

Jharkhand State Electricity Regulatory Commission



Order on
Business Plan, and
Tariff for MYT from FY 2021-22 to FY 2025-26.
for
Adhunik Power and Natural Resources Limited
(APNRL)
Ranchi
December 14, 2023



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List of Abbreviations

Abbreviation	Description
A&G	Administrative and General
APR	Annual Performance Review
ARR	Aggregate Revenue Requirement
ATE	Appellate Tribunal for Electricity
COD	Date of Commercial Operation
Cr.	Crore
ECR	Energy Charge Rate
FY	Financial Year
GCV	Gross Calorific Value
GFA	Gross Fixed Assets
GoI	Government of India
HO & SS	Head Office and Shared Services
JSERC	Jharkhand State Electricity Regulatory Commission
Kcal	Kilocalorie
Kg	Kilogram
kWh	Kilowatt-hour
LDC	Load Dispatch Centre
LPPF	Landed Price of primary fuel
MAT	Minimum Alternative Tax
MCL	MCL Mahanadi Coalfields Ltd. (IB Valley Coalfields)
ml	Millilitre
MT	Million Tonnes
MU	Million Units
MW	Megawatt
NAPAF	Normative Annual Plant Availability Factor
O&M	Operation and Maintenance
PAF	Plant Availability Factor
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
TPCL	Tata Power Company Limited
TSL	Tata Steel Limited
UoM	Unit of Measurement
WB	West Bokaro



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BEFORE

**Jharkhand State Electricity Regulatory Commission,
Ranchi
Case (Tariff) No.: 02 of 2022**

In the matter of:

**Petition for
Approval for Business Plan, Annual Revenue Requirement and
Determination of Tariff for FY 2021-22 to FY 2025-26.**

In the matter:

Adhunik Power and Natural Resources Limited (APNRL),
H-29, Harmu Housing Colony, Harmu,
Ranchi-834002 **Petitioner**

PRESENT

Hon'ble Justice Amitav Kumar Gupta..... Chairperson
Hon'ble Mr. Mahendra Prasad.....Member (Legal)
Hon'ble Mr. Atul Kumar.....Member (Technical)

Order dated December 14, 2023

Adhunik Power and Natural Resources Limited (hereinafter referred to as APNRL or the Petitioner) has filed the petition for Approval for Business Plan, Annual Revenue Requirement and Determination of Tariff for FY 2021-22 to FY 2025-26.



Chapter 1: Introduction

Jharkhand State Electricity Regulatory Commission

- 1.1 The Jharkhand State Electricity Regulatory Commission (hereinafter referred to as the 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 stand repealed and the functions of State Electricity Regulatory Commission are now defined under Section 86 of the Act 2003.
- 1.4 In accordance with Section 86 (1) of the 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:



Provided that where open access has been permitted to a category of consumers under section 42, the State Commission shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers;

- (b) regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;
- (c) facilitate intra-state transmission and wheeling of electricity;
- (d) issue licences to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State;
- (e) 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;
- (f) adjudicate upon the disputes between the licensees and generating companies, and to refer any dispute for arbitration;
- (g) levy fee for the purposes of this Act;
- (h) specify State Grid Code consistent with the Grid Code specified under Clause (h) of sub-section (1) of Section 79;
- (i) specify or enforce standards with respect to quality, continuity and reliability of service by licensees;
- (j) fix the trading margin in the intra-state trading of electricity, if considered, necessary;
- (k) discharge such other functions as may be assigned to it under this Act.

1.5 The Commission has to also advise the State Government as per sub section 2 of Section 86 of the Act, on all or any of the following matters, namely:

- a) promotion of competition, efficiency and economy in activities of



- the electricity industry;
- b) promotion of investment in electricity industry;
 - c) reorganization and restructuring of electricity industry in the State;
 - d) matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the State Commission by that Government.
- 1.6 The State Commission shall ensure transparency while exercising its powers and discharging its functions.
- 1.7 In discharge of its functions, the State Commission is also guided by the National Tariff Policy as brought out by GoI in compliance to Section 3 of the Act. The objectives of the 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.

Adhunik Power and Natural Resources Limited (APNRL)

- 1.8 Adhunik Power and Natural Resources Limited (hereinafter referred to as APNRL or the Petitioner) is a company incorporated under the provisions of the Indian Companies Act, 1956.
- 1.9 Originally incorporated as “Adhunik Thermal Energy Ltd.” (ATEL), in the year 2007, ATEL was renamed to “Neepaz Thermal Energy Limited” (NTEL) and subsequently renamed as “Adhunik Power & Natural Resources Ltd.” (APNRL) in the year 2008 after complying with the applicable provisions of the Companies Act, 1956.
- 1.10 ATEL, in October 2005, had signed a Memorandum of Understanding (hereinafter referred to as “the MoU”) with Government of Jharkhand to develop a 1,000 MW coal based thermal power plant. Further in January



2007, the Petitioner and Government of Jharkhand agreed to extend the validity period of the MoU further for a period of 12 months. In February 2008, the Petitioner and Government of Jharkhand agreed to extend the validity period of the MoU further for a period of three years upto October 31, 2010. Subsequently in May 2011, the validity of the MoU was again extended for a period of three years from November 1, 2010 to October 31, 2013. In November 2013, the validity of MoU was again extended for a period of three years from November 1, 2013 to October 31, 2016.

- 1.11 Accordingly, APNRL has set up a 540 MW coal based power plant in Stage-1 (consisting of Unit 1 and Unit 2 of 270 MW each) and is planning to develop an additional 540 MW coal based power plant in Stage-2. Unit 1 of the power plant was synchronized on November 13, 2012 and COD for the same was declared on January 21, 2013. Unit 2 of the power plant was synchronized on March 29, 2013 and COD for the same was declared on May 19, 2013.
- 1.12 Further, as per the provisions of the MOU, the Government of Jharkhand or Distribution Licensees authorized by it will have the first right of claim on purchase upto 25% of power delivered to the system by the proposed power station.
- 1.13 Further, the extension of the MoU stipulates that the Government of Jharkhand moved to Government of India for the policy decision through suitable arrangements for making available to the State, 12% of the total power generated at variable cost, by APNRL. Hence, as stated above, as per MoU and its extension's conditions, JSEB will have first right of claim on purchase upto 25% of power delivered to the system, out of which 12% power will be made available to the state at variable cost only.
- 1.14 Pursuant to the MoU signed between Government of Jharkhand and APNRL, APNRL signed a Power Purchase Agreement (hereinafter also referred to as "the PPA") with Jharkhand State Electricity Board (now Jharkhand Urja Vikas Nigam Limited or "JUVNL") on September 28, 2012 for supplying contracted capacity of 122.85 MW (25% of 491.4 MW, i.e., gross capacity of 2 units of 270 MW each, totaling to 540 MW less normative auxiliary consumption) from Stage-1 of the Project on long



term basis.

- 1.15 As per the terms of the PPA, 63.882 MW capacity, i.e., 13% of Net Capacity of Stage-1 shall be supplied to JSEB (now JUVNL) at total tariff and the balance 58.968 MW capacity, i.e. 12% of total Net Capacity of Stage-1 shall be supplied at variable cost only.
- 1.16 As per clause 3.1 (ii) and (iii) of the PPA entered into by the Petitioner and JSEB (now JUVNL), the tariff payable shall be determined by the State Commission:

3.1(ii) "The tariff for sale of power by seller to procurer for the contracted capacity of 63.882 MW shall be payable by the procurer as determined by JSERC in accordance with the "Jharkhand State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2010 as amended from time to time or any other competent authority authorized from time to time. The annual fixed charges determined in accordance with the "Jharkhand State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2010 shall be recoverable from the net saleable capacity of 432.432 MW (i.e. Gross capacity minus auxiliary consumption minus 12% power to be supplied to procurer at energy charge)".

3.1(iii) The energy charge for sale of power by seller to procurer for the contracted capacity of 59.968 MW shall be payable by the procurer as determined by the JSERC in accordance with the "Jharkhand State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2010", as amended from time to time."

Overview of the Thermal Station

- 1.17 The Petitioner had achieved COD of its two units of 270 MW each in the year 2013. Both these units are subject to ARR and Tariff determination. The following table summarizes the information pertaining to both the units:

Sr. no.	Unit	Installed Capacity (MW)	Status of Operation	Actual Date of Commercial Operation
1	Unit 1	270 MW	Operational	January 21, 2013
2	Unit 2	270 MW	Operational	May 19, 2013



The Petitioner's Prayers

1.18 The Petitioner in this Petition has prayed before the Commission:

- a) Accept the Petition.
- b) Approve the tariff for supplying the regulated Contracted Capacity of 122.85 MW to DISCOM for the MYT period encompassing FY 2021-22 to FY 2025-26
- c) Allow the Petitioner for Shakti Coal entitlement and its related applicable discount of 3 paise discount in tariff for unit to be supplied out of SHAKTI coal against receipt of an allocation of 9,00,000 tonnes / annum under SHAKTI Scheme B(ii) round (i) for which discount of 8 paise in tariff for unit to be supplied out of receipt of LOI for 99,000 tonnes/annum under SHAKTI Scheme B(ii) round (ii) of auction for Shakti coal for which the signing of FSA is pending in absence of PPA amendment approval (The petition for the approval of amendment of PPA, is lying with this Hon'ble commission), and NIL discount for 2,93,600 tonne per year allocated for 66 MW power supply to JBVNL) agreed by the Petitioner and its beneficiaries for each of the FSA for SHAKTI coal which is valid till the tenure of PPA .
- d) Allow the Petitioner to recover the water charges for FY 2021-22 to FY 2025-26 as per the billing rates of Government of Jharkhand along with the accumulated liability till 31.03.2021 as shown in section 5.3.9 of this petition.
- e) Allow the Petitioner to bill and recover the cost incurred towards Ash disposal/transportation charges, Legal expenses and Capital Spares from the DISCOM for FY 2021-22 to FY 2025-26;
- f) Allow the Petitioner to recover 180 days of receivables as suggested in the petition for FY 2021-22 to FY 2025-26 by relaxing the provisions of JSERC, Generation Tariff Regulations, 2020.
- g) The Petitioner respectfully seeks an opportunity to present their case prior to the finalization of the tariff order. The Petitioner believes that such an approach would provide a fair treatment to all the stakeholders and may eliminate the need of a review or clarification.
- h) Condone any inadvertent omissions/ errors/ rounding off difference/ shortcomings and permit the Petitioner to add/alter this filing and make further submissions as may be required by the Hon'ble Commission;



Chapter 2: Procedural History

Background

- 2.1 The Commission had passed Provisional Order on the Petition for approval of Capital Cost, Business Plan, and MYT Petition for FY 2012-13 to FY 2015-16 for Adhunik Power and Natural Resources Limited (APNRL) on May 26, 2014.
- 2.2 The Commission had passed Order on petition for approval of final Capital Cost of 540MW (2x270) Coal Based Thermal Power Plant in Jharkhand, True Up of ARR for FY 2012-13, FY 2013-14, APR of FY 2014-15 and ARR and Tariff Determination for FY 2015-16 on September 01, 2016. Further, the Petitioner filed a petition on September 29, 2016 seeking review of Order dated September 01, 2016. The Order, against the Review Petition, was issued by Commission on January 09, 2018.
- 2.3 The Commission had passed the True-up for FY 2014-15 and FY 2015-16, Business Plan, ARR and Tariff for Multi Year Tariff Period from FY 2016-17 to FY 2020-21 by Order dated February 19, 2018
- 2.4 The Commission had passed Corrigendum Order by the Commission in Case No. 05 of 2018 by Order dated April 10, 2019.
- 2.5 The Commission has passed True-up for FY 2017-18, FY 2018-19, FY 2019-20 and APR for FY 2020-21 by order date June 19, 2023.
- 2.6 In the instant petition, the Petitioner has now sought approval from the Commission on Business Plan, Annual Revenue Requirement and Determination of Tariff for FY 2021-22 to FY 2025-26.

Information Gaps in the Petitions

- 2.7 In exercise of tariff determination process exercise, several deficiencies/information gaps were found in the Petition submitted by the Petitioner and the same was communicated to the Petitioner vide letter nos. JSERC/Case (Tariff) No. 02 of 2022/206 dated October 14, 2022.
- 2.8 In response the Petitioner has furnished additional data/information to the Commission vide letter nos. APNRL/PT-JBVNL/FY22-23/1435



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January 18, 2023.

- 2.9 On May 24, 2023, the Petitioner has further submitted additional data vide letter nos. APNRL/PT-JBVNL/FY23-24/22 and also via E-mail.
- 2.10 On August 11, 2023, the Petitioner has filed review petition against the JSERC (Generation Tariff Regulation) 2020.
- 2.11 The Commission has scrutinized the Petition and the additional data/information furnished by the Petitioner with respect to its discrepancies identified and has considered the same while passing this Order.

Inviting Public Comments/Suggestions

- 2.12 On scrutiny of the petition, the Commission directed the Petitioner to publish a Public Notice inviting comments/suggestions from public and to make available copies of the Petition to the members of general public on request.
- 2.13 Accordingly, Public Notice was published by the Petitioner in the newspapers and a period of twenty-one (21) days was given for submitting the comments/suggestions by the general public:

Table 1: List of newspapers and dates of publication of public notice by the Petitioner

Newspaper	Date of Publication
Sanmarg Ranchi	30.01.2023
The Pioneer	30.01.2023
The Hindustan Times	30.01.2023
Hindustan	30.01.2023
Sanmarg Jharkhand	31.01.2023
Sunday Pioneer	31.01.2023
Sunday Hindustan Times	31.01.2023
Hindustan Ranchi	31.01.2023

- 2.14 The Commission has published a Public Notice on its website www.jserc.org and various newspapers giving sufficient time to various Stakeholders to submit their comments/suggestions and also organized a Public Hearing on March 20, 2023 where an additional opportunity was provided to all the Stakeholders to submit their comments/suggestions on



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the above Petition. The newspapers wherein the Notice was published by the Commission are mentioned below:

Table 2: List of newspapers and dates of publication of public notice by the Commission.

Newspaper	Date of Publication
Prabhat Khabar (Hindi)	05.03.2023
Danik Bhaskar (Hindi)	05.03.2023
The Times of India (English)	05.03.2023
The Hindustan Times (English)	05.03.2023
Prabhat Khabar (Hindi)	19.03.2023
Hindustan Dainik (Hindi)	19.03.2023
The Times of India (English)	19.03.2023
Morning India (English)	19.03.2023

Submission of Comments/Suggestions and Conduct of Public Hearing

2.15 Objections/Comments/Suggestions on the Petition were received. The Objections/ Comments/Suggestions of the Public, Petitioner's responses and Commission's views thereon are detailed in **Chapter 4** of this Order.



Chapter 3: BRIEF FACTS OF THE PETITION

3.1 The following Chapter summarizes the Petition of Business Plan, Annual Revenue Requirement and Determination of Tariff for FY 2021-22 to FY 2025-26 as filed by the Petitioner for the approval of Hon'ble Commission.

Business Plan for FY 2021-22 to FY 2025-26

Capital Expenditure and Capitalization

3.2 The details of capital expenditure proposed by APRNL during the 3rd control period are given below:

Table 3: Unit wise Capital Expenditure as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
Land Under full title		3.00	2.00		
Land held under lease					
Plant and Machinery	5.36	2.82	2.85	3.60	3.41
Steam-electric NHRS	0.77	0.73	0.72	1.02	0.77
Building & civil engineering works		0.50	1.00	0.50	
Transformer and others	0.40	0.42	0.18	0.27	0.27
Others					
Any other assets not covered above					
Total	6.53	7.46	6.75	5.39	4.44
Unit-II					
Land Under full title		3.00	2.00		
Land held under lease					
Plant and Machinery	2.46	5.42	2.85	3.70	3.51
Steam-electric NHRS	0.77	0.73	0.72	1.02	0.77
Building & civil engineering works		0.50	1.00	0.50	
Transformer and others	0.40	0.42	0.18	0.27	0.27
Others					
Any other assets not covered above					
Total	3.63	10.06	6.75	5.49	4.54



Business Plan, ARR and Tariff for MYT control Period FY 2021-22 to FY 2025-26

3.3 Unit-wise details of additional capitalization proposed by the Petitioner for the 3rd MYT Control Period is given below:

Table 4: Unit wise Capitalization as submitted by the Petitioner

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
Land Under full title		3.00	2.00		
Land held under lease					
Plant and Machinery	5.36	2.82	2.85	3.60	3.41
Steam-electric NHRS	0.77	0.73	0.72	1.02	0.77
Building & civil engineering works		0.50	1.00	0.50	
Transformer and others	0.40	0.42	0.18	0.27	0.27
Others					
Any other assets not covered above					
Total	6.53	7.46	6.75	5.39	4.44
Unit-II					
Land Under full title		3.00	2.00		
Land held under lease					
Plant and Machinery	2.46	5.42	2.85	3.70	3.51
Steam-electric NHRS	0.77	0.73	0.72	1.02	0.77
Building & civil engineering works		0.50	1.00	0.50	
Transformer and others	0.40	0.42	0.18	0.27	0.27
Others					
Any other assets not covered above					
Total	3.63	10.06	6.75	5.49	4.54

ARR for 3rd MYT control period (i.e. FY 2021-22 to FY 2025-26)

3.4 The summary of operational parameters as submitted by the Petitioner for Stage I (2x270 MW) of the project for the period FY 2021-22 to FY 2025-26 is as follows:



Business Plan, ARR and Tariff for MYT control Period FY 2021-22 to FY 2025-26

Table 5: Operational Parameters for FY 2021-22 to FY 2025-26 as submitted by the Petitioner.

Particulars	UoM	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I						
NPAF	%	85.00	85.00	85.00	85.00	85.00
NPLF	%	85.00	85.00	85.00	85.00	85.00
Aux Power Consumption	%	9.00	9.00	9.00	9.00	9.00
Station Heat Rate	Kcal/kWh	2387	2387	2387	2387	2387
Specific Fuel oil Consumption	Ml/kWh	0.50	0.50	0.50	0.50	0.50
Gross Generation	MUs	2010.42	2010.42	2010.42	2010.42	2010.42
Unit-II						
NPAF	%	85.00	85.00	85.00	85.00	85.00
NPLF	%	85.00	85.00	85.00	85.00	85.00
Aux Power Consumption	%	9.00	9.00	9.00	9.00	9.00
Normative GCV	Kcal/kWh	2387	2387	2387	2387	2387
Specific Fuel oil Consumption	Ml/kWh	0.50	0.50	0.50	0.50	0.50
Gross Generation	MUs	2010.42	2010.42	2010.42	2010.42	2010.42

Aggregate Revenue Requirement (ARR)

3.5 The summary of Annual Revenue Requirement (ARR) as submitted by the Petitioner for Stage I (2x270 MW) of the project for the period FY 2021-22 to FY 2025-26 is as follows:

Table 6: Summary of AFC for Unit-I as submitted by the Petitioner (Rs. Crore).

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Depreciation	66.62	66.84	67.03	67.23	67.43
Interest on loan	59.82	52.21	44.58	36.84	28.98
O&M Expenses	74.57	79.11	83.92	89.03	94.45
Return on Equity	71.56	71.86	72.15	72.41	72.62
Interest on Working Capital	54.28	50.34	50.31	50.57	50.72
Less: Non-Tariff Income	1.10	0.95	0.80	0.75	0.75
Total Annual Fixed Charges (excluding Water charge, ash handling, legal expenses)	325.74	319.40	317.19	315.33	313.44



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Table 7: Summary of AFC for Unit-II as submitted by the Petitioner (Rs. Crore).

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Depreciation	67.17	67.39	67.63	67.83	68.04
Interest on loan	63.36	55.67	48.08	40.27	32.34
O&M Expenses	74.57	79.11	83.92	89.03	94.45
Return on Equity	72.09	72.38	72.73	72.99	73.20
Interest on Working Capital	54.97	51.02	51.00	51.26	51.40
Less: Non-Tariff Income	1.10	0.95	0.80	0.75	0.75
Total Annual Fixed Charges (excluding Water charge, ash handling, legal expenses)	331.04	324.61	322.56	320.63	318.68

Table 8: Energy Charge for Unit-I and Unit-II as submitted by the Petitioner for FY 2021-22 to FY 2025-26.

Particulars	UoM	UNIT-I	UNIT-II
Normative Aux	%	9	9
Normative Heat Rate	Kcal/Kwh	2387	2387
Normative Specific Oil consumption	ml / kWh	0.5	0.5
Calorific value of Oil	Kcal/ml	9.35	9.35
Weighted avg cost of oil	Rs/ml	0.0447	0.0459
Wt avg cost of coal	Rs/Kg	3.231	3.254
Weighted avg GCV of coal	Kcal/kg	3,395	3,373
Energy Charge Rate	Rs/kWh	2.516	2.550

Table 9: Tariff for 13% of total Net Capacity for Unit-I as submitted by the Petitioner (Fixed Cost).

Particulars	Derivation	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Gross Capacity	A	270.00	270.00	270.00	270.00	270.00
Auxiliary Consumption	B	9.00%	9.00%	9.00%	9.00%	9.00%
Net Capacity	$C = A \times (1 - B)$	245.70	245.70	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	$D = C \times 12\%$	29.48	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	$E = C - D$	216.22	216.22	216.22	216.22	216.22
Total Annual Fixed Charge	F	325.74	319.40	317.19	315.33	313.44
Annual Fixed Charges/MW	$G = F/E$	1.51	1.48	1.47	1.46	1.45



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Particulars	Derivation	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
13% of Net Capacity for supply to JUVNL at full tariff	$H = C \times 13\%$	31.94	31.94	31.94	31.94	31.94
AFC for 13% of Net Capacity	$I = G \times H$ (Rs. Crs)	48.12	47.18	46.86	46.58	46.30

Table 10: Tariff for 13% of total Net Capacity for Unit-II as submitted by the Petitioner (Fixed Cost).

Particulars	Derivation	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Gross Capacity	A	270.00	270.00	270.00	270.00	270.00
Auxiliary Consumption	B	9.00%	9.00%	9.00%	9.00%	9.00%
Net Capacity	$C = A \times (1 - B)$	245.70	245.70	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	$D = C \times 12\%$	29.48	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	$E = C - D$	216.22	216.22	216.22	216.22	216.22
Total Annual Fixed Charge	F	331.04	324.61	322.56	320.63	318.68
Annual Fixed Charges/MW	$G = F/E$	1.53	1.50	1.49	1.48	1.47
13% of Net Capacity for supply to JUVNL at full tariff	$H = C \times 13\%$	31.94	31.94	31.94	31.94	31.94
AFC for 13% of Net Capacity	$I = G \times H$ (Rs. Crs)	48.90	47.95	47.65	47.37	47.08



Chapter 4: Public Consultation Process

- 4.1 On the Petitioner's plea several Stakeholders have responded. A Public hearing was held by the Commission in March 20, 2023 for giving additional opportunity to all the stakeholders to submit their comments/suggestions on the said petition for ensuring maximum public participation and transparency. Accordingly, stakeholders voiced their comments and suggestions and the list of the attendees is attached as **Chapter-8** of this Order.
- 4.2 The comments and suggestions of the public along with the response of the Petitioner and the views of the Commission are summarized in this Chapter. The issues raised by the stakeholders, which do not have meaning to Business Plan, and ARR for MYT control period for FY 2021-22 to FY 2025-26 have not been discussed in this Chapter.

Interest on working capital

JBVNL's objections

- 4.3 The elements like Coal cost for 1 month or maximum coal stock whichever is lower, Cost of Coal for 1 month, Receivable's equivalent to 180 days average billing Vs receivables against 60 days of billing. It is disheartening to see that APNRL is claiming 180 days of receivables in interest on working capital without any base. Also, it does not have any control over the cost of coal. Such huge working capital requirement is a blunder on the part of APNRL and at any cost, it should not be passed on to the consumers that are already reeling under huge tariff burden. JBVNL requests JSERC to disallow this instantly.

Reply from APNRL

- 4.4 The APNRL has claimed interest on working capital for 180 days as the company received payment too late and on the other hand the company is paying advance for purchase of coal.

Commission Analysis

- 4.5 The Commission has considered the submission of Stakeholders and replies of the Petitioner.



Summary of Annual Fixed Charges

JBVNL's objections

4.6 Such fixed charges from APNRL is not desirable that constitutes elements at inflated cost and should be disallowed instantly.

Reply from APNRL

4.7 No Comments

Commission Analysis

4.8 The Commission has taken note of the submissions of the stakeholder and the response of the Petitioner.

Water Charges

JBVNL's objections

4.9 JBVNL should not be penalized for any inefficiency in the part of APNRL in water agreement and its charges.

Reply from APNRL

4.10 APNRL has already given a detailed deliberation on this matter. It is requested to the Hon'ble Commission to kindly consider the same.

Commission Analysis

4.11 The Commission has taken note of the submissions of the stakeholder and the response of the Petitioner.

Ash disposal and Transportation charges

JBVNL's objections

4.12 JBVNL submits that ash disposal and its transportation is the responsibility of APNRL and moreover, by selling these waste residual matters to other industries such as brick kiln and cement, APNRL is generating revenue. So, any expenditure related to the ash disposal and its transportation should not be passed on to the consumers.



Reply from APNRL

- 4.13 The Petitioner has submitted that ash disposal and transportation is the statutory requirement of the power plant. The Petitioner has been disposing off and transporting the Ash from its power station in accordance with the Government of India, Ministry of Environment, Forest & Climate Change (MOEFCC) notification dated 25.01.2016.
- 4.14 The Petitioner has already provided the justification for the same in its reply to the query raised by the Hon'ble Commission, vide the letter of the Petitioner dated January 18, 2023.
- 4.15 In connection with the above, it is submitted that the APNRL is trying to fulfill the MOEF guidelines for the Ash utilizations by giving Ash to cement plant / Ash brick manufacturing plant.

Commission Analysis

- 4.16 The Commission has taken note of the submissions of the stakeholder and the response of the Petitioner.

Allowable incentives

JBVNL's objections

- 4.17 The incentives of the AFC (Annual Fixed Charge) on account of its calculation is disputed with APNRL. While it should have been on the basis of PLF, APNRL takes into account the availability while deciding on the AFC. Hence, it should be corrected accordingly. The PLF of the power plant is never shared by APNRL.
- 4.18 In Energy Charges, the inflated value of coal due to inefficient purchase should not be passed on to the JBVNL.

Reply from APNRL

- 4.19 It has been stated above that historically, JBVNL has been dispatching the entire declared capacity against the contracted capacity. It is noteworthy that the definition of PLF takes into account the entire capacity of the station since the Regulation does not envisage a situation in that a generator can be supplying only part of the capacity.



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4.20 Given the above facts, the Petitioner has considered the availability of the station to be taken as the operating PLF for JBVNL. Accordingly, since the plant/station has remained available and gets dispatched fully for JBVNL's contracted capacity, the Petitioner has raised the claim for incentives against the same and requests the Hon'ble Commission to kindly approve the submission.

Commission Analysis

4.21 The Commission has taken note of the submissions of the stakeholder and the response of the Petitioner.



Chapter 5: BUSINESS PLAN FOR THE MYT CONTROL PERIOD FY 2021-22 TO FY 2025-26.

5.1 The Commission has outlined clause 6.5 and clause 6.6 of JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2020, for the approval of Business plan and Tariff for MYT Control period FY 2021-22 to FY 2025-26 as reproduced below:

“Business Plan

6.5 Each Generating Company shall file for the Commission’s approval a Business Plan approved by an authorized signatory, as per the timelines specified in Section A 39 of these Regulations.

6.6 The Business Plan shall be for the entire Control Period and shall inter-alia contain: -

a) **Capital Investment Plan:** The Generating Company shall submit the Capital Investment Plan for the entire Control Period, detailing the investments planned by the Generating Company along with the corresponding capitalization schedule and financing plan. This Plan shall also include capacity enhancement plan, if any, and proposed efficiency improvements and its cost benefit analysis. It shall also submit plant-wise details of 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, risk associated in generating business and creditworthiness;

b) **Operational Plan:** A set of targets proposed for performance parameters such as Annual Plant Availability Factor (PAF), Plant Load Factor (PLF), Gross Station Heat Rate (SHR), Secondary Fuel Oil Consumption, Auxiliary Power Consumption (Aux)etc., and shall also include Unit-wise Outage Plan;

c) **Human Resource Plan:** Human Resource Plan with manpower planning including details of the estimated year wise manpower addition and retirements for the Control Period to run the power plant efficiently and effectively;

d) **Proposals for Non-Tariff Income with item-wise description and details;**

e) **Proposals in respect of income from Other Business; and**

f) **Business Plan shall also contain the requisite information for the preceding Control Period:**

Provided that requisite information for the preceding Control Period shall include year-wise audited data on Scheme-wise capital investment, capacity enhancement plan, if any, proposed efficiency improvements and its cost benefit



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analysis, quality improvement measures undertaken, Employee Expenses, Repair & Maintenance Expenses and A&G Expenses along with detailed break up and any other information used for preparing projections of various performance parameters and other components during the Control Period. In case of a new generating plant, such information is required to be submitted for the period of operations up to the start of the Control Period.

Operational Plan

Plant Availability Factor (PAF)

Petitioner's Submission

5.2 The Petitioner has projected the Plant Availability Factor as 85.00% for both units.

Commission's Analysis

5.3 In accordance with clause 16.1 of JSERC Generation Tariff (1st Amendment) Regulation 2023, the Commission approve the Normative Plant Availability factor as given below.

Table 11: Plant Availability Factor as approved by the Commission for Unit-I & Unit-II

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
NPAF	85.00%	85.00%	85.00%	85.00%	85.00%

Auxiliary Consumption

Petitioner's Submission

5.4 The Petitioner has projected the Auxiliary Consumption as 9.00% for both units.

Commission's Analysis

5.5 In accordance with clause 16.1 of JSERC Generation Tariff (1st Amendment) Regulation 2023, the Commission approves the auxiliary consumption as given below.



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Table 12: Auxiliary Consumptions as approved by the Commission for both Units.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
AUX	9.00%	9.00%	9.00%	9.00%	9.00%

Plant Load Factor and Generation

Petitioner's Submission

5.6 The Petitioner has projected the Plant Load Factor and gross generation as 85.00% and 2010.42 MUs respectively for both units.

Commission's Analysis

5.7 In accordance with clause 16.1 of JSERC Generation Tariff (1st Amendment) Regulation 2023, the Commission approves the Plant Load Factor and Normative Gross Generation as given below.

Table 13: Plant Load Factor and Generation as approved by the Commission

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
NPLF	85.00%	85.00%	85.00%	85.00%	85.00%
Gross Generation	2010.42	2010.42	2010.42	2010.42	2010.42
Unit-II					
NPLF	85.00%	85.00%	85.00%	85.00%	85.00%
Gross Generation	2010.42	2010.42	2010.42	2010.42	2010.42

Gross Station Heat Rate (GHR)

Petitioner's Submission

5.8 The Petitioner has projected the Gross Station Heat Rate (GHR) as 2387.00 kCal/kWh for both units.

Commission's Analysis

5.9 In accordance with clause 16.1 of JSERC Generation Tariff (1st Amendment) Regulation 2023, the Commission approves the Normative GHR as 2387.00 kCal/kWh for both units.



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Table 14: Gross Station Heat Rate (GHR) as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
GHR (kCal/kWh)	2387.00	2387.00	2387.00	2387.00	2387.00
Unit-II					
GHR (kCal/kWh)	2387.00	2387.00	2387.00	2387.00	2387.00

Specific Fuel Oil Consumption

Petitioner's Submission

5.10 The Petitioner has projected the Specific Fuel Oil Consumption as 0.5 ml/kWh for both units.

Commission's Analysis

5.11 In accordance with clause 16.1 of JSERC Generation Tariff (1st Amendment) Regulation 2023, the Commission approves the specific fuel oil consumption as 0.50 ml/kWh for both the Units as given below.

Table 15: Specific Fuel Oil Consumption as approved by the Commission

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
Specific fuel Oil Consumption	0.50	0.50	0.50	0.50	0.50
Unit-II					
Specific fuel Oil Consumption	0.50	0.50	0.50	0.50	0.50

Transit Loss

Petitioner's Submission

5.12 The Petitioner has projected the transit loss as 0.80 % for primary fuel from domestic market for both the units.

Commission's Analysis

5.13 In accordance with clause 17.11 of JSERC Generation Tariff Regulation 2020, the Commission approves the transit loss as 0.80 % for both the Units as given below.

Table 16: Transit Loss as approved by the Commission for both the Unit.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
Transit Loss	0.80%	0.80%	0.80%	0.80%	0.80%
Unit-II					
Transit Loss	0.80%	0.80%	0.80%	0.80%	0.80%

Capital Investment Plan

Petitioner's Submission

5.14 The Petitioner has submitted that to improve plant's availability and to enhance reliability in order to improve cost effectiveness of generation of electricity, it is essential to implement additional facilities. Thus, Petitioner has planned certain additional capitalization schemes as detailed below, which will get completed within the Control period.

A. Operating System (OS) upgradation for unit-1 & 2 DCS HMI

The Petitioner has submitted that maximum equipment is supplied by BHEL during project stage along with Human-Machine Interface (HMI). And these equipment has digital processing unit's version 4.5.2 which runs on operating system, Windows XP platform. Windows XP is already obsolete and there is no support from Microsoft.

The Petitioner has further submitted that there are lot of advantages with upgradation of this system, therefore the Petitioner has plan for additional capital expenditure of Rs. 2.9 Cr in FY 2021-22 for Unit-1 and Rs. 2.6 Cr in FY 2022-23 for Unit-2 under plant and machinery head as shown below.

Table 17: Details of upgradation in operating system for both the Unit.

S.No.	Existing System	Modified System	Advantages	Disadvantage of Existing System
1.	Existing system work on window XP platform	Modified system will work on latest version i.e. Window 10	Windows 10 is latest OS and will last for another 15 years and has easy	Window XP is now obsolete and there is no support from



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S.No.	Existing System	Modified System	Advantages	Disadvantage of Existing System
			compatibility.	Microsoft
2.	Frequent failure of max STORIAN system which is responsible for plant data.	Modify HMI based on Windows XP with latest Hardware and with latest version of max DNA HMI software and with Windows 10 Operating System software.	Due to use of latest software it is reliable for historian and prevent the failure of plant data.	Trends are very much susceptible for frequent failures
3.	Existing system is hanged any time and need to be restart the system.	Modified system will not Hang as the software will be latest version.	Modified system will run continuously without any trouble to desk engineers	It disturb the desk engineer to control the plant process value etc.
4.	Existing system may lead to failure frequent system PC like OWS, Storian, etc due to malware which are generated internally within system.	No chance to failure due to Updated system i.e maxDNA 7.0.2 and window 10.	No system failure	Chance of system failure.
5.	Recent updated antivirus software cannot be loaded as it is not compatible with existing system.	Due latest version of software antivirus can be loaded easily.	All malwares and viruses can be removed easily system will be trouble free.	Malwares created within the system may block the memory or crash entire system.

In the view of the above, the Petitioner pray to the Hon'ble Commission to allow the above additional expenditure under Regulation 14.3 (c) of



JSERC Regulation Generation Regulation, 2020.

B. Land Acquisition

The Petitioner has submitted that approx. 57 acres of land, which is in its possession against which advance amount has been paid to the respective land owners, and registration of the same and transfer of ownership is pending. The Petitioner's company is planning to get the transfer of legal title in the name of the company in coming years. Therefore, the Petitioner has planned Rs. 10 Cr of land expenditure. The Petitioner pray to the Hon'ble Commission to allow such expenditure under Regulation 14.4(d) of JSERC Regulation Generation Regulation, 2020.

C. Plant and Machinery

- a) **Boiler:** The Petitioner has planned various system improvement and other equipment to be installed towards boiler improvement and its reliability which are as follows:

- **PA (Primary Air) Fan:**

The Petitioner has submitted that main function of the Primary air fan or PA fan is to carry the pulverized coal to the furnace as fuel for combustion i.e; the PA fans supply air for conveying of the pulverized coal from coal mills to the furnace.

Further, one set of each critical equipment of PA fan is to be procured as we have total 04 nos. of PA fans installed in our plant i.e; 02 nos. in each Unit and have been running since from COD and there is no standby available for this critical equipment. If any PA Fan suffers a breakdown it will reduce the generation from Unit-1 by 50%. Such breakdown may have a significant impact on JBVNL since they will have to procure cost power from power exchange to meet their requirements. It is therefore critical to have one set of such equipment.

- **FD (Forced Draft) Fan:**

The Petitioner has submitted that Forced Draft (FD) fans



supply the air necessary for fuel combustion by pushing air through the combustion air supply system and into the furnace. FD fans draw air from the atmosphere and force it into the furnace/combustion chamber through a preheater, where it mixed with the fuel to produce positive pressure. FD fans are used as secondary air fans to regulate proper combustion and maximize the fuel efficiency of the process.

One set of each critical equipment of FD fan is to be procured as we have total 04 nos. of FD fans installed in our plant i.e. 02 nos. in each Unit and have been running since from COD and there is no standby available for this critical equipment. If any FD fan suffers a breakdown it will reduce the generation from Unit-1 by 50%. Such breakdown may have significant impact on JBVNL since they will have to procure cost power from power exchange to meet their requirements. It is therefore critical to have one set of such equipment.

- **ID (Induced Draft) Fan:**

The Petitioner has submitted that Induced Draft (ID) fan is normally located at the outlet between dust collector and chimney. The fan takes hot flue gases from the boiler through ESP and delivers it to the chimney into the open atmosphere. ID fan creates vacuum of negative air pressure or suction to discharge the gases out after combustion from the furnace. Since ID fans can handle hot flue gases, they have more corrosion and erosion problems even when used with Electrostatic precipitators.

One set of each critical equipment of ID fan is to be procured as we have total 04 nos. of ID fans installed in our plant i.e; 02 nos. in each Unit and have been running since from COD and there is no standby available for this critical equipment. If any ID fan suffers a breakdown it will reduce the generation from Unit-1 by 50%. Such breakdown may have significant impact on JBVNL since they will have to procure cost power from power exchange to meet their requirements. It is



therefore critical to have one set of such equipment.

- **Seal Air Fan:**

The Petitioner has submitted that Seal Air Fan is used to prevent coal dust particles coming out of the pulverized (Coal Mill), secondly the seal air is also used in rotary Belt Coal Feeders to prevent the hot primary air from entering bunker via feeder route which can cause a higher pressure as compared to the primary air.

One set of each critical equipment of Seal Air Fan is to be procured as we have total 04 nos. of fans installed in our plant i.e; 02 nos. in each Unit and have been running from COD of the plant. If any 01 seal air fan will be unavailable for long period, then we have to face problem in Coal Mill & Coal Feeder equipment failure due to any unbalance in operation of Unit. One set of all recommended equipment must be kept in plant to handle emergency situation. Therefore, the Petitioner has planned to procure the same for the plant.

- **Pressure Parts:**

The Petitioner has submitted that combustion chamber is a component of the boiler where the fuel is burned to heat the water to convert it into steam. The feed water and steam flows through the different parts where the pressure is much higher than the atmospheric pressure. Mainly the heat addition to the working fluid (Water) is done through these pressure parts. These are the boiler pressure parts namely boiler drum and internals, super heaters, LTSH (low temperature super heater), platen super heater re-heater, economizer, water walls and header & tubes.

The Petitioner therefore intend to procure pressure parts considering the long boiler service duration and Failure of boiler tube occurs due to some reasons such as pitting, stress corrosion cracking, stress rupture, creep, erosion, and thermal fatigue etc. So, different types of pressure parts such



as boiler tube including coils & drum internals must be kept in plant to handle contingency situation and to avoid unseen circumstances and ensure availability of unit after unforeseen force shutdown.

- **Air Preheater (APH):**

The Petitioner has submitted that Air preheater absorbs waste heat from flue gas and transfers this heat to incoming cold air by means of continuously rotating heat transfer elements of specially formed metal sheets. Tri-sector air-preheater (existing in plant) preheats the secondary air for combustion and also primary air which is required to preheat & carry pulverized fuel to the burners and the primary objective of increasing the thermal (boiler) efficiency of the process.

One set of each critical equipment of APH must be kept and the petitioner plant has total 04 nos. of APH i.e. 02 nos. in each Unit and have been running since COD. Therefore, to avoid forced shut the petitioner has planned to be procured APH.

- **LDO (Light Diesel Oil) Transfer Pumps:**

The Petitioner has submitted that Light Diesel Oil (LDO) is used for initial startup through oil gun while light fuel oil is used for flame stabilization, during two Mill breakdown at a time and during low load operation of boilers.

One set LDO transfer pump is planned to be procured to handle emergency situation as the plant has total 04 nos. of LDO transfer pump. i.e. 02 nos. in each Unit. Therefore, the Petitioner has planned to procure the same for plant.

- **Damper:**

The Petitioner has submitted that Dampers are used for balancing opening, closing and controlling the flow of air. Damper is a series of mounted blades (which is in aero foil shape) pivoted a center, rotates through actuator to give an opening or to close. It plays a major role in air flow accordingly



a path in air-handling system. There is different size of damper installed at various points in the duct, which work to regulate the flow of air & flue gas through the system.

The Petitioner's project requires complete equipment of Flue gas inlet/outlet damper as these damper are installed at APH inlet & outlet. Therefore, the Petitioner has planned to procure the same for plant

- **Coal Mill:**

The Petitioner has submitted that bowl coal mills are employed to pulverize the pre-crushed raw coal for more efficient combustion. The pulverized coal transported by hot air and introduced directly into the boiler furnace zone for combustion. The Petitioner's project requires minimum 04 nos. for mill operation to achieve the full load of Unit.

The critical/recommended equipment of bowl mills is to be procured as total 12 nos. of mills are installed in the petitioner plant i.e. 06 nos. for each Unit. Therefore, the same critical equipment of mills must be kept in plant to ensure reliable coal mill operations which helps in supplying consistent power supply to JBVNL.

b) Turbine: The Petitioner has planned procurement of equipment for improvement and reliability in operations as detailed below:

- **CW (Cooling Water) PUMP:**

The Petitioner has submitted that cooling water pumps are used for supplying surface condenser/heat exchangers with cooling water. Therefore, the flow rate varies depending on the heat flow to be dissipated. The required head is determined by the type of cooling system. Cooling water pumps are usually vertical shaft tubular casing pumps (Vertical Turbine pump with mixed flow Impeller/Non Pull out).

The Petitioner's project requires complete set of CW Pump which is to be procured as at present total 05 nos. of CW Pump are installed in the plant i.e. 02 nos. in each Unit and 01 nos.



for standby. Therefore, the same critical equipment of CW pump must be kept in plant to ensure reliable coal mill operations which helps in supplying consistent power supply to JBVNL.

- **ACW (Auxiliary Cooling Water) PUMP:**

The Petitioner has submitted that Auxiliary cooling water (ACW) pump keeps the circulation of water in the plate heat exchanger. The water pumped from Auxiliary cooling water pump is clean, high quality water, unlike the main cooling system which takes water directly from the cooling tower.

As per the Petitioner's assessment, one set of ACW pump is planned to be procured in the control period. It is critical there are overall 3 pumps in the station and out of the above, 1 pump in standby mode. Accordingly, as per prudent practice 1 pump ACW under standby will ensure adequate redundancy and will help in consistently reliable operation in the plant.

- **GSC (Gland Steam Condenser) Exhaust Fan:**

The Petitioner has submitted that the function of gland steam condenser is to maintain a sub-atmospheric pressure at the outermost leak-off steam of the gland and thereby prevent the leakage of steam from the glands into the turbine.

Therefore, the same equipment of GSC exhaust fan must be kept in plant to ensure reliable coal mill operations which helps in supplying consistent power supply to JBVNL.

- **Cooling Tower (Gear Box Assembly):**

The Petitioner has submitted that induced draft counter flow cooling tower are used to draw water from a reservoir and is circulated within the surface condenser to condense the steam from the turbine water. The primary task of a cooling tower is to release heat into the atmosphere.

As per the Petitioner's assessment, one set of CW pump is planned to be procured in the control period. It is critical as



there are overall 27 pumps in the station (14 in U-1 and 13 in U-2). Out of above 1 pump is in standby mode. Accordingly, as per prudent practice 1 no. of gearbox assembly for CW pump will ensure adequate redundancy and will help in consistent reliable operation of the plant.

- **Jacking Oil Pump (JOP):**

The Petitioner has submitted that jacking oil pump is used to lift turbine rotor shaft until it attains its self-lubrication (hydrodynamic Lubrication) to prevent metal to metal contact in the bearing during turbine startup & shutdown condition only.

Therefore, JOP must be kept in plant to ensure reliable operations which help in supplying consistent power supply to JBVNL.

- **HPCV & IPCV Valve:**

The Petitioner has submitted that turbine control valves (HPCV & IPCV) regulate the flow of steam to the steam turbine so as to control its speed or increase or decrease load as per requirement. The variation in load during the operation of a steam turbine can have a significant impact on its performance. In a practical situation the load frequently varies from the designed or economic load and thus there always exists a considerable deviation from the desired performance of the turbine by varying HP control valve opening. There are two sets of HP control valves and IP control valves.

Further, HP control valves are operated through hydraulic servomotor. HP control valve is coupled with hydraulic servomotor which is used for operating the control valve. Valve opening and closing is done by governing system of the Turbine. Control consists of valve cone with spindle which moves inside valve cover bush to regulate the steam flow by varying the gap between valve cone and valve seat. Therefore, the control valve cone with spindle must be kept in plant to



ensure reliable coal mill operations which helps in supplying consistent power supply to JBVNL.

• **Turbine & Generation Bearing Set:**

The Petitioner has submitted that turbo generator is a turbine connected to a generator, which together transfer the mechanical energy of moving steam into electricity. Turbines harness a system of blades to spin and via a shaft, drive the generator. The Petitioner plant has 3 cylinder reheat condensing turbine (Single flow HP Turbine with 25 reaction stages, Single flow IP Turbine with 17 reaction stages and Double flow LP Turbine with 8 reaction stages per flow) and 7 nos. of bearing.

As per the Petitioner's assessment, TG bearing set is to be procured to handle and ensure reliable coal mill operations which help in supplying consistent power supply to JBVNL.

c) Electrical: The Petitioner has planned various system improvement and other equipment's to be installed towards Electrical improvement and its reliability which are as follows:

- Generator Bushing (BHEL)
- Generator Transformer
- LT Breaker 800 Amps (Schneider)
- ABB Relay REC 670
- AVR
- ABB make auxiliary relay for CRP
- HT Motor Bearing

d) Air Preheater: The Petitioner has planned various system improvement and other equipment's to be installed towards Air Preheater improvement and its reliability which are as follows:

• **Ash Slurry Pump Assembly**

The Petitioner has submitted that slurry pump is commonly used for the transportation of coal ash (bottom ash) from the plant to the ash ponds. These systems are very energy intensive and also lead to excessive wear and tear, more due



to ash corrosive nature.

As per the Petitioner's assessment, complete Ash Slurry Pump assembly is to be procured for handling of highly abrasive and corrosive ash through this system to ensure reliable operations which help in supplying consistent power supply to JBVNL.

- **Instrument Air Compressor HP & LP Element:**

The Petitioner has submitted that air compressor controls and supplies air for operating valves in pneumatic instruments. The air compressors ensure that the air passing through to power the process control equipment is of the correct pressure and temperature. Instrument air compressor plays a major part in operation of all instruments through air.

Therefore, over a period of time compressors are damaged and as per the Petitioner's assessment, HP & LP Elements of IA compressor is to be procured to avoid the emergency situation/force shutdown of plant and to ensure reliable operations in supplying consistent power to JBVNL.

- **Conveying Air Compressor Element:**

The Petitioner has submitted that convey or air compressors are provided to fulfill the requirement of conveying fly ash from ESP/ APH hoppers to intermediate surge hoppers. Further, transport air compressors are provided to fulfill the requirement of transport Fly ash from intermediate surge hoppers to fly ash silos.

As per the Petitioner's assessment, the conveying air compressors element is to be procured for fly ash handling through this system as the existing element is highly corrosive. If this system failed, then the accumulation of ash in ESP & APH hopper will create a problem and lead to force shutdown of plant. Therefore, the Petitioner has planned to procure this equipment to ensure reliable operations in supplying consistent power to JBVNL.



- **Vacuum Pump Assembly:**

The Petitioner has submitted that vacuum pump in ash handling system is mainly design for the collection, handling and disposal of fly ash from ESP hopper to Silo area and operation of its associate.

As per the Petitioner's assessment, vacuum pump assembly is to be procured as fly ash handling through this system causes more wear and tear due to highly abrasive and corrosive nature of this system may fail then the accumulation of ash in ESP & APH hopper may create problem and lead to forced shutdown of Unit. Therefore, the Petitioner has planned to procure this equipment to ensure reliable operations in supplying consistent power to JBVNL

- **Silo Unloading Spout:**

The Petitioner has submitted that silo unloading spout is use to unload the fly ash to through the system. If this system is unavailable it may lead to Unit stoppage. Due to highly abrasive and corrosive nature of fly ash, spouts are getting damaged in day to day running of Unit. Therefore, the Petitioner has planned to procure this equipment to ensure reliable operations in supplying consistent power to JBVNL.

e) Control and Instrumentation: The Petitioner has planned various system improvement and other equipment to be installed towards Control and Instrumentation improvement and its reliability which are as follows:

f) Coal handling Plant: The Petitioner has planned various system improvement and other equipment to be installed towards Coal Handling Plant improvement and its reliability which are as follows:

- **IC Make VGF (Vibrating Grizzly Feeder):**

The Petitioner has submitted that linear motion vibrating grizzly feeder is used as screening of coal having size ($\leq 25\text{mm}$) before it's crushing. The Petitioner has received coal having size ($\leq 300\text{mm}$) from mines by Road/Rake into our Truck



Tippler Hopper. The Petitioner has transferred this coal through Belt Conveyor to Vibrating Grizzly Feeder (VGF) for screening of coal before its crushing. Therefore, the Petitioner has planned to procure this equipment to ensure reliable operations in supplying consistent power to JBVNL.

Key Benefits: -

1. It increases Crusher efficiency;
2. It also increases Coal Feed Rate;
3. It reduces maintenance cost of crusher;
4. Maintenance cost of this equipment is also less.

• **Live Frame for IC Make VGF:**

Live frame comprises main equipment of vibrating grizzly feeder.

Key Benefits: -

- 1 Reduce equipment downtime;
- 2 Ease of maintenance;
- 3 Easy to tackling any emergency situation;
- 4 Avoid generation losses.

Therefore, the Petitioner has submitted that VGF is a critical equipment which is required for keeping and for reducing equipment downtime during breakdown. Therefore, the Petitioner has planned to procure this equipment to ensure reliable operations in supplying consistent power to JBVNL.

• **Stacker Bucket Wheel drive Hydraulic Motor:**

The Petitioner has submitted that bucket wheel drive hydraulic motor is used for driving Bucket wheel using hydraulic power pack. It is used for coal feeding through stacker yard during non-availability of coal in truck tippler yard & coal blending.

Key Benefits: -

- 1 Reduce Equipment downtime;
- 2 Ease of maintenance;
- 3 Easy to tackling any emergency situation;



4 Avoid generation losses.

Therefore, the Petitioner requires this equipment as it is required to feed coal into bunker from stacker. Therefore, the Petitioner has planned to procure this equipment to ensure reliable operations in supplying consistent power to JBVNL.

• **Stacker Slew Drive Hydraulic Motor:**

The Petitioner has submitted that Slew Drive Hydraulic Motor is used for moving stacker boom conveyor with bucket wheel using Hydraulic Power Pack. It is also used for Coal Feeding through Stacker yard during no availability of Coal Truck Tippler Yard & Coal Blending.

Key Benefits: -

- 1 Reduce Equipment downtime
- 2 Ease of maintenance
- 3 Easy to tackling any emergency situation
- 4 Avoid generation losses

The Petitioner has submitted that stacker-reclaimer is used to feed coal to bunker from stacker. Therefore, the Petitioner has planned to procure this equipment to ensure reliable operations in supplying consistent power to JBVNL

• **Additional Belt Conveyor BC-3D:**

The Petitioner has submitted that the belt is installed in CHP after Truck Tippler ground Hopper. It is starting belt conveyor of our CHP system. It is used for transferring coal from Truck Tippler Hopper using Vibro Feeder to Bunker via its screening & crushing.

Key Benefits: -

- 1 Reduce Equipment downtime
- 2 Ease of maintenance
- 3 Easy to tackling any emergency situation
- 4 Avoid generation losses
- 5 Reduce equipment running hour
- 6 Increases reliability of BC-3C conveyor &

our existing system.

Therefore, the Petitioner has planned to procure this equipment to ensure reliable operations in supplying consistent power to JBVNL.

• **Flow Divider Gate:**

The Petitioner has submitted that a flow divider gate can split flow (Coal Feeding) equally, unequally, and into more than two paths. One design maintains a constant flow for one discharge chute and directs any excess flow to a second discharge chute. It is required to install before receiving chute of Vibrating Grizzly Feeder & after discharge chute of RBF belt feeder in place of Flap Gate because they have coal feed of lump size ($\leq 300\text{mm}$) & due to this reason damage of Gate in this area is frequent.

Therefore, the Petitioner require flow divider gate for installation in place of flap gate for ease of CHP operation & maintenance.

5.15 Accordingly, the Petitioner pray to the Commission to allow the additional capital expenditures of Rs. 10.15 Crores for FY 2021-22, Rs. 17.52 Crores for FY 2022-23, Rs. 13.50 Crores for FY 2023-24, Rs. 10.88 Crores for FY 2024-25 and Rs. 8.98 Crores for FY 2025-26 is towards the capital expenditure incurred after the cut-off date as per Regulation 14.3(a), 14.3 (c) and 14.4(d) of Generation Regulations, 2020 as shown below:

Table 18: Details of additional capital expenditure (Rs Crore) under plant and machinery as proposed by the Petitioner for both Units.

Particulars	Heads	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Boiler	Steam Generator Island	3.45	1.45	3.36	2.04	1.53
Turbine	Turbine Generator Island	2.51	3.15	1.54	1.65	1.45
Electrical	Transformer, Switchgear, cable	0.80	0.84	0.35	0.53	2.45
Air Preheater	Ash Handling System	0.44	0.58	2.36	0.58	0.52
Control & Instrumentation	Steam Generator Island	1.15	2.41	0.45	0.75	0.55



Business Plan, ARR and Tariff for MYT Period FY 2021-22 to FY 2025-26

Particulars	Heads	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Coal Handling Plant	Coal Handling system	0.82	0.77	0.87	3.83	1.99
Water Treatment Plant	DM Water Plant	-	0.15	-	0.12	0.11
Total Financial Year Wise		9.17	9.35	8.93	9.49	8.59
Grand Total		45.53				

Table 19: Additional Capitalization as projected by the Petitioner

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
Land Under full title		3.00	2.00		
Land held under lease					
Plant and Machinery	5.36	2.82	2.85	3.60	3.41
Steam-electric NHRS	0.77	0.73	0.72	1.02	0.77
Building & civil engineering works		0.50	1.00	0.50	
Transformer and others	0.40	0.42	0.18	0.27	0.27
Others					
Any other assets not covered above					
Total	6.53	7.46	6.75	5.39	4.44
Unit-II					
Land Under full title		3.00	2.00		
Land held under lease					
Plant and Machinery	2.46	5.42	2.85	3.70	3.51
Steam-electric NHRS	0.77	0.73	0.72	1.02	0.77
Building & civil engineering works		0.50	1.00	0.50	
Transformer and others	0.40	0.42	0.18	0.27	0.27
Others					
Any other assets not covered above					
Total	3.63	10.06	6.75	5.49	4.54

Commission's Analysis

5.16 The Commission has outlined clause 6.6 (a) of JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2020, for



Business Plan, ARR and Tariff for MYT Period FY 2021-22 to FY 2025-26

the approval of capital investment plan for MYT Control period FY 2021-22 to FY 2025-26 as reproduced below:

“Business Plan

6.6 *The Business Plan shall be for the entire Control Period and shall inter-alia contain: -*

a) **Capital Investment Plan:** *The Generating Company shall submit the Capital Investment Plan for the entire Control Period, detailing the investments planned by the Generating Company along with the corresponding capitalization schedule and financing plan. This Plan shall also include capacity enhancement plan, if any, and proposed efficiency improvements and its cost benefit analysis. It shall also submit plant-wise details of 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, risk associated in generating business and creditworthiness;*

- 5.17 The Commission in its discrepancy note has directed the Petitioner to provide the approval of Competent Authority for the capital expenditure/scheme proposed, Detailed Project Report, Implementation schedule including timelines, Cost-benefit analysis & rate reasonability, Improvement in operational efficiency envisaged in the Control Period, Any scheme Ongoing that will spill over into the Control period FY 2021-22 to FY 2025-26, Cost of Financing (Interest on Debt) after considering the existing market conditions, terms of the loan agreements for each year of the Control Period as per MYT Regulation. In compliance to the above, the Petitioner vide Letter no: APRNL/PT-JVBNL/FY 22-23/1435 on dated January 18, 2023 has submitted the actual expenses for FY 2021-22 & proposed expenses for the Control Period from FY 2021-22 to FY 2025- 26.
- 5.18 On Scrutinizing and analyzing the discrepancies note, the Commission has observed that the Petitioner incurred only Rs 1.42 Cr for FY 2021-22 against Rs 10.15 Cr as submitted in Business Plan Petition. Accordingly, the Commission approved only Rs 1.42 Cr for FY 2021-22.
- 5.19 With regard to Land Acquisition, the Commission disapproves the Land expenditure cost of Rs 10.00 Cr, and shall be taken up during true-up on presentation of actual data.
- 5.20 Based on the facts and circumstance, the Commission approves the



Business Plan, ARR and Tariff for MYT Period FY 2021-22 to FY 2025-26

Capital expenditure plan and capitalization for control period FY 2021-22 to FY 2025-26 as summarized below.

Table 20: Additional Capital Expenditure as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
Land Under full title					
Land held under lease					
Plant and Machinery	0.71	2.82	2.85	3.60	3.41
Steam-electric NHRS		0.73	0.72	1.02	0.77
Building & civil engineering works		0.50	1.00	0.50	
Transformer and others		0.42	0.18	0.27	0.27
Others					
Any other assets not covered above					
Total	0.71	4.46	4.75	5.39	4.44
Unit-II					
Land Under full title					
Land held under lease					
Plant and Machinery	0.71	5.42	2.85	3.70	3.51
Steam-electric NHRS		0.73	0.72	1.02	0.77
Building & civil engineering works		0.50	1.00	0.50	
Transformer and others		0.42	0.18	0.27	0.27
Others					
Any other assets not covered above					
Total	0.71	7.06	4.75	5.49	4.54

Table 21: Additional Capitalization as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
Land Under full title					
Land held under lease					



Business Plan, ARR and Tariff for MYT Period FY 2021-22 to FY 2025-26

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Plant and Machinery	0.71	2.82	2.85	3.60	3.41
Steam-electric NHRS		0.73	0.72	1.02	0.77
Building & civil engineering works		0.50	1.00	0.50	
Transformer and others		0.42	0.18	0.27	0.27
Others					
Any other assets not covered above					
Total	0.71	4.46	4.75	5.39	4.44
Unit-II					
Land Under full title					
Land held under lease					
Plant and Machinery	0.71	5.42	2.85	3.70	3.51
Steam-electric NHRS		0.73	0.72	1.02	0.77
Building & civil engineering works		0.50	1.00	0.50	
Transformer and others		0.42	0.18	0.27	0.27
Others					
Any other assets not covered above					
Total	0.71	7.06	4.75	5.49	4.54

5.21 In accordance with clause 6.8 to 6.10 of the JSERC Generation Tariff Regulations, 2020, the Commission shall review the capital expenditure and capitalization actually done by the Petitioner at the end of each year. The relevant regulations are mentioned below.

“6.8 During the Annual Performance Review, the Commission shall monitor the year-wise progress of the actual capital expenditure incurred by the Generating Company vis-à-vis the approved capital expenditure. The Generating Company shall submit the actual capital expenditure incurred along with the Annual Performance Review Filing.

6.9 The Commission shall review the actual capitalisation at the end of each year of the Control Period vis-à-vis the approved capitalisation schedule and shall true up the ARR based on actual capitalisation for the year for which True up has been filed and also revise the ARR components for the year for which APR and Tariff have been sought.

Business Plan, ARR and Tariff for MYT Period FY 2021-22 to FY 2025-26

6.10 In case the capital expenditure is required for emergency work, which has not been approved in the Capital Investment Plan, the Generating Company shall submit an application containing all relevant information along with reasons justifying emergency nature of the proposed work seeking approval of the Commission:

Provided that in case the capital expenditure is required for emergency work or unforeseen situation to mitigate threat to life and property and if prior intimation thereof to the Commission shall cause any irreparable loss or injury, the Generating Company may undertake such capital expenditure and submit the details for post-facto approval of the Commission along with next Tariff Petition with all relevant details.

Financing of Capital Expenditure Plan

Petitioner's Submission

5.22 The Petitioner has considered the financing of the aforementioned value of Gross Fixed Assets in a Debt: Equity ratio of 70: 30.

Table 22: Financing of Capital Expenditure Plan as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
Capital Expenditure Plan	6.53	7.46	6.75	5.39	4.44
Normative Equity	1.96	2.24	2.03	1.62	1.33
Normative Loan	4.57	5.22	4.73	3.77	3.11
Unit-II					
Capital Expenditure Plan	3.63	10.06	6.75	5.49	4.54
Normative Equity	1.09	3.02	2.03	1.65	1.36
Normative Loan	2.54	7.04	4.73	3.84	3.18

Commission's Analysis

5.23 The Commission has outlined clause 15.6 and clause 15.7 of JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2020, for the approval of Debt-Equity Ratio for MYT Control period FY 2021-22 to FY 2025-26 as reproduced below:

"Debt-Equity Ratio

15.6 Existing Projects:



Business Plan, ARR and Tariff for MYT Period FY 2021-22 to FY 2025-26

For existing projects declaring Commercial Operation on or before April 01, 2021, the following Capital Structure is allowed: -

- 1. Debt-Equity ratio allowed by the Commission for determination of tariff for the period ending March 31, 2021 shall be considered;*
- 2. In case of the generating station declared under commercial operation prior to April 01, 2021, but where debt-equity ratio has not been determined by the Commission for determination of tariff for the period ending March 31, 2021, the Commission shall approve the debt-equity ratio in accordance with Clause 15.7 of these Regulations.*
- 3. Any expenditure incurred or projected to be incurred on or after April 01, 2021, as may be admitted by the Commission as additional capital expenditure for determination of tariff and renovation and modernisation expenditure for life extension shall be serviced in the manner as specified in Clause 15.7 of these Regulations.*

15.7 New Projects:

For new projects, declaring Commercial Operation on or after April 01, 2021, the following Capital Structure is allowed: -

- 1. Normative debt-equity ratio of 70:30 shall be considered for the purpose of determination of Tariff.*
- 2. In case the actual equity employed is in excess of 30%, the amount of equity for the purpose of tariff determination shall be limited to 30%, and the balance amount shall be considered as normative loan;*
- 3. In case the actual equity employed is less than 30%, the actual debt-equity ratio shall be considered.;"*

5.24 In accordance with Clause 15.6 & 15.7 of Regulations, 2020, the Commission approved normative equity to the tune of 30% and considered the remaining 70% as normative debt. Further, the Petitioner is directed to submit the detail of actual equity infusion towards capital assets at the time of True up. The financing of the additional capitalization as approved by the Commission is tabulated below.

Table 23: Financing of Capital Expenditure Plan as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					



Business Plan, ARR and Tariff for MYT Period FY 2021-22 to FY 2025-26

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Capital Expenditure Plan	0.71	4.46	4.75	5.39	4.44
Normative Equity	0.21	1.34	1.43	1.62	1.33
Normative Loan	0.50	3.12	3.33	3.77	3.11
Unit-II					
Capital Expenditure Plan	0.71	7.06	4.75	5.49	4.54
Normative Equity	0.21	2.12	1.43	1.65	1.36
Normative Loan	0.50	4.94	3.33	3.84	3.18

Human Resource Plan

Petitioner's Submission

5.25 The Petitioner has not projected any Human Resource Plan for MYT control period FY 2021-22 to FY 2025-26.

Commission's Analysis

5.26 The Commission aren't approving any Human Resource Plan for MYT control period FY 2021-22 to FY 2025-26.

Non-Tariff Income

Petitioner's Submission

5.27 The Petitioner has projected Non-Tariff Income for MYT control period FY 2021-22 to FY 2025-26 as shown below.

Table 24: Non-Tariff Income as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
Non-Tariff Income	1.10	0.95	0.80	0.75	0.75
Unit-II					
Non-Tariff Income	1.10	0.95	0.80	0.75	0.75

Commission's Analysis

5.28 The Commission approves Non-Tariff Income same as Petitioner Projection for MYT control period FY 2021-22 to FY 2025-26 and directed the Petitioner to submit detailed description regarding non-tariff income at the time of True-up.



Business Plan, ARR and Tariff for MYT Period FY 2021-22 to FY 2025-26

Table 25: Non-Tariff Income as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Unit-I					
Non-Tariff Income	1.10	0.95	0.80	0.75	0.75
Unit-II					
Non-Tariff Income	1.10	0.95	0.80	0.75	0.75



Chapter 6: DETERMINATION OF TARIFF FOR THE MYT CONTROL PERIOD FY 2021-22 TO FY 2025-26.

6.1 The Petitioner, in the instant Petition has outlined the Operational and financial projections for APRNL Unit-I and Unit-II and has computed each element of ARR for the 3rd Control Period i.e. FY 2021-22 to FY 2025-26, taking into the following consideration:

- Norms and Principles outlined in the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations 2020 and JSERC (Generation Tariff Regulation) 1st Amendment Regulation 2023;
- Multi Year Tariff Business Plan covering Operational and Financial Plan submitted for the Control Period from FY 2021-22 to FY 2025-26;
- Actual Operational and Financial Performance of the last Control Period i.e. FY 2015- 16 to FY 2019-20 along with the performance parameters to be used for the Base Year i.e. FY 2020-21;

6.2 In accordance with the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations 2020 and JSERC (Generation Tariff Regulation) 1st Amendment 2023, the Commission has scrutinized the Petition filed by the Petitioner for determination of Generation Tariff for the MYT Control Period i.e. FY 2021-22 to 2025-26. The component-wise description of the Petitioner's submission and the Commission's analysis thereon is given below.

Operational Performance

Petitioner's Submission

6.3 The Petitioner has projected the Operational Performance Parameters in accordance with JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations 2020.

Commission's Analysis

6.4 The Commission approve the Operational Performance Parameters for MYT Control Period FY 2021-22 to FY 2025-26 in chapter 5.



Fuel Cost Parameter

Coal Mix, Landed price of Coal, Transit Loss and (GCV) of Primary Fuel

Petitioner's Submission

- 6.5 The Petitioner has submitted that post de-allocation of coal block pursuant to Supreme Court judgment, the Petitioner has been relying on the coal available in the Spot Market (e-auction).
- 6.6 The Petitioner has participated in SHAKTI Scheme B(ii) round (i) against 122.85 MW of JBVNL PPA and 100 MW of TANGEDCO PPA on 21.12.2017 and received an allocation of 9,00,000 ton / annum of coal linkage. The Petitioner has been giving discount in tariff of 3 paise per unit to JBVNL against the units generated from coal received under Shakti Scheme, which is applicable till validity of PPA. Additionally, under SHAKTI Scheme B(ii) round (ii) of auction against 122.85 MW of JBVNL PPA and 100 MW of TANGEDCO PPA for Shakti coal, the Petitioner has received a LOI of total 99,000 ton of coal per year at 8 paise per unit discount in tariff.
- 6.7 Further, for 66 MW power supply to JBVNL, the Petitioner was able to secure Shakti coal allocation of 2,93,600 ton per year and the said coal shall be supplied on notified price only. Accordingly, the APNRL had started the lifting of such coal from October 2020 onward and this shall be applicable till validity of PPA.
- 6.8 In view of the above, the Petitioner pray to the Hon'ble Commission to allow for Shakti Coal entitlement and its related applicable discount of 3 paise discount in tariff for unit to be supplied out of SHAKTI coal against receipt of an allocation of 9,00,000 ton / annum under SHAKTI Scheme B(ii) round (i) for which discount of 8 paise in tariff for unit to be supplied out of receipt of LOI for 99,000 ton / annum under SHAKTI Scheme B(ii) round (ii) of auction for Shakti coal for which the signing of FSA is pending in absence of PPA amendment approval (The petition for the approval of amendment of PPA, is lying with this Hon'ble commission), and NIL discount for 2,93,600 ton per year allocated for 66 MW power supply to JBVNL) agreed to by the Petitioner and its beneficiaries for each of the FSA for SHAKTI coal which is valid till the tenure of PPA .



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Table 26: Source Wise Coal Mix plan for FY 2021-22 to FY 2025-26 as submitted by the Petitioner.

Particulars	UoM	UNIT-I	UNIT-II
Linkage Coal	%	70.01	62.35
F Auction	%	25.70	33.37
MCL Auction	%	0.09	0.06
Other (Market Coal)	%	4.20	4.22
Total	%	100.00	100.00

6.9 The Petitioner has submitted the details of preceding three months of GCV of coal for from various sources as depicted in the table below:

Table 27: GCV of Coal from various source as submitted by the Petitioner.

Particulars	UoM	UNIT-I	UNIT-II
Linkage Coal	kCal/kg	3,377.38	3,368.31
F Auction	kCal/kg	3,363.54	3,317.06
MCL Auction	kCal/kg	2,414.51	2,315.48
Other (Market Coal)	kCal/kg	3,891.07	3,904.34
Total	kCal/kg	3394.51	3373.15

6.10 The Petitioner has submitted the details of preceding three months of cost of coal from various sources as depicted in the table below:

Table 28: Cost of Coal including transit loss from various source as submitted by the Petitioner.

Particulars	UoM	UNIT-I	UNIT-II
Linkage Coal	Rs/MT	3,273.18	3,319.21
F Auction	Rs/MT	3,158.10	3,167.66
MCL Auction	Rs/MT	3,232.74	3,280.63
Other (Market Coal)	Rs/MT	2,964.89	2,965.13
Total	Rs/MT	3,230.62	3,253.68



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Commission's Analysis

- 6.11 The Commission has observed that the Petitioner has participated in the bid process for coal allocation under Shakti Scheme B(ii) round-(I) and round-(II) and was able to secure coal linkage. Such steps will not only increase the reliability towards availability of coal but also improve the economics of fuel purchase, which shall lead to decrease in the energy charge rate.
- 6.12 Considering the facts and circumstance of the Petition and after due diligence, the Commission approve the coal mix for Unit-I and Unit-II as given below.

Table 29: Source Wise Coal Mix plan for FY 2021-22 to FY 2025-26 as approved by the Commission.

Particulars	UoM	UNIT-I	UNIT-II
Linkage Coal	%	70.01	62.35
F Auction	%	25.70	33.37
MCL Auction	%	0.09	0.06
Other (Market Coal)	%	4.20	4.22
Total	%	100.00	100.00

- 6.13 The Commission has observed that the Petitioner has projected the GCV of the primary fuel based on the actual value for the period from January 2021 to March 2021. Accordingly, the Commission provisionally approves the GCV in accordance to clause 17.10 of JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2020, subject to truing up based on actuals.

Table 30: GCV of Coal for FY 2021-22 to FY 2025-26 as approved by the Commission.

Particulars	UoM	UNIT-I	UNIT-II
Linkage Coal	kCal/Kg	3,377.38	3,368.31
F Auction	kCal/Kg	3,363.54	3,317.06

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Particulars	UoM	UNIT-I	UNIT-II
MCL Auction	kCal/Kg	2,414.51	2,315.48
Other (Market Coal)	kCal/Kg	3,891.07	3,904.34
Total	kCal/Kg	3394.51	3373.15

6.14 Based on the fact and circumstance of the Petition, the Commission approve the Cost of coal from various sources (Rs/MT) is shown below:

Table 31: Cost of Coal for FY 2021-22 to FY 2025-26 as approved by the Commission.

Particulars	UoM	UNIT-I	UNIT-II
Linkage Coal	Rs/MT	3,273.18	3,319.21
F Auction	Rs/MT	3,158.10	3,167.66
MCL Auction	Rs/MT	3,232.74	3,280.63
Other (Market Coal)	Rs/MT	2,964.89	2,965.13
Total	Rs/MT	3,230.62	3,253.68

6.15 The Commission, in the earlier chapter of this order has approved the transit loss of 0.8% from various sources.

Calorific value and Cost of Secondary Fuel

Petitioner's Submission

6.16 The Petitioner has submitted the weighted average calorific value and landed price of secondary fuel i.e., LDO is 9350 kCal/L and Rs. 44672 /kL for Unit-I and 9350 kCal/L and Rs. 45943.72 /kL for Unit-II respectively for entire control period.

Commission's Analysis

6.17 Considering the fact that the landed price of secondary fuel is volatile and depends on the market supply and demand, accordingly, the Commission approve the calorific value and landed price of Secondary Fuel as submitted by the Petitioner, and directs the Petitioner to provide the auditor certificate at the time of true-up.

Table 32: Calorific value & Landed Price of Secondary fuel as approved by the Commission.

Particulars	UoM	UNIT-I	UNIT-II
Calorific Value	Kcal/L	9350.00	9350.00
Landed Price of Oil	Rs/kL	44672.00	45943.72

Energy Charge Rate (ECR)

Petitioner's Submission

- 6.18 The Petitioner has estimated the Energy Charge Rate (ECR) for FY 2021-22 to FY 2025-26 as Rs. 2.516/kWh and Rs. 2.550/kWh for Unit-I and Unit-II respectively before taking into account the discount of Shakti Coal.
- 6.19 The Petitioner has worked out the variable charge for the control period by considering the cost of primary and secondary fuel oil of preceding three months (i.e Jan 21 to Mar 21).

Table 33: Energy Charge for Unit-I and Unit-II as submitted by the Petitioner for FY 2021-22 to FY 2025-26.

Particulars	UoM	UNIT-I	UNIT-II
Normative Aux	%	9%	9%
Normative Heat Rate	Kcal/Kwh	2387.00	2387.00
Normative Specific Oil consumption	ml / kWh	0.5	0.5
Calorific value of Oil	Kcal/ml	9.35	9.35
Weighted avg cost of oil	Rs/ml	0.0447	0.0459
Wt avg cost of coal	Rs/Kg	3.231	3.254
Weighted avg GCV of coal	Kcal/kg	3,395	3,373
Energy Charge Rate	Rs/kWh	2.516	2.550

Commission's Analysis

- 6.20 The Commission has outlined clause 17.7, clause 17.8 of JSERC Generation Tariff Regulation, 2020 and clause 17.8 of JSERC (Generation Tariff 1st Amendment) Regulation, 2023 for the approval of the Energy Charge Rate (ECR) as reproduced below:

“17.7 Total Energy charge payable to the Generating Company for a month shall be = Energy charge rate (in Rs. /kWh) x Scheduled



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energy (ex-bus) for the month (in kWh.)

17.8 Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formulae:

a) For coal based stations

$$ECR = \{(SHR - SFC \times CVSF) \times LPPF / CVPF + SFC \times LPSFi + LC \times LPL\} \times 1 / (1 - AUX)\}$$

Where,

AUX - Normative auxiliary energy consumption in percentage;

CVPF- (a) Weighted Average Gross calorific value of coal as received, in kCal per kg for coal based stations;

(b) Weighted Average Gross calorific value of primary fuel as received in kCal per kg, per litre or per standard cubic meter, as applicable for lignite, gas and liquid fuel based stations;

(c) In case of blending of fuel from different sources, the weighted average Gross calorific value of primary fuel shall be arrived in proportion to blending ratio;

CVSF - Calorific value of secondary fuel, in kCal per ml

ECR - Energy charge rate, in Rupees per kWh.

SHR - Gross station heat rate, in kCal per kWh.

LC = Normative limestone consumption in kg per kWh

LPPF - Weighted average landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month. (In case of blending of fuel from different sources, the weighted average landed price of primary fuel shall be arrived in proportion to blending ratio)

LPSFi=Weighted Average Landed Price of Secondary Fuel in Rs./ml during the month

LPL = Weighted average landed price of limestone in Rupees per kg.

SFC - Specific fuel oil consumption, in ml per kWh”

Clause 11.1 of JSERC (GTR 1st Amendment) Regulation 2023

*CVPF: (a) Weighted Average Gross calorific value of coal as received, in kcal per kg for coal based stations **less 85 kCal/Kg on account of variation during storage at generating station;***

6.21 The Commission has calculated the base ECR for the Control Period as per the formula stated above and considered the operational parameters as approved in this order. The table below contain the base ECR approved by the Commission for the FY 2021-22 to FY 2025-26:

Table 34: Energy Charge Rate (ECR) for Unit-I as approved by the Commission.

Particulars	UoM	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Normative Aux	%	9.00	9.00	9.00	9.00	9.00
Normative Heat Rate	Kcal/Kwh	2387.00	2387.00	2387.00	2387.00	2387.00
Normative Specific Oil consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Calorific value of Oil	Kcal/ml	9.35	9.35	9.35	9.35	9.35
Weighted avg cost of oil	Rs/ml	0.04	0.04	0.04	0.04	0.04
Wt avg cost of coal	Rs/Kg	3.23	3.23	3.23	3.23	3.23
Weighted avg GCV of coal	Kcal/kg	3309.51	3309.51	3309.51	3309.51	3309.51
Energy Charge Rate	Rs/kWh	2.580	2.580	2.580	2.580	2.580

Table 35: Energy Charge Rate (ECR) for Unit-II as approved by the Commission.

Particulars	UoM	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Normative Aux	%	9.00	9.00	9.00	9.00	9.00
Normative Heat Rate	Kcal/Kwh	2387.00	2387.00	2387.00	2387.00	2387.00
Normative Specific Oil consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Calorific value of Oil	Kcal/ml	9.35	9.35	9.35	9.35	9.35
Weighted avg cost of oil	Rs/ml	0.05	0.05	0.05	0.05	0.05
Wt avg cost of coal	Rs/Kg	3.25	3.25	3.25	3.25	3.25
Weighted avg GCV of coal	Kcal/kg	3288.15	3288.15	3288.15	3288.15	3288.15
Energy Charge Rate	Rs/kWh	2.616	2.616	2.616	2.616	2.616

Summary of Fuel Cost

6.22 On consideration of the submission and details furnished by the



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Petitioner, the Commission approve the Fuel Cost for both the unit as summarized below:

Table 36: Fuel Cost for Unit-I as approved by the Commission

Particulars	UoM	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Primary Fuel Cost	Rs. Cr.	467.53	467.53	467.53	467.53	467.53
Secondary Fuel Cost	Rs. Cr.	4.49	4.49	4.49	4.49	4.49
Energy Cost	Rs. Cr.	472.02	472.02	472.02	472.02	472.02

Table 37: Fuel Cost for Unit-II as approved by the Commission

Particulars	UoM	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Primary Fuel Cost	Rs. Cr.	473.93	473.93	473.93	473.93	473.93
Secondary Fuel Cost	Rs. Cr.	4.62	4.62	4.62	4.62	4.62
Energy Cost	Rs. Cr.	478.55	478.55	478.55	478.55	478.55

Determination of Fixed Cost

Additional Capitalization

Petitioner's Submission

6.23 In accordance with JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations 2020, the Petitioner has projected the additional capitalization in its MYT Business Plan for FY 2021-22 to FY 2025-26.

Commission's Analysis

6.24 The Commission has scrutinized the additional capitalization submitted by the Petitioner in its MYT Business Plan. The Commission, after prudent check, approved the additional capitalization for Unit-I and Unit-II in Chapter 5 of this Order.

6.25 In accordance to the approved Capital Expenditure Plan, the Gross Fixed Assets, as approved by the Commission for the Control Period, is shown below.



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Table 38: Gross Fixed Asset (GFA) in (Rs Crore) for Unit-I as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Opening GFA	1,697.06	1,697.77	1,702.23	1,706.98	1,712.37
Capitalization	0.71	4.46	4.75	5.39	4.44
Decapitalization	-	-	-	-	-
Closing GFA	1,697.77	1,702.23	1,706.98	1,712.37	1,716.81

Table 39: Gross Fixed Asset (GFA) in (Rs Crore) for Unit-II as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Opening GFA	1,711.05	1,711.76	1,718.82	1,723.57	1,729.06
Capitalization	0.71	7.06	4.75	5.49	4.54
Decapitalization	-	-	-	-	-
Closing GFA	1,711.76	1,718.82	1,723.57	1,729.06	1,733.60

Depreciation

Petitioner's Submission

- 6.26 In accordance with clause 15.28, 15.30, 15.32 of JSERC (Generation Tariff Regulation) 2020, the Petitioner has projected the Depreciation for entire control period for FY 2021-22 to FY 2025-26.
- 6.27 The Petitioner has worked out the allowable depreciation for the purpose for FY 2021-22 to FY 2025-26 on the basis of the GFA at the beginning of FY 2021-22 and after considering the projected additional capital expenditures during every year.
- 6.28 The following table shows the allowable depreciation claimed for Unit-I and Unit-II, considering the capital cost as on 1st April of respective year, additional capitalization during financial year and the depreciation rates specified in Appendix-I of JSERC Generation Regulations, 2020. Accordingly, the Petitioner pray to the Hon'ble Commission to allow depreciation as computed below

Table 40: Depreciation (Rs. Crore) for Unit-I as submitted by the Petitioner

Particulars	Depreciation Rate	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Land Under full title	0.00%	0.00	0.00	0.00	0.00	0.00
Land held under lease	3.34%	0.30	0.30	0.30	0.30	0.30
Plant and Machinery	4.22%	60.30	60.52	60.69	60.87	61.07
Building & civil engineering works	2.67%	5.68	5.69	5.71	5.73	5.73
Others	4.22%	0.34	0.34	0.34	0.34	0.34
Total		66.62	66.84	67.03	67.23	67.43

Table 41: Depreciation (Rs. Crore) for Unit-II as submitted by the Petitioner

Particulars	Depreciation Rate	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Land Under full title	0.00%	0.00	0.00	0.00	0.00	0.00
Land held under lease	3.34%	0.30	0.30	0.30	0.30	0.30
Plant and Machinery	4.22%	60.89	61.11	61.32	61.51	61.71
Building & civil engineering works	2.67%	5.64	5.65	5.67	5.69	5.70
Others	4.22%	0.34	0.34	0.34	0.34	0.34
Total		67.17	67.39	67.63	67.83	68.04

Commission's Analysis

6.29 The Commission has outlined clause 15.28 to clause 15.34 of JSERC Generation Tariff Regulation, 2020 for the approval Depreciation for a generating station.

“15.28 Depreciation shall be calculated every year, on the amount of Capital Cost of the assets as admitted by the Commission. In case tariff of multiple Units of a generating station is determined, weighted average life for the generating station shall be applied:

Provided that depreciation shall not be allowed on assets funded by Consumer Contribution and Capital Subsidies/Grants. Provision for replacement of such assets shall be made in the Capital Investment Plan.

15.29 Depreciation for each year shall be determined based on the methodology as specified in these Regulations along with the rates and other terms specified in these Regulations.

15.30 Depreciation shall be calculated annually, based on the straight-line method, at the rates specified at Appendix-I. The



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base value for the purpose of depreciation shall be original cost of the asset:

Provided that the Generating Company shall ensure that once the individual asset is depreciated to the extent of seventy (70) percent of the Book Value of that asset, remaining depreciable value as on March 31 of the year closing shall be spread over the balance useful life of the asset;

Provided that in case the tenure of PPA executed between the Generating plant and Beneficiaries is more than that of the Useful life of the plant, the Commission after prudence check may consider the PPA life for spreading the remaining depreciable value as on March 31 of the year instead of useful life;

Provided that in case after carrying out the residual life assessment, it is found that the residual life of the generating station or unit as the case may be is beyond the useful life specified in these regulations the Commission after prudence check, may spread the remaining depreciable value to be recovered over the extended life of the plant.

15.31 Depreciation shall be charged from the first year of commercial operation of the asset. In case, the operation of the asset is for a part of the year, depreciation shall be charged on pro-rata basis:

Provided that any depreciation disallowed on account of lower availability of the generating station shall not be allowed to be recovered at a later stage during the useful life and the extended life.

15.32 The residual value of assets shall be considered as 10% and depreciation shall be allowed to a maximum of 90% of the original cost of the asset. Land is not a depreciable asset and its cost shall be excluded while computing 90% of the original cost of the asset:

Provided that the salvage value for IT equipment and software shall be considered as NIL and 100% value of the assets shall be considered depreciable: Provided further that in case of hydro generating stations, the salvage value shall be as provided in the agreement signed by the developers with the State Government for creation of the site:

15.33 The Commission may, in the absence of the Fixed Assets Register, calculate Depreciation (%) arrived by dividing the Depreciation and the Average Gross Fixed Assets as per the latest available Audited Accounts of the Generating Company. The Depreciation (%) so arrived shall be multiplied by the Average GFA approved by the Commission for the relevant Financial Year to arrive at the Depreciation for that Financial Year.

15.34 In case of de-capitalization of assets in respect of Generating Station or Unit thereof the cumulative depreciation shall be adjusted by taking into account the depreciation recovered through tariff towards decapitalization asset during its useful services.

6.30 The Commission has calculated the depreciation for Unit-I and Unit-II considering the approved capital cost, additional capitalization and the depreciation rates specified in **Appendix-I** of Generation Tariff Regulations, 2020.

6.31 The following table shows the depreciation for Unit-I and Unit-II as calculated by the Commission:

Table 42: Depreciation (Rs. Crore) for Unit-I as approved by the Commission.

Particulars	Depreciation Rate	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Land Under full title	0.00%	0.00	0.00	0.00	0.00	0.00
Land held under lease	2.67%	0.30	0.30	0.30	0.30	0.30
Plant and Machinery	4.22%	59.80	59.90	60.06	60.24	60.44
Building & civil engineering works	2.67%	5.64	5.65	5.67	5.69	5.70
Others	4.22%	0.34	0.34	0.34	0.34	0.34
Total		66.08	66.18	66.37	66.57	66.77

Table 43: Depreciation (Rs. Crore) for Unit-II as approved by the Commission.

Particulars	Depreciation Rate	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Land Under full title	0.00%	0.00	0.00	0.00	0.00	0.00
Land held under lease	2.67%	0.30	0.30	0.30	0.30	0.30



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Particulars	Depreciation Rate	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Plant and Machinery	4.22%	60.45	60.60	60.82	61.00	61.20
Building & civil engineering works	2.67%	5.61	5.61	5.63	5.65	5.66
Others	4.22%	0.34	0.34	0.34	0.34	0.34
Total		66.69	66.85	67.09	67.29	67.50

Operation & Maintenance Expenses

Petitioner's Submission

6.32 The Petitioner has projected the Operation and Maintenance (O&M) expenses for FY 2021-22 to FY 2025-26 under the following broad categories: -

- Repairs & Maintenance (R&M) Expenses;
- Employee Expenses excluding Terminal Liabilities;
- Administrative and General (A&G) Expenses;

6.33 The Petitioner has calculated the Repair and Maintenance expenses as per clause 15.42(a) of JSERC (Generation Tariff Regulation) 2020, considering the nth year as 2021-22. The detailed calculations are being provided as below:

Table 44: Calculation of K as submitted by Petitioner.

S.No.	Particulars	Amount
1.	Repair and Maintenance Costs for 2019-20* (Rs. Crs)	44.00
2.	GFA of the preceding year (2019-20) * of the Base Year (2020-21) (Rs. Crs)	3389.26
3.	K	1.30%

*As per audited account

Table 45: Average CPI & WPI of preceding 2 years as submitted by Petitioner.

S.No.	Particulars	FY 2018-19	FY 2019-20
1.	CPI	299.92	322.50
2.	WPI	119.79	121.80

6.34 Based on the above factors the petitioner has computed the Repair and Maintenance expenses as below:



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Table 46: R&M for FY 2021-22 as submitted by Petitioner.

S.No.	Particulars	Amount
1.	K: % of Repair & Maintenance to GFA of the preceding year of the Base Year i.e. 19-20	1.30%
2.	GFA is the opening value of the gross fixed asset of the nth year (2021-22) as per form -F7	3408.11
3.	$INDX_n: 0.55 * CPI_n + 0.45 * WPI_n$	323.19
4.	$INDX_{n-1}$	218.86
5.	$(\text{Repair \& Maintenance})_n = K * GFA * (INDX_n / INDX_{n-1})$	46.93

6.35 In accordance with clause 15.42(b) of JSERC (Generation Tariff Regulation) 2020, the Petitioner has calculated the Employee expenses excluding terminal benefit, considering the nth year as 2021-22. The detailed calculations are being provided as below:

Table 47: Growth Factor for FY 2021-22 as submitted by Petitioner.

S.No.	Year	No. of Employee	Growth
1.	2015-16	363	
2.	2016-17	367	1.10%
3.	2017-18	410	11.72%
4.	2018-19	434	5.85%
5.	2019-20	438	0.92%
6.	2020-21	432	-1.37%

6.36 The Petitioner has considered employee expenses for n-1 year i.e. for FY 2020-21 without terminal liabilities and administrative and general expenses for FY 2020-21 as shown in below computation:

Table 48: R&M for FY 2021-22 as submitted by Petitioner.

S.No.	Particulars	Amount
1.	(EMP_{n-1})	28.49
2.	$(1 + G_n)$	1.04



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S.No.	Particulars	Amount
3.	(A&Gn-1)	68.51
4.	(INDXn/ INDXn-1)	1.06
5.	$EMP_n + A\&G_n = [(EMP_{n-1}) * (1+G_n) + (A\&G_{n-1})] * (INDX_n / INDX_{n-1})$	102.20

Table 49: Calculation of Operation and Maintenance for FY 2021-22 as submitted by Petitioner.

S.No.	Particulars	Amount
1.	Repair and Maintenance	46.93
2.	EMP _n + A&G _n	102.20
3.	Terminal Liabilities	0.00
4.	O&M_n = (R&M_n + EMP_n + A&G_n) + Terminal Liabilities	149.13

Table 50: Calculation of Escalation factor for FY 2021-22 to FY 2025-26 as submitted by Petitioner.

S.No.	Particulars	Amount
1.	$INDX_n : 0.55 * CPI_n + 0.45 * WPI_n$	232.19
2.	INDX _{n-1}	218.86
3.	Escalation (%)	6.09%

6.37 Based on the above details, the Petitioner has computed the Operation and Maintenance expenses for Unit-I and Unit-II for FY 2021-22 to FY 2025-26 by considering the escalation factor of 6.09% as depicted below:

Table 51: O&M Expenses (Rs. Cr.) for Unit-I for as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
O&M Expenses	74.57	79.11	83.92	89.03	94.45



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Table 52: O&M Expenses (Rs. Cr.) for Unit-II for as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
O&M Expenses	74.57	79.11	83.92	89.03	94.45

Commission's Analysis

6.38 The Commission has outlined clause 15.35 and clause 15.40 to 15.42 of JSERC Generation Tariff Regulation, 2020 for the approval Operation & Maintenance Charges for a generating station as reproduced below:

“15.35 Operation and Maintenance (O&M) expenses shall comprise of the following:

- 1. Salaries, wages, pension contribution and other employee costs;*
- 2. Administrative and General costs;*
- 3. Repairs and maintenance expenses;*

Existing Generating Station

15.40 *The O&M Expenses for the Base Year of the Control Period shall be approved by the Commission taking into account the audited accounts of FY 2015-16 to FY 2019-20, Business Plan filed by the Generating Company, estimates of the actual for the Base Year, prudence check and any other factor considered appropriate by the Commission.*

15.41 *The O&M expenses permissible towards ARR of each year of the Control Period shall be approved based on the formula shown below:*

*$O\&M_n = (R\&M_n + EMP_n + A\&G_n) + \text{Terminal Liabilities Where, } R\&M_n$
– Repair and Maintenance Costs of the Generating Company for the nth year*

*$O\&M_n = (R\&M_n + EMP_n + A\&G_n) + \text{Terminal Liabilities Where, } R\&M_n$
– Repair and Maintenance Costs of the Generating Company for the nth year*

15.42 *The above components shall be computed in the manner specified below:*

*a) $(\text{Repair \& Maintenance})_n = K * GFA * (INDX_n / INDX_{n-1})$*

Where,

‘K’ is a constant (expressed in %) governing the relationship between Repair & Maintenance costs and Gross Fixed Assets (GFA) and shall be calculated based on the % of Repair & Maintenance to GFA of the



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preceding years of the Base Year in the MYT Order after normalising any abnormal expenses;

'GFA' is the opening value of the gross fixed asset of the nth year;

$$b) EMP_n + A\&G_n = [(EMP_{n-1}) * (1+G_n) + (A\&G_{n-1})] * (INDX_n / INDX_{n-1})$$

Where,

EMP_{n-1} – Employee Costs of the Generating Company for the (n-1)th year excluding terminal liabilities;

A&G_{n-1} – Administrative and General Costs of the Generating Company for the (n-1)th year excluding legal/litigation expenses;

INDX_n – Inflation factor to be used for indexing the employee cost and A&G cost. This will be a combination of the Consumer Price Index (CPI) and the Wholesale Price Index (WPI) for immediately preceding year before the base year;

G_n – is a growth factor for the nth year and it can be greater than or lesser than zero based on the actual performance. Value of G_n shall be determined by the Commission in the MYT Order for meeting the additional manpower requirement based on the Generating Company Filing, benchmarking and any other factor that the Commission feels appropriate;

$$c) INDX_n = 0.55 * CPI_n + 0.45 * WPI_n;$$

Note-1: For the purpose of estimation, the same INDX_n/INDX_{n-1} value shall be used for all years of the Control Period. However, the Commission will consider the actual values in the INDX_n/INDX_{n-1} at the end of each year during the Annual Performance Review exercise and true up the employee cost and A&G expenses on account of this variation, for the Control Period;

Note-2: Any variation due to changes recommended by the Pay Commission or wage revision agreement, etc., will be considered separately by the Commission.

Note-3: Terminal Liabilities will be approved as per actual submitted by the Generating Company along with documentary evidence such as actuarial studies.

6.39 The Commission has computed the O&M expenses by considering the



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methodology specified in the aforesaid Regulation. For approval of Employee Expenses for the Control Period, following approach has been adopted:

- a) The average of past five years actual audited employee expenses from FY 2015-16 to FY 2019-20 has been considered for deriving normative Employee Expenses for FY 2017-18.
- b) The average of such expenses has been escalated twice with inflation factor of respective years to arrive at the normative expenses for Base Year i.e., FY 2019-20.
- c) The Base Year expenses so calculated are then escalated with inflation factor of respective years to arrive at normative Employee expenses for FY 2021-22 and for subsequent years normative Employee expenses has been arrived at by escalating with inflation factor of 6.09% (i.e., Inflation factor of FY 2019-20) for each year of the control period, subject to truing up based on actuals.

6.40 No additional manpower has been projected by the Petitioner, Accordingly the Commission approve nil growth factor, subject to true-up on actuals basis. Thus, the Employee expense approved for control period is shown below:

Table 53: Employee Expenses (Rs. Cr) for Unit-I as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Employee Expenses	13.36	14.17	15.03	15.95	16.92

Table 54: Employee Expenses (Rs. Cr) for Unit-II as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Employee Expenses	13.36	14.17	15.03	15.95	16.92

6.41 As per Clause 15.40 to 15.42 of JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2020, the Commission has estimated the Base Year value of Administrative & General Expenses (excluding Legal Expenses and Application Fees & Publication Expenses) as per the following approach.



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- a) The average of past five year's actual audited A&G expenses from FY 2015-16 to FY 2019-20 has been considered for deriving normative A&G Expenses for FY 2017-18.
- b) The average of such expenses has been escalated twice with inflation factor of respective years to arrive at the normative expenses for Base Year i.e., FY 2019-20.
- c) The Base Year expenses so calculated are then escalated with inflation factor of respective years to arrive at normative A&G expenses for FY 2021-22 and for subsequent year normative expenses has been arrived at by escalating with inflation factor of 6.09% (i.e., Inflation factor of FY 2019-20) for each year of the control period which shall be subject to truing up based on actual Inflation rate.

6.42 Based on facts and circumstances the Commission approve the A&G Expenses is given below:

Table 55: A&G Expenses (Rs. Cr) for Unit-I as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
A&G Expenses	35.26	37.41	39.69	42.10	44.67

Table 56: A&G Expenses (Rs. Cr) for Unit-II as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
A&G Expenses	35.26	37.41	39.69	42.10	44.67

6.43 The Commission is aware that the R&M Expenses for a generating station may vary from year to year depending upon the maintenance activities carried out during the year and therefore clause 15.42(a) talks about determining R&M expenses based on preceding years and not on the basis of single year. The Commission has accordingly determined the K factor based on the last five years which more or less also covers the expenses towards planned shutdown. Accordingly, in line with MYT Tariff Regulation, 2020, the Commission has taken into account both the 'K' factor and inflation factor while deriving the R&M Expenses. Based on the actual percentage of R&M Expenses with approved GFA for the past



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five years i.e. FY 2015-16 to FY 2019- 20, the Commission approve the 'K' factor for the third control period for Unit-I &II as 1.14%

6.44 The actual inflation factor for FY 2021-22 is considered for escalation for FY 2021-22 thereafter inflation factor of 6.09% (i.e., Inflation factor of FY 2019-20) has been considered for each year of the control period which shall be subject to truing up based on actuals.

6.45 The R&M Expenses, as approved by the Commission for the Control Period from FY 2021- 22 to FY 2025-26 has been tabulated below.

Table 57: R&M Expenses (Rs. Cr) for Unit-I as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
R&M Expenses	20.45	21.70	23.02	24.42	25.91

Table 58: R&M Expenses (Rs. Cr) for Unit-II as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
R&M Expenses	20.45	21.70	23.02	24.42	25.91

6.46 In accordance with clause 15.43 of JSERC Generation Tariff Regulation 2020 the Commission approved Legal expense for the Control Period from FY 2021- 22 to FY 2025-26 as given below.

Table 59: Legal Expenses (Rs. Cr) for Unit-I as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Legal Expenses	0.22	0.22	0.22	0.22	0.22

Table 60: Legal Expenses (Rs. Cr) for Unit-II as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Legal Expenses	0.22	0.22	0.22	0.22	0.22

6.47 The summary of approved O&M Expenses for the Control Period from FY 2021-22 to FY 2025-26 is shown below.



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Table 61: Net O&M Expenses (Rs. Cr) for Unit-I as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Employee Expenses	13.36	14.17	15.03	15.95	16.92
A&G Expenses	35.26	37.41	39.69	42.10	44.67
R&M Expenses	20.45	21.70	23.02	24.42	25.91
Legal Expenses	0.22	0.22	0.22	0.22	0.22
Net O&M	69.29	73.50	77.96	82.69	87.71

Table 62: Net O&M Expenses (Rs. Cr) for Unit-II as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Employee Expenses	13.36	14.17	15.03	15.95	16.92
A&G Expenses	35.26	37.41	39.69	42.10	44.67
R&M Expenses	20.45	21.70	23.02	24.42	25.91
Legal Expenses	0.22	0.22	0.22	0.22	0.22
Net O&M	69.29	73.50	77.96	82.69	87.71

Interest on Loan

Petitioner's Submission

- 6.48 The Petitioner has considered the repayment during the year equivalent to the normative depreciation for the year being in line with the methodology prescribed in the JSERC Generation Regulations, 2020.
- 6.49 The Petitioner has projected the weighted average rate of interest at 12.31% for FY 2021-22 to FY 2025-26 for Unit-I and Unit-II considering the rate of Trued up year FY 2019-20.
- 6.50 In accordance with the JSERC (Generation Tariff Regulation) 2020, the interest on debt has been computed on the normative average loan of the year by applying the weighted average rate of interest as depicted in the table below.

Table 63: Computation of interest on Loan (Rs. Cr) for Unit-I as submitted by Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Opening Balance	517.00	454.95	393.33	331.03	267.57
Addition	4.57	5.22	4.73	3.77	3.11

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Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Repayment	66.62	66.84	67.03	67.23	67.43
Closing Balance	454.95	393.33	331.03	267.57	203.25
Interest Rate (%)	12.31%	12.31%	12.31%	12.31%	12.31%
Interest on Loan	59.82	52.21	44.58	36.84	28.98

Table 64: Computation of interest on Loan (Rs. Cr) for Unit-II as submitted by Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Opening Balance	547.00	482.38	422.03	359.13	295.14
Addition	2.54	7.04	4.73	3.84	3.18
Repayment	67.17	67.39	67.63	67.83	68.04
Closing Balance	482.38	422.03	359.13	295.14	230.28
Interest Rate (%)	12.31%	12.31%	12.31%	12.31%	12.31%
Interest on Loan	63.36	55.67	48.08	40.27	32.34

Commission's Analysis

- 6.51 The Commission has scrutinized the additional capitalization as projected by the Petitioner in its MYT Petition and after prudent check approve the additional capitalization and normative loan addition for the Control Period from FY 2021-22 to FY 2025-26.
- 6.52 The Commission has considered the deemed loan repayment equal to depreciation as approved by the Commission.
- 6.53 In accordance to Clause 15.18 of JSERC Generation Tariff Regulations, 2020, the Commission approve the weighted average rate of interest rate at 12.31% for both the Units as shown below.

Table 65: Computation of interest on Loan (Rs. Cr) for Unit-I as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Opening Balance	557.06	491.48	428.42	365.38	302.59
Addition	0.50	3.12	3.33	3.77	3.11
Repayment	66.08	66.18	66.37	66.57	66.77
Closing Balance	491.48	428.42	365.38	302.59	238.92
Interest Rate (%)	12.31%	12.31%	12.31%	12.31%	12.31%

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Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Interest on Loan	64.54	56.62	48.86	41.11	33.33

Table 66: Computation of interest on Loan (Rs. Cr) for Unit-II as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Opening Balance	586.61	520.42	458.51	394.75	331.30
Addition	0.50	4.94	3.33	3.84	3.18
Repayment	66.69	66.85	67.09	67.29	67.50
Closing Balance	520.42	458.51	394.75	331.30	266.98
Interest Rate (%)	12.31%	12.31%	12.31%	12.31%	12.31%
Interest on Loan	68.14	60.25	52.52	44.69	36.82

Return on Equity

Petitioner's Submission

- 6.54 In accordance with clause 15.9 and 15.10 of JSERC Generation Tariff Regulation, 2020, the Petitioner has computed the normative return on equity for determination of tariff.
- 6.55 While calculating the Return on Equity, the Petitioner has considered Post-Tax Return on Equity at 14.00%. The Return on Equity claimed for Unit-I and Unit-II for FY 2021-22 to FY 2025-26 is summarized in the table below.

Table 67: Computation of Return on Equity (Rs. Cr) for Unit-I as submitted by Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Opening Balance	510.18	512.13	514.37	516.40	518.01
Net Addition	1.96	2.24	2.03	1.62	1.33
Closing Balance	512.13	514.37	516.40	518.01	519.35
Average Equity	511.16	513.25	515.38	517.21	518.68
Rate of Return on Equity	14.00%	14.00%	14.00%	14.00%	14.00%
Return on Equity	71.56	71.86	72.15	72.41	72.62

Table 68: Computation of Return on Equity (Rs. Cr) for Unit-II as submitted by Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Opening Balance	514.38	515.46	518.48	520.51	522.15
Net Addition	1.09	3.02	2.03	1.65	1.36
Closing Balance	515.46	518.48	520.51	522.15	523.52
Average Equity	514.92	516.97	519.49	521.33	522.84
Rate of Return on Equity	14.00%	14.00%	14.00%	14.00%	14.00%
Return on Equity	72.09	72.38	72.73	72.99	73.20

Commission's Analysis

6.56 The Commission has scrutinized the additional capitalisation as proposed by the Petitioner in its MYT Petition and after prudent check approves the additional capitalisation and normative equity addition for the Control Period from FY 2021-22 to FY 2025-26.

6.57 In accordance with Clause 15.9 of the JSERC Generation Tariff Regulations, 2020, and clause 6.1 of Generation Tariff Regulation 1st Amendment 2023, the Commission approves the Return on Equity at 15.00%. as shown below.

Table 69: Computation of Return on Equity (Rs. Cr) for Unit-I as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Opening Balance	456.57	456.78	458.12	459.55	461.16
Net Addition	0.21	1.34	1.43	1.62	1.33
Closing Balance	456.78	458.12	459.55	461.16	462.49
Average Equity	456.68	457.45	458.83	460.35	461.83
Rate of Return on Equity	15.00%	15.00%	15.00%	15.00%	15.00%
Return on Equity	68.50	68.62	68.83	69.05	69.27

Table 70: Computation of Return on Equity (Rs. Cr) for Unit-II as approved by Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Opening Balance	461.20	461.41	463.53	464.96	466.60
Net Addition	0.21	2.12	1.43	1.65	1.36

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Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Closing Balance	461.41	463.53	464.96	466.60	467.96
Average Equity	461.31	462.47	464.24	465.78	467.28
Rate of Return on Equity	15.00%	15.00%	15.00%	15.00%	15.00%
Return on Equity	69.20	69.37	69.64	69.87	70.09

Interest on Working Capital (IOWC)

Petitioner's Submission

6.58 The Petitioner has projected the Interest on Working Capital (IOWC) requirement in accordance with Clause 15.23, Clause 15.26 of the JSERC Generation Tariff Regulations, 2020, as tabulated hereunder.

Table 71: IOWC (Rs. Crore) for Unit-I as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Cost towards Coal for Generation 50 days	61.68	62.56	62.39	62.56	62.56
Cost of Oil for Generation (2 months)	0.75	0.75	0.75	0.75	0.75
O&M Expenses (1 month)	11.53	7.64	8.12	8.63	9.17
Receivables*	415.32	390.10	388.38	388.96	388.51
Maintenance Spares (20% O&M)	27.68	18.34	19.50	20.72	22.02
Total Working Capital	516.96	479.39	479.15	481.62	483.01
Interest Rate	10.50%	10.50%	10.50%	10.50%	10.50%
Interest on Working Capital	54.28	50.34	50.31	50.57	50.72

*Petitioner has Projected receivables equivalent to 180 day

Table 72: IOWC (Rs. Crore) for Unit-II as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Cost towards Coal for Generation 50 days	62.51	63.41	63.24	63.41	63.41
Cost of Oil for Generation (2 months)	0.77	0.77	0.77	0.77	0.77
O&M Expenses (1 month)	11.53	7.64	8.12	8.63	9.17
Receivables*	420.99	395.77	394.11	394.67	394.19
Maintenance Spares (20% O&M)	27.68	18.34	19.50	20.72	22.02
Total Working Capital	523.48	485.93	485.74	488.20	489.56
Interest Rate	10.50%	10.50%	10.50%	10.50%	10.50%
Interest on Working Capital	54.97	51.02	51.00	51.26	51.40

*Petitioner has Projected receivables equivalent to 180 day

Commission's Analysis

6.59 The Commission has outlined clause 15.23 to clause 15.26 JSERC Generation Tariff Regulation 2020 for the approval of interest on working



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capital for a generating station as reproduced below:

“15.23 The Commission shall determine the Working Capital requirement on normative basis for coal-based generating stations, which shall comprise the following components:

- 1. Cost of coal or lignite and limestone towards stock, if applicable, for 10 days for pit-head generating stations and 20 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity, whichever is lower;*
- 2. Cost of coal or lignite and limestone for 30 days for generation corresponding to normative annual plant availability factor;*
- 3. Cost of secondary fuel oil for two months for generation corresponding to the Normative Annual Plant Availability Factor, and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;*
- 4. Operation and Maintenance expenses, including water charge and security expenses for one month;*
- 5. Maintenance spares @ 20% of Operation and Maintenance Expenses;*
- 6. Receivables equivalent to 45days of capacity charges and energy charges for sale of electricity calculated on the Normative Annual Plant Availability Factor:*

Provided that the cost of primary fuel shall be based on the landed cost incurred (taking into account normative transit and handling losses) by the generating station and gross calorific value of the fuel on ‘as received basis’ as per actual weighted average for three months preceding the first month for which tariff is to be determined:

Provided further that in case of new generating station, the cost of fuel for the first financial year shall be considered based on landed fuel cost (taking into account normative transit and handling losses) and gross calorific value of the fuel as per actual weighted average for three months, as used for infirm power, preceding date of commercial operation for which tariff is to be determined.

15.26 The rate of Interest on Working Capital shall be on normative basis and shall be equal to Bank Rate plus 350 basis points as on September 30

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of the financial year in which the MYT Petition is filed as on April 01, of the year during the Control Period from FY 2021-22 to FY 2025-26 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 true up on the basis of Bank Rate plus 350 basis points as applicable on April 01, of the respective financial year at the time of true up.

6.60 Taking into account the above regulation, the Interest on Working capital has been calculated at an interest rate of 10.50% (Bank Rate plus 350 basis points) as specified in clause 15.26 JSERC Generation Tariff Regulation, 2020 as given below.

Table 73: IOWC (Rs. Crore) for Unit-I as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Cost towards Coal for Generation 50 days	62.56	62.56	62.56	62.56	62.56
Cost of Oil for Generation (2 months)	0.73	0.73	0.73	0.73	0.73
O&M Expenses (1 month)	5.89	6.25	6.85	7.25	7.68
Receivables (45 days)	93.43	93.03	92.71	92.41	92.14
Maintenance Spares (20% O&M)	13.86	14.70	15.59	16.54	17.54
Total Working Capital	176.48	177.27	178.44	179.49	180.64
Interest Rate	10.50%	10.50%	10.50%	10.50%	10.50%
Interest on Working Capital	18.53	18.61	18.74	18.85	18.97

Table 74: IOWC (Rs. Crore) for Unit-II as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Cost towards Coal for Generation 50 days	63.42	63.42	63.42	63.42	63.42
Cost of Oil for Generation (2 months)	0.75	0.75	0.75	0.75	0.75
O&M Expenses (1 month)	5.89	6.25	6.85	7.25	7.68
Receivables (45 days)	94.87	94.49	94.18	93.87	93.59
Maintenance Spares (20% O&M)	13.86	14.70	15.59	16.54	17.54
Total Working Capital	178.79	179.61	180.79	181.83	182.98
Interest Rate	10.50%	10.50%	10.50%	10.50%	10.50%
Interest on Working Capital	18.77	18.86	18.98	19.09	19.21



Water Charges, Security Deposit, Capital Spare

Petitioner Submission

- 6.61 The Petitioner has entered into an MoU with Govt. of Jharkhand for drawl of water to an extent of 35.60 MCM (4064 m³ per hour) in a phased manner from Subarnarekha river, flowing at a distance of eight km downstream of water intake point from APNRL Project site, vide agreement dated August 29, 2008. The said agreement stipulates that a pump house has to be installed for drawl of required water from the river Subarnarekha withdrawn directly from the river and not from any reservoir. Subsequently, Water Department of Govt. of Jharkhand vide its Notification No. 2/PMC/Jalapurti-175/2007 dated April 01, 2011 has revised various categories for water off-take and APNRL was asked to pay @ Rs. 26.40 per thousand gallons. The Petitioner, aggrieved by the rate, filed a Writ Petition before High Court of Jharkhand on February 07, 2012 with regard to demand raised by Subarnarekha Dam Division towards withdrawal of water at higher than the agreed rates.
- 6.62 The Hon'ble High Court of Jharkhand was pleased to pass a stay Order in the above mentioned Writ Petition, restricting the payment of water charges at pre-revised rate of Rs. 4.50 per thousand gallons.
- 6.63 The Petitioner further mention that clause 18 of the Water agreement, which contains provisions for reduction of the Water quantity, the Petitioner has requested WRD, Government of Jharkhand for lowering of the permitted water quantity from 35.60 MCM to 17.60 MCM i.e. almost 50% of the original allocated quantity, which is yet to be considered by the WRD, State of Jharkhand. As a result, the Petitioner has filed another petition before the Hon'ble High Court of Ranchi which is still pending for resolution of dispute in the mater of the water quantum bill.
- 6.64 With reference to the fact given in the previous water charges order dated 19.02.2018 given by the Hon'ble Commission, the Petitioner has decided on a most conservative basis to account for the water liability based on rates applicable for Dam water as per notification No :2/PMC/Jalapurti-175/2007 dated April 1,2011, issued by WRD, GOJ multiplied by the quantity of 35.60 MCM for the initial 5 years and thereafter by the requested quantity of 17.60 MCM, including past years. Accordingly, the



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accumulated liability till 31.03.2021 will be accounted for in the FY 2021-22.

Table 75: Accumulated Water Charges liability till FY 21 as submitted by Petitioner.

S.No.	Particulars	Amount
1.	Liability for 50% allocation as on 31.03.2021	164,28,33,792
2.	Liability as on 31.03.2021 already Accounted	60,11,80,382
3.	Balance Liability to be taken 31.03.2021 in FY 2021-22	104,16,53,410
4.	Total Balance Liability in Rs. Crore	104.17

Table 76: Water Charge, Capital Spare, Security Deposit as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Water Charges combined for both Unit 1 and 2 (Attributable to contracted capacity of 122.85 MW) – as claimed in the instant petition	62.61	11.32	12.20	13.08	14.06
Capital Spare	-	-	-	-	-
Security Deposit	1.20	1.28	1.37	1.47	1.57

Commission Analysis

6.65 The Commission has outlined clause 9.1 of JSERC Generation Tariff (1st amendment) Regulation, 2023 for the approval of water charge, capital spare, security spare for a generating station as reproduced below:

“15.46. The Water Charges, Security Expenses and Capital Spares for thermal generating stations shall be allowed separately after prudence check:

Provided that Water Charges shall be allowed based on water consumption, depending upon type of plant, type of cooling water system, subject to prudent check. The details regarding the same shall be furnished along with the Petition.

Provided that the generating station shall submit the details of year wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through special allowance as per Clause 14.11 and 14.12 of



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the Regulation or claimed as a part of additional capitalization or consumption of stores and spares and renovation and modernization”.

- 6.66 The Commission has scrutinized the detail as submitted by the Petitioner and observed that the matter related to water charge is sub-judice before the Hon'ble Jharkhand High Court. Accordingly, the Commission in the instant petition approve the water charges as per audited accounts of FY 2019-20 in proportion to power allocated to JBVNL from FY 2021-22 to FY 2022-23. Further, the net water charges approved in this order is subject to final outcome of the above mentioned petition before the Hon'ble Jharkhand High Court.
- 6.67 Further, the Petitioner vide letter no APNRL/PT-JVBNL/FY 23-24/22 dated May 24, 2023 has submitted additional data regarding to water charge for month of April FY 2023-24. On prudent check the Commission approve the Water charge for FY 2023-24 to FY 2025-26 as per Petitioner projection, subject to truing-up on the basis of actual.
- 6.68 The Commission approves the security deposit in accordance with above mentioned regulation.

Table 77: Water Charge, Capital Spare, Security Deposit as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Water Charges combined for both Unit 1 and 2 (Attributable to contracted capacity of 122.85 MW) – as claimed in the instant petition	0.44	0.44	5.64	5.64	5.64
Capital Spare	-	-	-	-	-
Security Deposit	1.20	1.28	1.37	1.47	1.57

Legal Expenses

Petitioner's Submission

- 6.69 The Petitioner has projected legal expense separately for FY 2021-22 to FY 2025-26 considering the escalation factor of 6.09% on FY 2020-21.

Table 78: Legal Expense as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Legal expenses for Unit-1 and Unit-2 (Attributable to contracted capacity of 122.85 MW)	0.44	0.46	0.49	0.52	0.55

Commission’s Analysis

6.70 The Commission has already approved legal expenses in Operation and Maintenance portion of this order.

Ash Disposal Expenses

Petitioner’s Submission

6.71 The Petitioner has projected that ash disposal and transportation is the statutory requirement of the power plant. Accordingly, the Petitioner has been disposing and transporting ash from its power station in accordance with the Government of India, Ministry of Environment, Forest & Climate Change (MOEFCC) notification dated 25.1.2016.

6.72 Further, the Petitioner has submitted that as per the environmental norms and MOEFCC guidelines, the Petitioner has been transporting ash from its power station to various cement and brick manufacturing units. The details of quantity of ash disposal and its expenditure is given below:

Table 79: Ash Disposal Expense as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Ash disposal and transportation expenses for Unit-1 and Unit-2 (Attributable to contracted capacity of 122.85 MW)	4.93	5.23	5.55	5.89	6.25

Commission’s Analysis

6.73 On consideration of the facts and circumstance and submission of the petition, the Commission approves ash disposal expenses for unit-1 and unit-2 (attributed to contracted capacity of only 13%) subject to prudent check on the basis of actuals at the time of true-up.

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Table 80: Ash Disposal Expense as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Ash disposal and transportation expenses for Unit-1 and Unit-2 (Attributable to contracted capacity of only 13%)	4.38	4.38	4.38	4.38	4.38

Summary of Annual Fixed Charge (AFC) for MYT Control Period FY 2021-22 to FY 2025-26

Petition Submission

6.74 The table below provides the summary of the annual capacity charges claimed in the instant petition on account of Multi Year Tariff for FY 2021-22 to FY 2025-26:

Table 81: Summary of AFC for Unit-I as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Depreciation	66.62	66.84	67.03	67.23	67.43
Interest on loan	59.82	52.21	44.58	36.84	28.98
O&M Expenses	74.57	79.11	83.92	89.03	94.45
Return on Equity	71.56	71.86	72.15	72.41	72.62
Interest on Working Capital	54.28	50.34	50.31	50.57	50.72
Less: Non-Tariff Income	1.10	0.95	0.80	0.75	0.75
Total Annual Fixed Charges (excluding Water charge, ash handling, legal expenses)	325.74	319.40	317.19	315.33	313.44

Table 82: Summary of AFC for Unit-II as submitted by the Petitioner.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Depreciation	67.17	67.39	67.63	67.83	68.04
Interest on loan	63.36	55.67	48.08	40.27	32.34
O&M Expenses	74.57	79.11	83.92	89.03	94.45
Return on Equity	72.09	72.38	72.73	72.99	73.20
Interest on Working Capital	54.97	51.02	51.00	51.26	51.40
Less: Non-Tariff Income	1.10	0.95	0.80	0.75	0.75
Total Annual Fixed Charges (excluding Water charge, ash handling, legal expenses)	331.04	324.61	322.56	320.63	318.68

Commission's Analysis

6.75 On perusal of material furnished by the Petitioner and the submission, the Commission approves the Annual Fixed Cost (AFC) for FY 2021-22 to FY 2025-26 which as summarized below.

Table 83: Summary of AFC for Unit-I as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Depreciation	66.08	66.18	66.37	66.57	66.77
Interest on loan	64.54	56.62	48.86	41.11	33.33
O&M Expenses incl. Legal expenses	69.29	73.50	77.96	82.69	87.71
Return on Equity	68.50	68.62	68.83	69.05	69.27
Interest on Working Capital	18.53	18.61	18.74	18.85	18.97
Less: Non-Tariff Income	1.10	0.95	0.80	0.75	0.75
Total Annual Fixed Charges (excluding Water charge, ash handling, capital spare, security expenses)	285.83	282.58	279.94	277.52	275.30

Table 84: Summary of AFC for Unit-II as approved by the Commission.

Particulars	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Depreciation	66.69	66.85	67.09	67.29	67.50
Interest on loan	68.14	60.25	52.52	44.69	36.82
O&M Expenses incl. Legal expenses	69.29	73.50	77.96	82.69	87.71
Return on Equity	69.20	69.37	69.64	69.87	70.09
Interest on Working Capital	18.77	18.86	18.98	19.09	19.21
Less: Non-Tariff Income	1.10	0.95	0.80	0.75	0.75
Total Annual Fixed Charges (excluding Water charge, ash handling, capital spare, security expenses)	290.98	287.87	285.38	282.88	280.59

Approved Tariff for Unit-I and Unit-II

Petition Submission

6.76 In accordance with the provisions of PPA executed with DISCOM, out of total Contracted Capacity of 122.85 MW, APNRL will supply 63.882 MW capacity (i.e. 13% of the total net Capacity at Total Tariff (both fixed and Variable Charge) and the balance 58.968 MW capacity, i.e.12% of the Total Net capacity at variable cost i.e. Energy Charge as approved by the Commission. Accordingly, the tariff for supply of Regulated Capacity to DISCOM for FY 2021-22 to FY 2025-26 at Normative Availability as summarized below:

Table 85: Tariff for 12% of total Net Capacity as submitted by the Petitioner (Variable Cost).

Particulars	UoM	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Variable cost (Unit-I)	Rs/kWh	2.481	2.516	2.516	2.516	2.516
Variable cost (Unit-II)	Rs/kWh	2.515	2.550	2.550	2.550	2.550

Table 86: Tariff for 13% of total Net Capacity for Unit-I as submitted by the Petitioner (Fixed Cost).

Particulars	Derivation	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Gross Capacity	A	270.00	270.00	270.00	270.00	270.00
Auxiliary Consumption	B	9.00%	9.00%	9.00%	9.00%	9.00%
Net Capacity	$C = A \times (1-B)$	245.70	245.70	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	$D = C \times 12\%$	29.48	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	$E = C - D$	216.22	216.22	216.22	216.22	216.22
Total Annual Fixed Charge	F	325.74	319.40	317.19	315.33	313.44
Annual Fixed Charges/MW	$G = F/E$	1.51	1.48	1.47	1.46	1.45
13% of Net Capacity for supply to JUVNL at full tariff	$H = C \times 13\%$	31.94	31.94	31.94	31.94	31.94
AFC for 13% of Net Capacity	$I = G \times H$ (Rs. Crs)	48.12	47.18	46.86	46.58	46.30

Table 87: Tariff for 13% of total Net Capacity for Unit-II as submitted by the Petitioner (Fixed Cost).

Particulars	Derivation	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Gross Capacity	A	270.00	270.00	270.00	270.00	270.00
Auxiliary Consumption	B	9.00%	9.00%	9.00%	9.00%	9.00%
Net Capacity	$C = A \times (1-B)$	245.70	245.70	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	$D = C \times 12\%$	29.48	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	$E = C - D$	216.22	216.22	216.22	216.22	216.22
Total Annual Fixed Charge	F	331.04	324.61	322.56	320.63	318.68
Annual Fixed Charges/MW	$G = F/E$	1.53	1.50	1.49	1.48	1.47

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Particulars	Derivation	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
13% of Net Capacity for supply to JUVNL at full tariff	$H = C \times 13\%$	31.94	31.94	31.94	31.94	31.94
AFC for 13% of Net Capacity	$I = G \times H$ (Rs. Crs)	48.90	47.95	47.65	47.37	47.08

Commission's Analysis

6.77 The tariff for 12% of the total net capacity shall be the variable cost (subject to fuel price adjustment in accordance with Generation Tariff Regulations 2020, and Generation Tariff Regulation 1st Amendment Regulation, 2023) approved by the Commission is given below.

Table 88: Tariff for 12% of total Net Capacity as approved by Commission (Variable charge).

Particulars	UoM	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Variable cost (Unit-I)	Rs/kWh	2.580	2.580	2.580	2.580	2.580
Variable cost (Unit-II)	Rs/kWh	2.616	2.616	2.616	2.616	2.616

6.78 The tariff for 13% of the total net capacity shall be the total tariff i.e. variable cost (subject to fuel price adjustment in accordance with Generation Tariff Regulations 2020, and Generation Tariff Regulation 1st amendment Regulation 2023) and fixed charges as approved by the Commission in this order as noted below.

Table 89: Tariff for 13% of total Net Capacity as approved by Commission (Variable charge).

Particulars	UoM	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Variable cost (Unit-I)	Rs/kWh	2.580	2.580	2.580	2.580	2.580
Variable cost (Unit-II)	Rs/kWh	2.616	2.616	2.616	2.616	2.616

Table 90: Tariff for 13% of total Net Capacity for Unit-I as approved by the Commission (Fixed Cost).

Particulars	Derivation	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Gross Capacity	A	270.00	270.00	270.00	270.00	270.00
Auxiliary Consumption	B	9.00%	9.00%	9.00%	9.00%	9.00%



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Particulars	Derivation	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Net Capacity	$C = A \times (1-B)$	245.70	245.70	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	$D = C \times 12\%$	29.48	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	$E = C - D$	216.22	216.22	216.22	216.22	216.22
Total Annual Fixed Charge	F	285.83	282.58	279.94	277.52	275.30
Annual Fixed Charges/MW	$G = F/E$	1.32	1.31	1.29	1.28	1.27
13% of Net Capacity for supply to JUVNL at full tariff	$H = C \times 13\%$	31.94	31.94	31.94	31.94	31.94
AFC for 13% of Net Capacity	$I = G \times H$ (Rs. Crs)	42.23	41.74	41.35	41.00	40.67

Table 91: Tariff for 13% of total Net Capacity for Unit-II as approved by the Commission (Fixed Cost).

Particulars	Derivation	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Gross Capacity	A	270.00	270.00	270.00	270.00	270.00
Auxiliary Consumption	B	9.00%	9.00%	9.00%	9.00%	9.00%
Net Capacity	$C = A \times (1-B)$	245.70	245.70	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	$D = C \times 12\%$	29.48	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	$E = C - D$	216.22	216.22	216.22	216.22	216.22
Total Annual Fixed Charge	F	290.98	287.87	285.38	282.88	280.59
Annual Fixed Charges/MW	$G = F/E$	1.35	1.33	1.32	1.31	1.30
13% of Net Capacity for supply to JUVNL at full tariff	$H = C \times 13\%$	31.94	31.94	31.94	31.94	31.94
AFC for 13% of Net Capacity	$I = G \times H$ (Rs. Crs)	42.99	42.53	42.16	41.79	41.45



Chapter 7: DIRECTIVES

Timeliness and Data Adequacy in next Tariff Petition.

8.1 The Commission direct the Petitioner to file the next tariff Petition, after removing the deficiencies highlighted in this tariff order. The Petitioner should ensure that the data submitted to the Commission is accurate and justified with the adequacy of the next tariff petition within the time frame as stipulated in the JSERC (Generation Tariff Regulation) 2020, and JSERC (Generation Tariff Regulation) 1st Amendment 2023.

Submission of Unit-wise Operational Parameters Separately

8.2 The Commission directs the Petitioner to submit Unit-Wise Operational Parameters of the Plant at the time of true-up.

Development of a Fuel Procurement Plan

8.3 The Petitioner is directed to develop a Fuel Procurement Plan and explore options with its suppliers in order to reduce the cost of coal. The Petitioner should prioritize the procurement of primary fuel from the least cost source.

Transit Loss

8.4 The Commission directs the Petitioner to devise ways to control the expense and maintain transit loss at the levels specified as per Generation Tariff Regulations 2020.

Notice to the Commission

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

Compliance of directives issued in earlier Orders

8.6 In addition to above, the Petitioner is also directed to submit the compliance of the directives issued by the Commission in its earlier Orders.



Business Plan, ARR and Tariff for MYT Period FY 2021-22 to FY 2025-26

This Order is signed and issued by the Jharkhand State Electricity Regulatory Commission on December 14, 2023.

Date: 14.12.2023

Place: Ranchi

Sd/-

Mr. Atul Kumar
Member (Technical)

Sd/-

Mr. Mahendra Prasad
Member (Law)

Sd/-

Justice Amitav Kr. Gupta
Chairperson



Chapter 8: ANNEXURE

Table 92: List of participating members of the Public in the Public Hearing

Sl. No.	Name S/Shri	Address / Organization if any
Venue: Hotel B N R Chanakya, Ranchi, Date & Time: 20.03.2023 & 12:30 PM		
1	Amit Griwan	468, 1st floor, Udyog Bihar, DLF Ph-III, Gurgram
2	Ravi Shankar Singh	2IC Road Shanti Hari tower, Bistupur, Jamshedpur
3	Sarangdev Sarkar	1st floor, Udyog Bihar, DLF Ph-III, Gurgram
4	Rajesh Kumar Sharma	Petrol Pump Road, No. 6, Sonari west, Jamshedpur
5	Ravi Verma	Flat NEI/2 ,Manav Shree Appt., Rd. IA, Basant Vihar, Harmu, Ranchi
6	Himanshu Kumar	A/3 Nishaant Vihar, adityapur
7	Rishi Nandan	GM, Commercial, JBVNL
8	Ravishankar Kumar	EEE, Revenue, JBVNL
9	Bhavesh Saw	APNRL
10	Arvind Kumar	ED (C&R), JBVNL
11	Radha Krishna Tripathy	JBVNL Representative
12	Jiwan Kumar Jalan	101, Harmu Road, Ranchi
13	Anita Prasad	JBVNL
14	Birendra Kisku	JBVNL
15	R. K. Pandey	Ranchi
16	Eshan Singh	Ranchi
17	Sharat Kumar	JBVNL
18	Vijay Kumar	Ranchi