auxiliary Consumption

Petitioner's submission

5.9 The Petitioner submitted the auxiliary consumption of the plant at 0.70% for 06th Jan'14 to 31st Mar'14, 0.71% for FY 2014-15 and 0.46% for FY 2015-16.

Commission's analysis

5.10 The Commission in the previous MYT order had considered normative auxiliary consumption at 0.70% for each year of the Control Period i.e. from FY 2012-13 to FY 2015-16 as specified in the Generation Tariff Regulation, 2010.

5.11 As per Clause 6.12 (C) of the Generation tariff Regulations 2010, auxiliary consumption is deemed a controllable parameter. Further, clause 6.13 of the aforementioned regulations states that:

"6.13 Any financial loss on account of underperformance on targets for parameters specified in clause 6.12 (a) to (e) of these Regulations is not recoverable through tariffs. Similarly, any financial gain on account of over-performance with respect to these parameters is to the Generating Company's benefit and shall not be adjusted in tariffs."

5.12 In line with the above clause, the Commission has approved the auxiliary consumption at 0.70% for the true up period.

Gross and Net Generation

Petitioner's submission

5.13 The Petitioner submitted that the actual gross generation for the plant was 1.98 MUs for 06th Jan'14 to 31st Mar'14, 33.71 MUs for FY 2014-15 and 51.29 MUs for FY 2015-16.

5.14 Accordingly, the Petitioner submitted net generation at 1.96 MUs for 06th Jan'14 to 31st Mar'14, 33.47 MUs for FY 2014-15 and 51.05 MUs for FY 2015-16.

Commission's analysis

5.15 The Commission in the MYT Order dated August 02, 2012 had approved gross generation at 287.55 MUs for the MYT period after considering availability at normative level of 75%.

5.16 The Commission directed the Petitioner to justify the reasons for low generation w.r.t to the gross generation of 287.55 MUs which was approved for the MYT period.

5.17 The Petitioner submitted in year 2011, the gross annual generation was 270.1 MUs and it was due to high actual rainfall in the Ranchi district. The Petitioner also submitted actual data received from Meteorological centre (GoI), Ranchi wherein it is evident that actual rainfall in the year 2011 was high at 1630.8 mm vs an average of 1055 mm for last 8 years in the Ranchi district. The actual generation of the year 2011 was considered while approving the MUs for the MYT period of FY 2012-13 to FY 2015-16.

5.18 In addition, the low generation was also due to the following reasons:

(a) Increase in water consumption for drinking purpose from 100 acre ft. per day in the year 2005 to 387 acre ft. per day in the year 2018. Since minimum water level has to be maintained in the reservoir, increased water consumption led to less water availability for electricity generation.

(b) Decrease in available water for electricity generation due to silting effect. Previously, Water Resource Department, Jharkhand used to provide water for generation upto a level of 1906 feet which was increased to 1910 feet.

5.19 In view of the reasons stated above, for truing up, the Commission has considered the actual generation units submitted by the Petitioner and has also reviewed the data submitted. Accordingly, the Commission has approved the gross generation at 1.98 MUs for the period from 06th Jan'14 to 31st Mar'14, 33.71 MUs for FY 2014-15 and 51.29 MUs for FY 2015-16 respectively.

5.20 The net generation approved by the Commission is 1.97 MUs for the period from 06th Jan'14 to 31st Mar'14, 33.47 MUs for FY 2014-15 and 50.93 MUs for FY 2015-16.

Determination of Fixed Cost

Depreciation

Petitioner's submission

5.21 The Petitioner submitted that no capital investment was undertaken during the company period of first control period, so no additional depreciation expense was incurred. Subsequently, the petitioner has claimed the depreciation based on the actuals as per the audited annual accounts for FY 13-14, FY 14-15 and FY 2015-16.

5.22 The Petitioner has requested the Commission to allow the submitted depreciation expense as per annual accounts as summarized in the table below

Table 7: Depreciation submitted by the Petitioner for the true-up period

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
Depreciation	Rs. Cr	0.40	1.70	1.62

Commission's analysis

5.23 The Generation Tariff Regulation, 2010 have specified the following methodology for the calculation of depreciation expense for existing generating stations:

a) *Depreciation shall be allowed up to a maximum of 90% of the capital cost of the asset and the salvage value of the asset shall be considered as 10%.*

b) *Depreciation shall be calculated annually as per the straight line method and at the rates specified in the Appendix-I of the said Regulations.*

c) *In case of existing generating stations, during the transition period, the balance depreciable value as on April 1, 2011 shall be worked out by deducting the cumulative depreciation including AAD as admitted by the Commission up to March 31, 2011 from the gross depreciable value of the assets.*

d) *The rate of depreciation shall be continued to be charged at the rate specified in Annexure-I till the cumulative depreciation reaches 70%. Thereafter, the remaining depreciable value shall be spread over the remaining life of the asset such that the maximum depreciation does not exceed 90%.*

5.24 The Petitioner has not submitted the asset wise depreciation schedule of the plants as per the Regulations. Hence, in the absence of the same, the Petitioner has relied on the details given in audited accounts.

5.25 The Commission for the present true-up has approved the depreciation as given in the following table:

Table 8: Depreciation approved by the Commission for the True-up period

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
Depreciation	Rs. Cr	0.40	1.70	1.62

Operation & Maintenance Expenses

Petitioner's submission

5.26 The Petitioner has presented the O&M expenses for the Control Period under following broad categories:

a) Salaries, wages, pension contribution and other employee costs i.e. Employee Expenses;

b) Administrative and General costs;

c) Repairs and maintenance expenses; and

d) Other expenses

5.27 The O&M expenses of the JUUNL are booked in two major heads one is the SHPS head and other part of expenses on account of headquarter expenses are raised by the secretariat in proportion of shareholding in all the three utilities JUUNL, JUNSL and JBVNL.

5.28 In FY 2015-16, due to the ongoing separation of the employees of PTPS from JUUNL there was sudden decrease in the operation and maintenance expenses bill from Rs 9.72 Cr. to Rs 0.32 Cr. raised by the secretariat in JUUNL head and subsequently there was a major reduction in the O&M expenses in FY 2015-16 compared to FY 2014-15.

5.29 The petitioner submitted the actual O&M expense as per the audited annual accounts for FY 13-14, FY 14-15 and FY 2015-16 as summarized in the table below:

Table 9: O&M expenses submitted by the Petitioner

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
Employee expense	Rs. Cr	3.52	14.28	8.27
R&M expense	Rs. Cr	1.23	5.69	2.73
A&G expense	Rs. Cr	0.50	2.66	1.65
Total O&M expense	**Rs. Cr**	**5.25**	**22.63**	**12.65**

Commission's Analysis

5.30 In view of the separation of employees of PTPS from JUUNL, the Commission directed the Petitioner to submit details of O&M cost components. The Petitioner vide letter no. 155/CE (Gen) dated 11.07.2018 submitted the detailed component wise revised costs of O&M for the true up period. The Petitioner submitted that the revised O&M costs have been worked out considering the revised transfer scheme dated 20th November 2015. The revised submission is as given below:

Table 10: Revised submission of O&M costs by the Petitioner

O&M	06th Jan'14 to 31st Mar'14		FY 2014-15	
	Submission with Petition	Revised submission	Submission with Petition	Revised submission
Employee Cost	3.52	2.15	14.28	8.81
R&M Expenses	1.23	1.22	5.69	5.49
A&G Expenses	0.50	0.24	2.66	1.36
Total O&M Expenses	**5.25**	**3.60**	**22.63**	**15.65**

5.31 The Commission has also reviewed the audited accounts submitted by the Petitioner along with the Petition.

5.32 Regulation 6.14 of the Generation Tariff Regulation, 2010 specifies the treatment of O&M expenses during true-up. The regulations are quoted below:

"6.14 The true up across various controllable parameters shall be conducted as per principles stated below: -

(a) Any surplus and deficit on account of O&M expenses shall be to the account of the generating company and shall not be trued up in ARR;

…

6.15 Notwithstanding anything contained in these Regulations, the gains or losses in the Controllable items of ARR on account of force majeure factors shall be passed on as an additional charge or rebate in ARR over such period as may be laid down in the order of the Commission."

5.33 As per the above Regulations, the O&M cost determined during the MYT order should not be trued up in ARR. However, the Commission is of the view that the MYT order was prepared before the unbundling of Jharkhand State Electricity Board (JSEB) and subsequently post unbundling, JUUNL was formed in Oct'2013. Also, there has been separation of PTPS from JUUNL during the true-up period. Hence, the Commission is not inclined to true up the O&M costs of JUUNL as determined in the MYT order. The Commission finds it prudent to rely on the actual costs submitted by the Petitioner considering separation of JUUNL and the figures given in the audited accounts.

5.34 In view of the above, the Commission has approved the O&M expenses as given in the table below

Table 11: Approved O&M expenses (in Rs Cr)

O&M	06th Jan'14 to 31st Mar'14		FY 2014-15		FY 2015-16	
	Submitted by JUUNL	Approved in True-up	Submitted by JUUNL	Approved in True-up	Submitted by JUUNL	Approved in True-up
Employee Cost	2.15	2.15	8.81	8.81	8.27	8.27
R&M Expenses	1.22	1.22	5.49	5.49	2.73	2.65*
A&G Expenses	0.24	0.24	1.36	1.36	1.65	1.65
Total O&M Expenses	**3.60**	**3.60**	**15.65**	**15.65**	**12.65**	**12.57**

** Water charges considered by the Petitioner has not been approved as there is no provision to approve water charges in JSERC Generation Tariff Regulations 2010.*

Return on Equity (RoE)

Petitioner's submission

5.35 The Petitioner submitted that the opening equity balance in the balance sheet of JUUNL as on 6th Jan 2014 was Rs 38.03 Cr. as mentioned in the transfer scheme 20th Nov 2015. In line with the above, for the FY 13-14* (from 6th Jan 2014 to 31st March 2014) petitioner has taken the opening equity on pro-rata basis and considered Rs 38.03 Cr. for the FY 14-15 and FY 15-16.

5.36 The Petitioner has submitted the following details for calculating RoE

Table 12: Return on Equity submitted by the Petitioner (Rs Cr)

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
Opening equity	Rs. Cr	8.78 *(for 85 days)*	38.03	38.03
Addition to equity	Rs. Cr	0.00	0.00	0.00
Closing equity	Rs. Cr	8.78	38.03	38.03
Average equity	Rs. Cr	8.78	38.03	38.03
Rate	%	15.50	15.50	15.50
Return on equity	Rs. Cr	**1.37**	**5.89**	**5.89**

Commission's analysis

5.37 The Commission has worked out the gross normative equity for as per Regulation 7.13 and 7.14 of the JSERC Generation Tariff Regulation, 2010.

7.13 "In case of the generating station declared under commercial operation prior to1.4.2011, debt-equity ratio allowed by the Commission for determination of Tariff for the period ending 31.3.2011 shall be considered for determination of tariff for the Transition period."

7.14 "During the control period, debt-equity ratio allowed by the Commission for determination of Tariff for the period ending 31.3.2012 shall be considered for determination of tariff.

For the project declared under commercial operation on or after 1.04.2011, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that where equity deployed is less than 30% of capital cost, the actual equity shall be considered for determination of tariff:

Provided further that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment"

5.38 As per the above regulations, the Commission considered the equity to be at 30% of the proposed additional capitalization. Also Clause 7.16, 7.17 and 7.18 of the Generation Tariff regulations, 2010 states that

7.16 "Return on equity shall be computed on pre-tax basis at the base rate of 15.50%, to be grossed up as per clause 7.17 of these Regulations."

7.17 "The rate of return on equity shall be computed by grossing up the base rate with the normal tax rate applicable to the Generating Company as per details shown as under:

(ii) MYT period: Base rate to be grossed by the applicable tax rate for the Year 2011-12

Provided that return on equity with respect to the actual tax rate applicable to the Generating Company, in line with the provisions of the relevant Finance Acts of the respective year during the Control period shall be trued up separately for each year of the Control period along with the tariff petition filed for the next Control period."

7.18 "Rate of return on equity shall be rounded off to three decimal points and be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)

Where 't' is the applicable tax rate in accordance with clause 7.17 of these Regulations"

In line with the regulations, the Commission considered the rate of return on equity at 15.50%. Since there is no tax payment, the rate has not been grossed up with applicable tax rate.

5.39 To determine the gross fixed asset transferred to JUUNL on 6th January'2014, the Commission relied on the audited accounts submitted by the Petitioner. As per the audited accounts, the gross block transferred by Government of Jharkhand (GoJ) on 06th January 2014 is Rs. 43.02 Cr. The Commission for the purpose of tariff determination has considered the same.

5.40 The Commission has considered the debt equity ratio as 70:30.

5.41 Accordingly, the Commission approves the return of equity as per detailed calculation shown in the following table.

Table 13: Return on Equity approved by the Commission

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
Opening equity	Rs. Cr	12.91	12.91	12.91
Addition to equity	Rs. Cr	0.00	0.00	0.00
Closing equity	Rs. Cr	12.91	12.91	12.91
Average equity	Rs. Cr	12.91	12.91	12.91
Rate	%	15.50	15.50	15.50
Return on equity	Rs. Cr	**0.64** *(after adjusting for 85 days)*	**2.00**	**2.00**

Interest on Loan

Petitioner's submission

5.42 The Petitioner has not claimed interest on loan in the true up period.

Commission's analysis

5.43 The Commission has worked out gross normative loan as per Regulation 7.13 and 7.14 of the Generation Tariff Regulation, 2010 as quoted below

"7.13 In case of the generating station declared under commercial operation prior to 1.4.2011, debt-equity ratio allowed by the Commission for determination of Tariff for the period ending 31.3.2011 shall be considered for determination of tariff for the Transition period.

7.14 For the project declared under commercial operation on or after 1.04.2011, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:"

…

"7.23 The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the Project:

Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered:

Provided further that if the generating station does not have actual loan, then the weighted average rate of interest of the Generating Company as a whole shall be considered."

5.44 Since actual loan is not there but the loan considered is normative, the last available weighted average rate of interest has been considered. The interest on loan approved by the Commission is given in the table below:

Table 14: Interest on loan approved by the Commission

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
Opening balance of normative loans	Rs. Cr	30.12	29.71	28.01
Additions during the year due to Additional Capitalization	Rs. Cr	0.00	0.00	0.00
Repayments of normative loans during the year	Rs. Cr	0.40	1.70	1.62
Closing balance of normative loans	Rs. Cr	29.71	28.01	26.39
Average normative loan	Rs. Cr	29.91	28.86	27.20
Rate of Interest	%	14.75%	14.75%	14.75%
Interest on Loan	Rs. Cr	**1.03** *(after adjusting for 85 days)*	**4.26**	**4.01**

Interest on Working Capital

Petitioner's submission

5.45 The Petitioner for computing the working capital and interest thereon as per the Generation Tariff Regulations, 2010 has considered the working capital as the sum of the following:

(a) Receivables equivalent to two months of fixed cost

(b) Maintenance spares @ 15% of operation and maintenance expenses specified in clause 7.40- 7.47 of these Regulations

(c) Operation and Maintenance expenses for 1 month

5.46 The rate of interest for calculating the interest on working capital is taken at the prevalent SBI PLR rate @ 14.75%. The details are shown in the table below:

Table 15: Interest on working capital submitted by the Petitioner

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
O&M expenses for 1 month	Rs. Cr	0.44	1.89	1.05

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
Maintenance spares at 15% of O&M expenses	Rs. Cr	0.79	3.39	1.90
Receivables equivalent to 2 months of fixed cost	Rs. Cr	1.18	5.29	3.52
Total working capital	**Rs. Cr**	**2.41**	**10.57**	**6.47**
Interest rate	%	14.75%	14.75%	14.75%
Interest on working capital	Rs. Cr	**0.08** *(after adjusting for 85 days)*	**1.56**	**0.95**

Commission's analysis

5.47 The Commission has computed the interest on working capital by considering values of related components. The working capital requirement for the Petitioner has been determined by considering the following components as per Regulation 7.36 of the Generation Tariff Regulation, 2010:

7.36 For hydro generating station, the working capital requirements shall be determined using the following components:

(a) Receivables equivalent to two months of fixed cost; and

(b) Maintenance spares @ 15% of operation and maintenance expenses specified in clause 7.40- 7.47 of these Regulations; and

(c) Operation and Maintenance expenses for 1 month

5.48 The rate of interest on working capital has been taken as 14.75% i.e. the short-term Prime Lending Rate of State Bank of India as on April 1, 2012.

"7.38 Rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on April 1, 2011 or April 1 of the year in which the generating station or a unit thereof, is declared under commercial operation, whichever is later during Transition period.

During Control Period rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on April 1, 2012 or April 1 of the year in which the generating station or a unit thereof, is declared under commercial operation."

5.49 Accordingly, the Commission has trued up the interest on working capital as shown in the tables below:

Table 16: Interest on working capital approved by the Commission

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
O&M expenses for 1 month	Rs. Cr	1.27*	1.30	1.05
Maintenance spares at 15% of O&M expenses	Rs. Cr	0.54	2.35	1.89
Receivables equivalent to 2 months of fixed cost	Rs. Cr	4.14#	4.12	3.52
Total working capital	**Rs. Cr**	**5.95**	**7.77**	**6.45**
Interest rate	%	14.75%	14.75%	14.75%
Interest on working capital	Rs. Cr	**0.20**	**1.15**	**0.95**
** Considered for 30 days out of 85 days* *# Considered for 60 days out of 85 days*				

Non-tariff income

Petitioner's submission

5.50 The petitioner has submitted the actual figures of the non-tariff income for SHPS as per the audited annual accounts for FY 13-14, FY 14-15 and FY 2015-16. Submissions are given in the table below:

Table 17: Non-tariff income submitted by the Petitioner

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
Opening equity	Rs. Cr	0.01	0.05	0.03

Commission's analysis

5.51 The Commission had approved the non-tariff income based on the submission of the Petitioner and after verifying from the audited accounts. Details are given in the table below:

Table 18: Non-tariff income approved by the Commission

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
Opening equity	Rs. Cr	0.01	0.05	0.03

Summary of Fixed Cost Determinants and Generation Tariff

5.52 Regulation 9.1 of the Generation Tariff Regulations, 2010 states that

"9.1 The Tariff for supply of electricity from a hydropower generating station shall comprise of capacity charge and energy charge to be derived in the manner specified in clauses 9.8-9.15 of these Regulations, for recovery of annual fixed cost consisting of the following components:

(a) Return on Equity;

(b) Interest and Financing Charges on Loan Capital;

(c) Depreciation;

(d) Operation and Maintenance Expenses;

(e) Interest Charges on Working Capital;"

5.53 The following tables show the summary of fixed cost components in terms of the Petitioner's submission and the Commission's trued up costs.

Table 19: Submitted vs Approved ARR for the True up period

Parameters	Units	06th Jan'14 to 31st Mar'14		FY 2014-15		FY 2015-16	
		Submitted by JUUNL	Approved in True up	Submitted by JUUNL	Approved in True up	Submitted by JUUNL	Approved in True up
O&M charges	Rs Cr	5.25	3.60	22.63	15.65	12.65	12.57
Depreciation	Rs Cr	0.40	0.40	1.70	1.70	1.62	1.62
Interest on Loan	Rs Cr	0.00	1.03	0.00	4.26	0.00	4.01
Return on Equity	Rs Cr	1.37	0.64	5.89	2.00	5.89	2.00
Interest on Working Capital	Rs Cr	0.08	0.20	1.56	1.15	0.95	0.95
Total cost	Rs Cr	7.11	5.88	31.78	24.75	21.12	21.16
(Less) Non-Tariff Income	Rs Cr	- 0.01	- 0.01	- 0.05	-0.05	- 0.03	- 0.03
Annual Fixed charge (AFC)	Rs Cr	**7.10**	**5.87**	**31.73**	**24.70**	**21.10**	**21.13**

Computation and Payment of Capacity Charges and Energy Charges for Hydro Generating Stations

5.54 The regulation 9.8 to 9.14 of the JSERC Generation Tariff Regulations provide the methodology for computation and payment of capacity and energy charges for hydro generating station.

5.55 To determine the capacity charges, the following methodology was adopted

"9.9 The capacity charge (inclusive of incentive) payable to a hydro generating station for a calendar month shall be

= AFC x 0.5 x NDM / NDY x (PAFM / NAPAF) (in Rupees)

Where,

AFC - Annual Fixed Cost specified for the Year, in Rupees;

NAPAF - Normative Plant Availability Factor in percentage;

NDM - Number of Days in the month;

NDY - Number of Days in the Year;

PAFM - Plant Availability Factor achieved during the month, in Percentage.

5.56 The Commission while approving the capacity charge as per the Regulations has incentive the petitioner for maintaining plant availability above 75%. In FY 2015-16, the PAFM submitted is 60.79% which is beyond the control of the Petitioner as highlighted in various sections of this order. Hence the Petitioner has not been de-incentivised in capacity charges for reduction in PAFM for FY 2015-16. The capacity charge is given below:

Table 20: Capacity charges for the True-up period

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
AFC	Rs. Cr	5.87	24.70	21.13
NAPAF	%	75%	75%	75%
PAFM	%	100%	81.57%	60.79%
Capacity charges	**Rs. Cr**	**3.91**	**13.43**	**10.57**

5.57 The energy charge to be calculated as per the methodology given below:

"9.11 The energy charge shall be payable by every Beneficiary for the total energy scheduled to be supplied to the Beneficiary, excluding free energy, if any, during the calendar month, on ex power plant basis, at the computed energy charge rate. Total Energy Charge payable to the Generating Company for a month shall be :

= (Energy Charge Rate in Rs. / kWh) x {Scheduled Energy (ex-bus) for the month in

kWh} x (100 – FEHS) / 100.

9.12 Energy Charge Rate (ECR) in Rupees per kWh on ex-power plant basis, for a hydro generating station, shall be determined up to three decimal places based on the following formula, subject to the clause 9.14 of these Regulations:

ECR = AFC x 0.5 x 10 / {DE x (100 – AUX) x (100 – FEHS)}

Where,

DE - Annual Design Energy specified for the Hydro generating station, in MWh, subject to the provision in clause 9.13 of these Regulations;

FEHS - Free Energy for home State, in per cent, as defined in clause 10.7 of these Regulation;"

5.58 While calculating the ECR of the hydro plant as per the above given formula, the Commission has also been guided by the provisions given in Regulations 9.13 and 9.14. These provisions are specifically for the condition wherein the actual total energy generated by a hydro generation station during a year is less than the Design Energy for reasons beyond the control of the generating company. In the present scenario, the actual energy generated is less than the design energy for reasons beyond the control of the generating company.

5.59 Regulation 9.13 (ii) specifies the following

"(ii) in case the energy shortfall occurs after ten years from the Date of Commercial Operation of a generating station, the following shall apply. Suppose the specified annual Design Energy for the station is DE MWh, and the actual energy generated during the concerned (first) and the following (second) financial year is A1 and A2 MWh respectively, A1 being less than DE. Then, the Design Energy to be considered in the formula as specified in clause of these Regulation for calculating the ECR for the third financial year shall be moderated as (A1 + A2 – DE) MWh, subject to a maximum of DE MWh and a minimum of A1 MWh;."

5.60 The Commission while calculating the ECR as per Regulations 9.12 has considered the maximum design energy of the plants. Since the plant is designed for peak load generation and operates for only 3-5 hours a day with an overall load factor of 14% as per the operating manual details of OEM. Hence the submitted design energy is 159.43 MUs and same has been used to accordingly calculated the ECR as given in the table below:

Table 21: ECR calculated for the plants

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
AFC	Rs. Cr	5.87	24.70	21.13
50% of AFC	Rs. Cr	2.93	12.35	10.57
Design Energy	MUs	37.13 *(for 85 days)*	159.43	159.43
Auxiliary consumption	%	0.70%	0.70%	0.70%
ECR	Rs./kWh	0.796	0.780	0.667

5.61 Regulations 9.14 also specifies the following

"In case the Energy Charge Rate (ECR) for a Hydro generating station, as computed in clause 9.12 of these Regulations, exceeds eighty paise per kWh, and the actual saleable energy in a Year exceeds {DE x (100 – AUX) x (100 – FEHS) / 10000} MWh, the Energy charge for the energy in excess of the above shall be billed at eighty paise per kWh only.

Provided that in a Year following a Year in which total energy generated was less than the Design Energy for reasons beyond the control of the Generating Company, the Energy Charge Rate shall be reduced to eighty paise per kWh after the energy charge shortfall of the previous Year has been made up."

5.62 The Commission while guided by the above Regulations calculated the ECR and observed that it is coming less than Rs. 0.80/ kWh in all the three years of the true-up period. Hence the Commission has decided to approve the energy charge rate as calculated above. According the energy charge and total charge to be recovered is as given below.

Table 22: ARR for the True-up period

Particulars	UoM	06th Jan'14 to 31st Mar'14	FY 2014-15	FY 2015-16
ECR	Rs. Per kWh	0.796	0.780	0.667
Schedules energy Ex-bus for the year	MUs	1.97	33.47	50.93
Energy Charge	Rs. Cr	0.16	2.61	3.40
Capacity Charge	Rs. Cr	3.91	13.43	10.57
ARR	**Rs. Cr**	**4.07**	**16.04**	**13.96**

Gap/Surplus for the True-up period

5.63 As per Regulation 6.17 and 6.18 of the Generation Tariff Regulations, 2010.

"6.16 If the Tariff already recovered is more than the Tariff determined after true up, the Generating Company shall refund to the Beneficiaries the excess amount so recovered along with simple interest at the rate equal to short term prime lending rate of State Bank of India as on 1st April of the respective Year."

6.17 "Similarly, in case the Tariff already recovered is less than the Tariff determined after true up, the Generating Company shall recover from the Beneficiaries, the less recovered amount along with simple interest at the rate equal to short term prime lending rate of State Bank of India as on 1st April of the respective Year/ Years subject to adhering to the timelines specified by the Commission for filling of True-up application. In case, it is found that the filling of True-up is delayed due to the reasons attributable to the Generating Company, the under recovery shall not bear any interest expenses."

6.18 "The amount under-recovered or over-recovered, along with simple interest, shall be recovered or refunded by the Generating Company, in six equal monthly instalments starting within three months from the date of the tariff order issued by the Commission after the truing up exercise."

5.64 The Commission had directed the Petitioner to submit details of the amounts billed to Distribution Licensee. The Petitioner vide letter no. 51/ CE (Gen) dated 21.02.2018 submitted the billed details to the Commission. The Commission has considered the same while calculating the gap/ surplus. Accordingly, the Commission has calculated and approved revenue gap/surplus for the period of true up and it is given in the table below.

Particulars	Units	FY 2013-14*	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18$
Annual Revenue Requirement (ARR)	Rs. Cr	4.07	16.04	13.96	-	-
Total Amount Billed by JUUNL	Rs. Cr	3.51	19.86	20.35	-	-
Gap/ (Surplus) for the year	Rs. Cr	0.56	-3.82	-6.39	-	-
Opening Gap/ (Surplus)	Rs. Cr	0.00	0.58	-3.43	-10.80	-12.31
Closing Gap/ (Surplus)	Rs. Cr	0.56	-3.24	-9.82	-10.80	-12.31
Rate of Interest	Rs. Cr	14.45%	14.75%	14.75%	14.05%	13.85%
Carrying cost#	Rs. Cr	0.02*	-0.20	-0.98	-1.52	-1.28
Closing Gap/ (Surplus) including Carrying cost	Rs. Cr	**0.58**	**-3.43**	**-10.80**	**-12.31**	**-13.59**

** 85 days in the year FY 2013-14*
 # Interest calculated for 6 months for gap in the same year and for 12 months in case previous gap/ (surplus) carried forward
$ Interest calculated upto the date of submission of Petition which is 30.12.2017

A6: APPROVAL OF BUSINESS PLAN FOR THE MYT CONTROL PERIOD FY 2016-17 TO FY 2020-21

6.1 The Petitioner filed the petition for the Approval of Business plan for the MYT Control period FY 2016-17 to FY 2020-21 along with the true-up petition.

6.2 As per clause 6.6 of the JSERC Generation Tariff Regulations, 2015

"6.6

….

the Business Plan shall be for the entire Control Period and shall, interalia, contain:

(a) ***Capital Investment Plan****: This shall include details of the investments planned by the Generating Company, along with the corresponding capitalisation schedule and financing plan. This plan shall be commensurate with capacity enhancement and proposed efficiency improvements for various plants of the Company and shall include cost benefit analysis;*

(b) ***Capital Structure:*** *The Generating Company shall submit plant-wise details of the capital structure and cost of financing (interest on debt) and return on equity, after considering the existing market conditions, terms of the existing loan agreements, risks associated in generation business and creditworthiness;*

(c) ***Operation and Maintenance (O&M) expenses:*** *This shall include the costs estimated for the Base Year, the actual expenses incurred in the previous two years and the projected*

values for each year of the Control Period based on the proposed norms for O&M cost, including indexation and other appropriate mechanisms;

(d) ***Depreciation****: This shall include details of depreciation based on the fair life of the asset and capitalisation schedules for each year of the Control Period;*

(e) ***Performance Targets:*** *A set of targets proposed for other controllable items such as NAPAF, Station Heat Rate, Secondary Fuel Oil Consumption, and Auxiliary Power Consumption. The targets shall be consistent with the Capital Investment Plan proposed by the Generating Company;*

(f) ***Other Information:*** *This shall include any other details considered appropriate by the Generating Company for consideration during determination of tariff."*

6.3 The Business Plan submitted by the Petitioner covers aspects such as generation plan, availability of the plant, operational performance plan, capital expenditure plan, operation and maintenance expenses etc.

6.4 The Commission has approved the Business plan for the MYT control period from FY 2016-17 to FY 2020-21, in line with the relevant Regulations specified above.

6.5 The component-wise description of the Petitioner's submission and the Commission's analysis thereof is provided hereunder.

Capital Investment Plan for the Control Period FY 2016-17 to FY 2020-21

Petitioner's submission

6.6 The Petitioner has projected capital expenditure and additional capitalization for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 in its MYT Business Plan. The capital expenditure planned is for renovation and modernization as well as life extension of existing two units of 65 MW each and also setting up of other small units whose feasibility studies are under process.

6.7 The summary of the capital expenditure submitted is as given in the table below:

Table 23: Summary of capital expenditure submitted by the Petitioner

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional capitalization	Rs. Cr	-	2.00	5.00	5.00	5.00

6.8 The Petitioner also mentioned that in case any major renovation and modernization works are undertaken the capital expenditure might increase to Rs 100 Cr. for the entire control period.

Table 24: Additional capitalization: Work details and justifications submitted by the Petitioner

Year	Amount	Work Details	Reasons given
FY 2017-18	2.00	Renovation of canal and other civil structure related works. Reason: Presently the canal is not in very good condition and other civil structure also require up gradation. These are very necessary for proper operation and running of unit.	This will help in improving the availability of plant and also increase the generation and subsequently reduce the per unit cost for the beneficiaries in the long run
FY 2018-19	5.00	Upgradation of units from B to F class insulation. Reason: Presently, the excitation system has outlived the Design life of 30-35 years. There had been incidents of burning and puncturing of stator bars. Hence, change of insulation is very important for the running of the plant.	It will help in increasing the useful-life of plant and also increase generation.
FY 2019-20	5.00	Renovation of the penstock pipes of power houses Reason: Penstock pipe has not been changed since the inception of the plant. The pipe is putrefied and is in poor condition and there have been incidents of bursting of pipe. Such busting may cause serious damage and accidents. Therefore, the renovation of pipe is necessary	Will increase the useful-life of plant and efficiency.
FY 2020-21	5.00	Upgradation of Jacking system Upgradation of excitation system of Power house Upgradation of electrical panel and control system	These works necessary for smooth functioning of plant and increasing the efficiency as well as generation.

6.11 For the planned additional capitalization, the Petitioner submitted the following capitalization schedule and GFA

Table 25: Capitalization schedule submitted by the Petitioner for additional capitalization

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening CWIP	Rs. Cr	-	-	-	2.50	3.75
Capex during the year	Rs. Cr	-	2.00	5.00	5.00	5.00
% of capitalization	Rs. Cr	-	100%	50%	50%	50%

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Less: **Addition to GFA/ Capitalization**	Rs. Cr	-	2.00	2.50	3.75	4.38
Closing CWIP	Rs. Cr	-	-	2.50	3.75	4.38
Opening GFA	Rs. Cr	43.28	43.28	45.28	47.78	51.53
Additions to GFA	Rs. Cr	-	2.00	2.50	3.75	4.38
Closing GFA	Rs. Cr	43.28	45.28	47.78	51.53	55.90

Commission's analysis

6.12 As per Clause 7.6 of the JSERC Generation Tariff Regulations, 2015

"7.6 The capital expenditure incurred on the following counts after the cut-off date may, in its discretion, be admitted by the Commission, subject to prudence check:
(i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court;
(ii) Change in law;
(iii) Deferred works relating to ash pond or ash handling system in the original scope of work;
(iv) Any additional works/services, which have become necessary for efficient and successful operation of the generating station, but not included in the original project cost;
(v) Any liability for works executed prior to the cut-off date, after prudence check of the details of such undischarged liability, total estimated cost of package, reasons for such withholding of payment and release of such payments etc.
(vi) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receiving system arising due to non-materialisation of coal supply corresponding to full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station:
(vii) In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of power house attributable to the negligence of the generating company) including due to ecological reasons after adjusting for proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plan operation; and

……"

6.13 The Commission has scrutinized the information provided in the MYT Business Plan where the Petitioner has provided justifications for all the schemes proposed.

6.14 The Commission vide discrepancy note had directed the Petitioner to submit DPR's for the works proposed to be undertaken indicating cost-benefit analysis. The DPR submitted should be approved by the Competent Authority of JUUNL and should explain clearly the rate reasonability of the schemes proposed. The Petitioner was directed to submit the basis of estimation of such costs along with supporting documents like tendered rates, approved schedule of rates, quotations etc.

6.15 The Petitioner had mentioned that in case any major renovation and modernization works are undertaken, the capital expenditure may increase to Rs 100 Cr. for the entire control period. The Petitioner was asked to submit the details of such plans during the Control period with relevant details/ supporting documents.

6.16 In reply to the discrepancy raised, the Petitioner submitted justifications similar to the reasons submitted in the Petition for the works but did not submit any Detailed Project Reports (DPR) or rate reasonability justifications. In addition, the Petitioner said that DPR's are under preparation and will be submitted as soon as finalized.

6.17 The Commission scrutinized the submissions of the Petitioner and considering the nature of works proposed has provisionally approved the expenditure. However, the Petitioner will be required to submit DPR's, rate reasonability justifications etc. during subsequent APR, True-up Petitions. The Commission shall review the capital expenditure and capitalization actually done by the Petitioner at the end of each year of the Control Period in accordance with Clause 6.8 to 6.10 of the Generation Tariff Regulations, 2015. In case, the cumulative incurred capital expenditure and/or capitalization deviates from the approved capital expenditure / capitalization by more than 20% (cumulative), the Commission will make necessary changes to capital investment plan for the Control Period and will adjust depreciation and financing cost, which includes cost of debt (interest), working capital interest, cost of equity (return) based on the actual capital expenditure and/or capitalization vis-à-vis approved capital expenditure/capitalization.

6.18 The Commission has approved the capitalization as proposed by the Petitioner in the Petition. The approved capitalization for each year has been summarized in the tables below.

Table 26: Additional capitalization approved by the Commission with capitalization

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening	Rs. Cr	-	-	-	2.50	3.75
Capex during the year	Rs. Cr	-	2.00	5.00	5.00	5.00
% of capitalization	Rs. Cr	-	100%	50%	50%	50%
Less: Addition to GFA/ Capitalization	Rs. Cr	-	2.00	2.50	3.75	4.38
Closing CWIP	Rs. Cr	-	-	2.50	3.75	4.38

6.19 Accordingly, the GFA approved by the Commission for the MYT control period is as follows

Table 27: GFA approved by the Commission

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening GFA	Rs. Cr	43.02	43.02	45.02	47.52	51.27
Additions to GFA	Rs. Cr	-	2.00	2.50	3.75	4.38
Deletions to GFA	Rs. Cr	-	-	-	-	-
Closing GFA	Rs. Cr	43.02	45.02	47.52	51.27	55.65

Capital Structure (Financing of Additional Capitalization)

Petitioner's Submission

6.20 The Petitioner submitted that it is planning to finance the projected Additional Capitalization for FY 2016-17 to FY 2020-21 from internal accruals and hence, no project specific debt for any of the proposed Capex Schemes is anticipated.

6.21 However, for the purpose of tariff computation, the Petitioner has considered the financing of Projected Additional Capitalization for FY 2016-17 to FY 2020-21 at Normative Debt: Equity ratio of 70:30 as per the provisions of Generation Tariff Regulations 2015.

Commissions Analysis

6.22 As per Clause 7.6 (a) of the Generation Tariff Regulations, 2015

"7.6 Capital cost for a Project shall include:

(a) the expenditure incurred or projected to be incurred, including interest during construction, IEDC and financing charges, any gain or loss on account of foreign exchange risk variation during construction on the loan –

(i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or

(ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed, - up to the date of commercial operation of the project,

as admitted by the Commission after prudence check shall form the basis for determination of tariff;"

6.23 The Commission accordingly approved equity to the tune of 30% and considered the remaining 70% as normative debt. The financing of the additional capitalization as approved by the Commission are tabulated below.

Table 28: Financing of Additional Capitalization (in Rs Cr) as approved by the Commission

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional Capitalization	0.00	2.00	2.50	3.75	4.38
Normative Debt Component (70% of Capitalized Cost)	0.00	1.40	1.75	2.63	3.07
Normative Equity Component (30% of Capitalized Cost)	0.00	0.60	0.75	1.13	1.31

Performance targets – FY 2016-17 to FY 2020-21

Availability

Petitioner's submission

6.24 The Petitioner has mentioned that the normative plant availability factor of 75% is non-achievable due to the following reasons;

a) Sikidiri Hydel Power Station is a peak load operating plant, which is designed to operate only for 3-4 hours in a day.
b) Plant is designed for operation only if water level is 1925 ft. besides, the water level is affected because the same reservoir is used for water consumption needs of Ranchi town as well as irrigation purposes and the level of head for operating plant various monthly according to the directions issued by the Water Resources Department, Jharkhand.
c) As per the operation manual of BHEL, the working condition of the plant is peak load operation and its design energy is 14% of load factor.
d) The situation is further aggravated by the shortfall in the rainfall in last few years.

6.25 Due to aforementioned reasons, the Petitioner has projected the availability of the plant at 50%. The availability as projected is shown in the table below.

Table 29: Plant availability for the Control Period as submitted by the Petitioner

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
PAF	%	50%	50%	50%	50%	50%

Commission's analysis

6.26 In order to determine the projected availability of the plant, the Commission has reviewed the submissions of the Petitioner and has also looked into the actual data for plant availability as submitted by the Petitioner upto FY 2016-17.

6.27 As per the submissions of the Petitoner, the availability has reduced over the years due to the following reasons

a) Lesser average rainfall in the Ranchi district which has resulted in less water accumulation in the Getalsud reservoir
b) Increase in minimum water level to be maintained in the reservoir to 1910 feet due to prioritization of water consumption for drinking purposes. Hence less water is available for generation.
c) Plant availability data for FY 2016-17 highlights an average availability of only 17.69% and PH II has not been available throughout the year
d) Sikidiri Hydel Power Station is a peak load operating plant, which is designed to operate only for 3-4 hours in a day.
e) Decrease in available water for electricity generation due to silting effect.

6.28 In view of the above, it is expected that the plant will not be able to meet the specified Normative Annual Plant Availability Factor (NAPAF) of 75% as specified in the Clause 9.8 (Norms of Operation) of the Generation Tariff Regulations, 2015 for projection of availability during each year of the Control Period i.e. from FY 2016-17 to FY 2020-21.

6.29 As per Regulation 9.4 of the JSERC Generation Tariff Regulations, 2015

"A further allowance may be made by the Commission in NAPAF determination under special circumstances e.g. abnormal silt problem or other operating conditions, and known plant imitations."

6.30 In view of the circumstances highlighted above, the Commission hereby approves the normative availability at 50% for the MYT control period.

6.31 The Commission has approved a relaxed availability considering the issues highlighted. It may also happen that due to good rainfall and higher water availability in reservoir, the Petitioner may be available for more than 75%. Hence the Commission would like to highlight that the Petitioner would be eligible for incentive in the MYT control period only when the PAFM goes above 75%.

Auxiliary consumption

Petitioner's submission

6.32 The Petitioner has considered Auxiliary Consumption at 0.70% during each year of the Control Period in accordance with the Generation Tariff Regulations, 2015.

Commission's analysis

6.33 The Commission has considered Auxiliary Consumption at 0.70% for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 as specified in as specified in the Clause 8.4 (Norms of Operation) of the Generation Tariff Regulation, 2015.

Generation

Petitioner's submission

6.34 The Petitioner submitted that even though it expects to maintain the availability, the operation depends on the reasons as highlighted in the previous section. The Petitioner has considered the design energy as specified by BHEL as the gross generation for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21.

Table 30: Projected Generation (MU) as submitted by the Petitioner

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	130	130	130	130	130
Gross generation	MU	159.43	159.43	159.43	159.43	159.43
Auxiliary Consumption	%	0.70%	0.70%	0.70%	0.70%	0.70%
Net Generation	MU	158.32	158.32	158.32	158.32	158.32

Commission's analysis

6.35 The Commission has computed and approved the generation and corresponding generation for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 considering the submissions of the Petitioner as per Generation Tariff Regulations, 2015 as shown in the table below. Any variation from the approved values shall be trued up as per Generation Tariff Regulations, 2015.

Table 31: Projected Generation (MU) as approved by the Petitioner

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	130	130	130	130	130
Gross generation	MU	159.43	159.43	159.43	159.43	159.43
Auxiliary Consumption	%	0.70%	0.70%	0.70%	0.70%	0.70%
Net Generation	MU	158.32	158.32	158.32	158.32	158.32

A7: TARIFF DETERMINATION FOR THE MYT CONTROL PERIOD (FY 2016-17 TO FY 2020-21)

7.1 The Petitioner submitted the petition for determination of generation tariff for the Control Period FY 2016-17 to FY 2020-21 on the basis of:

- Actual Operational & Financial Performance of the last Control Period i.e., from 6th January 2014 to 31st March 2016

- The MYT Business Plan covering capital expenditure, capital structure and performance targets

7.2 The Commission has scrutinized the petition filed by JUUNL for determination of Generation Tariff for the Control Period in accordance with the Generation Tariff Regulations, 2015. The component-wise description of the Petitioner's submission and the Commission's analysis thereon is given below.

Operational Performance – FY 2016-17 to FY 2020-21

Availability

Petitioner's submission

6.36 The Petitioner has mentioned that the normative plant availability factor of 75% is non-achievable due to the following reasons;

a) Sikidiri Hydel Power Station is a peak load operating plant, which is designed to operate only for 3-4 hours in a day.
b) Plant is designed for operation only if water level is 1925 ft. besides, the water level is affected because the same reservoir is used for water consumption needs of Ranchi town as well as irrigation purposes and the level of head for operating plant various monthly according to the directions issued.
c) As per the operation manual of BHEL, the working condition of the plant is peak load operation and its design energy is 14% of load factor.
d) The situation is further aggravated by the shortfall in the rainfall in last few years.

6.37 Due to aforementioned reasons, the Petitioner has projected the availability of the plant at 50%. The availability as projected is shown in the table below.

Table 32: Availability for the Control Period as submitted by the Petitioner

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
PAF	%	50%	50%	50%	50%	50%

Commission's analysis

7.3 The Commission approved the norms for availability at 50% for the MYT control period as discussed in paragraph 6.26 of this tariff order.

Auxiliary Consumption

Petitioner's submission

6.38 The Petitioner has considered Auxiliary Consumption at 0.70% during each year of the Control Period in accordance with the Generation Tariff Regulations, 2015.

Commission's analysis

7.4 The Commission has approved the auxiliary consumption in paragraph 6.32 of this Tariff Order.

Generation

Petitioner's submission

6.39 The Petitioner submitted that even though it expects to maintain the availability, the operation depends on the reasons as highlighted in the previous section. The Petitioner has considered the design energy as specified by BHEL as the gross generation for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21.

Table 33: Projected Generation (MU) as submitted by the Petitioner

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	130	130	130	130	130
Gross generation	MU	159.43	159.43	159.43	159.43	159.43
Auxiliary Consumption	%	0.70%	0.70%	0.70%	0.70%	0.70%
Net Generation	MU	158.32	158.32	158.32	158.32	158.32

Commission's analysis

7.5 The Commission has approved the generation for each year of the Control Period in Paragraph 6.34 of this Tariff Order.

Summary of the Operational Performance Parameters

Petitioner's submission

7.6 The Summary of Operational performance parameters as submitted by the Petitioner been summarized below

Table 34: Summary of Operational performance parameters submitted by the Petitioner

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	130	130	130	130	130
Plant Availability	%	50%	50%	50%	50%	50%
Gross Generation (DE)	MU	159.43	159.43	159.43	159.43	159.43
Auxiliary Power Consumption	%	0.70%	0.70%	0.70%	0.70%	0.70%
Net Generation	MU	158.32	158.32	158.32	158.32	158.32

Commission's analysis

7.7 The Summary of Operational Performance parameters as approved by the Commission for has been summarized below

Table 35; Summary of Operational performance parameters approved by the Commission

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	130	130	130	130	130
Plant Availability	%	50%	50%	50%	50%	50%
Gross Generation (DE)	MU	159.43	159.43	159.43	159.43	159.43
Auxiliary Power Consumption	%	0.70%	0.70%	0.70%	0.70%	0.70%
Net Generation	MU	158.32	158.32	158.32	158.32	158.32

Determination of Fixed Cost

Capital Investment Plan for the Control Period FY 2016-17 to FY 2020-21

Petitioner's submission

7.8 The Petitioner has projected capital expenditure and additional capitalization for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 in its MYT Business Plan. The capital expenditure planned is for renovation and modernization as well as life extension of existing two units of 65 MW each and also setting up of other small units whose feasibility studies are under process.

7.9 The summary of the capital expenditure submitted is as given in the table below:

Table 36: Additional capitalization submitted by the Petitioner

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional capitalization	Rs. Cr	-	2.00	5.00	5.00	5.00

7.10 The Petitioner also mentioned that in case any major renovation and modernization works are undertaken the capital expenditure might increase to Rs 100 Cr. for the entire control period.

Table 37: Additional capitalization: Work details and justifications

Year	Amount	Work Details	Reasons given
FY 2017-18	2.00	Renovation of canal and other civil structure related works. Reason: Presently the canal is not in very good condition and other civil structure also require up gradation. These are very necessary for proper operation and running of unit.	This will help in improving the availability of plant and also increase the generation and subsequently reduce the per unit cost for the beneficiaries in the long run
FY 2018-19	5.00	Upgradation of units from B to F class insulation. Reason: Presently, the excitation system has outlived the Design life of 30-35 years. There had been incidents of burning and puncturing of stator bars. Hence, change of insulation is very important for the running of the plant.	It will help in increasing the useful-life of plant and also increase generation.
FY 2019-20	5.00	Renovation of the penstock pipes of power houses Reason: Penstock pipe has not been changed since the inception of the plant. The pipe is putrefied and is in poor condition and there have been incidents of bursting of pipe. Such busting may cause serious damage and accidents. Therefore, the renovation of pipe is necessary	Will increase the useful-life of plant and efficiency.
FY 2020-21	5.00	Upgradation of Jacking system Upgradation of excitation system of Power house Upgradation of electrical panel and control system	These works necessary for smooth functioning of plant and increasing the efficiency as well as generation.

6.40 For the planned additional capitalization, the Petitioner submitted the following capitalization schedule and GFA

Table 38: Additional capitalization submitted by the Petitioner

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening CWIP	Rs. Cr	-	-	-	2.50	3.75
Capex during the year	Rs. Cr	-	2.00	5.00	5.00	5.00
% of capitalization	Rs. Cr	-	100%	50%	50%	50%
Less: Addition to GFA/ Capitalization	Rs. Cr	-	2.00	2.50	3.75	4.38
Closing CWIP	Rs. Cr	-	-	2.50	3.75	4.38
Opening GFA	Rs. Cr	43.28	43.28	45.28	47.78	51.53
Additions to GFA	Rs. Cr	-	2.00	2.50	3.75	4.38
Closing GFA	Rs. Cr	43.28	45.28	47.78	51.53	55.90

Commission's analysis

7.11 The Commission has approved capitalization and GFA for each year of the control period in paragraph 6.12 of this Tariff Order.

Capital Structure (Financing of Additional Capitalization)

Petitioner's Submission

6.41 The Petitioner submitted that it is planning to finance the projected Additional Capitalization for FY 2016-17 to FY 2020-21 from internal accruals and hence, no project specific debt for any of the proposed Capex Schemes is anticipated.

6.42 However, for the purpose of tariff computation, the Petitioner has considered the financing of Projected Additional Capitalization for FY 2016-17 to FY 2020-21 at Normative Debt: Equity ratio of 70:30 as per the provisions of Generation Tariff Regulations 2015.

Commission's Analysis

7.12 The Commission approved the capital structure as discussed in paragraph 6.22 of this Tariff Order.

Operation & Maintenance Expenses

Petitioner's submission

7.13 The Petitioner has presented the O&M expenses for the Control Period under four broad categories

(a) Salaries, wages, pension contribution and other employee costs;
(b) Administrative and General costs;

(c) Repairs and maintenance expenses; and

(d) Other miscellaneous expenses statutory levies and taxes (except corporate income tax)

7.14 The Petitioner has projected the O&M expenses as per the provisions of the JSERC Tariff Regulations, 2015. The petitioner projected the operations and maintenance expenses for the entire control period using the escalation factor of 8.59% which is weighted average of the WPI and CPI indexes in ratio of 80:20 for WPI and CPI respectively. The Petitioner has considered the O&M expenses for the previous five years (FY 2010-11 to FY 2014-15) after excluding the terminal liabilities and then used the escalation factor to project for the MYT period. The terminal benefits has been projected same as per the actual figure for FY 15-16 as under the Clause 7.42 (c) of JSERC Generation Tariff Regulation, 2015 clearly mentions that the terminal liabilities will be as per the actual figures submitted by the Generating company.

7.15 The O&M expenses as submitted by the Petitioner has been summarized below

Table 39: Employee expenses (in Rs Cr) for Unit 2 & 3 as submitted by the Petitioner

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
O&M excluding terminal benefits	18.99	20.63	22.40	24.32	26.41
Terminal Benefits	0.52	0.52	0.52	0.52	0.52
Total O&M expense	**19.51**	**21.15**	**22.92**	**24.84**	**26.93**

Commission's analysis

7.16 As per the Clause 7.40 of the JSERC Generation Tariff Regulation, 2015

7.40"The O&M expenses shall comprise of:

a. Salaries, wages, pension contribution and other employee costs;

b. Administrative and General costs;

c. Repairs and maintenance expenses; and

d. Other miscellaneous expenses, statutory levies and taxes (except corporate income tax)."

7.17 Further, as per Clause 7.42 of the Generation Tariff Regulation, 2015, for the Existing Hydro Generating Stations, the O&M expenses for the Control Period shall be approved considering the past O&M expenses of the generating station. The said Regulations are reproduced for reference below:

7.42 Existing Hydro generating stations

(a) Operation and maintenance expenses excluding terminal liabilities, for the existing generating stations which have been in operation for 5 years or more as on 1st April 2016, shall be derived on the basis of actual operation and maintenance expenses for the financial years 2011-12 to 2015-16, based on the audited balance sheets, excluding abnormal operation and maintenance expenses, if any, after prudence check by the Commission.

(b) The normalised operation and maintenance expenses excluding terminal liabilities after prudence check, for the FY 2010-11 to FY 2014-15, shall be escalated to arrive at the normalised operation and maintenance expenses at the 2014-15 price level respectively and then averaged to arrive at normalized average operation and maintenance expenses for FY 2010-11 to FY 2014-15 at 2014-15 price level. The averaged normalized operation and maintenance expenses at 2014-15 price level shall be escalated to arrive at the operation and maintenance expenses for FY 2016-17. The escalation factor shall be computed based on the weighted average increase in WPI and CPI during last five years (FY 2010-11 to FY 2014-15). The weighted average shall be computed in ratio of 80:20 for WPI and CPI, respectively.

Provided that operation and maintenance expenses for the financial year 2015-16 shall further be rationalized considering an increase in employee cost on the basis of pay revision of the employees on account of Pay Commission to arrive at permissible operation and maintenance expenses for the financial year 2015-16.

(c) The operation and maintenance expenses for the financial year 2015-16 shall be escalated further annually to arrive at permissible operation and maintenance expenses for subsequent years of the Tariff Period. The escalation factor shall be computed in line with Clause 7.42 (b) of this Regulation;

Terminal Liabilities will be approved as per actual submitted by the Generating Company or be established through actuarial studies.

7.18 The Commission calculated the escalation factor giving ‘80% weightage to WPI & 20% weightage to CPI and the escalation factor comes out to be 7.24% for the period FY 2010-11 to FY 2014-15 as per the Regulations.

7.19 **Employee Expenses:** In accordance with the provisions of the JSERC Generation Tariff Regulations, 2015, for the purpose of approval of O&M expenses, employee expenses have been considered in two parts –

(a) Employee Expenses excluding terminal liabilities: The base figures for employee expenses (excluding terminal liabilities) have been taken equal to the expenses in the True-up period from 6th January 2014 to end of FY16, audited accounts and as per Petitioner's submission. The expenses for each year has been normalised to arrive at the average normalised employee expenses for FY2015-16. The employee expenses for the period 6th January 2014 to end of FY16 have been normalized at the rate of 7.40%, which is the YoY % increase considered in the previous control period.

The normalised figure of FY 2015-16 has then been escalated to arrive at the O&M expenses for the MYT control period. The YoY escalation factor for the current MYT period has been derived as 7.24%. The Commission as of now has not approved any expenses with respect to the impact of Pay Commission. The impact of pay commission shall be trued up as per the actuals, incurred by the Petitioner after due prudence check by the Commission.

(b) Terminal Liabilities: The base figures for projecting terminal liabilities have been taken equal to the expenses submitted by the Petitioner for the period. The same has been considered for projection of terminal benefits during the Control Period. However, in accordance with Clause 7.42, the terminal liabilities for each year of the Control Period shall be trued up as per the actual terminal liabilities incurred by the Petitioner after due prudence check by the Commission.

7.20 **R&M expenses:** The actual R&M expenses have been taken by first normalizing the R&M expenses of the past five years (FY 2013-14 to FY 2015-16) at the escalation rate of 32.0%, which has then been used for the projection of R&M expenses for the first control period and then taking an average of the same. The average normalized R&M expense for FY 2015-16 was then used and the escalation factor considered is 7.24% (as stated above) on year-on-year basis to arrive at the approved R&M expenses figure for the control period FY 2016-17 to FY 2020-21.

7.21 **A&G expenses:** Similar methodology adopted to escalate A&G expenses also. The normalized factor used is 8.4% and subsequently post normalization upto FY 2015-16, the A&G expenses for the MYT control period FY 2016-17 to FY 2020-21 has been derived by escalating with 7.24%.

7.22 The projected O&M expenses approved by the Commission is given in the table below:

Table 40: O&M expenses approved by the Commission

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Employee expenses	9.66	10.36	11.11	11.91	12.77
R&M Expenses	5.60	6.01	6.44	6.91	7.41
A&G expenses	1.60	1.60	1.71	1.83	1.97

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Terminal benefits	0.52	0.52	0.52	0.52	0.52
Total O&M expense	**17.27**	**18.48**	**19.78**	**21.17**	**22.67**

Depreciation

Petitioner's submission

7.23 The Petitioner submitted that the total depreciation for the Control Period FY 2016-17 to FY 2020-21 is as following:

- Depreciation on Original Project Cost
- Depreciation on Additional Capitalization approved for the control period

7.24 The depreciation on proposed Additional Capitalization for the period FY 2016-17 to FY 2020-21 has been considered for 6 months during the year of capitalization considering that asset addition will be spread over the course of the entire year and for full year for subsequent years of the Control Period FY 2016-17 to FY 2020-21.

7.25 The depreciation amount submitted by the Petitioner is summarized below

Table 41: Depreciation (in Cr) as submitted by the Petitioner

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation on existing assets	1.62	1.62	1.62	1.62	1.62
Depreciation on Additional Capitalization FY 12-16	0.00	0.10	0.21	0.39	0.60
Total Depreciation during the Year	**1.62**	**1.71**	**1.83**	**2.01**	**2.22**

Commission's analysis

7.26 The Generation Tariff Regulations, 2015 have specified the following methodology for the calculation of depreciation expense for existing generating stations:

"7.28 Depreciation shall be calculated for each year of the tariff period, on the amount of Capital Cost of the assets admitted by the Commission; Provided that depreciation shall not be allowed on assets funded by any capital subsidy / grant.

7.29 The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset. ……

7.30 Land other than land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.

7.31 Depreciation shall be calculated annually based on 'Straight Line Method' and at rates specified in Appendix-I to these Regulations for the assets of the generating station: Provided that, the remaining depreciable value as on 31st March of the Year closing after a period of 12 Years from the Date of Commercial operation shall be spread over the balance Useful life of the assets. ......

7.32 In case of the existing Projects, the balance depreciable value as on 1st April 2016 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31st March 2016 from the gross depreciable value of the assets.

The rate of depreciation shall be continued to be charged at the rate specified in Appendix-I till cumulative depreciation reaches 70%. Thereafter the remaining depreciable value shall be spread over the remaining life of the asset such that the maximum depreciation does not exceed 90%.

7.33 Depreciation shall be chargeable from the first Year of commercial operation. In case of commercial operation of the asset for part of the Year, depreciation shall be charged on pro rata basis."

7.27 The Commission has computed depreciation on the approved GFA and the approved additional capitalization during MYT control period FY 2016-17 to FY 2020-21 considering the depreciation rates specified in Generation Tariff Regulations, 2015.

7.28 Further, depreciation has been provided for twelve months on the approved additional capitalization at the beginning of the year; and for six months on the approved additional capitalization during the year, considering that asset addition will be spread over the course of the entire year.

7.29 The depreciation approved for the control period i.e. FY 2016-17 to FY 2020-21 has been tabulated below:

Table 42: Depreciation approved by the Commission

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation on existing assets	1.62	1.62	1.62	1.62	1.62
Depreciation on Additional Capitalization FY 12-16	0.00	0.06	0.19	0.37	0.61
Total Depreciation during the Year	**1.62**	**1.68**	**1.81**	**1.99**	**2.23**

Interest on Loan

Petitioner's submission

7.30 The Petitioner further submitted that no loan has been availed for the financing of the additional capitalization and normative debt has been considered for working out the interest on loan on Additional Capitalization as discussed earlier.

7.31 The Petitioner has considered the rate of interest at 11.30% in accordance with Regulations 7.23 of the JSERC Generation Tariff Regulations 2015.

Table 43: Interest on Loan (in Rs Cr) submitted by the Petitioner

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening Debt for the year	0.00	0.00	1.30	2.84	5.07
Additions during the year	0.00	1.40	1.75	2.63	3.06
Repayment	0.00	0.10	0.21	0.39	0.60
Closing Debt	0.00	1.30	2.84	5.07	7.54
Average Debt	0.00	0.65	2.07	3.96	6.32
Rate of Interest	11.30%	11.30%	11.30%	11.30%	11.30%
Interest on Debt	**0.00**	**0.07**	**0.23**	**0.45**	**0.71**

Commission's analysis

7.32 As per Clause 7.13, 7.14, 7.19 to 7.24 of the Generation Tariff Regulations, 2015

"7.13 In case of the generating station declared under commercial operation prior to 1st April 2016, debt-equity ratio allowed by the Commission for determination of Tariff for the period ending 31st March 2016 shall be considered for determination of tariff. During the control period, debt-equity ratio allowed by the Commission for determination of Tariff for the period ending 31st March 2017 shall be considered for determination of tariff.

7.14 For the project declared under commercial operation on or after 1st April 2016, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that where equity deployed is less than 30% of capital cost, the actual equity shall be considered for determination of tariff"

"7.19 The loans arrived at in the manner indicated in clause 7.13 and 7.14 of these Regulations shall be considered as gross normative loan for calculation of interest on loan.

7.20 The normative loan outstanding as on 1st April 2016 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31st March 2016 from the *gross normative loan 7.21 The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year.*

7.22 Notwithstanding any moratorium period availed by the Generating Company, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.

7.23 The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the Project: Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered: Provided further that if the generating station does not have actual loan, then the weighted average rate of interest of the Generating Company as a whole shall be considered.....

7.24 The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest."

7.33 As per the above Regulations, the value of the opening loan for the FY 2016-17 is considered equal to the closing debt for the FY 2015-16 as approved in the True-up of FY 2015-16. Further, the additions in loan each year has been considered at 70% of the proposed additional capitalization as per the provisions of the above regulations.

7.34 The rate of interest on the approved normative debt has been worked out in accordance with Clause 7.23 of the Generation Tariff Regulation, 2015. For the loans projected during the Control Period, the Interest Rate has been considered in accordance with clause 7.23 of JSERC Generation Tariff Regulations, 2015, i.e. SBI Base Rate plus 200 basis points. As on 01st April 2016, the SBI Base Rate was 9.30% and accordingly, the Interest Rate on Normative Loan comes out to be 11.30%.

7.35 The repayment of loan for each year of the control period has been considered equal to the value of depreciation for the year as per clause 7.21 of the JSERC Generation Tariff Regulations, 2015.

7.36 The Interest on Loan as approved by the Commission for the control period has been tabulated below

Table 44: Interest on loan approved by the Commission

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening normative debt	26.39	24.77	24.49	24.44	25.07
Additions during the year	0.00	1.40	1.75	2.63	3.07
Repayment	1.62	1.68	1.81	1.99	2.23
Closing Debt	24.77	24.49	24.44	25.07	25.91
Average Debt	25.58	24.63	24.46	24.75	25.49
Rate of Interest	11.30%	11.30%	11.30%	11.30%	11.30%

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Interest on Debt	**2.89**	**2.78**	**2.76**	**2.80**	**2.88**

Return on Equity (RoE)

Petitioner's submission

7.37 The Petitioner has considered the RoE of 15.50% without grossing up with tax, as there is no tax liability on the Petitioner. The debt-equity ratio for any additional capital investment incurred has been considered as per the Clause 7.13 & 7.14 of JSERC Generation Tariff Regulations 2015 i.e. 70:30.

7.38 Moreover, the existing equity component of Rs 38.03 Cr. has been considered as opening balance for FY 16-17 as per the closing equity figure of FY 15-16. The year on year addition to equity has been considered based on the additional capitalization during the year.

7.39 The summary of RoE is given in the table below:

Table 45: Return on Equity (in Rs Cr) submitted by the Petitioner

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening equity	38.03	38.03	38.63	39.38	40.51
Addition to equity during the year	0.00	0.60	0.75	1.13	1.31
Closing equity	38.03	38.63	39.38	40.51	41.82
Average equity	38.03	38.33	39.01	39.94	41.16
Rate of Return on Equity	15.50%	15.50%	15.50%	15.50%	15.50%
Return on Equity	**5.89**	**5.94**	**6.05**	**6.19**	**6.38**

Commission's analysis

7.40 The Commission has worked out the normative equity for the MYT control period as per Clause 7.13 and 7.14 of the Generation Tariff Regulation, 2015.

7.41 Further, as per clause 7.15 to 7.18 of the Generation Tariff Regulations, 2015

"7.15 Return on equity shall be computed in rupee terms, on the equity base determined in accordance with clause 7.13, 7.14 of these Regulations.

7.16 Return on equity shall be computed on pre-tax basis at the base rate of 15.50% for thermal generating stations ...., to be grossed up as per clause 7.17 of these Regulations.

Provided that return on equity with respect to the actual base rate applicable to the Generating Company, in line with the performance of the respective generating station for *the respective year during the Control Period shall be trued up separately for each year of the Control Period along with the tariff petition filed for the next Control Period.*

Provided that in case of Projects commissioned on or after 1st April, 2016, an additional return of 0.5% shall be allowed if such Projects are completed within the timeline specified in Appendix-II to these Regulations:

Provided further that the additional return of 0.5% shall not be admissible if the Project is not completed within the timeline specified above for any reasons whatsoever.
....

7.17 The rate of return on equity shall be computed by grossing up the base rate with the normal applicable tax rate for the FY 2016-17 applicable to the Generating Company. Provided that return on equity with respect to the actual tax rate applicable to the Generating Company, in line with the provisions of the relevant Finance Acts of the respective year during the Control period shall be trued up separately for each year of the Control period along with the tariff petition filed for the next Control period.

7.18 Rate of return on equity shall be rounded off to three decimal points and be computed as per the formula given below:
Rate of pre-tax return on equity = Base rate / (1-t)

Where 't' is the applicable tax rate in accordance with clause 7.17 of these Regulations."

7.42 The Commission considered the base rate of return on equity at 15.50% as per the submission of the Petitioner. The additions in equity has been considered at 30% of the additional capitalization approved for each year of the control period. The opening equity for the FY 2016-17 has been considered as per the closing values for the FY 2015-16 as approved in True-up in the relevant sections of this Order.

7.43 The RoE approved by the Commission is given in the following table:

Table 46: Return on equity approved by the Commission

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening equity	12.91	12.91	13.51	13.88	14.82
Addition to equity during the year	0.00	0.60	0.75	1.13	1.31
Closing equity	12.91	13.51	14.26	15.38	16.70
Average equity	12.91	13.21	13.88	14.82	16.04
Rate of Return on Equity	15.50%	15.50%	15.50%	15.50%	15.50%
Return on Equity	**2.00**	**2.05**	**2.15**	**2.30**	**2.49**

Interest on Working Capital

Petitioner's Submission

7.44 The Petitioner submitted that the Interest on Working Capital has been computed in line with JSERC Generation Tariff Regulations, 2015. The Interest on working capital as submitted by the Petitioner for the MYT Control period has been tabulated below:

Table 47: Interest on Working Capital submitted by the Petitioner

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
O&M expenses of 1 month	4.68	5.01	5.38	5.81	6.29
Maintenance spares	2.85	3.09	3.36	3.65	3.96
Receivables for 2 months	1.58	1.72	1.87	2.03	2.20
Total Working Capital	9.12	9.82	10.61	11.49	12.45
Bank Rate submitted	12.30%	12.30%	12.30%	12.30%	12.30%
Interest on Working Capital	**1.12**	**1.21**	**1.30**	**1.41**	**1.53**

Commission's analysis

7.45 As per Clause 7.36 and 7.38 of the Generation Tariff Regulations, 2015

7.36 For hydro generating station, the working capital requirements shall be determined using the following components:

(a) Receivables equivalent to two months of fixed cost; and
(b) Maintenance spares @ 15% of Operation and maintenance expenses specified in clauses 7.40 to 7.48 of these regulations;
(c) Operation and Maintenance expenses for 1 month

"7.38 Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 01.04.2016 or as on 1st April of the year during the tariff period 2016-17 to 2020-21 in which the generating station or a unit thereof, is declared under commercial operation, whichever is later.

Provided that the rate of interest on working capital shall be trued up on the basis of actual bank rate as on 1st April of the respective year at the time of true up for that year."

7.46 The rate of interest on working capital has been taken as 12.80% (9.30% + 3.50%) as per regulation 2.1 (8) of the Generation Tariff Regulations, 2015 which is:

"2.1
....
8) "Bank Rate" means the base rate of interest as specified by the State Bank of India from

time to time or any replacement thereof for the time being in effect plus 350 basis points;"

7.47 Accordingly, the Commission has computed the interest on working capital each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 as shown in the tables below.

Table 48: Interest on Working Capital approved by the Commission

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Receivables equal to two months of fixed cost	4.13	4.34	4.61	4.91	5.26
Maintenance at 15% of O&M expenses	2.59	2.77	2.97	3.18	3.40
O&M Expenses for 1 month	1.44	1.54	1.65	1.76	1.89
Total Working Capital	8.16	8.65	9.22	9.85	10.55
Bank Rate as on 1st April 2016 (%)	12.80%	12.80%	12.80%	12.80%	12.80%
Interest on Working Capital	**1.04**	**1.11**	**1.18**	**1.26**	**1.35**

Non-tariff income

Petitioner's submission

7.48 The petitioner has projected the non-tariff income for the year based on the average for FY 15 and FY 16. Submissions are given in the table below:

Table 49: Non-tariff income submitted by the Petitioner

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Non-tariff income	Rs. Cr	0.04	0.04	0.04	0.04	0.04

Commission's analysis

7.49 The Commission had provisionally approved the non-tariff income based on the submission of the Petitioner. The same will be reviewed during the control period as per actuals. Details are given in the table below:

Table 50: Non-tariff income approved by the Commission

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Non-tariff income	Rs. Cr	0.04	0.04	0.04	0.04	0.04

Summary of Fixed Cost Determinants

Petitioner's submission

7.50 The Annual Fixed Charges as submitted by the Petitioner for each year of the Control Period are shown in the following tables –

Table 51: Annual Fixed Charges as submitted by the Petitioner

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation	1.62	1.71	1.83	2.01	2.22
Interest on Loan	0.00	0.07	0.23	0.45	0.71
O&M expenses	19.51	21.15	22.92	24.84	26.93
Return on Equity	5.89	5.94	6.05	6.19	6.38
Interest on Working Capital	1.12	1.21	1.30	1.41	1.53
(Less) Non-Tariff income	0.04	0.04	0.04	0.04	0.04
Total Annual Fixed Charges	**28.11**	**30.04**	**32.29**	**34.86**	**37.73**

Commission's analysis

7.51 Clause 9.1 of the Generation Tariff Regulations, 2015 states that the annual fixed cost of a hydro generating station shall consist of the following

- Return on Equity;
- Interest and Financing Charges on Loan Capital;
- Depreciation;
- Operation and Maintenance Expenses;
- Interest Charges on Working Capital

7.52 The Annual Fixed Charges as approved by the Commission for each year of the Control Period are shown in the following tables –

Table 52: Annual Fixed Charges approved by the Commission

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation	1.62	1.68	1.81	1.99	2.23
Interest on Loan	2.89	2.78	2.76	2.80	2.88
O&M expenses	17.27	18.48	19.78	21.17	22.67
Return on Equity	2.00	2.05	2.15	2.30	2.49
Interest on Working Capital	1.04	1.11	1.18	1.26	1.35
(Less) Non-Tariff income	0.04	0.04	0.04	0.04	0.04
Total Annual Fixed Charges	**24.78**	**26.06**	**27.65**	**29.48**	**31.57**

Recovery of capacity and energy charges

7.53 The Commission hereby directs that the recovery of capacity and energy charges shall as per regulations 9.9 to 9.20 of the JSERC Generation Tariff regulations, 2015

A8: DIRECTIVES

Filling of True up Petition for True-up for FY 2016-17 and 2017-18

8.1 The Commission directs the Petitioner to submit petition for truing up of FY 2016-17 and FY 2017-18. The Petitioner should adhere to the timelines as provided in the JSERC Generation tariff Regulations 2015.

Data adequacy in next Tariff petition

8.2 The Commission directs the Petitioner to note the data deficiencies highlighted throughout the present petition and submit required details and certificates along with the next petition.

Detailed Project Report (DPR)

8.3 The Petitioner has not submitted DPR of schemes that has been proposed along with the Petition. The Petitioner is required to submit detailed DPR along with the next Petition. In the DPRs the Petitioner has to submit details about the project along with costs and the impact of such schemes. The analysis and costs should be supported by rate reasonability and should have approval of the competent authority of JUUNL. The Petitioner should provide supporting documents in the form of ordered rates, order for work carried out previously, quotations etc. The Petitioner is directed to ensure compliance.

New addition/ increase in scope of work during execution of approved schemes

8.4 The Petitioner is hereby directed that during execution of work pertaining to any pre-approved schemes, any increase in scope of work, procurement, services etc. should be brought to the notice of the Commission immediately.

Asset register and depreciation of individual assets

8.5 The Petitioner is hereby directed to submit Fixed asset register along with the next petition. Also while calculating depreciation, the Petitioner should submit asset wise depreciation schedule for each units of the plant considering the rates given in the Regulations.

De-silting of the plant

8.6 The Commission has noticed from the Petitioner's submission that the plant faces issues due to silting. The Commission hereby directs the Petitioner to undertake measures to de-silt the plant so that its operation may be enhanced and the plant availability improves.

Report on non-schedule of the plant

8.7 The Commission has observed that on certain occasions, the plant was capable of generating power but was not scheduled by SLDC. The Commission hereby directs the Petitioner to submit a report on the issue by giving instances when such a schedule was denied. The Petitioner should take pro-active steps within its control to maintain a higher availability of the plant.

This Order is signed and issued by the Jharkhand State Electricity Regulatory Commission on this the 25th of September, 2018.

Date: 25th September, 2018

Place: Ranchi

Sd/-	Sd/-
(R. N. Singh)	**(Dr. Arbind Prasad)**
MEMBER (T)	**CHAIRPERSON**

A9: ANNEXURES

Annexure I: List of participating members of public in the public hearing

Sl. No.	Name	Address / Organization if any
1	Nand Kishor Bhagat	Sikidri, Ranchi
2	Krishna Kumar Karmali	Sikidri, Ranchi
3	Mahendra Thakur	Jalima, Sikidri, Ranchi
4	Ritika Devi	Sikidri, Ranchi
5	Munot Singh	JUUNL (Consultant)
6	Hari Ram Swarnalav	EEE (Gen) JUUNL
7	Aditya Kumar	ESE, JUUNL
8	Shailesh Prasad`	ESE, SLDC
9	Sanjay Kumar Singh	EEE, SRHP, SKD
10	Santosh Kumar	JE (Civil), SRHP, Sikidiri
11	Md. Suveab Ahmad	Sikidri, Ranchi
12	Sunil Kumar Thakur	CE (C&R) JBVNL
13	Ishan Srivastava	Consultant, JBVNL
14	Nirmal	Grampradhan, Hesatu
15	Rajesh Pahan	Mukhiya, Hesatu
16	Anil Sahu	Bhadarbhanga
17	Basudev Sahu	Sikidri, Ranchi
18	Anita Prasad	JBVNL
19	Amit Banerjee	JUUNL (Consultant)
20	Kishor Kumar Mondal	JUUNL (Consultant)
21	B. Sinha	Sambedak
22	Andu Bediya	Sikidri, Ranchi
23	Balran Sahu	Sikidri, Ranchi
24	D. K. Chaudhary	Sikidri, Ranchi
25	Dipti Mahto	Bhusur
26	Dharmpal	Hos. SRHP
27	Krishna Bahadur	Sikidri, Ranchi
28	HarakhNath Karmali	Hesatu
29	Shashi Kapur Gupta	Sikidri, Ranchi
30	Bansi Saw	Sikidri, Ranchi
31	Santosh Kumar	Sikidri, Ranchi
32	Bipul	Sikidri, Ranchi
33	Ashok	Sikidri, Ranchi
34	Praveen Kujur	JUUNL
35	Prameshwar	JUUNL
36	Baleshwar Yadav	JUUNL
37	Amarkant Pandey	JUUNL
38	Niydev Mahto	JUUNL
39	Rajendranath Mahto	JUUNL

40	Devendra Mahto	JUUNL
41	Lakhi Charan Hajam	JUUNL
42	Raman Mahto	JUUNL
43	Shrawan Mahto	JUUNL
44	Hemant Kumar Mahto	JUUNL
45	S. Aahir	JUUNL
46	Ashok Pramani	JUUNL
47	B. Mahto	JUUNL
48	Chandrama Mali	JUUNL