

**COMMERCIAL  
UNIT**



U.P. Rajya Vidyut Utpadan Nigam Ltd.  
14<sup>th</sup> floor, Shakti Bhawan Extn.  
Lucknow-226001  
Telephone No.- 0522-2288056/2287030  
CIN :U40101UP1980SGC005065  
E-mail: gm.commercial@uprvunl.org

No. **834** /UNL/CE(Comml.)/MYT (2019-24)

Date: **06**, November-2019

✓ Secretary,  
U.P. Electricity Regulatory Commission  
Vibhuti Khand-II, Gomti Nagar  
Lucknow-2260010

**Subject:- Petitions for ARR & Multi Year Tariff of various Thermal Power Stations of  
UPRVUNL for FY 2019-20 to 2023-24.**

Dear Sir,

Kindly find enclosed herewith Petitions for determination of ARR & Multi Year Tariff of the following Thermal Power Stations including provisional Tariff of upcoming Harduaganj Extension Stage-II (1x660 MW) of UPRVUNL in 06 copies (one original + 05 photocopies + 01 soft copy) for FY 2019-20 to FY 2023-24 as per UPERC (Terms & Conditions for Generation Tariff) Regulation-2019.

The details are mentioned in Table hereunder:

Sl No.	Name of Power Station	Unit	Total Capacity (MW)	Fee @ Rs 5000/- per MW. Max Rs 50 Lacs per Station (Rs)
1.	Anpara- 'A' TPS	3x210	630	31,50,000/-
2.	Anpara-'B' TPS	2x500	1000	50,00,000/-
3.	Anpara-'D' TPS	2x500	1000	50,00,000/-
4.	Obra-'B' TPS	5x200	1000	50,00,000/-
5.	Harduaganj TPS (U#7)	1x110	110	5,50,000/-
6.	Harduaganj Extn TPS	2x250	500	25,00,000/-
7.	Parichha TPS (U#2)	1x110	110	5,50,000/-
8.	Parichha Extn TPS	2x210	420	21,00,000/-
9.	Parichha Extn Stage-II TPS	2x250	500	25,00,000/-
10.	Harduaganj Ext Stage-II	1x660	660	33,00,000/-
<b>Total</b>			<b>5930</b>	<b>2,96,50,000/-</b>

The fee amount of **Rs 2,96,50,000/- (Rs Two Crore, Ninety six Lacs, Fifty thousand only)** in form of Demand Draft (No. 557620, dt 05.11.2019 issued from State Bank of India) in favour of "Secretary, UPERC", payable at Lucknow [as per 'Schedule of Fees' of UPERC (Fee & Fines) Regulations-2010, Part-D Sl. No.-4(b) ] is also enclosed alongwith Petitions.

Submitted for kind consideration of Hon'ble Commission.

Encl: Petitions as as above.

Yours Sincerely,

(Ramesh Chandra)  
Chief Engineer(Commercial)



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UNIT**



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14<sup>th</sup> floor, Shakti Bhawan Extn.  
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E-mail: gm.commercial@uprvunl.org

No. **834**/UNL/CE(Comml.)/MYT (2019-24)

Date: **06**, November-2019

Copy alongwith enclosures to the following respondents for their kind information:-

1. M.D., U.P. Power Corporation Ltd., 7<sup>th</sup> floor, Shakti Bhawan, 14 Ashok Marg, Lucknow.
2. M.D., Madyanchal Vidyut Vitran Nigam Ltd., P.N. Road, Gokhale Marg, Lucknow.
3. M.D., Poorvaranchal Vidyut Vitran Nigam Ltd., 132KV S/S Bhikhari Vidyut Nagar, Varanasi.
4. M.D., Pashimanchal Vidyut Vitran Nigam Ltd., Victoria Park, Meerut.
5. M.D., Dakshinanchal Vidyut Vitran Nigam Ltd., Vidyut Bhawan, Gailana Road, Agra.
6. M.D., Kanpur Electric Supply Co. Ltd., KESA House, Kanpur.
7. Chief Executive Officer, Noida Power Company Ltd., Commercial Complex, H-Block, Alpha-II Sector, Greater Noida.
8. Chief Engineer (PPA), UPPCL, 14<sup>th</sup> Floor Shakti Bhawan Ext, Lucknow.

Copy to the followings for their kind information:-

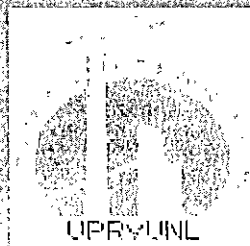
1. PS to Managing Director, UPRVUNL, 7<sup>th</sup> floor, Shakti Bhawan, 14 Ashok Marg, Lucknow.
2. Director (Project & Commercial), UPRVUNL, 8<sup>th</sup> floor, Shakti Bhawan Ext, Lucknow.
3. Director (Technical), UPRVUNL, 8<sup>th</sup> floor, Shakti Bhawan Ext, Lucknow.
4. Director (Finance), UPRVUNL, 8<sup>th</sup> floor, Shakti Bhawan Ext, Lucknow.
5. Executive Director (Finance), UPRVUNL, 8<sup>th</sup> floor, Shakti Bhawan Ext, Lucknow.

(Ramesh Chandra )  
Chief Engineer(Commercial)



2019

**MULTI YEAR TARIFF  
PETITION  
FOR  
FY 2019-20 to FY 2023-24**



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*[Signature]*

*[Signature]*

*[Signature]*  
मुख्य कार्यपालिका (कारिगरी)  
नियंत्रण विभाग, रा. रा.



(See Regulation 30)

Receipt Register No.: \_\_\_\_\_

Petition No.:

MULTI YEAR TARIFF PETITION FOR APPROVAL OF ANNUAL REVENUE REQUIREMENT AND DETERMINATION OF TARIFF FOR FY 2019-20 TO FY 2023-24 IN RESPECT OF EXISTING THERMAL POWER STATIONS & PETITION FOR DETERMINATION OF PROVISIONAL TARIFF FOR HARDUAGANJ EXTENSION STAGE II OF UTTAR PRADESH RAJYA VIDYUT UTPADAN NIGAM LIMITED (UPRVUNL), SHAKTI BHAWAN, 14-ASHOK MARG LUCKNOW

AND

UTTAR PRADESH RAJYA VIDYUT UTPADAN NIGAM LIMITED (UPRVUNL),  
SHAKTI BHAWAN, 14-ASHOK MARG, LUCKNOW.

 $V/s$ 

UTTAR PRADESH POWER CORPORATION LIMITED (UPPCL),  
SHAKTI BHAWAN, 14-ASHOK MARG, LUCKNOW.

MADHYANCHAL VIDYUT VITRAN NIGAM LTD.  
PN ROAD, LUCKNOW.

POORVANCHAL VIDYUT VITRAN NIGAM LTD.  
132 KV S/S BHIKARI VIDYUT NAGAR, VARANASI  
PASCHIMANCHAL VIDYUT VITRAN NIGAM LTD.  
VICTORIA PARK, MEERUT

APPLICANT

## RESPONDENTS

Sandeep

*Dr. Sugan*

A-27c

( इ० चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उ०प्र० रा० उ० नि० वि०  
शक्ति भवन विस्तार, लखनऊ

DAKSHINACHAL VIDYUT VITRAN NIGAM LTD.  
GALINA ROAD AGRA.

KANPUR ELECTRICITY SUPPLY CO. LTD.  
KESA HOUSE, KANPUR

NOIDA POWER CO. LTD.  
COMMERCIAL COMPLEX, H BLOCK, ALPHA-II SECTOR  
GREATER NOIDA CITY

  
Sandeep

  
V. Suresh

  
Ramesh Chandra

  
( ई० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उ०प्र०रा०वि०स०नि०दि०  
शक्ति भवन विस्तार, लखनऊ  
2.



उत्तर प्रदेश UTTAR PRADESH

88AD 143071

FORM-2

BEFORE THE HON'BLE UTTAR PRADESH ELECTRICITY REGULATORY  
COMMISSION, VIDYUT NIYAMAK BHAWAN, VIBHUTI KHAND, GOMTI NAGAR,  
LUCKNOW-226010

Receipt Register No.: \_\_\_\_\_

Petition No.: \_\_\_\_\_

SWORN & VERIFIED  
BEFORE ME

IN THE MATTER OF

MULTI YEAR TARIFF PETITION FOR APPROVAL OF ANNUAL REVENUE REQUIREMENT  
AND DETERMINATION OF TARIFF FOR FY 2019-20 TO FY 2023-24 IN RESPECT OF  
EXISTING THERMAL POWER STATIONS & PETITION FOR DETERMINATION OF  
PROVISIONAL TARIFF FOR HARDUAGANJ EXTENSION STAGE II OF UTTAR PRADESH  
RAJYA VIDYUT UTPADAN NIGAM LIMITED (UPRVUNL), SHAKTI BHAWAN, 14-ASHOK  
MARG LUCKNOW

AND

IN THE MATTER OF

UTTAR PRADESH RAJYA VIDYUT UTPADAN NIGAM LIMITED (UPRVUNL),  
SHAKTI BHAWAN, 14-ASHOK MARG, LUCKNOW.

VS

APPLICANT

( ई० रमेश चन्द्र )

मुख्य अभियन्ता (वाणिज्य)

उत्तरांचल विद्युत निगम

शक्ति भवन विस्तार, लखनऊ



UTTAR PRADESH POWER CORPORATION LIMITED (UPPCL),  
SHAKTI BHAWAN, 14-ASHOK MARG, LUCKNOW.

MADHYANCHAL VIDYUT VITRAN NIGAM LTD.  
PN ROAD, LUCKNOW.

POORVANCHAL VIDYUT VITRAN NIGAM LTD.  
132 KV S/S BHIKARI VIDYUT NAGAR, VARANASI

PASCHIMANCHAL VIDYUT VITRAN NIGAM LTD.  
VICTORIA PARK, MEERUT

DAKSHINACHAL VIDYUT VITRAN NIGAM LTD.  
GALINA ROAD AGRA.

KANPUR ELECTRICITY SUPPLY CO. LTD.  
KESA HOUSE, KANPUR

NOIDA POWER CO. LTD.  
COMMERCIAL COMPLEX, H BLOCK, ALPHA-II SECTOR  
GREATER NOIDA CITY

RESPONDENTS

SWORN & VERIFIED  
BEFORE ME

#### AFFIDAVIT

I, Ramesh Chandra, Son of Late Shri Mawasiram aged 59 years, office of Commercial Unit, 14th Floor, Shakti Bhawan Extn., 14 Ashok Marg, Lucknow, do hereby solemnly affirm and state as under::

1. I say that I am Chief Engineer, Commercial UPRVUNL, the Applicant in the above matter and am duly authorized by the said Applicant to swear the present affidavit.
2. I say that I have read the contents of the above MYT Petition filed by the Petitioner (applicant) and I have understood the contents of the same.
3. That the contents of the Petition filed by the Applicant are based on the information available with the Applicant in the normal course of business and believed by me to be true.
4. I say that the Text, Appendixes and Annexure to the Petition are the true and correct copies of their original.

#### VERIFICATION

I, the deponent above named, do hereby verify the contents of the above affidavit to be true to the best of my knowledge, no part of it is false and nothing material has been concealed therefrom.

Verified at Lucknow on the \_\_\_\_\_, 2019

DEPONENT ( ई० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उपग्राम वि० वित० नि० वि०

DEPONENT ( ई० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उपग्राम वि० वित० नि० वि०  
शक्ति भवन विस्तार, लखनऊ



## 1. Background of the Company and its Generating Capacities

Uttar Pradesh RajyaVidyutUtpadan Nigam Limited (hereinafter referred to as the 'UPRVUNL' or the 'Petitioner'), is a company incorporated on 25th August 1980 with the principal object of generating electricity. Consequent to the implementation of power sector reforms in the State where under, amongst others, the activities of generation, transmission, distribution and retail supply of electricity carried out by Uttar Pradesh State Electricity Board (UPSEB) have been restructured and UPSEB was unbundled into Uttar Pradesh Power Corporation Limited (UPPCL), Uttar Pradesh Jal Vidyut Nigam Limited (UPJVNL) and UP RajyaVidyutUtpadan Nigam Limited vide the Uttar Pradesh Electricity Reforms Transfer Scheme, 2000 notification No 149/P-1/2000-24, Lucknow dated January 14th, 2000. As part of the scheme all thermal generating stations as set out in Schedule A to the transfer scheme were transferred to and vested in the Petitioner.

The Transfer Scheme assigned a value of Rs. 6009.63 crs (Prov) to gross fixed assets as on March 31, 1999. The Scheme determined the equity capital as Rs. 1053.71 crs. As part of the Scheme certain liabilities (listed in Schedule 'D' to the Scheme) were retained by GoUP

The provisional Scheme was modified by GoUP vide notification no. 348/P-1/2001-24 dated 25 January 2001, which made the Transfer Scheme of the year 2000 effective from 14 January 2000. The modified Scheme provided that value of gross fixed assets as Rs. 6270.60 crs and increased the equity amount to Rs. 1511.44 crs.

In pursuance of GOUP notification no., 2740/P-1/2003-24-14P/2003 dated 12th August 2003, UPPCL was further divided into five successor companies, with UPPCL as Transco and four successor distribution companies (hereinafter referred to as "licensees"), which are as follows:

- PaschimanchalVidyutVitrان Nigam Limited, Meerut - (Meerut DisCom)
- DakshinanchalVidyutVitrان Nigam Limited, Agra - (Agra DisCom)
- Madhyanchal VidyutVitrان Nigam Limited, Lucknow - (Lucknow DisCom)
- PoorvanchalVidyutVitrان Nigam Limited, Varanasi - (Varanasi DisCom)

UPRVUNL is a wholly owned company of the Government of Uttar Pradesh. Pursuant to the Uttar Pradesh Electricity Reforms Act, 1999 and the statutory transfer scheme notified there under, the Petitioner was vested with the activities of generation and sale of electricity from thermal generation assets in the State of Uttar Pradesh. All the electricity generated by the Petitioner is sold to Uttar Pradesh Power Corporation Limited (hereinafter referred to as the 'UPPCL'), which under the aforementioned transfer scheme is vested with the transmission and distribution of electricity in the State of Uttar Pradesh.

UPRVUNL owns, maintains and operates the following generating stations-

  
( इं० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उत्तरप्रदेश विद्युत निगम लि.  
राजिब भवन विस्तार, लखनऊ  
5

**TABLE – Present Installed Capacity and Derated capacity of UPRVUNL generating stations**

S No	Thermal Power Station	Unit No.	Installed Capacity	Derated Capacity	Date of Commercial Operation
1	Anpara – A	1	210 MW	210 MW	01-Jan-87
2		2	210 MW	210 MW	01-Aug-87
3		3	210 MW	210 MW	01-Apr-89
4	Anpara – B	4	500 MW	500 MW	01-Mar-94
5		5	500 MW	500 MW	01-Oct-94
6	Obra – B	9	200 MW	200 MW	15-Mar-80
7		10	200 MW	200 MW	06-Mar-79
8		11	200 MW	200 MW	14-Mar-78
9		12	200 MW	200 MW	29-May-81
10		13	200 MW	200 MW	29-Jul-82
11	Harduaganj	7	110 MW	110 MW	01-Aug-78
12	HarduaganjExtn.	8	250 MW	250 MW	01-Feb-12
13		9	250 MW	250 MW	10-Oct-13
14	Parichha	2	110 MW	110 MW	25-Feb-85
15	ParichhaExtn	3	210 MW	210 MW	24-Nov-06
16		4	210 MW	210 MW	01-Dec-07
17	ParichhaExtn.	5	250 MW	250 MW	17-Jul-12
18	Stage 2	6	250 MW	250 MW	18-Apr-13
19	Anpara D	6	500 MW	500 MW	08-May-2016
20		7	500 MW	500 MW	18-Oct-2016

In addition to the above the following plants or Units are scheduled to be added to the generation capacity of UPRVUNL in the upcoming control period.

Sl. No.	Project	Location	Capacity Addition
1	Harduaganj Extension-II	Harduaganj, Aligarh	1x660 MW
2	Obra 'C' Extension	Obra ,Sonbhadra	2x660 MW
4	Panki Extension	Panki, Kanpur	1x660 MW
<b>Total</b>			<b>2640 MW</b>

\*Harduaganj Extension-II is likely to be commissioned in January 2020.

## 2. Scheme of Regulations and Previous Tariff Orders

The Electricity Act, 2003 (Act 36 of 2003) (hereinafter referred to as the 'Act') came into force with effect from 10.6.2003 and the previous Acts governing the electricity supply in the

*[Signature]*

*[Signature]*

*[Signature]*

( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उ०प्र०रा०वि०उ०नि०वि०



country viz. The Indian Electricity Act, 1910 (9 of 1910), the Electricity (Supply) Act, 1948 (54 of 1948), and the Electricity Regulatory Commissions Act, 1998 have been repealed. The provisions of the UP Electricity Reform Act, 1999 (Uttar Pradesh Act 24 of 1999) to the extent not inconsistent with the provisions of the Electricity Act, 2003, however, continue to apply to Uttar Pradesh.

Section 61 of the Electricity Act, 2003 deals with Tariff Regulations. Section 62 (1) of the Act provides that the Appropriate Commission shall determine the tariff in accordance with the provisions of the Act, inter-alia, for supply of electricity by a generating company to a distribution licensee. Further, in accordance with Section 86 (1) (a) of the Act, Hon'ble UPERC (hereinafter referred to as the 'Hon'ble Commission') shall determine the tariff of generation of power at stations owned by the UPRVUNL. Section 86 (1) (b) further mandates UPERC to regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees.

Subsequently, the Hon'ble Commission notified the Uttar Pradesh Electricity Regulatory Commission (Terms and Conditions of Generation Tariff) Regulations, 2014 which came into effect from 01.04.2014 and were for the control period of FY 2014-15 to 2018-19. In continuation with the previous MYT Regulations, 2009 vintage of certain power stations of the Petitioner namely Obra A Thermal Power Station (TPS), Obra B TPS, Panki TPS, Harduaganj TPS and Parichha TPS were continued and relaxed operating norms in respect of such stations were accordingly provided.

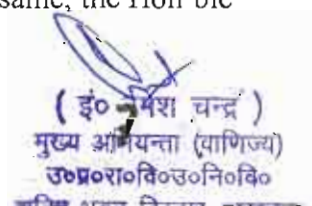
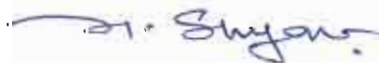
### **3. Multi Year Tariff Petition 2014-15 to 2018-19**

The Petitioner submitted its Multi Year Tariff Petition for Approval of Annual Revenue Requirement and determination of Tariff for FY 2014-15 to FY 2018-19 in respect of existing thermal power stations, Petition for determination of provisional tariff for Anpara 'D' and Petition for determination of Final True Up for FY 2011-12, FY 2012-13 and FY 2013-14 to the Honble Commission based on the extant Regulations. In continuation to the practice as adopted in the previous petitions, the petitioner continued to file the station-wise applications instead of on an overall basis considering the company as a whole.

### **4. Multi Year Tariff Order 2014-15 to 2018-19**

The Petitioner submitted its Multi Year Tariff Petition for Approval of Annual Revenue Requirement and determination of Tariff for FY 2014-15 to FY 2018-19 in respect of existing thermal power stations, Petition for determination of provisional tariff for Anpara 'D' and Petition for determination of Final True Up for FY 2011-12, FY 2012-13 and FY 2013-14 to the Honble Commission based on the extant Regulations. In continuation to the practice as adopted in the previous petitions, the petitioner continued to file the station-wise applications instead of on an overall basis considering the company as a whole.

After conducting of public hearings and taking into cognisance the various submissions from UPPCL and the responses and rejoinders filed by the petitioner against the same, the Hon'ble



( इ० न० चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उ०प्र० रा० वि० उ० नि० वि०  
अखिल भारतीय विद्युत नियंत्रण आयोग

Commission finally decided the MYT Petition for the period 2014-15 to 2018-19 in case no 1025 and 1026 of 2015 through order dated April 29<sup>th</sup>, 2016. The MYT Order also provided the final true ups for the generating stations of the petitioner for the period 2011-12 to 2013-14.

The GFA, NFA, Debt and Equity on 01.04.14, as approved by the Commission in the true-up of FY 2013-14 in this Tariff Order, had been considered as baseline data for calculation of tariff and Annual Revenue Requirement for the Petitioner for the MYT period FY 2014-15 to FY 2018-2019.

The Petitioner filed a review petition no. 1117 of 2016 against the UPRVUNL Tariff Order dated 29<sup>th</sup> April 2016 on June 20<sup>th</sup> 2016 and a further supplementary petition on July 15<sup>th</sup> 2016. UPPCL filed a rejoinder in response to the petitioner's review petition as well as an independent review petition no 1126 of 2016 against the said MYT order dated 29<sup>TH</sup> April.

The Hon'ble Commission after taking into consideration the various submissions of the Petitioner and UPPCL and dealt with the above-listed matters individually. The final judgment for the review petitions 117 of 2016 and 1126 of 2016 was passed through order dated January 18<sup>th</sup>, 2017.

#### **5. True Up Petition for the control period 2014-15 to 2018-19**

Based on the Generation Regulations, 2014, the Petitioner has submitted the corresponding true up petition for the control period 2014-15 to 2018-19 vide letter dated 25 October 2019. The current filings have been made in respect of each generating station of the Petitioner as per the directives of the Hon'ble Commission and past practice. The principles adopted for computing the true up are in accordance with the Generation Tariff Regulations, 2014 and the True up Order dated April 29<sup>th</sup>, 2016 read with review Order dated January 18<sup>th</sup> 2017. The petitioner prays for approval of the expenditures as submitted through the true up petition and consider the closing GFA as prayed through the petition as opening balance of the GFA for the control period 2019-20 to 2023-24.

#### **6. Generation Multi Year Tariff Regulation, 2019**


The Hon'ble UPERC has framed the "Uttar Pradesh Electricity Regulatory Commission (Terms and Conditions of Generation Tariff) Regulations, 2019" in exercise of powers conferred under section 181 read with Section 61 of the Electricity Act, 2003. The same were issued by the Hon'ble Commission on 11.09.2019. The Generation Tariff Regulations, 2019 were stated to be reckoned to have come into force with effect from 01.04.2019 and would be in force for 5 years up to 31.3.2024.

The Hon'ble Commission had initiated the process of framing the generation tariff principles for the fourth control period encompassing the financial years 2019-24 by issuing the Draft Generation Tariff Regulations, 2019 on 24 May 2019 and conducted public hearing in this matter after inviting comments from various stakeholders. The Petitioner had also participated in the stakeholder consultation process by submitting detailed comments, suggestions and objections on the same.







  
( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उपप्रशासक (वित्त)  
शक्ति भवन विस्तार, लखनऊ



However, certain prayers and requests by the Petitioner towards the said Regulations in regard to pass through of certain costs and relaxed operating norms for old generating units (that have already completed their useful life) have not been considered by the Hon'ble Commission and poses significant financial risks to the Petitioner for the control period.

## **7. Current Petition and its need, objectives and features**

This petition is being filed by the Petitioner in respect to the existing and upcoming generating Stations for the control Period 2019-20 to 2023-24. While the Petitioner has followed the normative parameters and the clauses as stipulated through the MYT Generation Regulations, 2019, it is humbly submitted that considering the vintage of the existing old generating stations certain relaxed parameters may be allowed to the Petitioner at the time of true up. It is also prayed the revenue impact on account of the above as well as certain other expenditures on account of statutory charges etc. may be allowed to be a pass through. Some key highlights of the assumptions and treatment of certain items of expenditure that forms the Annual Revenue Requirement (ARR) of the Petitioner has been discussed below:

### **a. Operating Norms for the old Generating Stations**

It is submitted that Anpara A and Anpara B TPS have completed their useful life. Due to Ageing, its operational parameters have deteriorated and there is increase in clearance in various rotating parts, diaphragms, and erosion etc causing substantial reduction in Turbine/ boiler efficiency. It is further submitted that Parichha Ext, Parichha Ext-II and Harduaganj Ext TPS face significant Thermal Backing or Reserve Shutdown and their Units mostly operate on partial load at most of the times. These factors combined reduces the operational efficiency of the plants. Hon'ble Commission in its MYT Generation Regulation has revised the operating norms of the generating stations of the Petitioner, thereby making it increasingly difficult for the Petitioner to run the vintage plants at their stipulate norms. This leads to significant disallowance of the cost of generation for the Petitioner and therefore the Petitioner prays leave for the same. The Petitioner therefore requests the Hon'ble UPERC to allow for actual generation operational norms at the time of true up for the above generating stations.

### **b. Employee Cost**

The employee cost for the generating stations of the Petitioner is currently serviced through a portion of the Operation and Maintenance (O&M) Expenses. Norms for O&M expenses have been prescribed through clause 24(iv) of the Generation MYT Regulations, 2019. However, such norms do not consider the effect of any pay revision within the control period. It is submitted by the Petitioner that the impact of the 7<sup>th</sup> pay Commission revision is yet to be ascertained in entirety and craves leave for claiming the same at actuals during the time of true up. In the matter the observation of the Hon'ble Commission in Tariff Order dated 29<sup>th</sup> April 2017 is as follows

*"Elements of Arrears of seventh pay commission including Pension, gratuity and provident fund*

*Amdeed*

*Dr. Suman*

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contribution thereon shall be claimed by UPRVUNL from the beneficiaries on providing the details of actual payments”

**c. Annual Payment of Statutory Charges like Water Cost, Water Cess, Payment to Pollution Control Board, Regulatory Fee, etc**

In the Multi Year Tariff Petition for FY 2018-19 to FY 2023-24, the Petitioner has not separately sought recovery of ‘duties, taxes payable to Government or local authorities (like Water Cost, Water cess, Pollution Cess, Rates and Taxes including Fringe Benefit Tax, Forest Cess) and fees payable to UPERC as separate pass through in Tariff.

However, considering these are payments being statutory in nature and imposed by law, the Petitioner seeks recovery of such items as separate pass through basis as and when they are incurred and paid. In the matter, the erstwhile Generation MYT Regulation may be brought to the notice of the Hon’ble Commission whereby vide Para 25 (iv) (c) of UPERC (Terms & Conditions of Generation Tariff) Regulations 2014 had allowed such items –

“The expenses on regulatory fee, payment to pollution control board, impact of pay revision, capital spares, cost of water and water cess shall be paid additionally at actuals subject to prudence check”.

In the matter, the Commission in its Review order dated 18<sup>th</sup> January 2018 had observed:

*“Recovery of Statutory charges and Tax on income etc. like water cess, cost of water, payment to Pollution Control Board, rates and taxes, FBT and Regulatory Fee paid to the Commission and taxes on income etc., on production of details of actual payments made and duly supported with the certificate of the Statutory Auditors. UPRVUNL has claimed certain additional charges as variable charges towards other fuel related costs, station supplies, lubricants and consumables critical to the generating stations as separate pass through on actuals. The same is allowed for the consideration period of MYT subject to verification of audited accounts at the time when true up would be considered by the Commission.”*

**d. Finance & Bank Charges**

The Finance charges, guarantee fees and bank charges remain un-recovered as the regulations do not provide for them explicitly. These costs are incidental with rising of debt. The Hon’ble Commission had allowed such expenses in the Tariff Order for FY 2008-09. The Petitioner cannot project such expenses as the likely impact & incidence of charges varies from situation to situation.

For example, in the past the GoUP has levied guarantee fees on some loans guaranteed by it, however in other cases it has also given a waiver on guarantee fees. The Petitioner requests the Hon’ble Commission to allow such charges as separate pass through in tariff based on actual payment.

*Sander*

*M. Sanyal*

*N. Sanyal*

*( इ० रमेश चन्द्र )*  
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**e. Return on Equity**

The present MYT Petition has been filed considering Return on Equity (ROE) as per the stipulated norms of 15.0% for generating stations of the Petitioner, as per the MYT Generation Tariff Regulations, 2019. However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same.

**f. Incentive**

The Petitioner was entitled to recover the Incentives in terms of the Tariff Regulations-2014 of the Commission for the control period of FY 2014-15 to FY 2018-19 and have raised the Bill for the period. The Petitioner is also entitled to recover the Incentives in terms of the Tariff Regulations-2019 of the Commission for the control period FY 2019-20 to 2023-24 at Rate allowed by the Hon'ble Commission, therefore Petitioner is not making any specific submission here.


**g. Taxes on Income**

The tariff regulations issued by the Commission provides that tax on the income streams of the generating company from its core business shall be computed as an expense and shall be permitted to be recovered. The income tax shall be recovered through the mechanism of tax escrow account.

**h. Provision for Annual Truing Up**

The Hon'ble Commission has not accepted the suggestion made by the Petitioner during the stakeholder consultation process in respect of the provision for annual truing up. Further, the provision for mid-term review performance / truing up as allowed in certain other State Commissions have not been considered in the Final Generation Tariff Regulations, 2019.

In this regard, the Petitioner seeks to make the submission to the Hon'ble Commission towards consideration of Annual truing up instead of Truing up at the end of the control period which can ensure that there is no overhang on the balance sheets and there is no burden of carrying cost on the beneficiaries resulting in higher tariffs in later years.



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**i. Sharing of Efficiency Gains at Corporate Basis on overall efficiency gain instead of Station wise**

The Petitioner would also emphasise on the fact that the Hon'ble Commission as per Regulation 34(3) mentioned that efficiency gains on account of controllable factors like (i)GSHR (ii) SFO (iii) AEC, and (iv) Re-financing of loan, shall be shared station-wise between the Generating Company and the Beneficiary. It is pertinent to mention that the above factors are dependent on the scheduled capacity of the Generating Station. If a Generating Unit operates at Technical Minimum or a capacity close to Technical Minimum, then the Station Heat Rate, Auxiliary Energy Consumption and Secondary Fuel Oil Consumption increase. In such a situation the Energy Charge Rate of the Generation Unit/ Plant is also set to increase. The Hon'ble Commission has possibly not given attention to this situation.

As per the present Regulation-2019, the UPRVUNL is required to share its efficiency gain with the Beneficiary but there is no provision to pass-on or share the loss due to lower scheduling by the Beneficiary.

On account of the above, the profit due to efficiency gain should be shared with the Beneficiary on a Corporate level i.e. on overall profit of the UPRVUNL due to efficiency gain instead of Station wise sharing of the efficiency gain. Also to apprise the Hon'ble Commission that UPRVUNL pay its Income tax at Corporate level i.e. on overall profit of the Company.

*Sandeep*

*Sugan*

*~ 11K*

*(Signature)*  
( इ० सोम चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उ०प्र०रा०वि०उ०नि०वि०  
अतिरिक्त अध्यक्ष, विद्युत



**Prayer:**

The Petitioner respectfully prays to the Hon'ble Commission:

1. Accept this Petition as application towards Multi Year Tariff of each Power Station for the control period comprising FY 2019-20 to FY 2023-24.
2. Approve Annual Revenue Requirement for the generating stations of the Petitioner for each of the Financial years of the period 2019-20 to 2023-24.
3. Accept this Petition for provisional Capital cost of Harduaganj Extension-II and determine provisional tariff for the years FY 2019-20 onwards based on such provisional Capital cost.
4. Permit recovery of Statutory charges like water cost, water cess, payment to Pollution Control Board, Regulatory fee, Tax on income including Fringe Benefit Tax, Forest cess, 7<sup>th</sup> pay Commission revision impact, Gratuity and Provident fund etc. and others as it was allowed in Tariff Order for MYT period FY 2014-15 to FY 2018-19.
5. Permit efficiency gain shared with beneficiaries on a corporate level as overall basis instead of station wise.
6. Permit recovery of expenses understated/ not considered in this Petition subsequent to the submission of this petition.
7. Condone any inadvertent omissions / errors / short comings and permit the applicant to add /change /modify / alter this Petition and make further submissions as may be required at later stages from time to time.
8. Pass such orders as Hon'ble Commission may deem fit and proper and necessary in the facts and circumstances of the case, to grant relief to the petitioner.



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शक्ति भवन विस्तार, लखनऊ

# **ANPARA 'A' THERMAL POWER STATION**

## **MULTI YEAR TARIFF PETITION**

**FOR**

**DETERMINATION OF TARIFF FOR**

**CONTROL PERIOD**

**FY 2019-20 to FY 2023-24**



**UP RAJYA VIDYUT UTPADAN NIGAM LTD.**

(इं० रमेश चन्द्र)  
मुख्य अभियन्ता (यांत्रिक)  
अनपरा वि० उ० नि० वि०  
संवि० वि० विस्तार, लखनऊ

*Sandeep*

*M. Sanyal*



## 1. ANNUAL REVENUE REQUIREMENT & MULTI-YEAR TARIFF PETITION OF 'ANPARA A TPS'

The following sections detail the Annual Revenue Requirement and Tariff Petition of Anpara ATPS for the five year control period of FY 2019-20 to FY 2023-24.

### 1.1. Annual Capacity (Fixed Charges) Charges

As per tariff regulations the annual capacity (fixed) charges consist of




- a. Interest on Loan Capital
- b. Depreciation including Advance against Depreciation
- c. Return on Equity
- d. Operation and maintenance expenses including insurance and
- e. Interest on Working Capital

#### 1.1.1. Gross Fixed Assets

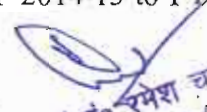
Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

ANPARA 'A'\_MYT Petition for Determination of Tariff

  
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In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. However, no additional capitalization is being envisaged at this stage during the next control period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**




(All figures in RsCrS)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	1,026.84	1,026.84	1,026.84	1,026.84	1,026.84
Capitalisation	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	1,026.84	1,026.84	1,026.84	1,026.84	1,026.84

#### 1.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

ANPARA 'A' MYT Petition for Determination of Tariff

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**Table: Calculation of GFA, NFA and its financing***Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	1,026.84	1,026.84	1,026.84	1,026.84	1,026.84
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>1,026.84</b>	<b>1,026.84</b>	<b>1,026.84</b>	<b>1,026.84</b>	<b>1,026.84</b>
<b>Closing Net FA</b>	<b>102.68</b>	<b>102.68</b>	<b>102.68</b>	<b>102.68</b>	<b>102.68</b>
<b>Financing:</b>					
Opening Equity	283.76	283.76	283.76	283.76	283.76
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>283.76</b>	<b>283.76</b>	<b>283.76</b>	<b>283.76</b>	<b>283.76</b>
Open. Accumulated Depreciation	901.90	924.16	924.16	924.16	924.16
Depreciation during the year	22.26	-	-	-	-
<b>Closing Accumulated Depreciation</b>	<b>924.16</b>	<b>924.16</b>	<b>924.16</b>	<b>924.16</b>	<b>924.16</b>
Opening Debts	-	-	-	-	-
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	-	-	-	-	-
<b>Closing Debts</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**1.1.3. Interest on Loan Capital**

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year

ANPARA 'A'\_MYT Petition for Determination of Tariff

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accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.50%, the interest on loan capital has been worked out in the table below:




**Table: Summary of Interest on Loan for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	-	-	-	-	-
Additions	-	-	-	-	-
Less: Normative repayment	-	-	-	-	-
<b>Closing Debts</b>	-	-	-	-	-
Average Debt	-	-	-	-	-
<b>Interest on Loan</b>	-	-	-	-	-

#### 1.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

ANPARA 'A' MYT Petition for Determination of Tariff

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The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

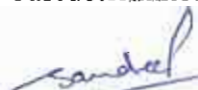
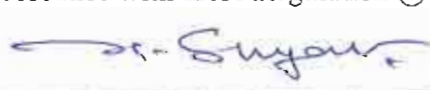

**Table: Depreciation Summary for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	54.25	54.25	54.25	54.25	54.25
Allowable Depreciation subject to maximum of 90% of the Capital Cost	22.26	0.00	0.00	0.00	0.00

#### 1.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity basedetermined in accordance with these Regulation @15.0% per annum.

ANPARA 'A' MYT Petition for Determination of Tariff

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The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	283.76	283.76	283.76	283.76	283.76
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>283.76</b>	<b>283.76</b>	<b>283.76</b>	<b>283.76</b>	<b>283.76</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>42.56</b>	<b>42.56</b>	<b>42.56</b>	<b>42.56</b>	<b>42.56</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 1.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)&Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)&Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

ANPARA 'A'\_MYT Petition for Determination of Tariff

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Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	630	630	630	630	630
Norms	32.96	34.12	35.31	36.56	37.84
<b>O&amp;M Expenses</b>	<b>207.65</b>	<b>214.96</b>	<b>222.45</b>	<b>230.33</b>	<b>238.39</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.


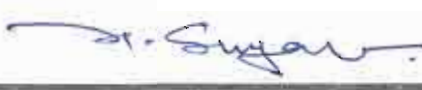


Provided that the generating station shall submit the details of year wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 1.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

ANPARA 'A' MYT Petition for Determination of Tariff

( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उपप्र० रा० वि० उ० नि० वि०  
शक्ति भवन वि०, लखनऊ



- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCr)

Anpara A	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	63.88	67.07	70.43	73.95	77.65
Cost of Main Secondary Fuel Oil	2.26	2.37	2.49	2.61	2.74
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	17.30	17.91	18.54	19.19	19.87
Maintenance Spares	41.53	42.99	44.49	46.07	47.68
Receivables	135.51	138.69	144.93	151.49	158.35
Total Working Capital	260.48	269.04	280.88	293.31	306.28
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>35.95</b>	<b>37.13</b>	<b>38.76</b>	<b>40.48</b>	<b>42.27</b>

ANPARA 'A' MYT Petition for Determination of Tariff

(हो. रमेश चन्द.)  
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### 1.1.8. Summary of Annual Capacity (Fixed) Charges

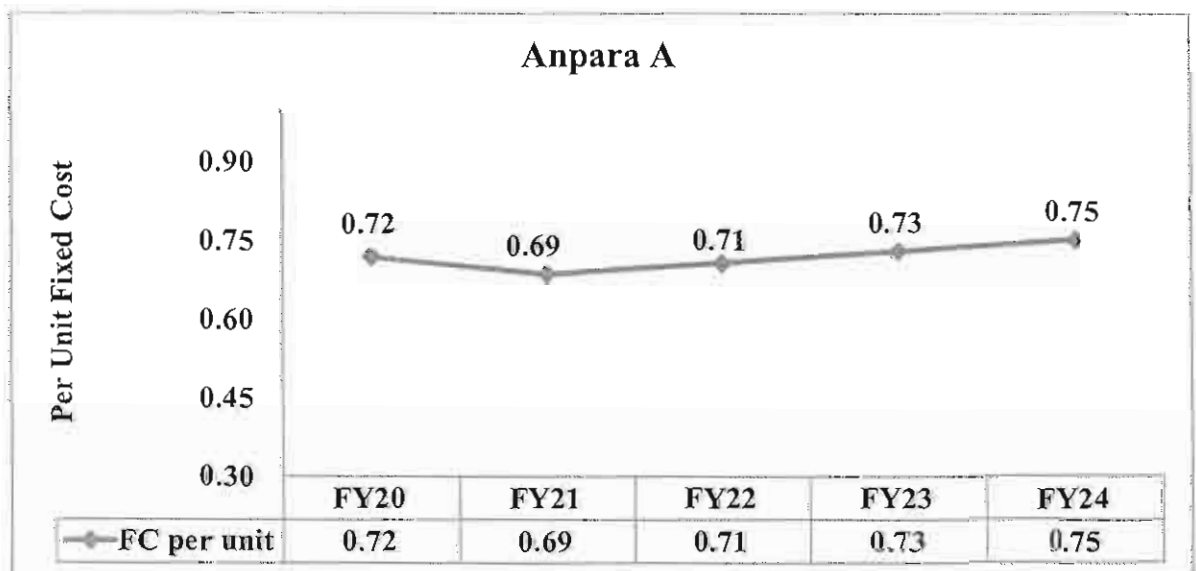
In view of the above submissions, the fixed cost of the Petitioner's Anpara A TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	22.26	0.00	0.00	0.00	0.00
Interest on Loan Capital	0.00	0.00	0.00	0.00	0.00
Return on Equity	42.56	42.56	42.56	42.56	42.56
O&M Expenses	207.65	214.96	222.45	230.33	238.39
Interest on Working Capital	35.95	37.13	38.76	40.48	42.27
<b>Total Capacity Charges</b>	<b>308.42</b>	<b>294.65</b>	<b>303.78</b>	<b>313.37</b>	<b>323.22</b>
Energy ex bus	4292	4292	4292	4292	4292
<b>FC per unit</b>	<b>0.72</b>	<b>0.69</b>	<b>0.71</b>	<b>0.73</b>	<b>0.75</b>

**Graph: Fixed Cost per unit in the Control Period**



## 1.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	8.50%	8.50%	8.50%	8.50%	8.50%
Gross Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges(Annexure-1). The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	MW	630	630	630	630	630
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Auxiliary Energy Consumption	%	8.5%	8.5%	8.5%	8.5%	8.5%
Energy Generation - Gross	MU	4,691	4,691	4,691	4,691	4,691
Auxiliary Energy Consumption	MU	399	399	399	399	399
Ex-bus Energy Sent Out	MU	4,292	4,292	4,292	4,292	4,292
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	10,619	10,619	10,619	10,619	10,619
Price of Oil	Rs./KL	57,722	60,608	63,638	66,820	70,161

ANPARA 'A' MYT Petition for Determination of Tariff

*Sandeep*

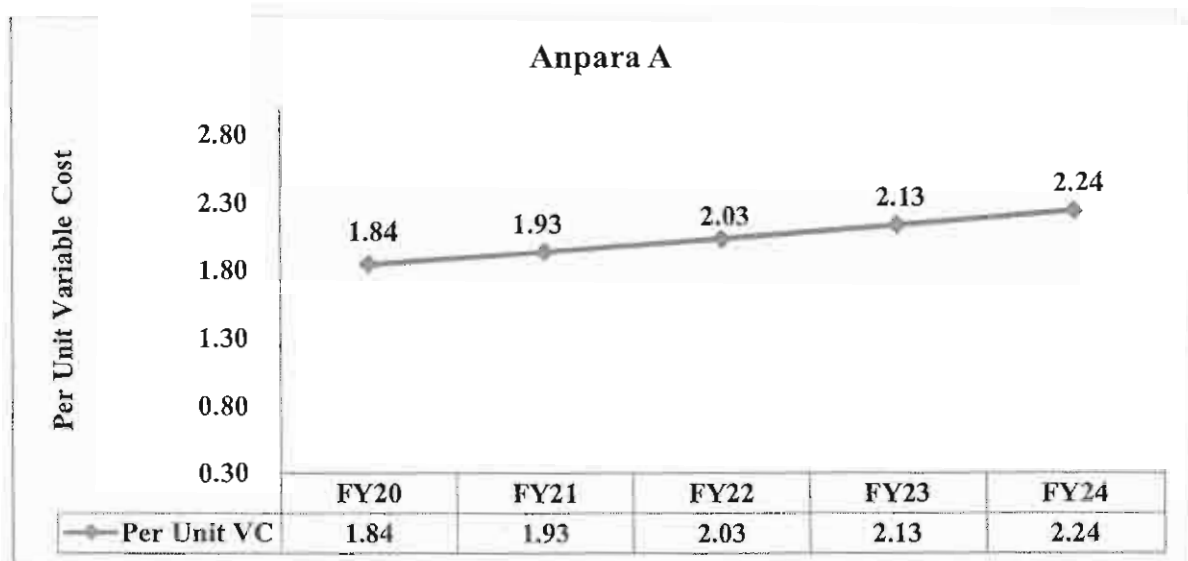
*Dr. Shyam*

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विद्युत विभाग, दिल्ली



Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Wt. Avg. GCV of Coal	kCal/kg	3681	3681	3681	3681	3681
Price of Coal	Rs./MT	2515	2641	2773	2912	3058
Heat Contribution from SFO	Kcal/kWh	5.31	5.31	5.31	5.31	5.31
Oil Consumption	KL	2345	2345	2345	2345	2345
Heat Contribution from Coal	Kcal/kWh	2425	2425	2425	2425	2425
Specific Coal Consumption	kg/kWh	0.66	0.66	0.66	0.66	0.66
Coal Consumption	MMT	3.09	3.09	3.09	3.09	3.09
Total Cost of Oil	Rs Cr	13.54	14.22	14.93	15.67	16.46
Total Cost of Coal	Rs Cr	777.20	816.06	856.86	899.70	944.69
Total Fuel Cost	Rs Cr	790.74	830.27	871.79	915.38	961.14
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	3.15	3.31	3.48	3.65	3.83
Rate of Energy Charge from Coal ex-bus	Paise/kWh	181.07	190.12	199.63	209.61	220.09
Rate of Energy Charge ex-bus per kWh	Paise/kWh	184.22	193.44	203.11	213.26	223.93

**Graph: Variable Cost per unit in the Control Period**



### 1.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*Sandeep*

*M. Shyam*

*[Signature]*

*[Signature]*

ANPARA 'A'\_MYT Petition for Determination of Tariff

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*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

*Sandeep*

*Singh*

*Signature*

*(Signature)*

( इ० रमेश चन्द्र )

मुख्य अभियन्ता (वित्तिय)  
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ANPARA 'A'\_MYT Petition for Determination of Tariff

# **ANPARA 'B' THERMAL POWER STATION**

## **MULTI YEAR TARIFF PETITION**

**FOR**

**DETERMINATION OF TARIFF FOR**

**CONTROL PERIOD**

**FY 2019-20 to FY 2023-24**



*Sandesh*

*Singh*

*Surk*

*[Signature]*

**UP RAJYA VIDYUT UTPADAN NIGAM LTD**

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## 1. ANNUAL REVENUE REQUIREMENT & MULTI-YEAR TARIFF PETITION OF 'ANPARA B TPS'

The following sections detail the Annual Revenue Requirement and Tariff Petition of Anpara B TPS for the five year control period of FY 2019-20 to FY 2023-24.

### 1.1. Annual Capacity (Fixed Charges) Charges

As per tariff regulations the annual capacity (fixed) charges consist of

- a. Interest on Loan Capital
- b. Depreciation including Advance against Depreciation
- c. Return on Equity
- d. Operation and maintenance expenses including insurance and
- e. Interest on Working Capital

#### 1.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

ANPARA 'B'\_MYT Petition for Determination of Tariff

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शक्ति भवन विस्तार, लखनऊ

In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. However, no additional capitalization is being envisaged at this stage during the next control period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**





(All figures in RsCr)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	5,150.48	5,150.48	5,150.48	5,150.48	5,150.48
Capitalisation	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	5,150.48	5,150.48	5,150.48	5,150.48	5,150.48

#### 1.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

ANPARA 'B' MYT Petition for Determination of Tariff

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**Table: Calculation of GFA, NFA and its financing**


*Figures in Rs Crore*

<b>MoF</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Opening GFA	5,150.48	5,150.48	5,150.48	5,150.48	5,150.48
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>5,150.48</b>	<b>5,150.48</b>	<b>5,150.48</b>	<b>5,150.48</b>	<b>5,150.48</b>
<b>Closing Net FA</b>	<b>515.05</b>	<b>515.05</b>	<b>515.05</b>	<b>515.05</b>	<b>515.05</b>
<b>Financing:</b>					
Opening Equity	1,405.41	1,405.41	1,405.41	1,405.41	1,405.41
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>1,405.41</b>	<b>1,405.41</b>	<b>1,405.41</b>	<b>1,405.41</b>	<b>1,405.41</b>
Open. Accumulated Depreciation	4,635.43	4,635.43	4,635.43	4,635.43	4,635.43
Depreciation during the year	-	-	-	-	-
<b>Closing Accumulated Depreciation</b>	<b>4,635.43</b>	<b>4,635.43</b>	<b>4,635.43</b>	<b>4,635.43</b>	<b>4,635.43</b>
Opening Debts	-	-	-	-	-
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	-	-	-	-	-
<b>Closing Debts</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

### 1.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year  
ANPARA 'B' MYT Petition for Determination of Tariff

  
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accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.50%, the interest on loan capital has been worked out in the table below:



**Table: Summary of Interest on Loan for the Control Period**

*(All figures in RsCr/s)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	-	-	-	-	-
Additions	-	-	-	-	-
Less: Normative repayment	-	-	-	-	-
<b>Closing Debts</b>	-	-	-	-	-
Average Debt	-	-	-	-	-
<b>Interest on Loan</b>	-	-	-	-	-

#### 1.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

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The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

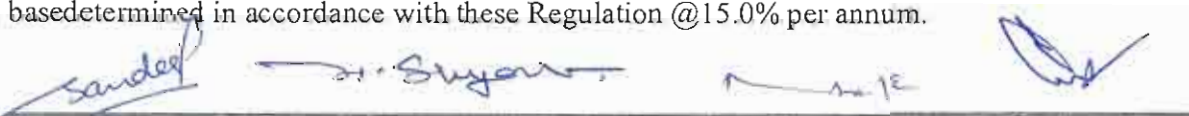
**Table: Depreciation Summary for the Control Period**

(All figures in RsCr)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	289.63	289.63	289.63	289.63	289.63
Allowable Depreciation subject to maximum of 90% of the Capital Cost	0.00	0.00	0.00	0.00	0.00

#### 1.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity basedetermined in accordance with these Regulation @15.0% per annum.

  
ANPARA 'B' MYT Petition for Determination of Tariff  
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The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	1,405.41	1,405.41	1,405.41	1,405.41	1,405.41
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>1,405.41</b>	<b>1,405.41</b>	<b>1,405.41</b>	<b>1,405.41</b>	<b>1,405.41</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>210.81</b>	<b>210.81</b>	<b>210.81</b>	<b>210.81</b>	<b>210.81</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 1.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)&Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)&Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

ANP/ARA 'B' MYT Petition for Determination of Tariff

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Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	1000	1000	1000	1000	1000
Norms	22.51	23.30	24.12	24.97	25.84
<b>O&amp;M Expenses</b>	<b>225.10</b>	<b>233.00</b>	<b>241.20</b>	<b>249.70</b>	<b>258.40</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.


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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 1.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:



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ANPARA 'B' MYT Petition for Determination of Tariff

( ई० रमेश चन्द्र )  
 मुख्य अभियन्ता (वाणिज्य)  
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- i. Cost of coal 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 stock storage capacity whichever is lower
- ii. Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- iii. Operation and Maintenance expenses including water charges for one month;
- iv. Maintenance spares @ 20% of operation and maintenance expenses; and
- v. Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCr/s)

Anpara B	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	100.77	105.81	111.10	116.66	122.49
Cost of Main Secondary Fuel Oil	3.58	3.76	3.95	4.15	4.35
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	18.76	19.42	20.10	20.81	21.53
Maintenance Spares	45.02	46.60	48.24	49.94	51.68
Receivables	214.06	223.00	232.38	242.21	252.51
Total Working Capital	382.19	398.59	415.77	433.76	452.56
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>52.74</b>	<b>55.01</b>	<b>57.38</b>	<b>59.86</b>	<b>62.45</b>

*Sandeep*

*M. Sanyal*

*R. K. Singh*

*(Signature)*

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### 1.1.8. Summary of Annual Capacity (Fixed) Charges

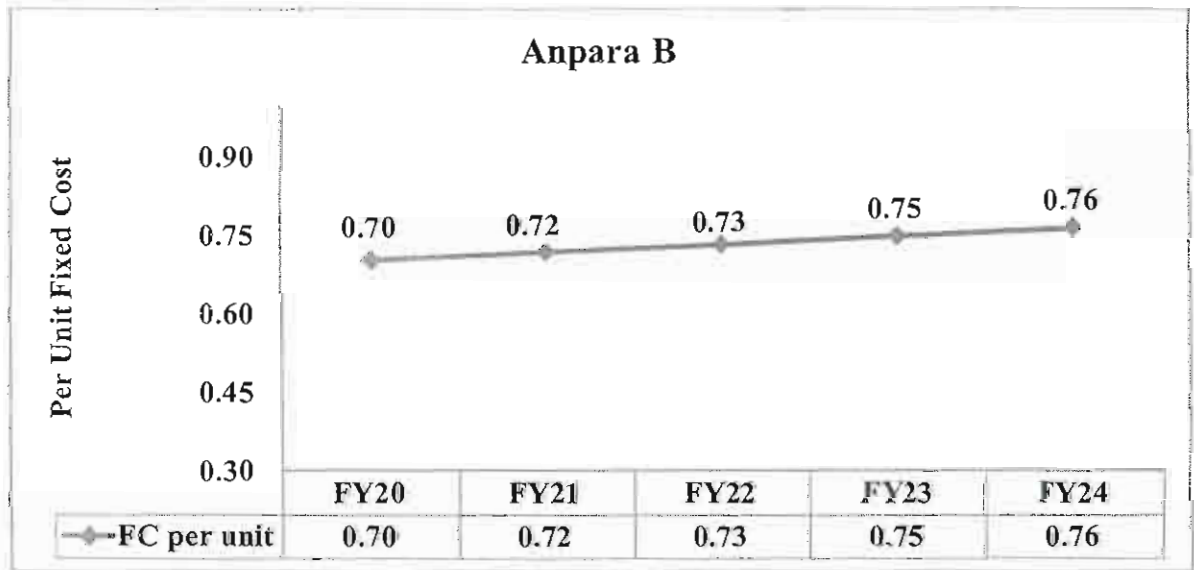
In view of the above submissions, the fixed cost of the Petitioner's Anpara B TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	0.00	0.00	0.00	0.00	0.00
Interest on Loan Capital	0.00	0.00	0.00	0.00	0.00
Return on Equity	210.81	210.81	210.81	210.81	210.81
O&M Expenses	225.10	233.00	241.20	249.70	258.40
Interest on Working Capital	52.74	55.01	57.38	59.86	62.45
<b>Total Capacity Charges</b>	<b>488.65</b>	<b>498.82</b>	<b>509.39</b>	<b>520.37</b>	<b>531.67</b>
Energy ex bus	6958	6958	6958	6958	6958
<b>FC per unit</b>	<b>0.70</b>	<b>0.72</b>	<b>0.73</b>	<b>0.75</b>	<b>0.76</b>

**Graph: Fixed Cost per unit in the Control Period**



*Sandeep*

*Dr. Sanyal*

*Mark*

*(Signature)*

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## 1.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24.

Further, it is humbly submitted that Anpara B Power Plant has a tube-type coal mill installed in the plant design. As per Regulation 26 Clause (v) sub-clause (a) the UPERC (Terms and Conditions of Generation Tariff) Regulations, 2019 stipulate

*“..Provided further that for thermal generating stations with induced draft cooling towers and where tube type coal mill is used, the norms shall be further increased by 0.5% and 0.8% respectively..”*

In light of the above, the Petitioner claims the same relaxed norm at 6.55% instead of the normative 5.75% for 500 MW and above series of unit sizes. In regards of the same, relevant drawing of Mill assembly from the OEM (M/S STEIN INDUSTRIE) has been furnished as Annexure-2

### Table Normative Operating Parameters for the Control Period

As per Tariff Generation Regulations for MYT FY 2020 to FY 2023						
Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	6.55%	6.55%	6.55%	6.55%	6.55%
Gross Heat Rate	Kcal/kWh	2390	2390	2390	2390	2390
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges(Annexure-1). The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24.

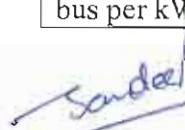
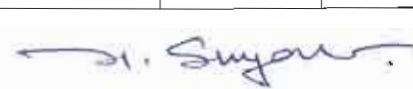

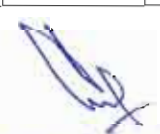
Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing forms prescribed by the Hon'ble Commission)

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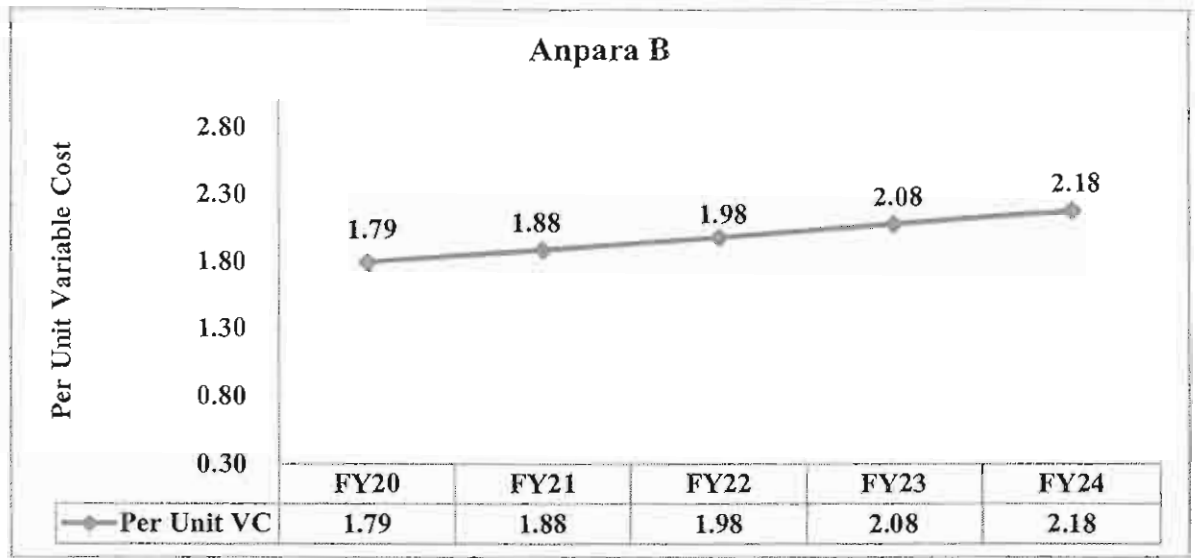
**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	MW	1000	1000	1000	1000	1000
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2390	2390	2390	2390	2390
Auxiliary Energy Consumption	%	6.55%	6.55%	6.55%	6.55%	6.55%
Energy Generation - Gross	MU	7,446	7,446	7,446	7,446	7,446
Auxiliary Energy Consumption	MU	488	488	488	488	488
Ex-bus Energy Sent Out	MU	6,958	6,958	6,958	6,958	6,958
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	10,619	10,619	10,619	10,619	10,619
Price of Oil	Rs./KL	57,722	60,608	63,638	66,820	70,161
Wt. Avg. GCV of Coal	kCal/kg	3628	3628	3628	3628	3628
Price of Coal	Rs./MT	2505	2631	2762	2900	3045
Heat Contribution from SFO	Kcal/kWh	5.31	5.31	5.31	5.31	5.31
Oil Consumption	KL	3723	3723	3723	3723	3723
Heat Contribution from Coal	Kcal/kWh	2385	2385	2385	2385	2385
Specific Coal Consumption	kg/kWh	0.66	0.66	0.66	0.66	0.66
Coal Consumption	MMT	4.89	4.89	4.89	4.89	4.89
Total Cost of Oil	Rs Cr	21.49	22.56	23.69	24.88	26.12
Total Cost of Coal	Rs Cr	1,226.09	1,287.39	1,351.76	1,419.35	1,490.32
Total Fuel Cost	Rs Cr	1,247.58	1,309.95	1,375.45	1,444.22	1,516.44
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	3.09	3.24	3.40	3.58	3.75
Rate of Energy Charge from Coal ex-bus	Paise/kWh	176.21	185.02	194.27	203.98	214.18
Rate of Energy Charge ex-bus per kWh	Paise/kWh	179.29	188.26	197.67	207.55	217.93

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Graph: Variable Cost per unit in the Control Period



#### 1.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

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# **ANPARA 'D' THERMAL POWER STATION**

## **MULTI YEAR TARIFF PETITION**

**FOR**

**DETERMINATION OF TARIFF FOR**

**CONTROL PERIOD**

**FY 2019-20 to FY 2023-24**



**UP RAJYA VIDYUT UTPADAN NIGAM LTD**

*Sandeep*  
A.E.

*S. Sanyal*

*N. K.*

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## 1. ANNUAL REVENUE REQUIREMENT & MULTI-YEAR TARIFF PETITION OF 'ANPARA D TPS'

The following sections detail the Annual Revenue Requirement and Tariff Petition of Anpara DTPS for the five year control period of FY 2019-20 to FY 2023-24.

### 1.1. Annual Capacity (Fixed Charges) Charges

As per tariff regulations the annual capacity (fixed) charges consist of

- a. Interest on Loan Capital
- b. Depreciation including Advance against Depreciation
- c. Return on Equity
- d. Operation and maintenance expenses including insurance and
- e. Interest on Working Capital

#### 1.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly tried up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

ANPARA 'D' MYT Petition for Determination of Tariff

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In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. However, no additional capitalization is being envisaged at this stage during the next control period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

(All figures in RsCr)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	7,155.73	7,155.73	7,155.73	7,155.73	7,155.73
Capitalisation	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	7,155.73	7,155.73	7,155.73	7,155.73	7,155.73

#### 1.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

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**Table: Calculation of GFA, NFA and its financing***Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	7,155.73	7,155.73	7,155.73	7,155.73	7,155.73
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>7,155.73</b>	<b>7,155.73</b>	<b>7,155.73</b>	<b>7,155.73</b>	<b>7,155.73</b>
<b>Closing Net FA</b>	<b>5,632.75</b>	<b>5,249.87</b>	<b>4,866.99</b>	<b>4,484.11</b>	<b>4,101.23</b>
<b>Financing:</b>					
Opening Equity	2,136.88	2,136.88	2,136.88	2,136.88	2,136.88
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>2,136.88</b>	<b>2,136.88</b>	<b>2,136.88</b>	<b>2,136.88</b>	<b>2,136.88</b>
Open. Accumulated Depreciation	1,140.10	1,522.99	1,905.87	2,288.75	2,671.63
Depreciation during the year	382.88	382.88	382.88	382.88	382.88
<b>Closing Accumulated Depreciation</b>	<b>1,522.99</b>	<b>1,905.87</b>	<b>2,288.75</b>	<b>2,671.63</b>	<b>3,054.51</b>
Opening Debts	3,868.91	3,486.03	3,103.15	2,720.27	2,337.39
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	382.88	382.88	382.88	382.88	382.88
<b>Closing Debts</b>	<b>3,486.03</b>	<b>3,103.15</b>	<b>2,720.27</b>	<b>2,337.39</b>	<b>1,954.50</b>

**1.1.3. Interest on Loan Capital**

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year

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accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.50%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

(All figures in RsCrS)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	3,868.91	3,486.03	3,103.15	2,720.27	2,337.39
Additions	-	-	-	-	-
Less: Normative repayment	382.88	382.88	382.88	382.88	382.88
<b>Closing Debts</b>	<b>3,486.03</b>	<b>3,103.15</b>	<b>2,720.27</b>	<b>2,337.39</b>	<b>1,954.50</b>
Average Debt	3,677.47	3,294.59	2,911.71	2,528.83	2,145.95
<b>Interest on Loan</b>	<b>422.91</b>	<b>378.88</b>	<b>334.85</b>	<b>290.82</b>	<b>246.78</b>

#### 1.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	382.88	382.88	382.88	382.88	382.88
Allowable Depreciation subject to maximum of 90% of the Capital Cost	382.88	382.88	382.88	382.88	382.88

#### 1.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity basedetermined in accordance with these Regulation @15.0% per annum.



The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCr)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	2,136.88	2,136.88	2,136.88	2,136.88	2,136.88
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>2,136.88</b>	<b>2,136.88</b>	<b>2,136.88</b>	<b>2,136.88</b>	<b>2,136.88</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>320.53</b>	<b>320.53</b>	<b>320.53</b>	<b>320.53</b>	<b>320.53</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 1.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)&Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)&Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

ANPARA DMYT Petition for Determination of Tariff

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Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	1000	1000	1000	1000	1000
Norms	22.51	23.30	24.12	24.97	25.84
<b>O&amp;M Expenses</b>	<b>225.10</b>	<b>233.00</b>	<b>241.20</b>	<b>249.70</b>	<b>258.40</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 1.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

ANPARA 'B' MYT Petition for Determination of Tariff

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*Shyam*

*(Dr. Ramesh Chandra)*  
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- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCr/s)

Anpara D	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	94.60	99.33	104.30	109.51	114.99
Cost of Main Secondary Fuel Oil	3.58	3.76	3.95	4.15	4.35
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	18.76	19.42	20.10	20.81	21.53
Maintenance Spares	45.02	46.60	48.24	49.94	51.68
Receivables	319.36	322.30	325.66	329.44	333.66
Total Working Capital	481.32	491.41	502.25	513.85	526.22
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>66.42</b>	<b>67.81</b>	<b>69.31</b>	<b>70.91</b>	<b>72.62</b>

*Sandeep*

ANPARA 'D'\_MYT Petition for Determination of Tariff

*S. Swamy*

*2012*

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### 1.1.8. Summary of Annual Capacity (Fixed) Charges

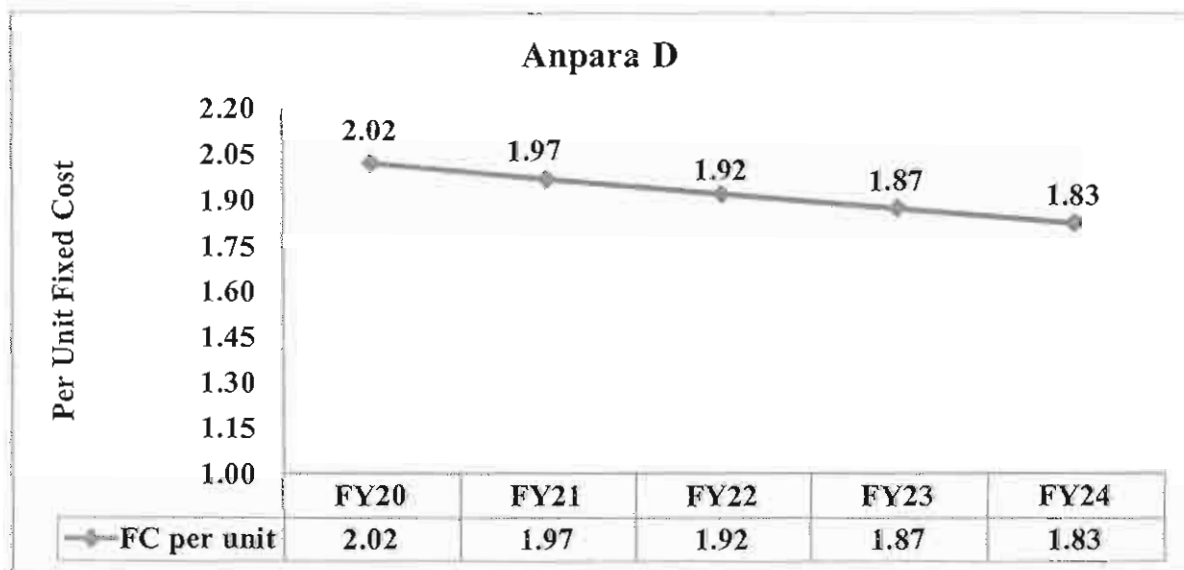
In view of the above submissions, the fixed cost of the Petitioner's Anpara D TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	382.88	382.88	382.88	382.88	382.88
Interest on Loan Capital	422.91	378.88	334.85	290.82	246.78
Return on Equity	320.53	320.53	320.53	320.53	320.53
O&M Expenses	225.10	233.00	241.20	249.70	258.40
Interest on Working Capital	66.42	67.81	69.31	70.91	72.62
<b>Total Capacity Charges</b>	<b>1417.84</b>	<b>1383.11</b>	<b>1348.77</b>	<b>1314.84</b>	<b>1281.22</b>
Energy ex bus	7018	7018	7018	7018	7018
<b>FC per unit</b>	<b>2.02</b>	<b>1.97</b>	<b>1.92</b>	<b>1.87</b>	<b>1.83</b>

**Graph: Fixed Cost per unit in the Control Period**



*Sandeep*

*A. Singh*

*N. S. S.*

*(Signature)*

## 1.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

As per Tariff Generation Regulations for MYT FY 2020 to FY 2023						
Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	5.75%	5.75%	5.75%	5.75%	5.75%
Gross Heat Rate	Kcal/kWh	2390	2390	2390	2390	2390
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges(Annexure-1). The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	MW	1000	1000	1000	1000	1000
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2390	2390	2390	2390	2390
Auxiliary Energy Consumption	%	5.75%	5.75%	5.75%	5.75%	5.75%
Energy Generation - Gross	MU	7,446	7,446	7,446	7,446	7,446
Auxiliary Energy Consumption	MU	428	428	428	428	428
Ex-bus Energy Sent Out	MU	7,018	7,018	7,018	7,018	7,018

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*Sander*

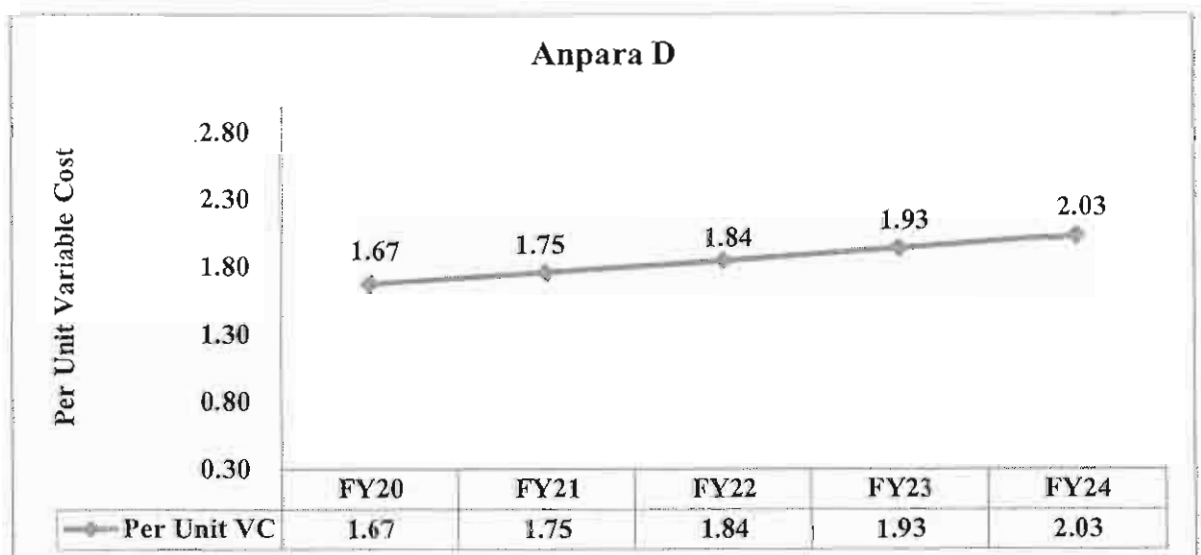
*S. Sanyal*

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Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	10,619	10,619	10,619	10,619	10,619
Price of Oil	Rs./KL	57,722	60,608	63,638	66,820	70,161
Wt. Avg. GCV of Coal	kCal/kg	3722	3722	3722	3722	3722
Price of Coal	Rs./MT	2412	2533	2660	2793	2932
Heat Contribution from SFO	Kcal/kWh	5.31	5.31	5.31	5.31	5.31
Oil Consumption	KL	3723	3723	3723	3723	3723
Heat Contribution from Coal	Kcal/kWh	2385	2385	2385	2385	2385
Specific Coal Consumption	kg/kWh	0.64	0.64	0.64	0.64	0.64
Coal Consumption	MMT	4.77	4.77	4.77	4.77	4.77
Total Cost of Oil	Rs Cr	21.49	22.56	23.69	24.88	26.12
Total Cost of Coal	Rs Cr	1,151.00	1,208.55	1,268.98	1,332.43	1,399.05
Total Fuel Cost	Rs Cr	1,172.49	1,231.12	1,292.67	1,357.31	1,425.17
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	3.06	3.22	3.38	3.54	3.72
Rate of Energy Charge from Coal ex-bus	Paise/kWh	164.01	172.21	180.82	189.86	199.36
Rate of Energy Charge ex-bus per kWh	Paise/kWh	167.07	175.43	184.20	193.41	203.08

**Graph: Variable Cost per unit in the Control Period**







### 1.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.



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**OBRA 'B' THERMAL POWER STATION**

**MULTI YEAR TARIFF PETITION**

**FOR**

**DETERMINATION OF TARIFF FOR**

**CONTROL PERIOD**

**FY 2019-20 to FY 2023-24**



**UP RAJYA VIDYUT UTPADAN NIGAM LTD**

*Sandesh*

*Dr. Suresh Kumar*

( *डॉ. रमेश चन्द्र* )

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## 1. ANNUAL REVENUE REQUIREMENT & MULTI-YEAR TARIFF PETITION OF 'OBRA B TPS'

The following sections detail the Annual Revenue Requirement and Tariff Petition of Obra BTPS for the five year control period of FY 2019-20 to FY 2023-24.

### 1.1. Annual Capacity (Fixed Charges) Charges

As per tariff regulations the annual capacity (fixed) charges consist of

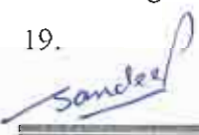
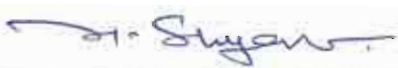

- a. Interest on Loan Capital
- b. Depreciation including Advance against Depreciation
- c. Return on Equity
- d. Operation and maintenance expenses including insurance and
- e. Interest on Working Capital

#### 1.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

    
OBRA 'B' MYT Petition for Determination of Tariff

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In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. However, no additional capitalization is being envisaged at this stage during the next control period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	1,782.45	1,782.45	1,782.45	1,782.45	1,782.45
Capitalisation	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	1,782.45	1,782.45	1,782.45	1,782.45	1,782.45

#### 1.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

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**Table: Calculation of GFA, NFA and its financing**

*Figures in Rs Crore*

<b>MoF</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Opening GFA	1,782.45	1,782.45	1,782.45	1,782.45	1,782.45
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>1,782.45</b>	<b>1,782.45</b>	<b>1,782.45</b>	<b>1,782.45</b>	<b>1,782.45</b>
<b>Closing Net FA</b>	<b>929.12</b>	<b>831.13</b>	<b>733.15</b>	<b>635.16</b>	<b>537.18</b>
<b>Financing:</b>					
Opening Equity	514.38	514.38	514.38	514.38	514.38
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>514.38</b>	<b>514.38</b>	<b>514.38</b>	<b>514.38</b>	<b>514.38</b>
Open. Accumulated Depreciation	755.35	853.33	951.32	1,049.30	1,147.29
Depreciation during the year	97.99	97.99	97.99	97.99	97.99
<b>Closing Accumulated Depreciation</b>	<b>853.33</b>	<b>951.32</b>	<b>1,049.30</b>	<b>1,147.29</b>	<b>1,245.27</b>
Opening Debts	513.14	415.16	317.17	219.19	121.20
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	97.99	97.99	97.99	97.99	97.99
<b>Closing Debts</b>	<b>415.16</b>	<b>317.17</b>	<b>219.19</b>	<b>121.20</b>	<b>23.22</b>

### 1.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year

OBRA 'B'\_MYT Petition for Determination of Tariff

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accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.50%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

(All figures in Rs Crs)

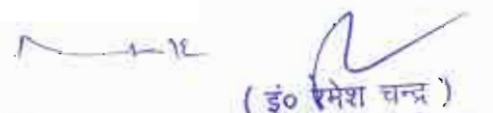
Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	513.14	415.16	317.17	219.19	121.20
Additions	-	-	-	-	-
Less: Normative repayment	97.99	97.99	97.99	97.99	97.99
<b>Closing Debts</b>	<b>415.16</b>	<b>317.17</b>	<b>219.19</b>	<b>121.20</b>	<b>23.22</b>
Average Debt	464.15	366.17	268.18	170.20	72.21
<b>Interest on Loan</b>	<b>53.38</b>	<b>42.11</b>	<b>30.84</b>	<b>19.57</b>	<b>8.30</b>

#### 1.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

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The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	97.99	97.99	97.99	97.99	97.99
Allowable Depreciation subject to maximum of 90% of the Capital Cost	97.99	97.99	97.99	97.99	97.99

#### 1.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity basedetermined in accordance with these Regulation @15.0% per annum.



The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	514.38	514.38	514.38	514.38	514.38
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>514.38</b>	<b>514.38</b>	<b>514.38</b>	<b>514.38</b>	<b>514.38</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>77.16</b>	<b>77.16</b>	<b>77.16</b>	<b>77.16</b>	<b>77.16</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 1.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)& Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)& Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

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Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in Rs Crs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	1000	1000	1000	1000	1000
Norms	32.96	34.12	35.31	36.56	37.84
<b>O&amp;M Expenses</b>	<b>329.60</b>	<b>341.20</b>	<b>353.10</b>	<b>365.60</b>	<b>378.40</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 1.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

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- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in Rs Crs)

Obra B	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	89.10	93.56	98.24	103.15	108.31
Cost of Main Secondary Fuel Oil	13.58	14.26	14.97	15.72	16.50
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	27.47	28.43	29.43	30.47	31.53
Maintenance Spares	65.92	68.24	70.62	73.12	75.68
Receivables	219.58	227.08	234.98	243.36	252.17
Total Working Capital	415.65	431.57	448.23	465.81	484.20
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>57.36</b>	<b>59.56</b>	<b>61.86</b>	<b>64.28</b>	<b>66.82</b>

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### 1.1.8. Summary of Annual Capacity (Fixed) Charges

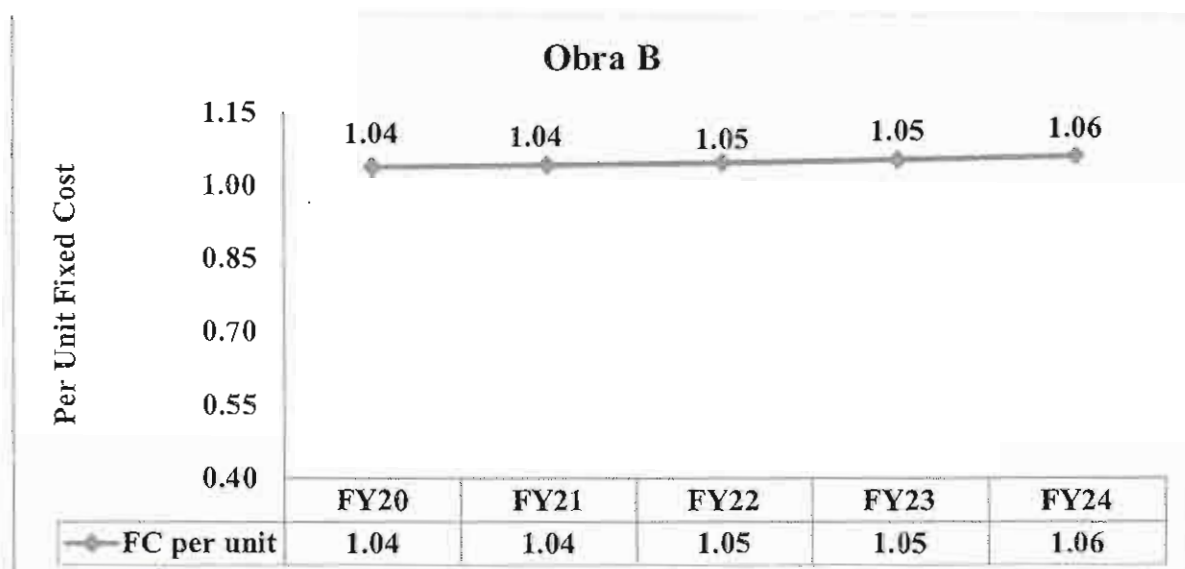
In view of the above submissions, the fixed cost of the Petitioner's Obra B TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	97.99	97.99	97.99	97.99	97.99
Interest on Loan Capital	53.38	42.11	30.84	19.57	8.30
Return on Equity	77.16	77.16	77.16	77.16	77.16
O&M Expenses	329.60	341.20	353.10	365.60	378.40
Interest on Working Capital	57.36	59.56	61.86	64.28	66.82
<b>Total Capacity Charges</b>	<b>615.48</b>	<b>618.01</b>	<b>620.94</b>	<b>624.60</b>	<b>628.67</b>
Energy ex bus	5933	5933	5933	5933	5933
<b>FC per unit</b>	<b>1.04</b>	<b>1.04</b>	<b>1.05</b>	<b>1.05</b>	<b>1.06</b>

**Graph: Fixed Cost per unit in the Control Period**



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## 1.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	75%	75%	75%	75%	75%
Aux Energy Consumption	%	9.70%	9.70%	9.70%	9.70%	9.70%
Gross Heat Rate	Kcal/kWh	2755	2755	2755	2755	2755
Specific Fuel Oil Cons	ml/kWh	2.10	2.10	2.10	2.10	2.10

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges(Annexure-1). The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

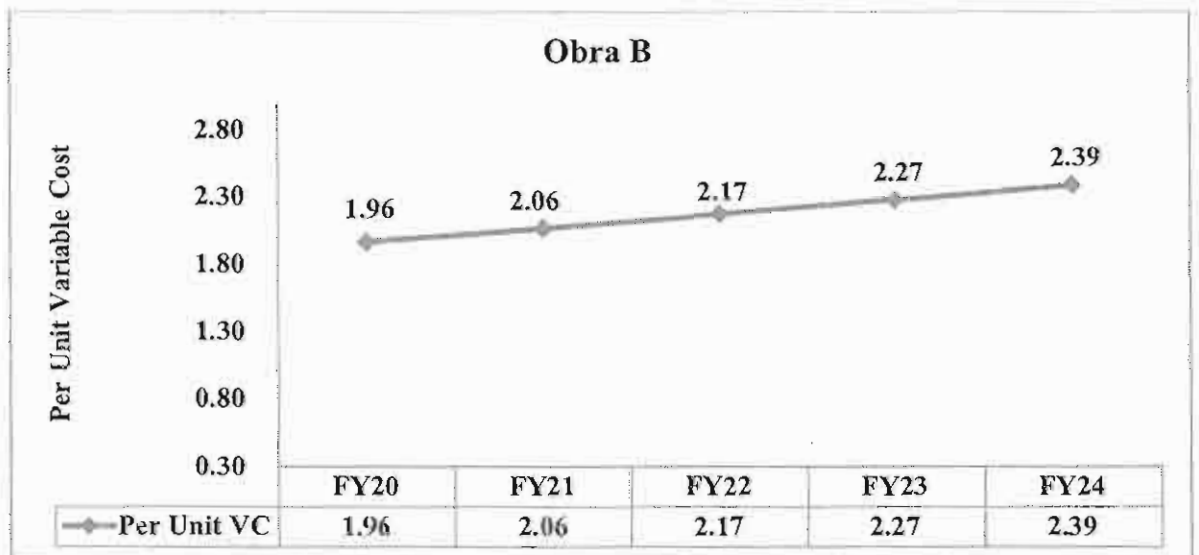
Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	MW	1000	1000	1000	1000	1000
PLF	%	75%	75%	75%	75%	75%
Gross Station Heat Rate	Kcal/kWh	2755	2755	2755	2755	2755
Auxiliary Energy Consumption	%	9.70%	9.70%	9.70%	9.70%	9.70%
Energy Generation - Gross	MU	6,570	6,570	6,570	6,570	6,570
Auxiliary Energy Consumption	MU	637	637	637	637	637
Ex-bus Energy Sent Out	MU	5,933	5,933	5,933	5,933	5,933

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Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Specific Oil Consumption	ml/kWh	2.10	2.10	2.10	2.10	2.10
Wt. Avg. GCV of Oil	KCal/Lt	10,429	10,429	10,429	10,429	10,429
Price of Oil	Rs./KL	59,040	61,992	65,092	68,347	71,764
Wt. Avg. GCV of Coal	kCal/kg	3830	3830	3830	3830	3830
Price of Coal	Rs./MT	2313	2428	2550	2677	2811
Heat Contribution from SFO	Kcal/kWh	21.90	21.90	21.90	21.90	21.90
Oil Consumption	KL	13797	13797	13797	13797	13797
Heat Contribution from Coal	Kcal/kWh	2733	2733	2733	2733	2733
Specific Coal Consumption	kg/kWh	0.71	0.71	0.71	0.71	0.71
Coal Consumption	MMT	4.69	4.69	4.69	4.69	4.69
Total Cost of Oil	Rs Cr	81.46	85.53	89.81	94.30	99.01
Total Cost of Coal	Rs Cr	1,084.11	1,138.31	1,195.23	1,254.99	1,317.74
Total Fuel Cost	Rs Cr	1,165.57	1,223.85	1,285.04	1,349.29	1,416.75
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	13.73	14.42	15.14	15.89	16.69
Rate of Energy Charge from Coal ex-bus	Paise/kWh	182.73	191.87	201.46	211.54	222.11
Rate of Energy Charge ex-bus per kWh	Paise/kWh	196.46	206.29	216.60	227.43	238.80

**Graph: Variable Cost per unit in the Control Period**



### 1.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.



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**HARDUAGANJ UNIT#7**  
**THERMAL POWER STATION**  
**MULTI YEAR TARIFF PETITION**  
**FOR**  
**DETERMINATION OF TARIFF FOR**  
**CONTROL PERIOD**  
**FY 2019-20 to FY 2023-24**



**UP RAJYA VIDYUT UTPADAN NIGAM LTD**

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## 1. ANNUAL REVENUE REQUIREMENT & MULTI-YEAR TARIFF PETITION OF 'HARDUAGANJ U#7 TPS'

The following sections detail the Annual Revenue Requirement and Tariff Petition of Harduaganj U#7TPS for the five year control period of FY 2019-20 to FY 2023-24.

### 1.1. Annual Capacity (Fixed Charges) Charges

As per tariff regulations the annual capacity (fixed) charges consist of

- a. Interest on Loan Capital
- b. Depreciation including Advance against Depreciation
- c. Return on Equity
- d. Operation and maintenance expenses including insurance and
- e. Interest on Working Capital

#### 1.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly true up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

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In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. However, no additional capitalization is being envisaged at this stage during the next control period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	584.29	584.29	584.29	584.29	584.29
Capitalisation	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	584.29	584.29	584.29	584.29	584.29

#### 1.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing**

*Figures in Rs Crore*

<b>MoF</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Opening GFA	584.29	584.29	584.29	584.29	584.29
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>584.29</b>	<b>584.29</b>	<b>584.29</b>	<b>584.29</b>	<b>584.29</b>
<b>Closing Net FA</b>	<b>346.77</b>	<b>314.04</b>	<b>281.31</b>	<b>248.57</b>	<b>215.84</b>
<b>Financing:</b>					
Opening Equity	176.29	176.29	176.29	176.29	176.29
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>176.29</b>	<b>176.29</b>	<b>176.29</b>	<b>176.29</b>	<b>176.29</b>
Open. Accumulated Depreciation	204.78	237.52	270.25	302.98	335.71
Depreciation during the year	32.73	32.73	32.73	32.73	32.73
<b>Closing Accumulated Depreciation</b>	<b>237.52</b>	<b>270.25</b>	<b>302.98</b>	<b>335.71</b>	<b>368.45</b>
Opening Debts	257.67	224.94	192.20	159.47	126.74
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	32.73	32.73	32.73	32.73	32.73
<b>Closing Debts</b>	<b>224.94</b>	<b>192.20</b>	<b>159.47</b>	<b>126.74</b>	<b>94.01</b>

### 1.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year

accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.50%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

(All figures in RsCrS)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	257.67	224.94	192.20	159.47	126.74
Additions	-	-	-	-	-
Less: Normative repayment	32.73	32.73	32.73	32.73	32.73
<b>Closing Debts</b>	<b>224.94</b>	<b>192.20</b>	<b>159.47</b>	<b>126.74</b>	<b>94.01</b>
Average Debt	241.30	208.57	175.84	143.11	110.37
<b>Interest on Loan</b>	<b>27.75</b>	<b>23.99</b>	<b>20.22</b>	<b>16.46</b>	<b>12.69</b>

#### 1.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.



The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	32.73	32.73	32.73	32.73	32.73
Allowable Depreciation subject to maximum of 90% of the Capital Cost	32.73	32.73	32.73	32.73	32.73

#### 1.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity basedetermined in accordance with these Regulation @15.0% per annum.

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The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	176.29	176.29	176.29	176.29	176.29
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>176.29</b>	<b>176.29</b>	<b>176.29</b>	<b>176.29</b>	<b>176.29</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>26.44</b>	<b>26.44</b>	<b>26.44</b>	<b>26.44</b>	<b>26.44</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 1.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)&Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)&Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

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Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	110	110	110	110	110
Norms	64.80	67.07	69.43	71.86	74.39
<b>O&amp;M Expenses</b>	<b>71.28</b>	<b>73.78</b>	<b>76.37</b>	<b>79.05</b>	<b>81.83</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 1.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, which ever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

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- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCr's)

Harduaganj U#7	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	15.64	16.42	17.24	18.10	19.01
Cost of Main Secondary Fuel Oil	1.27	1.33	1.40	1.47	1.54
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	5.94	6.15	6.36	6.59	6.82
Maintenance Spares	14.26	14.76	15.27	15.81	16.37
Receivables	45.31	46.41	47.60	48.86	50.20
Total Working Capital	82.41	85.07	87.88	90.83	93.94
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>11.37</b>	<b>11.74</b>	<b>12.13</b>	<b>12.53</b>	<b>12.96</b>

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### 1.1.8. Summary of Annual Capacity (Fixed) Charges

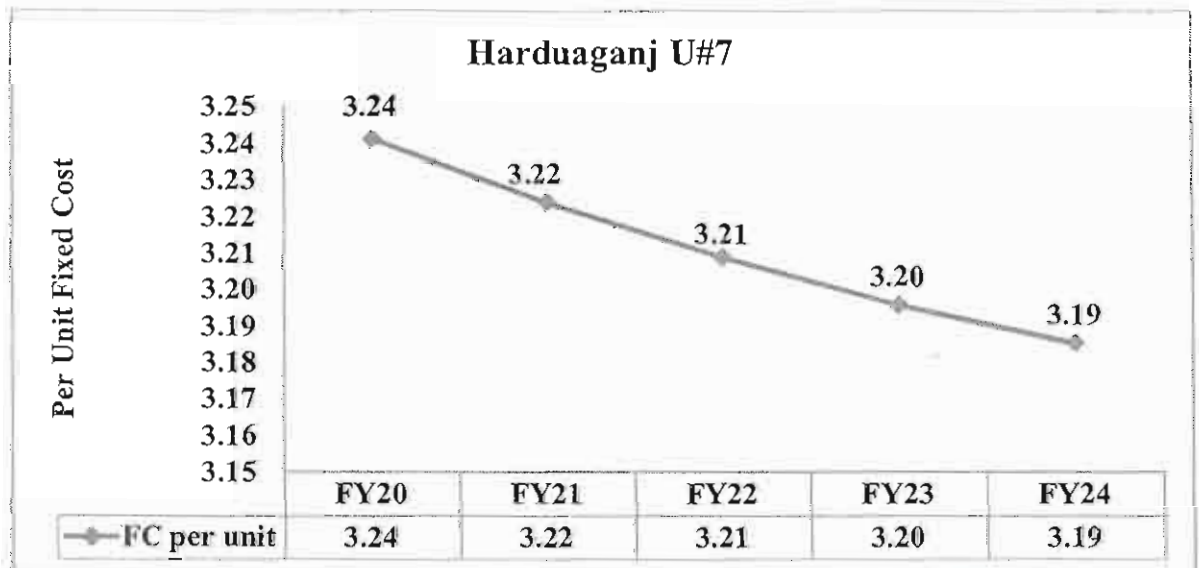
In view of the above submissions, the fixed cost of the Petitioner's Harduaganj U#7 TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	32.73	32.73	32.73	32.73	32.73
Interest on Loan Capital	27.75	23.99	20.22	16.46	12.69
Return on Equity	26.44	26.44	26.44	26.44	26.44
O&M Expenses	71.28	73.78	76.37	79.05	81.83
Interest on Working Capital	11.37	11.74	12.13	12.53	12.96
<b>Total Capacity Charges</b>	<b>169.58</b>	<b>168.68</b>	<b>167.90</b>	<b>167.21</b>	<b>166.66</b>
Energy ex bus	523	523	523	523	523
<b>FC per unit</b>	<b>3.24</b>	<b>3.22</b>	<b>3.21</b>	<b>3.20</b>	<b>3.19</b>

**Graph: Fixed Cost per unit in the Control Period**



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## 1.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	60%	60%	60%	60%	60%
Aux Energy Consumption	%	9.50%	9.50%	9.50%	9.50%	9.50%
Gross Heat Rate	Kcal/kWh	2625	2625	2625	2625	2625
Specific Fuel Oil Cons	ml/kWh	2.50	2.50	2.50	2.50	2.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges (Annexure-1). The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	MW	110	110	110	110	110
PLF	%	60%	60%	60%	60%	60%
Gross Station Heat Rate	Kcal/kWh	2625	2625	2625	2625	2625
Auxiliary Energy Consumption	%	9.50%	9.50%	9.50%	9.50%	9.50%
Energy Generation - Gross	MU	578	578	578	578	578
Auxiliary Energy Consumption	MU	55	55	55	55	55
Ex-bus Energy Sent Out	MU	523	523	523	523	523

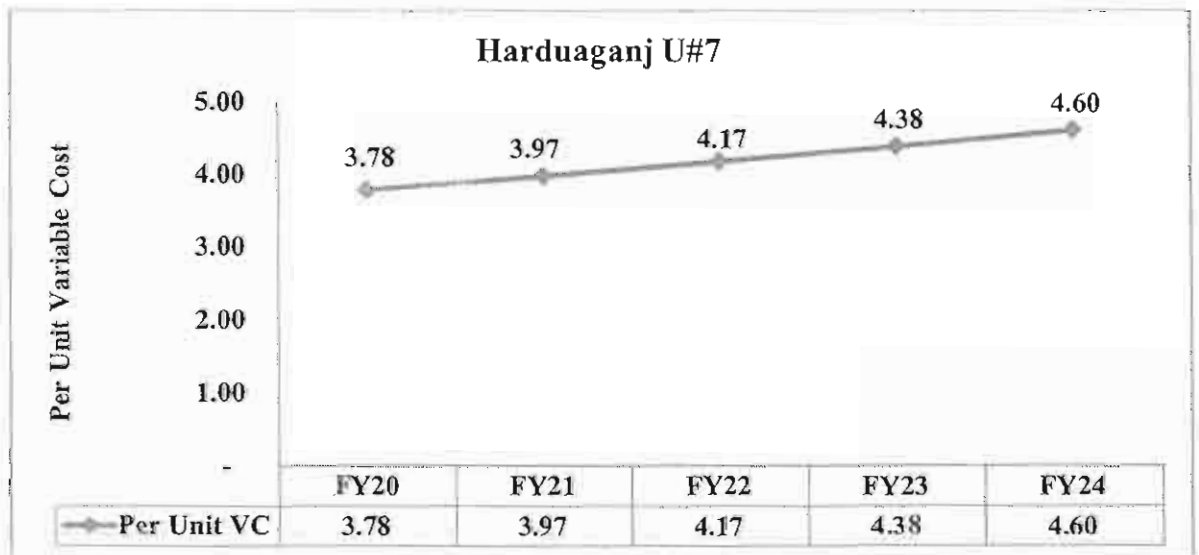
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Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Specific Oil Consumption	ml/kWh	2.50	2.50	2.50	2.50	2.50
Wt. Avg. GCV of Oil	KCal/Lt	9,482	9,482	9,482	9,482	9,482
Price of Oil	Rs./KL	52,721	55,357	58,125	61,031	64,082
Wt. Avg. GCV of Coal	kCal/kg	3560	3560	3560	3560	3560
Price of Coal	Rs./MT	4504	4730	4966	5215	5475
Heat Contribution from SFO	Kcal/kWh	23.71	23.71	23.71	23.71	23.71
Oil Consumption	KL	1445	1445	1445	1445	1445
Heat Contribution from Coal	Kcal/kWh	2601	2601	2601	2601	2601
Specific Coal Consumption	kg/kWh	0.73	0.73	0.73	0.73	0.73
Coal Consumption	MMT	0.42	0.42	0.42	0.42	0.42
Total Cost of Oil	Rs Cr	7.62	8.00	8.40	8.82	9.26
Total Cost of Coal	Rs Cr	190.28	199.79	209.78	220.27	231.29
Total Fuel Cost	Rs Cr	197.90	207.80	218.19	229.09	240.55
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	14.56	15.29	16.06	16.86	17.70
Rate of Energy Charge from Coal ex-bus	Paise/kWh	363.66	381.84	400.94	420.98	442.03
Rate of Energy Charge ex-bus per kWh	Paise/kWh	378.22	397.14	416.99	437.84	459.73

**Graph: Variable Cost per unit in the Control Period**



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### 1.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

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**HARDUAGANJ EXTENSION  
THERMAL POWER STATION**

**MULTI YEAR TARIFF PETITION**

**FOR**

**DETERMINATION OF TARIFF FOR**

**CONTROL PERIOD**

**FY 2019-20 to FY 2023-24**



**UP RAJYA VIDYUT UTPADAN NIGAM LTD**

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## 1. ANNUAL REVENUE REQUIREMENT & MULTI-YEAR TARIFF PETITION OF 'HARDUAGANJ EXTENSION TPS'

The following sections detail the Annual Revenue Requirement and Tariff Petition of Harduaganj ExtensionTPS for the five year control period of FY 2019-20 to FY 2023-24.

### 1.1. Annual Capacity (Fixed Charges) Charges

As per tariff regulations the annual capacity (fixed) charges consist of

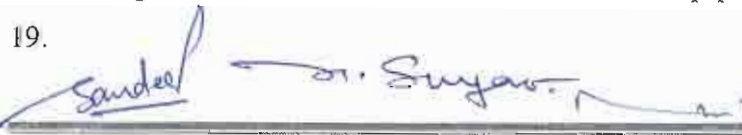
- a. Interest on Loan Capital
- b. Depreciation including Advance against Depreciation
- c. Return on Equity
- d. Operation and maintenance expenses including insurance and
- e. Interest on Working Capital


#### 1.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

  
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In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. However, no additional capitalization is being envisaged at this stage during the next control period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	3,149.69	3,149.69	3,149.69	3,149.69	3,149.69
Capitalisation	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	3,149.69	3,149.69	3,149.69	3,149.69	3,149.69

### 1.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing**

Figures in Rs Crore

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	3,149.69	3,149.69	3,149.69	3,149.69	3,149.69
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	3,149.69	3,149.69	3,149.69	3,149.69	3,149.69
Closing Net FA	2,018.14	1,853.52	1,688.90	1,524.28	1,359.66
<b>Financing:</b>					
Opening Equity	944.91	944.91	944.91	944.91	944.91
Additions	-	-	-	-	-
Closing Equity	944.91	944.91	944.91	944.91	944.91
Open. Accumulated Depreciation	966.93	1,131.55	1,296.17	1,460.79	1,625.41
Depreciation during the year	164.62	164.62	164.62	164.62	164.62
Closing Accumulated Depreciation	1,131.55	1,296.17	1,460.79	1,625.41	1,790.04
Opening Debts	1,217.92	1,053.30	888.68	724.05	559.43
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	164.62	164.62	164.62	164.62	164.62
Closing Debts	1,053.30	888.68	724.05	559.43	394.81

### 1.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year.

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accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.50%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

*(All figures in Rs Crs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	1,217.92	1,053.30	888.68	724.05	559.43
Additions	-	-	-	-	-
Less: Normative repayment	164.62	164.62	164.62	164.62	164.62
<b>Closing Debts</b>	<b>1,053.30</b>	<b>888.68</b>	<b>724.05</b>	<b>559.43</b>	<b>394.81</b>
Average Debt	1,135.61	970.99	806.36	641.74	477.12
<b>Interest on Loan</b>	<b>130.59</b>	<b>111.66</b>	<b>92.73</b>	<b>73.80</b>	<b>54.87</b>

#### 1.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

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The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	164.62	164.62	164.62	164.62	164.62
Allowable Depreciation subject to maximum of 90% of the Capital Cost	164.62	164.62	164.62	164.62	164.62

#### 1.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity basedetermined in accordance with these Regulation @15.0% per annum.

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The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	944.91	944.91	944.91	944.91	944.91
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>944.91</b>	<b>944.91</b>	<b>944.91</b>	<b>944.91</b>	<b>944.91</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>141.74</b>	<b>141.74</b>	<b>141.74</b>	<b>141.74</b>	<b>141.74</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 1.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)& Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)& Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

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Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	500	500	500	500	500
Norms	32.96	34.12	35.31	36.56	37.84
<b>O&amp;M Expenses</b>	<b>164.80</b>	<b>170.60</b>	<b>176.55</b>	<b>182.80</b>	<b>189.20</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

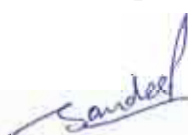
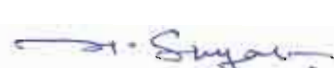

Provided that the generating station shall submit the details of year wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 1.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

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- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in Rs Crs)

<b>HARDUAGANJ EXTENSION</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Cost of Coal	93.89	98.59	103.52	108.69	114.13
Cost of Main Secondary Fuel Oil	1.64	1.72	1.80	1.89	1.99
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	13.73	14.22	14.71	15.23	15.77
Maintenance Spares	32.96	34.12	35.31	36.56	37.84
Receivables	222.44	228.13	234.21	240.70	247.62
Total Working Capital	364.67	376.77	389.55	403.08	417.35
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>50.32</b>	<b>51.99</b>	<b>53.76</b>	<b>55.63</b>	<b>57.59</b>

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*mark*

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### 1.1.8. Summary of Annual Capacity (Fixed) Charges

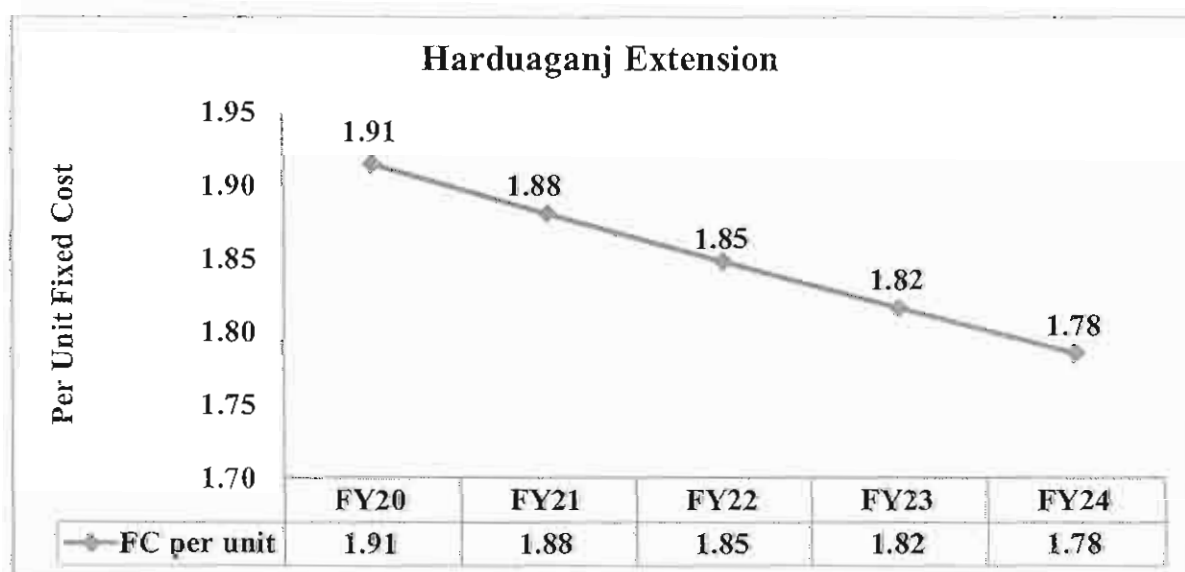
In view of the above submissions, the fixed cost of the Petitioner's Harduaganj Extension TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	164.62	164.62	164.62	164.62	164.62
Interest on Loan Capital	130.59	111.66	92.73	73.80	54.87
Return on Equity	141.74	141.74	141.74	141.74	141.74
O&M Expenses	164.80	170.60	176.55	182.80	189.20
Interest on Working Capital	50.32	51.99	53.76	55.63	57.59
<b>Total Capacity Charges</b>	<b>652.08</b>	<b>640.62</b>	<b>629.40</b>	<b>618.58</b>	<b>608.02</b>
Energy ex bus	3407	3407	3407	3407	3407
<b>FC per unit</b>	<b>1.91</b>	<b>1.88</b>	<b>1.85</b>	<b>1.82</b>	<b>1.78</b>

**Graph: Fixed Cost per unit in the Control Period**







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## 1.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	8.50%	8.50%	8.50%	8.50%	8.50%
Gross Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges (Annexure-1). The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

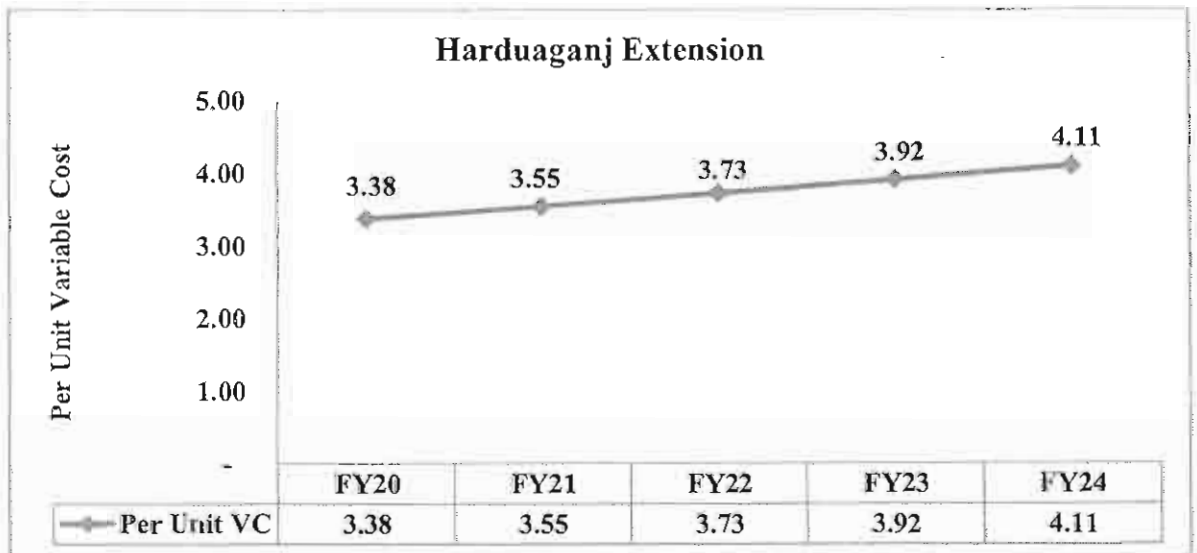
Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	MW	500	500	500	500	500
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Auxiliary Energy Consumption	%	8.50%	8.50%	8.50%	8.50%	8.50%
Energy Generation - Gross	MU	3,723	3,723	3,723	3,723	3,723
Auxiliary Energy Consumption	MU	316	316	316	316	316
Ex-bus Energy Sent Out	MU	3,407	3,407	3,407	3,407	3,407
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	9,482	9,482	9,482	9,482	9,482

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Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Price of Oil	Rs./KL	52,721	55,357	58,125	61,031	64,082
Wt. Avg. GCV of Coal	kCal/kg	3560	3560	3560	3560	3560
Price of Coal	Rs./MT	4504	4730	4966	5215	5475
Heat Contribution from SFO	Kcal/kWh	4.74	4.74	4.74	4.74	4.74
Oil Consumption	KL	1862	1862	1862	1862	1862
Heat Contribution from Coal	Kcal/kWh	2425	2425	2425	2425	2425
Specific Coal Consumption	kg/kWh	0.68	0.68	0.68	0.68	0.68
Coal Consumption	MMT	2.54	2.54	2.54	2.54	2.54
Total Cost of Oil	Rs Cr	9.81	10.30	10.82	11.36	11.93
Total Cost of Coal	Rs Cr	1,142.37	1,199.49	1,259.46	1,322.44	1,388.56
Total Fuel Cost	Rs Cr	1,152.18	1,209.79	1,270.28	1,333.80	1,400.49
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	2.88	3.02	3.18	3.34	3.50
Rate of Energy Charge from Coal ex-bus	Paise/kWh	335.35	352.11	369.72	388.20	407.61
Rate of Energy Charge ex-bus per kWh	Paise/kWh	338.23	355.14	372.89	391.54	411.12

**Graph: Variable Cost per unit in the Control Period**



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### 1.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

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**PARICHHA UNIT#2**  
**THERMAL POWER STATION**  
**MULTI YEAR TARIFF PETITION**  
**FOR**  
**DETERMINATION OF TARIFF FOR**  
**CONTROL PERIOD**  
**FY 2019-20 to FY 2023-24**

*Sandeep*

*Sandeep*



UPRVUNL

*(Signature)*

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**UP RAJYA VIDYUT UTPADAN NIGAM LTD**

## 1. ANNUAL REVENUE REQUIREMENT & MULTI-YEAR TARIFF PETITION OF 'PARICHHA UNIT#2 TPS'

The following sections detail the Annual Revenue Requirement and Tariff Petition of Parichha U#2TPS for the five year control period of FY 2019-20 to FY 2023-24.

### 1.1. Annual Capacity (Fixed Charges) Charges

As per tariff regulations the annual capacity (fixed) charges consist of

- a. Interest on Loan Capital
- b. Depreciation including Advance against Depreciation
- c. Return on Equity
- d. Operation and maintenance expenses including insurance and
- e. Interest on Working Capital

#### 1.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

PARICHHA UNIT#2 MYT Petition for Determination of Tariff

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In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. However, no additional capitalization is being envisaged at this stage during the next control period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**





*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	486.19	486.19	486.19	486.19	486.19
Capitalisation	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	486.19	486.19	486.19	486.19	486.19

#### 1.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

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**Table: Calculation of GFA, NFA and its financing**

*Figures in Rs Crore*

<b>MoF</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Opening GFA	486.19	486.19	486.19	486.19	486.19
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>486.19</b>	<b>486.19</b>	<b>486.19</b>	<b>486.19</b>	<b>486.19</b>
<b>Closing Net FA</b>	<b>169.37</b>	<b>143.04</b>	<b>116.72</b>	<b>90.39</b>	<b>64.06</b>
<b>Financing:</b>					
Opening Equity	133.30	133.30	133.30	133.30	133.30
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>
Open. Accumulated Depreciation	290.49	316.81	343.14	369.47	395.80
Depreciation during the year	26.33	26.33	26.33	26.33	26.33
<b>Closing Accumulated Depreciation</b>	<b>316.81</b>	<b>343.14</b>	<b>369.47</b>	<b>395.80</b>	<b>422.13</b>
Opening Debts	62.87	36.54	10.22	-	-
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	26.33	26.33	10.22	-	-
<b>Closing Debts</b>	<b>36.54</b>	<b>10.22</b>	<b>-</b>	<b>-</b>	<b>-</b>

### 1.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year

PARICHHA UNIT#2\_MYT Petition for Determination of Tariff

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accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.50%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	62.87	36.54	10.22	-	-
Additions	-	-	-	-	-
Less: Normative repayment	26.33	26.33	10.22	-	-
<b>Closing Debts</b>	<b>36.54</b>	<b>10.22</b>	<b>-</b>	<b>-</b>	<b>-</b>
Average Debt	49.71	23.38	5.11	-	-
<b>Interest on Loan</b>	<b>5.72</b>	<b>2.69</b>	<b>0.59</b>	<b>-</b>	<b>-</b>

#### 1.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	26.33	26.33	26.33	26.33	26.33
Allowable Depreciation subject to maximum of 90% of the Capital Cost	26.33	26.33	26.33	26.33	26.33

#### 1.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity basedetermined in accordance with these Regulation @15.0% per annum.

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The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	133.30	133.30	133.30	133.30	133.30
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>20.00</b>	<b>20.00</b>	<b>20.00</b>	<b>20.00</b>	<b>20.00</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 1.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)&Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)&Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

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Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	110	110	110	110	110
Norms	38.38	40.16	41.57	43.03	44.54
<b>O&amp;M Expenses</b>	<b>42.22</b>	<b>44.18</b>	<b>45.73</b>	<b>47.33</b>	<b>48.99</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.


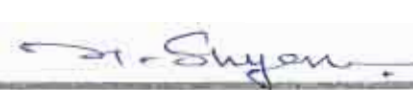


Provided that the generating station shall submit the details of year wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 1.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

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- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCr)

PARICHHA U#2	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	20.01	21.01	22.07	23.17	24.33
Cost of Main Secondary Fuel Oil	1.51	1.59	1.67	1.75	1.84
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	3.52	3.68	3.81	3.94	4.08
Maintenance Spares	8.44	8.84	9.15	9.47	9.80
Receivables	44.08	45.56	47.18	49.08	51.15
Total Working Capital	77.57	80.68	83.87	87.41	91.20
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>10.70</b>	<b>11.13</b>	<b>11.57</b>	<b>12.06</b>	<b>12.59</b>

*Sandeep*

*S. S. Sanyal*

*...*

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### 1.1.8. Summary of Annual Capacity (Fixed) Charges

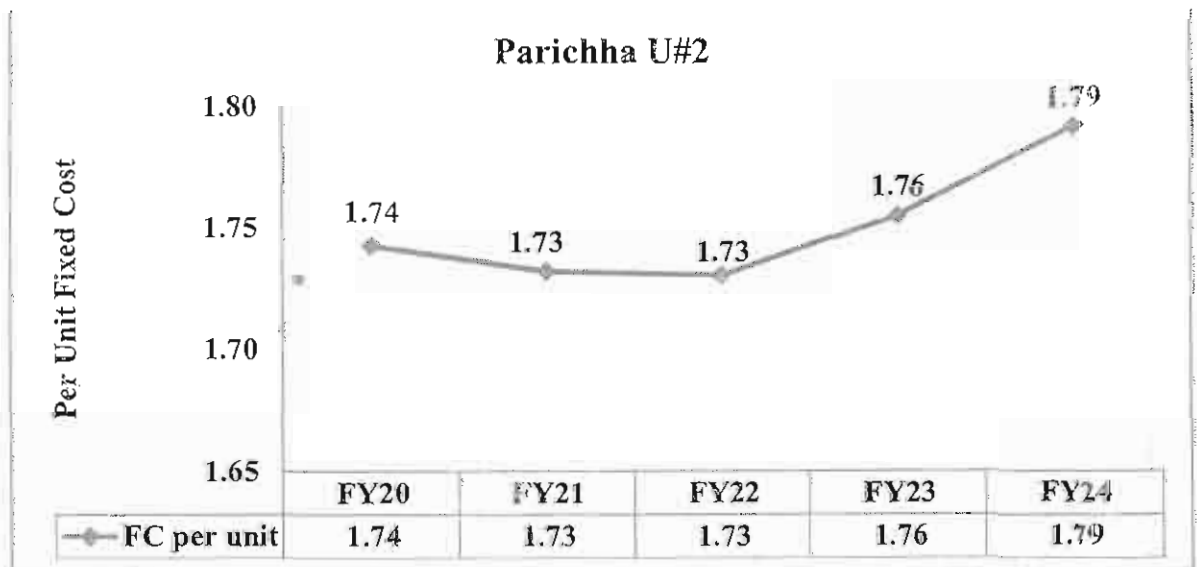
In view of the above submissions, the fixed cost of the Petitioner's Parichha U#2 TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	26.33	26.33	26.33	26.33	26.33
Interest on Loan Capital	5.72	2.69	0.59	0.00	0.00
Return on Equity	20.00	20.00	20.00	20.00	20.00
O&M Expenses	42.22	44.18	45.73	47.33	48.99
Interest on Working Capital	10.70	11.13	11.57	12.06	12.59
<b>Total Capacity Charges</b>	<b>104.96</b>	<b>104.32</b>	<b>104.21</b>	<b>105.72</b>	<b>107.90</b>
Energy ex bus	602	602	602	602	602
<b>FC per unit</b>	<b>1.74</b>	<b>1.73</b>	<b>1.73</b>	<b>1.76</b>	<b>1.79</b>

**Graph: Fixed Cost per unit in the Control Period**



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## 1.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	70%	70%	70%	70%	70%
Aux Energy Consumption	%	10.70%	10.70%	10.70%	10.70%	10.70%
Gross Heat Rate	Kcal/kWh	2980	2980	2980	2980	2980
Specific Fuel Oil Cons	ml/kWh	2.60	2.60	2.60	2.60	2.60

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges (Annexure-1). The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	MW	110	110	110	110	110
PLF	%	70%	70%	70%	70%	70%
Gross Station Heat Rate	Kcal/kWh	2980	2980	2980	2980	2980
Auxiliary Energy Consumption	%	10.70%	10.70%	10.70%	10.70%	10.70%
Energy Generation - Gross	MU	675	675	675	675	675
Auxiliary Energy Consumption	MU	72	72	72	72	72

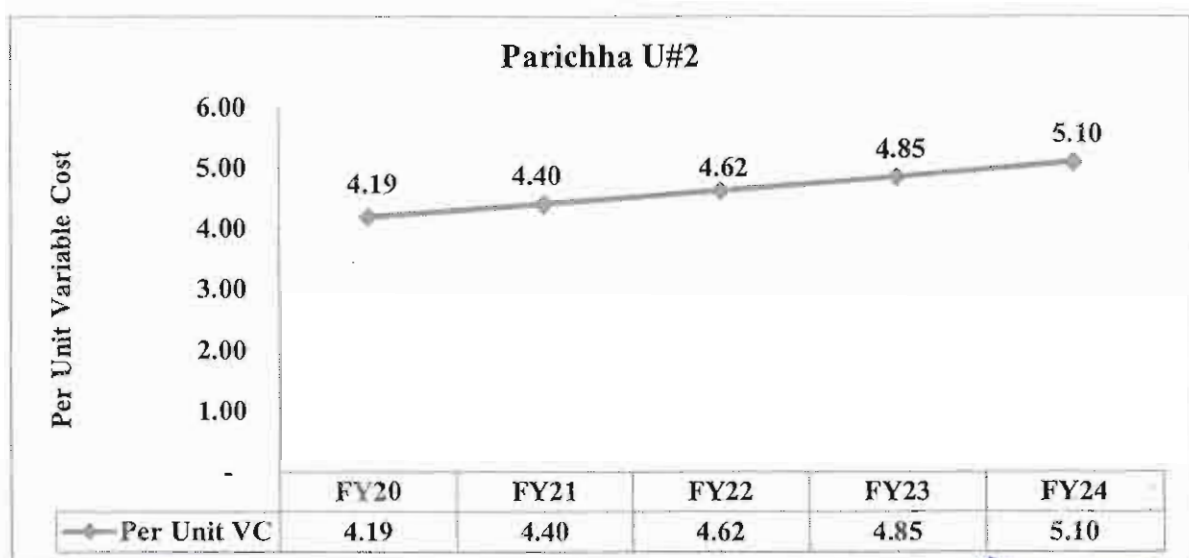
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Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Ex-bus Energy Sent Out	MU	602	602	602	602	602
Specific Oil Consumption	ml/kWh	2.60	2.60	2.60	2.60	2.60
Wt. Avg. GCV of Oil	KCal/Lt	9,509	9,509	9,509	9,509	9,509
Price of Oil	Rs./KL	51,735	54,321	57,037	59,889	62,884
Wt. Avg. GCV of Coal	kCal/kg	3566	3566	3566	3566	3566
Price of Coal	Rs./MT	4356	4574	4803	5043	5295
Heat Contribution from SFO	Kcal/kWh	24.72	24.72	24.72	24.72	24.72
Oil Consumption	KL	1754	1754	1754	1754	1754
Heat Contribution from Coal	Kcal/kWh	2955	2955	2955	2955	2955
Specific Coal Consumption	kg/kWh	0.83	0.83	0.83	0.83	0.83
Coal Consumption	MMT	0.56	0.56	0.56	0.56	0.56
Total Cost of Oil	Rs Cr	9.07	9.53	10.00	10.50	11.03
Total Cost of Coal	Rs Cr	243.51	255.68	268.47	281.89	295.98
Total Fuel Cost	Rs Cr	252.58	265.21	278.47	292.39	307.01
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	15.06	15.82	16.61	17.44	18.31
Rate of Energy Charge from Coal ex-bus	Paise/kWh	404.26	424.48	445.70	467.98	491.38
Rate of Energy Charge ex-bus per kWh	Paise/kWh	419.33	440.29	462.31	485.42	509.69

**Graph: Variable Cost per unit in the Control Period**



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### 1.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

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**PARICHHA EXTENSION**  
**THERMAL POWER STATION**  
**MULTI YEAR TARIFF PETITION**  
**FOR**  
**DETERMINATION OF TARIFF FOR**  
**CONTROL PERIOD**  
**FY 2019-20 to FY 2023-24**



**UP RAJYA VIDYUT UTPADAN NIGAM LTD**

*Sawyer*

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## 1. ANNUAL REVENUE REQUIREMENT & MULTI-YEAR TARIFF PETITION OF 'PARICHHA EXTENSION TPS'

The following sections detail the Annual Revenue Requirement and Tariff Petition of Parichha ExtensionTPS for the five year control period of FY 2019-20to FY 2023-24.

### 1.1. Annual Capacity (Fixed Charges) Charges

As per tariff regulations the annual capacity (fixed) charges consist of

- a. Interest on Loan Capital
- b. Depreciation including Advance against Depreciation
- c. Return on Equity
- d. Operation and maintenance expenses including insurance and
- e. Interest on Working Capital

#### 1.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

PARICHHA EXTENSION MYT Petition for Determination of Tariff

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*Dr. S. Kumar*

*Dr. S. Kumar*

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In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. However, no additional capitalization is being envisaged at this stage during the next control period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

(All figures in RsCr)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	1,862.24	1,862.24	1,862.24	1,862.24	1,862.24
Capitalisation	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	1,862.24	1,862.24	1,862.24	1,862.24	1,862.24

#### 1.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

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*M. Sanyal*

*Mark*

*(Signature)*

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**Table: Calculation of GFA, NFA and its financing**

*Figures in Rs Crore*

<b>MoF</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Opening GFA	1,862.24	1,862.24	1,862.24	1,862.24	1,862.24
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>1,862.24</b>	<b>1,862.24</b>	<b>1,862.24</b>	<b>1,862.24</b>	<b>1,862.24</b>
<b>Closing Net FA</b>	<b>815.44</b>	<b>713.59</b>	<b>611.74</b>	<b>509.89</b>	<b>408.03</b>
<b>Financing:</b>					
Opening Equity	388.92	388.92	388.92	388.92	388.92
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>388.92</b>	<b>388.92</b>	<b>388.92</b>	<b>388.92</b>	<b>388.92</b>
Open. Accumulated Depreciation	944.94	1,046.79	1,148.64	1,250.50	1,352.35
Depreciation during the year	101.85	101.85	101.85	101.85	101.85
<b>Closing Accumulated Depreciation</b>	<b>1,046.79</b>	<b>1,148.64</b>	<b>1,250.50</b>	<b>1,352.35</b>	<b>1,454.20</b>
Opening Debts	528.40	426.54	324.69	222.84	120.98
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	101.85	101.85	101.85	101.85	101.85
<b>Closing Debts</b>	<b>426.54</b>	<b>324.69</b>	<b>222.84</b>	<b>120.98</b>	<b>19.13</b>

### 1.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year

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accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.50%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

(All figures in RsCrS)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	528.40	426.54	324.69	222.84	120.98
Additions	-	-	-	-	-
Less: Normative repayment	101.85	101.85	101.85	101.85	101.85
<b>Closing Debts</b>	<b>426.54</b>	<b>324.69</b>	<b>222.84</b>	<b>120.98</b>	<b>19.13</b>
Average Debt	477.47	375.62	273.76	171.91	70.06
<b>Interest on Loan</b>	<b>54.91</b>	<b>43.20</b>	<b>31.48</b>	<b>19.77</b>	<b>8.06</b>

#### 1.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	101.85	101.85	101.85	101.85	101.85
Allowable Depreciation subject to maximum of 90% of the Capital Cost	101.85	101.85	101.85	101.85	101.85

#### 1.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity basedetermined in accordance with these Regulation @15.0% per annum.

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The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	388.92	388.92	388.92	388.92	388.92
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>388.92</b>	<b>388.92</b>	<b>388.92</b>	<b>388.92</b>	<b>388.92</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>58.34</b>	<b>58.34</b>	<b>58.34</b>	<b>58.34</b>	<b>58.34</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 1.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)&Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)&Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

PARICHHA EXTENSION\_MYT Petition for Determination of Tariff

(इं० रमेश चन्द्र)  
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Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	420	420	420	420	420
Norms	32.96	34.12	35.31	36.56	37.84
<b>O&amp;M Expenses</b>	<b>138.43</b>	<b>143.30</b>	<b>148.30</b>	<b>153.55</b>	<b>158.93</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 1.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

PARICHHA EXTENSION\_MYT Petition for Determination of Tariff

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- i. Cost of coal 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 stock storage capacity whichever is lower
- ii. Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- iii. Operation and Maintenance expenses including water charges for one month;
- iv. Maintenance spares @ 20% of operation and maintenance expenses; and
- v. Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCr's)

PARICHHA EXTENSION	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	76.15	79.95	83.95	88.15	92.55
Cost of Main Secondary Fuel Oil	1.35	1.42	1.49	1.56	1.64
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	11.54	11.94	12.36	12.80	13.24
Maintenance Spares	27.69	28.66	29.66	30.71	31.79
Receivables	163.57	168.66	174.07	179.82	185.91
Total Working Capital	280.29	290.63	301.52	313.03	325.14
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
Interest on Working Capital	38.68	40.11	41.61	43.20	44.87

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### 1.1.8. Summary of Annual Capacity (Fixed) Charges

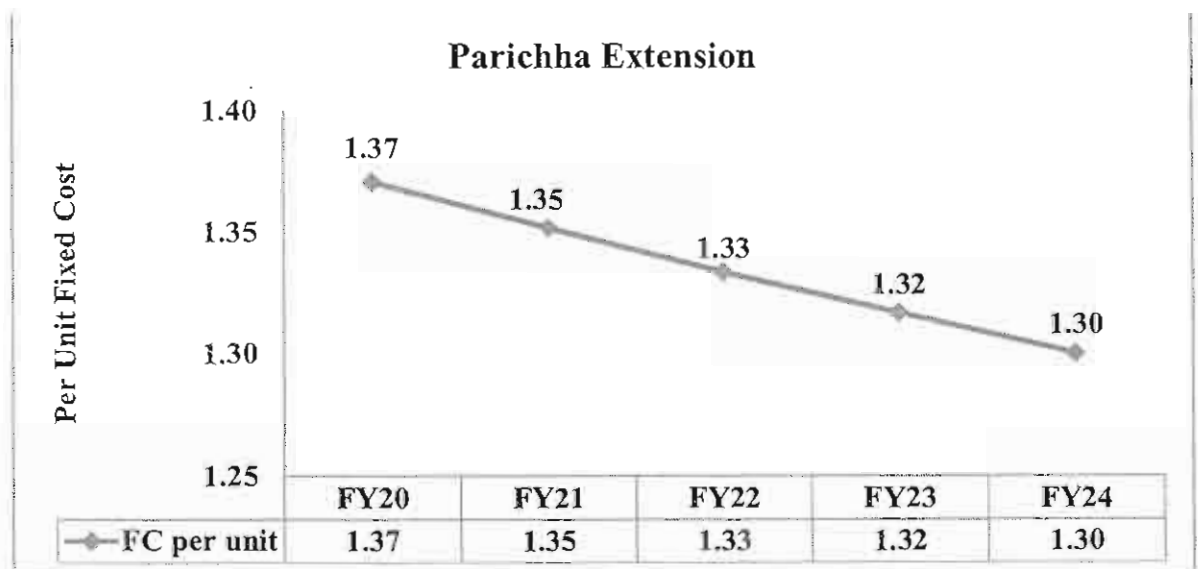
In view of the above submissions, the fixed cost of the Petitioner's Parichha Extension TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	101.85	101.85	101.85	101.85	101.85
Interest on Loan Capital	54.91	43.20	31.48	19.77	8.06
Return on Equity	58.34	58.34	58.34	58.34	58.34
O&M Expenses	138.43	143.30	148.30	153.55	158.93
Interest on Working Capital	38.68	40.11	41.61	43.20	44.87
<b>Total Capacity Charges</b>	<b>392.21</b>	<b>386.80</b>	<b>381.59</b>	<b>376.71</b>	<b>372.04</b>
Energy ex bus	2861	2861	2861	2861	2861
<b>FC per unit</b>	<b>1.37</b>	<b>1.35</b>	<b>1.33</b>	<b>1.32</b>	<b>1.30</b>

**Graph: Fixed Cost per unit in the Control Period**



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## 1.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	8.50%	8.50%	8.50%	8.50%	8.50%
Gross Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges (Annexure-1). The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	MW	420	420	420	420	420
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Auxiliary Energy Consumption	%	8.50%	8.50%	8.50%	8.50%	8.50%
Energy Generation - Gross	MU	3,127	3,127	3,127	3,127	3,127
Auxiliary Energy Consumption	MU	266	266	266	266	266
Ex-bus Energy Sent Out	MU	2,861	2,861	2,861	2,861	2,861

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### 1.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.



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**PARICHHA EXTENSION STAGE II**  
**THERMAL POWER STATION**  
**MULTI YEAR TARIFF PETITION**  
**FOR**  
**DETERMINATION OF TARIFF FOR**  
**CONTROL PERIOD**  
**FY 2019-20 to FY 2023-24**



**UP RAJYA VIDYUT UTPADAN NIGAM LTD** ( इ० रमेश चन्द्र )

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## 1. ANNUAL REVENUE REQUIREMENT & MULTI-YEAR TARIFF PETITION OF 'PARICHHA EXTENSION SATGE II TPS'

The following sections detail the Annual Revenue Requirement and Tariff Petition of Parichha Extension Satge IITPS for the five year control period of FY 2019-20 to FY 2023-24.

### 1.1. Annual Capacity (Fixed Charges) Charges

As per tariff regulations the annual capacity (fixed) charges consist of

- a. Interest on Loan Capital
- b. Depreciation including Advance against Depreciation
- c. Return on Equity
- d. Operation and maintenance expenses including insurance and
- e. Interest on Working Capital

#### 1.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly true up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

PARICHHA EXTENSION STAGE II\_MYT Petition for Determination of Tariff

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In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. However, no additional capitalization is being envisaged at this stage during the next control period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

(All figures in RsCr)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	2,795.08	2,795.08	2,795.08	2,795.08	2,795.08
Capitalisation	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	2,795.08	2,795.08	2,795.08	2,795.08	2,795.08

#### 1.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

PARICHHA-EXTENSION STAGE II\_MYT Petition for Determination of Tariff

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**Table: Calculation of GFA, NFA and its financing**

*Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	2,795.08	2,795.08	2,795.08	2,795.08	2,795.08
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>2,795.08</b>	<b>2,795.08</b>	<b>2,795.08</b>	<b>2,795.08</b>	<b>2,795.08</b>
<b>Closing Net FA</b>	<b>1,754.00</b>	<b>1,599.31</b>	<b>1,444.62</b>	<b>1,289.92</b>	<b>1,135.23</b>
<b>Financing:</b>					
Opening Equity	838.52	838.52	838.52	838.52	838.52
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>838.52</b>	<b>838.52</b>	<b>838.52</b>	<b>838.52</b>	<b>838.52</b>
Open. Accumulated Depreciation	886.38	1,041.08	1,195.77	1,350.47	1,505.16
Depreciation during the year	154.69	154.69	154.69	154.69	154.69
<b>Closing Accumulated Depreciation</b>	<b>1,041.08</b>	<b>1,195.77</b>	<b>1,350.47</b>	<b>1,505.16</b>	<b>1,659.85</b>
Opening Debts	1,107.18	952.48	797.79	643.09	488.40
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	154.69	154.69	154.69	154.69	154.69
<b>Closing Debts</b>	<b>952.48</b>	<b>797.79</b>	<b>643.09</b>	<b>488.40</b>	<b>333.71</b>

### 1.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.


Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year

PARICHHA EXTENSION STAGE II\_MYT Petition for Determination of Tariff

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**5/6**

accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.50%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

(All figures in RsCrS)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	1,107.18	952.48	797.79	643.09	488.40
Additions	-	-	-	-	-
Less: Normative repayment	154.69	154.69	154.69	154.69	154.69
<b>Closing Debts</b>	<b>952.48</b>	<b>797.79</b>	<b>643.09</b>	<b>488.40</b>	<b>333.71</b>
Average Debt	1,029.83	875.13	720.44	565.75	411.05
<b>Interest on Loan</b>	<b>118.43</b>	<b>100.64</b>	<b>82.85</b>	<b>65.06</b>	<b>47.27</b>

#### 1.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

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The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	154.69	154.69	154.69	154.69	154.69
Allowable Depreciation subject to maximum of 90% of the Capital Cost	154.69	154.69	154.69	154.69	154.69

#### 1.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity basedetermined in accordance with these Regulation @15.0% per annum.

The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCrS)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	838.52	838.52	838.52	838.52	838.52
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>838.52</b>	<b>838.52</b>	<b>838.52</b>	<b>838.52</b>	<b>838.52</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>125.78</b>	<b>125.78</b>	<b>125.78</b>	<b>125.78</b>	<b>125.78</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 1.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)&Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)&Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

PARICHHA EXTENSION STAGE II MYT Petition for Determination of Tariff

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Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	500	500	500	500	500
Norms	32.96	34.12	35.31	36.56	37.84
<b>O&amp;M Expenses</b>	<b>164.80</b>	<b>170.60</b>	<b>176.55</b>	<b>182.80</b>	<b>189.20</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 1.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations.

PARICHHA EXTENSION STAGE II\_MYT Petition for Determination of Tariff

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- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCr/s)

PARICHHA EXTENSION SATGE II	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	90.65	95.19	99.95	104.94	110.19
Cost of Main Secondary Fuel Oil	1.61	1.69	1.77	1.86	1.95
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	13.73	14.22	14.71	15.23	15.77
Maintenance Spares	32.96	34.12	35.31	36.56	37.84
Receivables	212.65	218.23	224.18	230.55	237.32
Total Working Capital	351.60	363.44	375.92	389.14	403.07
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>48.52</b>	<b>50.15</b>	<b>51.88</b>	<b>53.70</b>	<b>55.62</b>

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### 1.1.8. Summary of Annual Capacity (Fixed) Charges

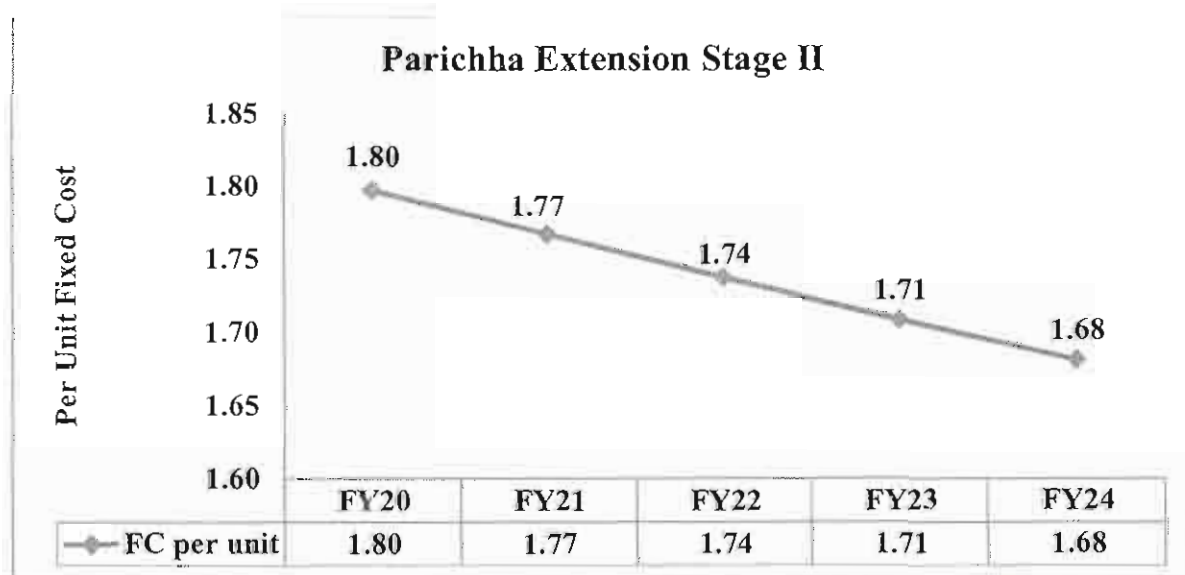
In view of the above submissions, the fixed cost of the Petitioner's Parichha Extension Satge II TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	154.69	154.69	154.69	154.69	154.69
Interest on Loan Capital	118.43	100.64	82.85	65.06	47.27
Return on Equity	125.78	125.78	125.78	125.78	125.78
O&M Expenses	164.80	170.60	176.55	182.80	189.20
Interest on Working Capital	48.52	50.15	51.88	53.70	55.62
<b>Total Capacity Charges</b>	<b>612.22</b>	<b>601.87</b>	<b>591.75</b>	<b>582.04</b>	<b>572.57</b>
Energy ex bus	3407	3407	3407	3407	3407
<b>FC per unit</b>	<b>1.80</b>	<b>1.77</b>	<b>1.74</b>	<b>1.71</b>	<b>1.68</b>

**Graph: Fixed Cost per unit in the Control Period**



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## 1.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	8.50%	8.50%	8.50%	8.50%	8.50%
Gross Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges (Annexure-1). The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	MW	500	500	500	500	500
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Auxiliary Energy Consumption	%	8.50%	8.50%	8.50%	8.50%	8.50%
Energy Generation - Gross	MU	3,723	3,723	3,723	3,723	3,723
Auxiliary Energy Consumption	MU	316	316	316	316	316

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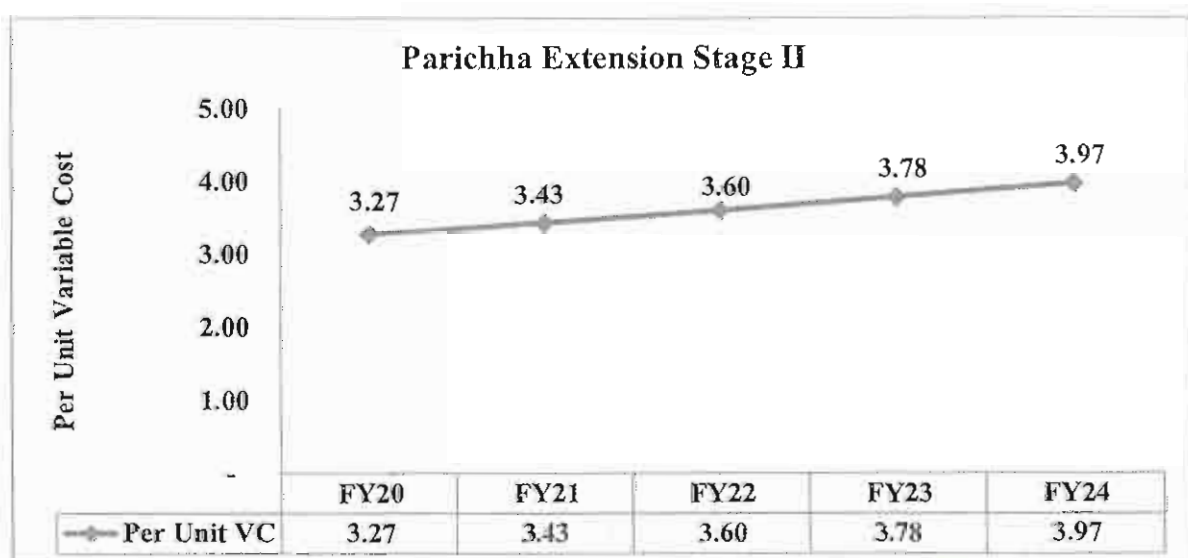
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Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Ex-bus Energy Sent Out	MU	3,407	3,407	3,407	3,407	3,407
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	9,549	9,549	9,549	9,549	9,549
Price of Oil	Rs./KL	51,735	54,321	57,037	59,889	62,884
Wt. Avg. GCV of Coal	kCal/kg	3566	3566	3566	3566	3566
Price of Coal	Rs./MT	4356	4574	4803	5043	5295
Heat Contribution from SFO	Kcal/kWh	4.77	4.77	4.77	4.77	4.77
Oil Consumption	KL	1862	1862	1862	1862	1862
Heat Contribution from Coal	Kcal/kWh	2425	2425	2425	2425	2425
Specific Coal Consumption	kg/kWh	0.68	0.68	0.68	0.68	0.68
Coal Consumption	MMT	2.53	2.53	2.53	2.53	2.53
Total Cost of Oil	Rs Cr	9.63	10.11	10.62	11.15	11.71
Total Cost of Coal	Rs Cr	1,102.97	1,158.11	1,216.02	1,276.82	1,340.66
Total Fuel Cost	Rs Cr	1,112.60	1,168.23	1,226.64	1,287.97	1,352.37
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	2.83	2.97	3.12	3.27	3.44
Rate of Energy Charge from Coal ex-bus	Paise/kWh	323.78	339.97	356.97	374.81	393.55
Rate of Energy Charge ex-bus per kWh	Paise/kWh	326.61	342.94	360.08	378.09	396.99

Graph: Variable Cost per unit in the Control Period



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### 1.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

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**HARDUAGANJ EXTENSION STAGE II**

**THERMAL POWER STATION**

**MULTI YEAR TARIFF PETITION**

**FOR**

**DETERMINATION OF TARIFF FOR**

**CONTROL PERIOD**

**FY 2019-20 to FY 2023-24**



**UP RAJYA VIDYUT UTPADAN NIGAM LTD**

*Sandeep*

*Dr. Sugan*

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## 1. ANNUAL REVENUE REQUIREMENT & MULTI-YEAR TARIFF

### PETITION OF 'HARDUAGANJ EXTENSION SATGE II TPS'

Harduaganj Extension Stage II TPS consisting of 1x660 MW supercritical Unit had been envisaged as a brownfield project in the land space available of the erstwhile Harduaganj 'A' units. The project will be installed, as an extension project, in the premises of Harduaganj Thermal Power Project, the site being located near Kasimpur village near Aligarh city of Uttar Pradesh. The Land required for the project was already owned by UP Rajya Vidyut Utpadan Nigam Ltd and the project was to be developed after dismantling of Power Block and old colony and relocation of 132/11/6.6 KV Substation of UPPCL. The scheme was accorded approval of the Government of Uttar Pradesh vide letter no. 2801/24-1-2011-3485/2009 dated 22<sup>nd</sup> September 2011. The initial estimated cost of the said project was estimated at Rs 4826.5 Crores. In light of the MOEF&CC notification S.O. 3305(E) dated 7<sup>th</sup> December 2015 (Attached as Annexure-3), additional expenditure towards installation of SCR and FGD systems was necessitated. This additional expenditure to the tune of Rs 674.48 Crores was accorded approval from the Government vide letter no 2390/24-1-2016-2356/2016 dated 24<sup>th</sup> November 2016 (Attached as Annexure-4), thereby increasing the overall project cost to Rs 5500.98 crores. The detailed project report towards the aforementioned project was prepared by M/s NTPC, a copy of which is enclosed as Annexure-5.

The cost estimate of the Thermal Power Station is given in table below:

**Table: Abstract of Cost Estimate of Harduaganj Extension Stage II TPS**

S No	Name/No. of Construction / Supply / Service Package	Cost Estimate of (Rs Crore)
1	<b>Preliminary &amp; Civil Works</b>	
1.1	Land & Civil Construction Works	811.97
1.2	Physical Contingency	12.18
	<b>Sub-Total 1</b>	<b>824.15</b>
2	<b>Plant &amp; Equipment</b>	
2.1	Mechanical Equipment	2,203.55
2.2	Electrical Equipment	151.17
2.3	Coal Transportation System	43.51
2.4	Spares	102.67
2.5	Misc. Tools & Plants	9.04
2.6	Customs Duty	128.21
2.7	Excise Duty	143.94

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S No	Name/No. of Construction / Supply / Service Package	Cost Estimate of (Rs Crore)
2.8	Central Sales Tax	31.28
2.9	Physical Contingency	42.20
	<b>Sub-Total 2</b>	<b>2,855.57</b>
<b>3</b>	<b>Pre Commissioning Expenses</b>	<b>18.40</b>
<b>4</b>	<b>Project Management</b>	
4.1	Establishment Audit & Accounts	82.79
4.2	Consultancy	36.80
4.3	training of O&M Staff	2.00
4.4	Losses on Stocks	0.50
	<b>Sub-Total 4</b>	<b>122.09</b>
<b>5</b>	<b>Interest During Construction (IDC)</b>	<b>874.23</b>
<b>6</b>	<b>Working Capital Margin (WCM)</b>	<b>132.05</b>
<b>7</b>	<b>installation of SCR and FGD</b>	<b>674.48</b>
	<b>Total</b>	<b>5500.98</b>

The total expenditure incurred till 30<sup>th</sup> September, 2019 is to the tune of Rs. 3095.90 crore, the statutory auditor certificate in this regard is hereby attached with the petition as Annexure-7. The unit of this power station is expected to get commissioned by 7<sup>th</sup> January 2020. Based on actual audited expenditure till 30<sup>th</sup> September 2019 and the aforementioned scheduled date of commissioning the Annual Revenue Requirement for determination of Provisional Tariff is detailed in the upcoming sections. It is submitted, that the data towards the forms have been determined based on actual expenditure levels till 30<sup>th</sup> September and the allowable ARR of the station would be finalized after determination of final Project cost. The additional expenditures envisaged, as detailed in the DPR, with respect to the estimated final project cost of Rs 5500.98 crores would be furnished to the Hon'ble Commission after incurring of the same at actual basis through Final Project Cost Petition and during true up stages. The Petitioner prays leave that the current submission is limited to the actual incurred expense levels only without prejudice to the rights of the entire actual project cost of Rs 5500.98 Crores.

Based on the above submission, the following sections detail the Annual Revenue Requirement and Tariff Petition of Harduaganj Extension Stage II TPS for the five-year control period of FY 2019-20 to FY 2023-24

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### ***1.1. Annual Capacity (Fixed Charges) Charges***

As per tariff regulations the annual capacity (fixed) charges consist of

- a. Interest on Loan Capital
- b. Depreciation including Advance against Depreciation
- c. Return on Equity
- d. Operation and maintenance expenses including insurance and
- e. Interest on Working Capital

#### **1.1.1. Gross Fixed Assets**

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly tried up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly, the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the audited expenditure incurred till 30<sup>th</sup> September 2019 towards the project. The petitioner reiterates that the current submission is based on actual expenses only and additional capitalization during the control period would be carried out as per the DPR.

In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. However, the Petitioner prays leave, that additional capitalization as per the approved project cost.

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Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	3,095.90	3,095.90	3,095.90	3,095.90	3,095.90
Capitalisation	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	3,095.90	3,095.90	3,095.90	3,095.90	3,095.90

### 1.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted based on the scheduled COD of the unit and the actual expenditure incurred till 30<sup>th</sup> September 2019. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing**

Figures in Rs Crore

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	3,095.90	3,095.90	3,095.90	3,095.90	3,095.90
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	3,095.90	3,095.90	3,095.90	3,095.90	3,095.90
Closing Net FA	2,928.49	2,761.08	2,593.67	2,426.26	2,258.85
Financing:					
Opening Equity	928.77	928.77	928.77	928.77	928.77
Additions	-	-	-	-	-
Closing Equity	928.77	928.77	928.77	928.77	928.77

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Open. Accumulated Depreciation	-	167.41	334.82	502.23	669.64
Depreciation during the year	167.41	167.41	167.41	167.41	167.41
<b>Closing Accumulated Depreciation</b>	<b>167.41</b>	<b>334.82</b>	<b>502.23</b>	<b>669.64</b>	<b>837.05</b>
Opening Debts	2,167.13	1,999.72	1,832.31	1,664.90	1,497.49
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	167.41	167.41	167.41	167.41	167.41
<b>Closing Debts</b>	<b>1,999.72</b>	<b>1,832.31</b>	<b>1,664.90</b>	<b>1,497.49</b>	<b>1,330.08</b>




### 1.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.50%, the interest on loan capital has been worked out in the table below:

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**Table: Summary of Interest on Loan for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	2,167.13	1,999.72	1,832.31	1,664.90	1,497.49
Additions	-	-	-	-	-
Less: Normative repayment	167.41	167.41	167.41	167.41	167.41
<b>Closing Debts</b>	<b>1,999.72</b>	<b>1,832.31</b>	<b>1,664.90</b>	<b>1,497.49</b>	<b>1,330.08</b>
Average Debt	2,083.43	1,916.02	1,748.60	1,581.19	1,413.78
<b>Interest on Loan</b>	<b>239.59</b>	<b>220.34</b>	<b>201.09</b>	<b>181.84</b>	<b>162.59</b>

#### 1.1.4. Depreciation


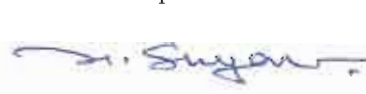


The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

HARDUAGANJ EXTENSION STAGE II\_MYT Petition for Determination of Tariff

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( डॉ. रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उपप्रशासक (वि. उ. नि. वि.)  
शक्ति भवन विस्तार, लखनऊ

**Table: Depreciation Summary for the Control Period***(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	167.41	167.41	167.41	167.41	167.41
Allowable Depreciation subject to maximum of 90% of the Capital Cost	167.41	167.41	167.41	167.41	167.41

**1.1.5. Return on Equity**

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity basedetermined in accordance with this Regulations @ 15.0% per annum.

The opening Equity base for computation of ROE for the generating station has been considered based on 30% normative funding of the total expenditure incurred till 30<sup>th</sup> September 2019 through equity. However, the Petitioner also prays that additional capitalization as per the estimated project cost of Rs 5500.98 crores would also be calimedundr similar principles of regulation.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)***(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	928.77	928.77	928.77	928.77	928.77
Additions	-	-	-	-	-
Closing Equity	928.77	928.77	928.77	928.77	928.77
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
Allowable RoE	139.32	139.32	139.32	139.32	139.32

HARDUAGANJ EXTENSION STAGE II MYT Petition for Determination of Tariff

( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उ०प्र०स०वि०उ०नि०वि०  
शक्ति मंत्रालय, नवखनार

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However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 1.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)&Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)&Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation. For the current generating station, normative parameters for O&M norms have been considered for 600 MW and above sets.

Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	660	660	660	660	660
Norms	20.26	20.97	21.71	22.47	23.26
<b>O&amp;M Expenses</b>	<b>133.72</b>	<b>138.40</b>	<b>143.29</b>	<b>148.30</b>	<b>153.52</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special

HARDUAGANJ EXTENSION STAGE II\_MYT Petition for Determination of Tariff

(इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उपप्रबंधन विभाग  
शक्ति भवन विस्तार, लखनऊ

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allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 1.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

- i. Cost of coal 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 stock storage capacity whichever is lower
- ii. Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- iii. Operation and Maintenance expenses including water charges for one month;
- iv. Maintenance spares @ 20% of operation and maintenance expenses; and
- v. Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

*Sandesh*  
*Dr. Shyam*  
*1.10*

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HARDUAGANJ EXTENSION STAGE II\_MYT Petition for Determination of Tariff

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( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य),  
उ०प्र० रा० वि० उ० नि० वि०  
शक्ति भवन, दिल्ली, लखनऊ

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCrS)

PARICHHA EXTENSION SATGE II	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	115.76	121.55	127.63	134.01	140.71
Cost of Main Secondary Fuel Oil	2.16	2.27	2.38	2.50	2.62
Fuel Cost	-	-	-	-	-
Liquid Fuel Stock	-	-	-	-	-
O & M Expenses	11.14	11.53	11.94	12.36	12.79
Maintenance Spares	26.74	27.68	28.66	29.66	30.70
Receivables	266.26	273.47	281.16	289.34	298.04
Total Working Capital	422.07	436.51	451.77	467.87	484.87
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>58.25</b>	<b>60.24</b>	<b>62.34</b>	<b>64.57</b>	<b>66.91</b>

#### 1.1.8. Summary of Annual Capacity (Fixed) Charges

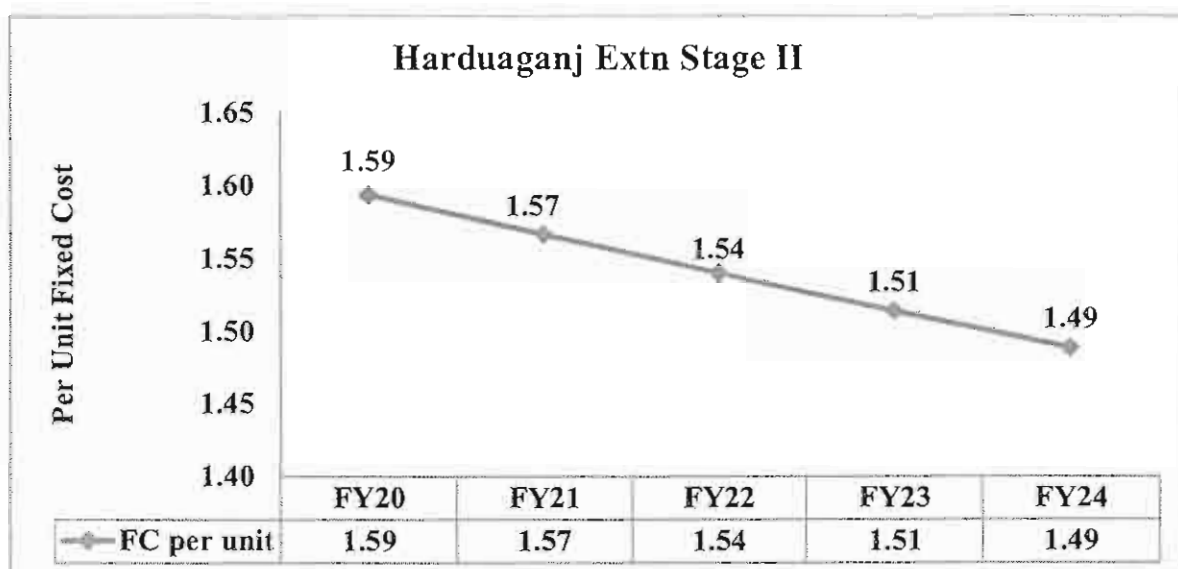
In view of the above submissions, the fixed cost of the Petitioner's Parichha Extension Satge II TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCrS)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	167.41	167.41	167.41	167.41	167.41
Interest on Loan Capital	239.59	220.34	201.09	181.84	162.59
Return on Equity	139.32	139.32	139.32	139.32	139.32
O&M Expenses	133.72	138.40	143.29	148.30	153.52
Interest on Working Capital	58.25	60.24	62.34	64.57	66.91
<b>Total Capacity Charges</b>	<b>738.28</b>	<b>725.71</b>	<b>713.45</b>	<b>701.43</b>	<b>689.74</b>
Energy ex bus	4632	4632	4632	4632	4632
<b>FC per unit</b>	<b>1.59</b>	<b>1.57</b>	<b>1.54</b>	<b>1.51</b>	<b>1.49</b>

Graph: Fixed Cost per unit in the Control Period



## 1.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

As per Tariff Generation Regulations for MYT FY 2020 to FY 2023						
Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	5.75%	5.75%	5.75%	5.75%	5.75%
Gross Heat Rate	Kcal/kWh	2270	2270	2270	2270	2270
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

In light of this being an upcoming generating station, the petitioner has estimated the energy charges based on the actual prices of coal and oil being delivered at other stations at Harduaganj, being similarly located geographically. However, the Petitioner also prays leave for recovery of excess energy charge in case of variations of quality and prices of the primary and secondary fuel as per terms and conditions of the Regulations. For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) for Harduaganj Extension has been taken for the purpose of calculations of energy charges (Annexure-1). The

HARDUAGANJ EXTENSION STAGE II MYT Petition for Determination of Tariff

( इ. रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उपप्रशासक (उपनिर्देश)  
शक्ति भवन विस्तार, लखनऊ

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Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five-year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	MW	660	660	660	660	660
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2270	2270	2270	2270	2270
Auxiliary Energy Consumption	%	5.75%	5.75%	5.75%	5.75%	5.75%
Energy Generation - Gross	MU	4,914	4,914	4,914	4,914	4,914
Auxiliary Energy Consumption	MU	283	283	283	283	283
Ex-bus Energy Sent Out	MU	4,632	4,632	4,632	4,632	4,632
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	9,482	9,482	9,482	9,482	9,482
Price of Oil	Rs./KL	52,721	55,357	58,125	61,031	64,082
Wt. Avg. GCV of Coal	kCal/kg	3560	3560	3560	3560	3560
Price of Coal	Rs./MT	4504	4730	4966	5215	5475
Heat Contribution from SFO	Kcal/kWh	4.74	4.74	4.74	4.74	4.74
Oil Consumption	KL	2457	2457	2457	2457	2457
Heat Contribution from Coal	Kcal/kWh	2265	2265	2265	2265	2265
Specific Coal Consumption	kg/kWh	0.64	0.64	0.64	0.64	0.64
Coal Consumption	MMT	3.13	3.13	3.13	3.13	3.13
Total Cost of Oil	Rs Cr	12.95	13.60	14.28	15.00	15.75
Total Cost of Coal	Rs Cr	1,408.45	1,478.87	1,552.81	1,630.45	1,711.98
Total Fuel Cost	Rs Cr	1,421.40	1,492.47	1,567.09	1,645.45	1,727.72
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	2.80	2.94	3.08	3.24	3.40
Rate of Energy Charge from Coal ex-bus	Paise/kWh	304.08	319.29	335.25	352.01	369.61
Rate of Energy Charge ex-bus per kWh	Paise/kWh	306.88	322.22	338.34	355.25	373.01

HARDUAGANJ EXTENSION STAGE II\_MYT Petition for Determination of Tariff

*Sander*

*S. Shyam*

( इ० रमेश चन्द्र )

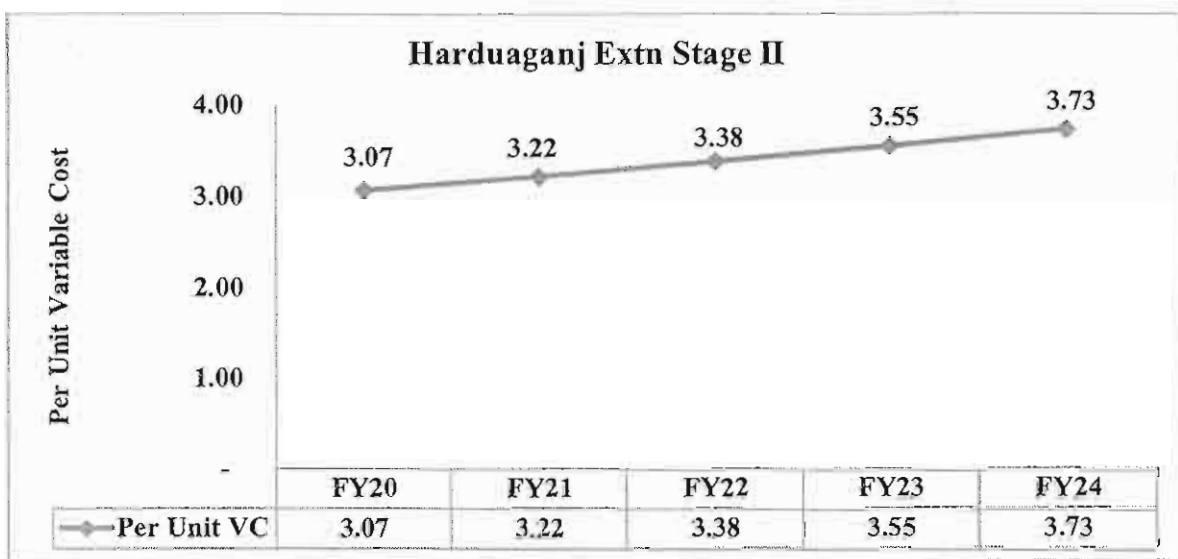
मुख्य अभियन्ता (वाणिज्य)

उपप्रबन्धक (वाणिज्य)

शक्ति भवन, लखनऊ

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Graph: Variable Cost per unit in the Control Period



#### 1.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

*Sandeep*

*S. Shyam*

*(Signature)*

( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उ०प्र०रा०वि०स०नि०वि०  
शक्ति भवन विस्तार, लखन

**COMMERCIAL  
UNIT**



U.P. Rajya Vidyut Utpadan Nigam Ltd.  
14<sup>th</sup> floor, Shakti Bhawan Extn.  
Lucknow-226001  
Telephone No.- 0522-2288056/2287030  
CIN : U40101UP1980SGC005065  
E-mail: gm.commercial@uprvunl.org

No. 02 /UNL/CE(Comm.)/MYT (2019-24)

Date: 03 January-2020

✓ Secretary,

U.P. Electricity Regulatory Commission  
Vibhuti Khand-II, Gomti Nagar  
Lucknow-2260010

**Subject:- Additional Submissions-I in Petitions for ARR & Multi Year Tariff of various Thermal Power Stations of UPRVUNL for FY 2019-20 to 2023-24.**

Dear Sir,

Kindly find enclosed herewith Additional Submissions in Petitions for determination of ARR & Multi Year Tariff of the following Thermal Power Stations including provisional Tariff of upcoming Harduaganj Extension Stage-II (1x660 MW) of UPRVUNL in 06 copies (one original + 05 photocopies + 01 soft copy) for FY 2019-20 to FY 2023-24 as per UPERC (Terms & Conditions for Generation Tariff) Regulation-2019. The original Petitions were submitted in Hon'ble Commission vide this office letter no. 834 /UNL/CE(Comm.)/MYT (2019-24), dt. 06.11.2019 alongwith Petition fees.

The Power Stations of UPRVUNL for which ARR/ MYT are requested are mentioned hereunder:

Sl No.	Name of Power Station	Unit No.	Total Capacity (MW)
1.	Anpara- 'A' TPS	1,2,3	3x210
2.	Anpara- 'B' TPS	4,5	2x500
3.	Anpara- 'D' TPS	6,7	2x500
4.	Obra- 'B' TPS	9,10,11,12,13	5x200
5.	Harduaganj TPS	7	1x110
6.	Harduaganj Extn TPS	8,9	2x250
7.	Parichha TPS	2	1x110
8.	Parichha Extn TPS	3,4	2x210
9.	Parichha Extn Stage-II TPS	5,6	2x250
10.	Harduaganj Ext Stage-II TPS	10	1x660
<b>Total</b>			<b>5930</b>

Submitted for kind consideration of Hon'ble Commission.

Encl: Petitions as as above.

Yours Sincerely,

(Ramesh Chandra)  
Chief Engineer (Commercial)



**COMMERCIAL  
UNIT**



**U.P. Rajya Vidyut Utpadan Nigam Ltd.**  
14<sup>th</sup> floor, Shakti Bhawan Extn.  
Lucknow-226001  
Telephone No.- 0522-2288056/2287030  
CIN :U40101UP1980SGC005065  
E-mail: gm.commercial@uprvunl.org

No. 02 /UNL/CE(Comml.)/MYT (2019-24)

Date: 03 , January-2020

Copy to the following respondents for their kind information:-

1. M.D., U.P. Power Corporation Ltd., 7<sup>th</sup> floor, Shakti Bhawan, 14 Ashok Marg, Lucknow.
2. M.D., Madyanchal Vidyut Vitran Nigam Ltd., P.N. Road, Gokhale Marg, Lucknow.
3. M.D., Poorvaranchal Vidyut Vitran Nigam Ltd., 132KV S/S Bhikhari Vidyut Nagar, Varanasi.
4. M.D., Pashimanchal Vidyut Vitran Nigam Ltd., Victoria Park, Meerut.
5. M.D., Dakshinanchal Vidyut Vitran Nigam Ltd., Vidyut Bhawan, Gailana Road, Agra.
6. M.D., Kanpur Electric Supply Co. Ltd., KESA House, Kanpur.
7. Chief Executive Officer, Noida Power Company Ltd., Commercial Complex, H-Block, Alpha-II Sector, Greater Noida.
8. Chief Engineer (PPA), UPPCL, 14<sup>th</sup> Floor, Shakti Bhawan Ext, Lucknow alongwith all enclosures..

Copy to the followings for their kind information:-

1. PS to Managing Director, UPRVUNL, 7<sup>th</sup> floor, Shakti Bhawan, 14 Ashok Marg, Lucknow.
2. Director (Project & Commercial), UPRVUNL, 8<sup>th</sup> floor, Shakti Bhawan Ext, Lucknow.
3. Director (Technical), UPRVUNL, 8<sup>th</sup> floor, Shakti Bhawan Ext, Lucknow.
4. Director (Finance), UPRVUNL, 8<sup>th</sup> floor, Shakti Bhawan Ext, Lucknow.
5. Executive Director (Finance), UPRVUNL, 8<sup>th</sup> floor, Shakti Bhawan Ext, Lucknow alongwith enclosures..

(Ramesh Chandra )  
Chief Engineer(Commercial)



2019

**ADDITIONAL SUBMISSION  
IN MULTI YEAR TARIFF**

**PETITION**

**FOR**

**FY 2019-20 to FY 2023-24**



**U P RAJYA VIDYUT UTPADAN NIGAM LIMITED**

*Sandesh*  
AE (Com)

*Dr. Shyam*  
EE (Commercial)

*M. S. S.*

( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उ०प्र०रा०वि०उ०नि०वि०  
शक्ति भवन विस्तार, लखनऊ

**FORM-1**

(See Regulation 30)

**BEFORE THE HON'BLE UTTAR PRADESH ELECTRICITY REGULATORY  
COMMISSION, VIDYUT NIYAMAK BHAWAN, VIBHUTI KHAND, GOMTI NAGAR,  
LUCKNOW-226010**

Receipt Register No.: \_\_\_\_\_

Petition No.: \_\_\_\_\_

**IN THE MATTER OF**

ADDITIONAL SUBMISSION IN MULTI YEAR TARIFF PETITION FOR APPROVAL OF ANNUAL REVENUE REQUIREMENT AND DETERMINATION OF TARIFF FOR FY 2019-20 TO FY 2023-24 IN RESPECT OF EXISTING THERMAL POWER STATIONS & PETITION FOR DETERMINATION OF PROVISIONAL TARIFF FOR HARDUAGANJ EXTENSION STAGE II OF UTTAR PRADESH RAJYA VIDYUT UTPADAN NIGAM LIMITED (UPRVUNL), SHAKTI BHAWAN, 14-ASHOK MARG LUCKNOW

AND

**IN THE MATTER OF**

UTTAR PRADESH RAJYA VIDYUT UTPADAN NIGAM LIMITED (UPRVUNL),  
SHAKTI BHAWAN, 14-ASHOK MARG, LUCKNOW.

V/s

UTTAR PRADESH POWER CORPORATION LIMITED (UPPCL),  
SHAKTI BHAWAN, 14-ASHOK MARG, LUCKNOW.

MADHYANCHAL VIDYUT VITRAN NIGAM LTD.  
PN ROAD, LUCKNOW.

POORVANCHAL VIDYUT VITRAN NIGAM LTD.  
132 KV S/S BHIKARI VIDYUT NAGAR, VARANASI  
PASCHIMANCHAL VIDYUT VITRAN NIGAM LTD.  
VICTORIA PARK, MEERUT

APPLICANT

RESPONDENTS



( ई० रमेश चन्द्र )  
मुख्य अभियन्ता (याणिज्य)  
उ०प्र०रा०वि०उ०नि०वि०  
शक्ति भवन विस्तार, लखनऊ

Sunder  
A.E.(Com)

Dr. Shyam

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DAKSHINACHAL VIDYUT VITRAN NIGAM LTD.  
GALINA ROAD AGRA.

KANPUR ELECTRICITY SUPPLY CO. LTD.  
KESA HOUSE, KANPUR

NOIDA POWER CO. LTD.  
COMMERCIAL COMPLEX, H BLOCK, ALPHA-II SECTOR  
GREATER NOIDA CITY

Sanded Sugan Nm

( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उ०प्र०श०वि०उ०नि०धि०  
शक्ति भवन विस्तार, लखनऊ





उत्तर प्रदेश UTTAR PRADESH

88AD 143074

FORM-2

BEFORE THE HON'BLE UTTAR PRADESH ELECTRICITY REGULATORY  
COMMISSION, VIDYUT NIYAMAK BHAWAN, VIBHUTI KHAND, GOMTI NAGAR,  
LUCKNOW-226010

Receipt Register No.: \_\_\_\_\_

Petition No.: \_\_\_\_\_

IN THE MATTER OF

ADDITIONAL SUBMISSION IN MULTI YEAR TARIFF PETITION FOR APPROVAL OF  
ANNUAL REVENUE REQUIREMENT AND DETERMINATION OF TARIFF FOR FY 2019-20  
TO FY 2023-24 IN RESPECT OF EXISTING THERMAL POWER STATIONS & PETITION FOR  
DETERMINATION OF PROVISIONAL TARIFF FOR HARDUAGANJ EXTENSION STAGE II  
OF UTTAR PRADESH RAJYA VIDYUT UTPADAN NIGAM LIMITED (UPRVUNL), SHAKTI  
BHAWAN, 14-ASHOK MARG LUCKNOW

AND

IN THE MATTER OF

UTTAR PRADESH RAJYA VIDYUT UTPADAN NIGAM LIMITED (UPRVUNL),  
SHAKTI BHAWAN, 14-ASHOK MARG, LUCKNOW.

VS

APPLICANT

(शिव रमेश चन्द्र)  
मुख्य अभियन्ता (वाणिज्य)  
उपग्रंथविभाग  
शक्ति भवन विस्तार, लखनऊ



UTTAR PRADESH POWER CORPORATION LIMITED (UPPCL),  
SHAKTI BHAWAN, 14-ASHOK MARG, LUCKNOW.

MADHYANCHAL VIDYUT VITRAN NIGAM LTD.  
PN ROAD, LUCKNOW.

POORVANCHAL VIDYUT VITRAN NIGAM LTD.  
132 KV S/S BHIKARI VIDYUT NAGAR, VARANASI

PASCHIMANCHAL VIDYUT VITRAN NIGAM LTD.  
VICTORIA PARK, MEERUT

DAKSHINACHAL VIDYUT VITRAN NIGAM LTD.  
GALINA ROAD AGRA.

KANPUR ELECTRICITY SUPPLY CO. LTD.  
KESA HOUSE, KANPUR

NOIDA POWER CO. LTD.  
COMMERCIAL COMPLEX, H BLOCK, ALPHA-II SECTOR  
GREATER NOIDA CITY

RESPONDENTS

### AFFIDAVIT

I, Ramesh Chandra, Son of Late Shri Mawasiram aged 59 years, office of Commercial Unit, 14<sup>th</sup> Floor, Shakti Bhawan Extn., 14 Ashok Marg, Lucknow, do hereby solemnly affirm and state as under::

1. I say that I am Chief Engineer, Commercial UPRVUNL, the Applicant in the above matter and am duly authorized by the said Applicant to swear the present affidavit.
2. I say that I have read the contents of the above MYT Petition filed by the Petitioner (applicant) and I have understood the contents of the same.
3. That the contents of the Petition filed by the Applicant are based on the information available with the Applicant in the normal course of business and believed by me to be true.
4. I say that the Text, Appendixes and Annexure to the Petition are the true and correct copies of their original.

(इं० रमेश चन्द्र)  
मुख्य अभियन्ता (वाणिज्य)  
उ०प्र०रा०वि०उ०नि०धि०  
शक्ति भवन विस्तार, लखनऊ

### VERIFICATION

I, the deponent above named, do hereby verify the contents of the above affidavit to be true to the best of my knowledge, no part of it is false and nothing material has been concealed therefrom.

Verified at Lucknow on the \_\_\_\_\_, 2019

Sandeep Singh

DEPONENT  
(इं० रमेश चन्द्र)  
मुख्य अभियन्ता (वाणिज्य)  
उ०प्र०रा०वि०उ०नि०धि०  
शक्ति भवन विस्तार, लखनऊ

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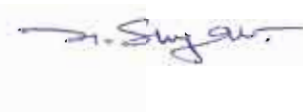
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*Sunder* *S. S. S. S. S.*

( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उपप्रशासक (उ०नि०पि०)  
शक्ति विस्तार, लखनऊ

## 1. ADDITIONAL SUBMISSION IN MULTI YEAR TARIFF PETITION FOR THE PERIOD FY 2019-20 TO FY 2023-24

UPRVUNL has submitted the Petition for determination of Annual Revenue Requirement & Multi Year Tariff Petition for FY 2019-20 to FY 2023-24 for its existing Thermal Power Stations and Provisional Tariff for Harduaganj Extension Stage II (1x660 MW). The said Petition was submitted before the Hon'ble Commission on 6<sup>th</sup> November 2019. However, later on the Petitioner has recognized some typographical slippages in the Petition submitted and hereby wishes to remediate the same by way of making this additional submission before the Hon'ble Commission. The Petitioner therefore requests the Hon'ble Commission to kindly consider the changes detailed in this additional submission at the time of finalization of the Multi-Year Tariff petition. The aforementioned modifications along with the revised tables are detailed hereunder:

  
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मुख्य अभियन्ता (वाणिज्य)  
उ०प्र०रा०वि०उ०नि०शि०  
शक्ति भवन विस्तार, लखनऊ

**Anpara A**  
**Additional Submission in MYT petition for the**  
**period FY 2019-20 to FY 2023-24**

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**Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited**

*Sandeep* *Dr. S. S. Singh* *R. S. Singh*

*(Signature)*  
( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
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## 2. ANPARA A TPS

### 2.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. Additional capitalization of Rs. 448.06 crore is projected during the control period due to installation of FGD and ESP. The approval of the same is attached herewith as Annexure-1

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

*(All figures in RsCrs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	1,024.21	1,024.21	1,024.21	1,024.21	1,472.28
Capitalisation	-	-	-	448.06	-
Deletions	-	-	-	-	-
Closing GFA	1,024.21	1,024.21	1,024.21	1,472.28	1,472.28

Anpara A\_Additional Submission\_MYT Petition for Determination of Tariff

2

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उत्तराखण्ड विद्युत निगम लि.

### 2.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing**

*Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	1,024.21	1,024.21	1,024.21	1,024.21	1,472.28
Additions	-	-	-	448.06	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>1,024.21</b>	<b>1,024.21</b>	<b>1,024.21</b>	<b>1,472.28</b>	<b>1,472.28</b>
<b>Closing Net FA</b>	<b>102.42</b>	<b>102.42</b>	<b>102.42</b>	<b>483.17</b>	<b>402.78</b>
<b>Financing:</b>					
Opening Equity	282.97	282.97	282.97	282.97	417.39
Additions	-	-	-	134.42	-
<b>Closing Equity</b>	<b>282.97</b>	<b>282.97</b>	<b>282.97</b>	<b>417.39</b>	<b>417.39</b>
Open. Accumulated Depreciation	902.12	921.79	921.79	921.79	989.11
Depreciation during the year	19.67	-	-	67.32	80.38
<b>Closing Accumulated Depreciation</b>	<b>921.79</b>	<b>921.79</b>	<b>921.79</b>	<b>989.11</b>	<b>1,069.49</b>
Opening Debts	-	-	-	-	246.32
Additions	-	-	-	313.65	-
Less: Depreciation (normative repayment)	-	-	-	67.32	80.38
<b>Closing Debts</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>246.32</b>	<b>165.94</b>

### 2.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived

*Sandeep* *21.5.2020* *N*

at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, it is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.25%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	-	-	-	-	246.32
Additions	-	-	-	313.65	-
Less: Normative repayment	-	-	-	67.32	80.38
<b>Closing Debts</b>	-	-	-	<b>246.32</b>	<b>165.94</b>
Average Debt	-	-	-	123.16	206.13
<b>Interest on Loan</b>	-	-	-	<b>13.86</b>	<b>23.19</b>

Anpara A\_Additional Submission\_MYT Petition for Determination of Tariff

*Sunder* *S. Suman* *N. S. S.*

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#### 2.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.


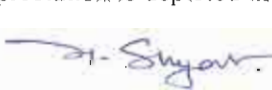

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.


The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

  
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उ०प्र०रा०वि०उ०नि०वि०  
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**Table: Depreciation Summary for the Control Period***(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	54.26	54.26	54.26	67.32	80.38
Allowable Depreciation subject to maximum of 90% of the Capital Cost	19.67	0.00	0.00	67.32	80.38

**2.1.5. Return on Equity**

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity base determined in accordance with these Regulation @15.0% per annum.

The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)***(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	282.97	282.97	282.97	282.97	417.39
Additions	-	-	-	134.42	-
<b>Closing Equity</b>	<b>282.97</b>	<b>282.97</b>	<b>282.97</b>	<b>417.39</b>	<b>417.39</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>42.45</b>	<b>42.45</b>	<b>42.45</b>	<b>52.53</b>	<b>62.61</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of

*Sandeep* *M. Shyam* *Rana*

*(श्री. रमेश चन्द्र)*  
मुख्य अभियन्ता (वाणिज्य)

Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 2.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)&P arichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7) & Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	630	630	630	630	630
Norms	32.96	34.12	35.31	36.56	37.84
<b>O&amp;M Expenses</b>	<b>207.65</b>	<b>214.96</b>	<b>222.45</b>	<b>230.33</b>	<b>238.39</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

*Sandeep* *Shyama* *Mark*

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Anpara A\_Additional Submission\_MYT Petition for Determination of Tariff

( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
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शक्ति भवन विस्तार

### 2.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coalbased generating stations:

- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCrs)

Anpara A	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	65.39	68.66	72.09	75.70	79.48
Cost of Main Secondary Fuel Oil	2.26	2.37	2.49	2.61	2.74
Fuel Cost	0.00	0.00	0.00	0.00	0.00

Anpara A Additional Submission\_MYT Petition for Determination of Tariff

<b>Anpara A</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Liquid Fuel Stock	0.00	0.00	0.00	- 0.00	0.00
O & M Expenses	17.30	17.91	18.54	19.19	19.87
Maintenance Spares	41.53	42.99	44.49	46.07	47.68
Receivables	137.50	141.12	147.49	165.62	176.68
Total Working Capital	263.98	273.05	285.09	309.18	326.45
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>36.43</b>	<b>37.68</b>	<b>39.34</b>	<b>42.67</b>	<b>45.05</b>

### 2.1.8. Summary of Annual Capacity (Fixed) Charges

In view of the above submissions, the fixed cost of the Petitioner's Anpara A TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCr/s)

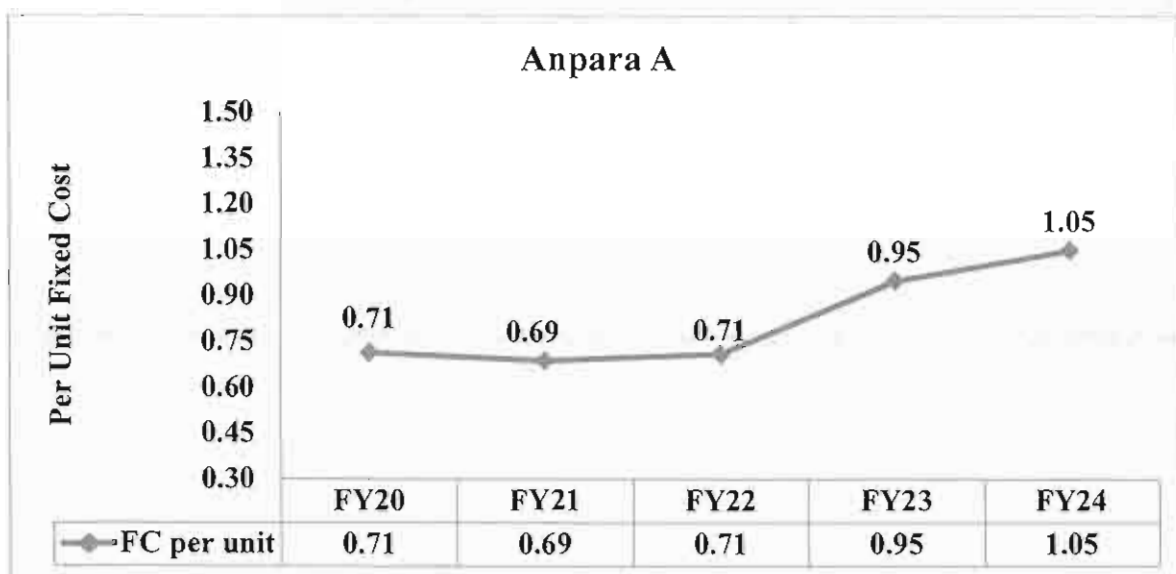
<b>Particulars</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Depreciation	19.67	0.00	0.00	67.32	80.38
Interest on Loan Capital	0.00	0.00	0.00	13.86	23.19
Return on Equity	42.45	42.45	42.45	52.53	62.61
O&M Expenses	207.65	214.96	222.45	230.33	238.39
Interest on Working Capital	36.43	37.68	39.34	42.67	45.05
Compensation Allowances	0.00	0.00	0.00	0.00	0.00
<b>Total Capacity Charges</b>	<b>306.19</b>	<b>295.08</b>	<b>304.24</b>	<b>406.70</b>	<b>449.62</b>
Energy ex bus	4292	4292	4292	4292	4292
<b>FC per unit</b>	<b>0.71</b>	<b>0.69</b>	<b>0.71</b>	<b>0.95</b>	<b>1.05</b>

**Graph: Fixed Cost per unit in the Control Period**

*Sandeep* → *Suyam* → *Manu*

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शक्ति भवन विस्तार, लखनऊ





## 2.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	8.50%	8.50%	8.50%	8.50%	8.50%
Gross Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges. The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

*Sandeep* *Sugan* *Manish*

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अमित

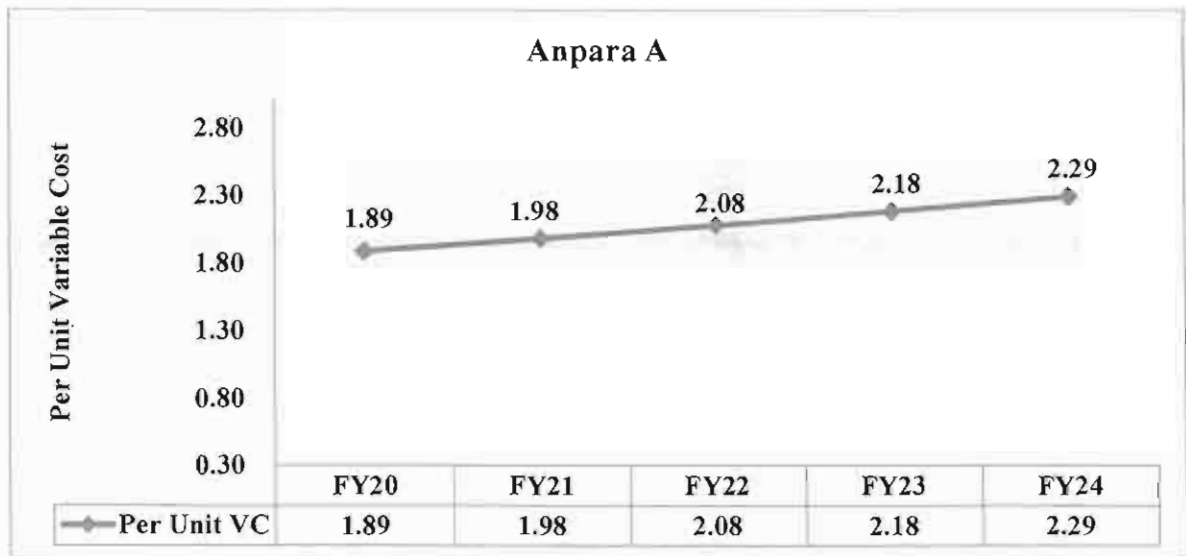
**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Capacity	MW	630	630	630	630	630
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Auxiliary Energy Consumption	%	8.50%	8.50%	8.50%	8.50%	8.50%
Energy Generation - Gross	MU	4,691	4,691	4,691	4,691	4,691
Auxiliary Energy Consumption	MU	399	399	399	399	399
Ex-bus Energy Sent Out	MU	4,292	4,292	4,292	4,292	4,292
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	10,619	10,619	10,619	10,619	10,619
Price of Oil	Rs./KL	57,722	60,608	63,638	66,820	70,161
Wt. Avg. GCV of Coal	kCal/kg	3681	3681	3681	3681	3681
GCV of Primary Fuel (Coal) less 85 Kcal/Kg on account of variation during storage	kCal/kg	3596	3596	3596	3596	3596
Price of Coal	Rs./MT	2,515	2,641.23	2,773.29	2,911.95	3,057.55
Heat Contribution from SFO	Kcal/kWh	5.31	5.31	5.31	5.31	5.31
Oil Consumption	KL	2345	2345	2345	2345	2345
Heat Contribution from Coal	Kcal/kWh	2425	2425	2425	2425	2425
Specific Coal Consumption	kg/kWh	0.67	0.67	0.67	0.67	0.67
Coal Consumption	MMT	3.16	3.16	3.16	3.16	3.16
Total Cost of Oil	Rs Cr	13.54	14.22	14.93	15.67	16.46
Total Cost of Coal	Rs Cr	795.57	835.34	877.11	920.97	967.02
Total Fuel Cost	Rs Cr	809.10	849.56	892.04	936.64	983.47
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	3.15	3.31	3.48	3.65	3.83
Rate of Energy Charge from Coal ex-bus	Paise/kWh	185.35	194.62	204.35	214.57	225.29
Rate of Energy Charge ex-bus per kWh	Paise/kWh	188.50	197.93	207.83	218.22	229.13

*Sandeep* → *Singh* *name*

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**Graph: Variable Cost per unit in the Control Period**



#### 2.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

*Sandeep* *Dr. Sanyal* *N. K.*

*(Signature)*

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**Anpara B**  
**Additional Submission in MYT petition for the**  
**period FY 2019-20 to FY 2023-24**

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**Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited**

*Sandesh* *Singh* *...*

*[Signature]*

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### 3. ANPARA B TPS

#### 3.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- e) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- f) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- g) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- h) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19.

Additional capitalization of Rs. 662.34 crore projected during the control period due to installation of FGD and ESP. The approval of the same is attached herewith as Annexure-2.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	5,141.73	5,141.73	5,141.73	5,141.73	5,804.07
Capitalisation	-	-	-	662.34	-
Deletions	-	-	-	-	-
Closing GFA	5,141.73	5,141.73	5,141.73	5,804.07	5,804.07

*Sandeep*

*S. S. S. S.*

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### 3.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing**

*Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	5,141.73	5,141.73	5,141.73	5,141.73	5,804.07
Additions	-	-	-	662.34	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>5,141.73</b>	<b>5,141.73</b>	<b>5,141.73</b>	<b>5,804.07</b>	<b>5,804.07</b>
<b>Closing Net FA</b>	<b>514.17</b>	<b>514.17</b>	<b>514.17</b>	<b>878.46</b>	<b>580.41</b>
<b>Financing:</b>					
Opening Equity	1,402.78	1,402.78	1,402.78	1,402.78	1,601.49
Additions	-	-	-	198.70	-
<b>Closing Equity</b>	<b>1,402.78</b>	<b>1,402.78</b>	<b>1,402.78</b>	<b>1,601.49</b>	<b>1,601.49</b>
Open. Accumulated Depreciation	4,627.56	4,627.56	4,627.56	4,627.56	4,925.61
Depreciation during the year	-	-	-	298.05	298.05
<b>Closing Accumulated Depreciation</b>	<b>4,627.56</b>	<b>4,627.56</b>	<b>4,627.56</b>	<b>4,925.61</b>	<b>5,223.66</b>
Opening Debts	-	-	-	-	165.58
Additions	-	-	-	463.64	-
Less: Depreciation (normative repayment)	-	-	-	298.05	165.58
<b>Closing Debts</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>165.58</b>	<b>-</b>

### 3.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.40%, the interest on loan capital has been worked out in the table below:


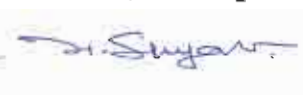

**Table: Summary of Interest on Loan for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	-	-	-	-	165.58
Additions	-	-	-	463.64	-
Less: Normative repayment	-	-	-	298.05	165.58
<b>Closing Debts</b>	-	-	-	165.58	-
Average Debt	-	-	-	82.79	82.79
<b>Interest on Loan</b>	-	-	-	9.44	9.44

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### 3.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	290.02	290.02	290.02	309.33	328.64
Allowable Depreciation subject to maximum of 90% of the Capital Cost	0.00	0.00	0.00	298.05	298.05

*Sandesh*  
*M. Shyam*

*[Signature]*

*( ज्ञो रमेश चन्द्र )*



### 3.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity base determined in accordance with these Regulation @15.0% per annum.

The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	1,402.78	1,402.78	1,402.78	1,402.78	1,601.49
Additions	-	-	-	198.70	-
<b>Closing Equity</b>	<b>1,402.78</b>	<b>1,402.78</b>	<b>1,402.78</b>	<b>1,601.49</b>	<b>1,601.49</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>210.42</b>	<b>210.42</b>	<b>210.42</b>	<b>225.32</b>	<b>240.22</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

### 3.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a)

  
(श्री रमेश चन्द्र)

(a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)& Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)& Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in RsCrs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	1000	1000	1000	1000	1000
Norms	22.51	23.30	24.12	24.97	25.84
<b>O&amp;M Expenses</b>	<b>225.10</b>	<b>233.00</b>	<b>241.20</b>	<b>249.70</b>	<b>258.40</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

### 3.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

*Sandeep* *Dr. Sugan* *Dr. Anurag*

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The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCr/s)

Anpara B	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	103.19	108.35	113.77	119.46	125.43
Cost of Main Secondary Fuel Oil	3.58	3.76	3.95	4.15	4.35
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	18.76	19.42	20.10	20.81	21.53
Maintenance Spares	45.02	46.60	48.24	49.94	51.68
Receivables	217.74	226.87	236.44	286.93	299.31
Total Working Capital	388.29	405.00	422.50	481.28	502.30
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>53.58</b>	<b>55.89</b>	<b>58.30</b>	<b>66.42</b>	<b>69.32</b>

*Sandeep*

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### 3.1.8. Summary of Annual Capacity (Fixed) Charges

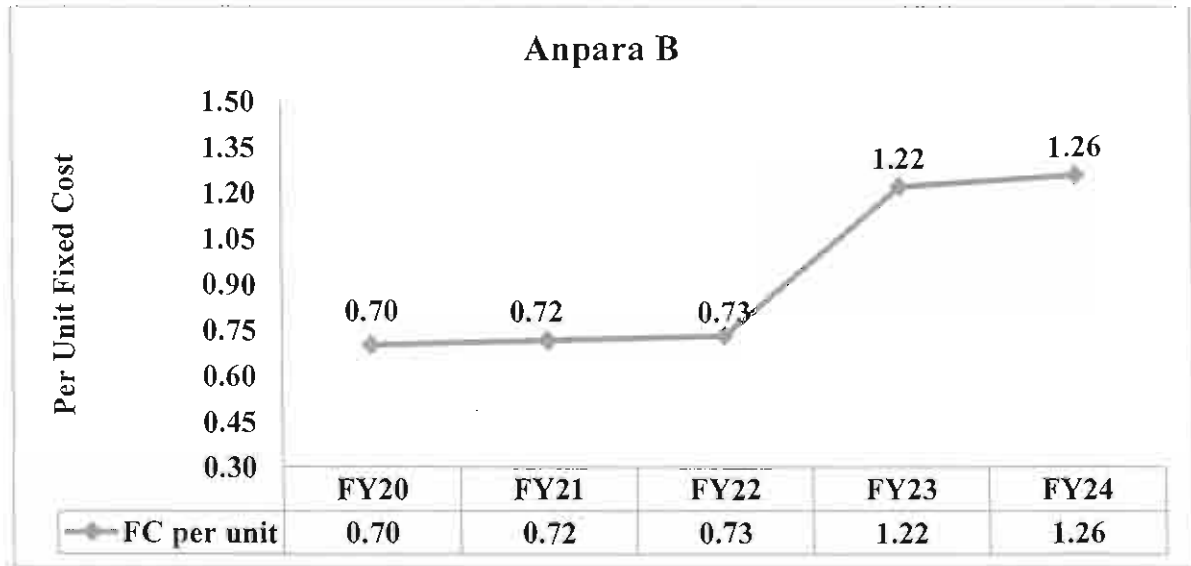
In view of the above submissions, the fixed cost of the Petitioner's Anpara B TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	0.00	0.00	0.00	298.05	298.05
Interest on Loan Capital	0.00	0.00	0.00	9.44	9.44
Return on Equity	210.42	210.42	210.42	225.32	240.22
O&M Expenses	225.10	233.00	241.20	249.70	258.40
Interest on Working Capital	53.58	55.89	58.30	66.41	69.32
Compensation Allowances	0.00	0.00	0.00	0.00	0.00
<b>Total Capacity Charges</b>	<b>489.10</b>	<b>499.31</b>	<b>509.92</b>	<b>848.92</b>	<b>875.43</b>
Energy ex bus	6958	6958	6958	6958	6958
<b>FC per unit</b>	<b>0.70</b>	<b>0.72</b>	<b>0.73</b>	<b>1.22</b>	<b>1.26</b>

**Graph: Fixed Cost per unit in the Control Period**



*Sandeep* → *Shyam*

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### 3.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24.

Further, it is humbly submitted that Anpara B Power Plant has a tube-type coal mill installed in the plant design. As per Regulation 26 Clause (v) sub-clause (a) the UPERC (Terms and Conditions of Generation Tariff) Regulations, 2019 stipulate

*"..Provided further that for thermal generating stations with induced draft cooling towers and where tube type coal mill is used, the norms shall be further increased by 0.5% and 0.8% respectively.."*

In light of the above, the Petitioner claims the same relaxed norm at 6.55% instead of the normative 5.75% for 500 MW and above series of unit sizes.

#### Table Normative Operating Parameters for the Control Period

##### As per Tariff Generation Regulations for MYT FY 2020 to FY 2023

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	6.55%	6.55%	6.55%	6.55%	6.55%
Gross Heat Rate	Kcal/kWh	2390	2390	2390	2390	2390
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges. The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

*Sandeep* *Singh* *N. M.*

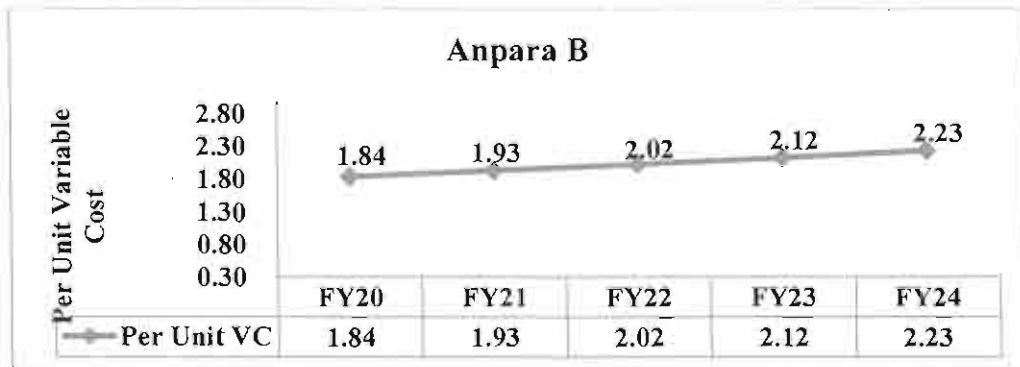
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**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Capacity	MW	1000	1000	1000	1000	1000
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2390	2390	2390	2390	2390
Auxiliary Energy Consumption	%	6.55%	6.55%	6.55%	6.55%	6.55%
Energy Generation - Gross	MU	7,446	7,446	7,446	7,446	7,446
Auxiliary Energy Consumption	MU	488	488	488	488	488
Ex-bus Energy Sent Out	MU	6,958	6,958	6,958	6,958	6,958
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	10,619	10,619	10,619	10,619	10,619
Price of Oil	Rs./KL	57,722	60,608	63,638	66,820	70,161
Wt. Avg. GCV of Coal	kCal/kg	3628	3628	3628	3628	3628
GCV of Primary Fuel (Coal) less 85 Kcal/Kg on account of variation during storage	kCal/kg	3543	3543	3543	3543	3543
Price of Coal	Rs./MT	2505	2631	2762	2900	3045
Heat Contribution from SFO	Kcal/kWh	5.31	5.31	5.31	5.31	5.31
Oil Consumption	KL	3723	3723	3723	3723	3723
Heat Contribution from Coal	Kcal/kWh	2385	2385	2385	2385	2385
Specific Coal Consumption	kg/kWh	0.67	0.67	0.67	0.67	0.67
Coal Consumption	MMT	5.01	5.01	5.01	5.01	5.01
Total Cost of Oil	Rs Cr	21.49	22.56	23.69	24.88	26.12
Total Cost of Coal	Rs Cr	1,255.50	1,318.27	1,384.19	1,453.40	1,526.07
Total Fuel Cost	Rs Cr	1,276.99	1,340.84	1,407.88	1,478.27	1,552.19
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	3.09	3.24	3.40	3.58	3.75
Rate of Energy Charge from Coal ex-bus	Paise/kWh	180.43	189.45	198.93	208.87	219.32
Rate of Energy Charge ex-bus per kWh	Paise/kWh	183.52	192.70	202.33	212.45	223.07

**Graph: Variable Cost per unit in the Control Period**



*Sandeep* → *Shyam*

*N. S. K.*

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### 3.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.



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**Anpara D**  
**Additional Submission in MYT petition for the**  
**period FY 2019-20 to FY 2023-24**

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**Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited**

*Sandeep* *M. Sanyal*

*M. Sanyal*

*(Signature)*

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## 4. ANPARA D TPS

### 4.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- i) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- j) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- k) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- l) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19.

Anpara D revised project cost works out Rs. 7795.11 crore. Out of which only 7156.52 crore capitalized upto March 2019 as per audited account. The detailed head wise breakup pf the above capital cost as on 31<sup>st</sup> March 2019 in Form 11 of the tariff Filing Format. Balance project cost of Rs. 638.59 crore capitalised in FY 2019-20 and FY 2020-21.

Additional capitalization of Rs. 556.08 crore projected in FY 2021-22 due to installation of FGD and Nox (Combustion Modification Package) work. The approval of the same is attached herewith as Annexure-3.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:



**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24***(All figures in RsCrs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
<b>Opening GFA</b>	7,156.52	7,636.52	7,795.11	8,351.19	8,351.19
<b>Capitalisation</b>	480.00	158.59	556.08	-	-
<b>Deletions</b>	-	-	-	-	-
<b>Closing GFA</b>	7,636.52	7,795.11	8,351.19	8,351.19	8,351.19

**4.1.2. Means of Finance**

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing***Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	7,156.52	7,636.52	7,795.11	8,351.19	8,351.19
Additions	480.00	158.59	556.08	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	7,636.52	7,795.11	8,351.19	8,351.19	8,351.19
<b>Closing Net FA</b>	6,101.14	5,845.31	5,966.12	5,514.65	5,063.19
<b>Financing:</b>					
Opening Equity	2,129.32	2,273.32	2,320.90	2,487.72	2,487.72
Additions	144.00	47.58	166.82	-	-
<b>Closing Equity</b>	2,273.32	2,320.90	2,487.72	2,487.72	2,487.72
Open. Accumulated Depreciation	1,139.57	1,535.38	1,949.81	2,385.07	2,836.53
Depreciation during the year	395.81	414.43	435.26	451.47	451.47
<b>Closing Accumulated Depreciation</b>	1,535.38	1,949.81	2,385.07	2,836.53	3,288.00

*Sandeep* *Singh*

*Ramesh*

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MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	3,870.00	3,810.19	3,506.77	3,460.77	3,009.30
Additions	336.00	111.01	389.25	-	-
Less: Depreciation (normative repayment)	395.81	414.43	435.26	451.47	451.47
<b>Closing Debts</b>	<b>3,810.19</b>	<b>3,506.77</b>	<b>3,460.77</b>	<b>3,009.30</b>	<b>2,557.83</b>

#### 4.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.40%, the interest on loan capital has been worked out in the table below:

*Sandeep* *S. Sanyal* *Ramesh*

**Table: Summary of Interest on Loan for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	3,870.00	3,810.19	3,506.77	3,460.77	3,009.30
Additions	336.00	111.01	389.25	-	-
Less: Normative repayment	395.81	414.43	435.26	451.47	451.47
<b>Closing Debts</b>	<b>3,810.19</b>	<b>3,506.77</b>	<b>3,460.77</b>	<b>3,009.30</b>	<b>2,557.83</b>
Average Debt	3,840.09	3,658.48	3,483.77	3,235.03	2,783.56
<b>Interest on Loan</b>	<b>437.77</b>	<b>417.07</b>	<b>397.15</b>	<b>368.79</b>	<b>317.33</b>

#### 4.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.





The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	395.81	414.43	435.26	451.47	451.47
Allowable Depreciation subject to maximum of 90% of the Capital Cost	395.81	414.43	435.26	451.47	451.47

#### 4.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity base determined in accordance with these Regulation @15.0% per annum.

The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	2,129.32	2,273.32	2,320.90	2,487.72	2,487.72
Additions	144.00	47.58	166.82	-	-
<b>Closing Equity</b>	<b>2,273.32</b>	<b>2,320.90</b>	<b>2,487.72</b>	<b>2,487.72</b>	<b>2,487.72</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>330.20</b>	<b>344.57</b>	<b>360.65</b>	<b>373.16</b>	<b>373.16</b>

*Sandeep*

*Sayan*

*[Signature]*

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 4.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)& Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)& Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	1000	1000	1000	1000	1000
Norms	22.51	23.30	24.12	24.97	25.84
<b>O&amp;M Expenses</b>	<b>225.10</b>	<b>233.00</b>	<b>241.20</b>	<b>249.70</b>	<b>258.40</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special

*Sandeep Singh*

allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 4.1.7. Interest on Working Capital

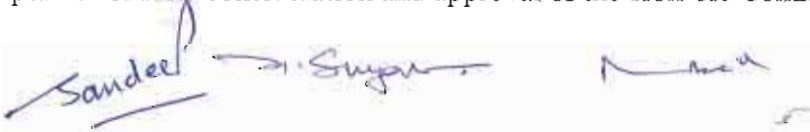
The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coalbased generating stations:

- i. Cost of coal 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 stock storage capacity whichever is lower
- ii. Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- iii. Operation and Maintenance expenses including water charges for one month;
- iv. Maintenance spares @ 20% of operation and maintenance expenses; and
- v. Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:



**Table: Interest on Working Capital for the Control Period***(All figures in RsCr)*

<b>Anpara D</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Cost of Coal	96.16	100.97	106.02	111.32	116.89
Cost of Main Secondary Fuel Oil	3.58	3.76	3.95	4.15	4.35
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	18.76	19.42	20.10	20.81	21.53
Maintenance Spares	45.02	46.60	48.24	49.94	51.68
Receivables	326.46	336.59	347.73	357.22	360.64
Total Working Capital	489.99	507.34	526.04	543.43	555.10
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>67.62</b>	<b>70.01</b>	<b>72.59</b>	<b>74.99</b>	<b>76.60</b>

**4.1.8. Summary of Annual Capacity (Fixed) Charges**

In view of the above submissions, the fixed cost of the Petitioner's Anpara D TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period***(All figures in RsCr)*

<b>Particulars</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Depreciation	395.81	414.43	435.26	451.47	451.47
Interest on Loan Capital	437.77	417.07	397.15	368.79	317.33
Return on Equity	330.20	344.57	360.65	373.16	373.16
O&M Expenses	225.10	233.00	241.20	249.70	258.40
Interest on Working Capital	67.62	70.01	72.59	74.99	76.60
<b>Total Capacity Charges</b>	<b>1456.50</b>	<b>1479.07</b>	<b>1506.85</b>	<b>1518.11</b>	<b>1476.96</b>
Energy ex bus	6981	6981	6981	6981	6981
<b>FC per unit</b>	<b>2.09</b>	<b>2.12</b>	<b>2.16</b>	<b>2.17</b>	<b>2.12</b>

*Sandeep*

*Suryan*

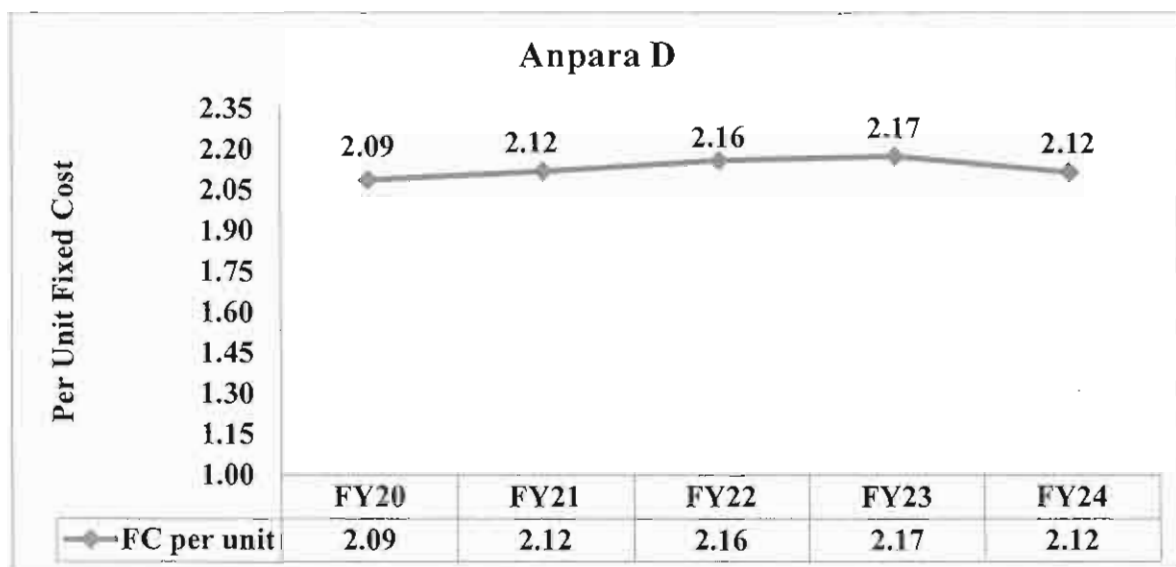
*Manish*

*[Signature]*

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Graph: Fixed Cost per unit in the Control Period



#### 4.2. Energy Charges

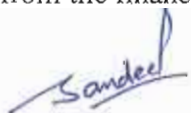



The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

As per Tariff Generation Regulations for MYT FY 2020 to FY 2023

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	6.25%	6.25%	6.25%	6.25%	6.25%
Gross Heat Rate	Kcal/kWh	2374	2374	2374	2374	2374
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges. The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Anpara D\_Additional Submission\_MYT Petition for Determination of Tariff

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 मुख्य अभियन्ता (वाणिज्य)  
 उ०प्र०रा०वि०उ०नि०धि०  
 शक्ति भवन गिन्ताप लखनऊ

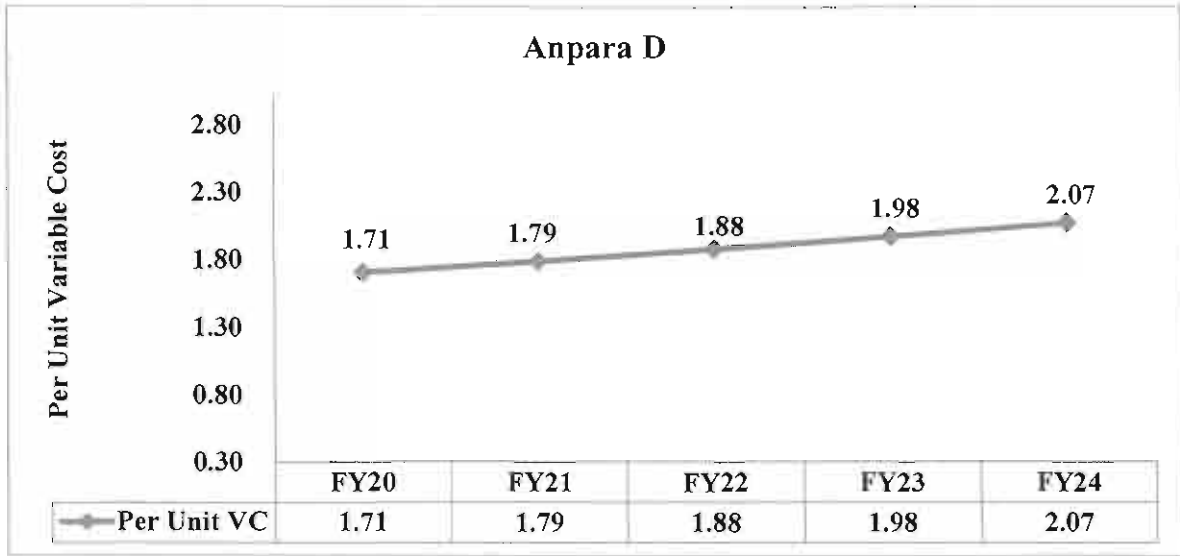
Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Capacity	MW	1000	1000	1000	1000	1000
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2374	2374	2374	2374	2374
Auxiliary Energy Consumption	%	6.25%	6.25%	6.25%	6.25%	6.25%
Energy Generation - Gross	MU	7,446	7,446	7,446	7,446	7,446
Auxiliary Energy Consumption	MU	465	465	465	465	465
Ex-bus Energy Sent Out	MU	6,981	6,981	6,981	6,981	6,981
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	10,619	10,619	10,619	10,619	10,619
Price of Oil	Rs./KL	57,722	60,608	63,638	66,820	70,161
Wt. Avg. GCV of Coal	kCal/kg	3722	3722	3722	3722	3722
GCV of Primary Fuel (Coal) less 85 Kcal/Kg on account of variation during storage	kCal/kg	3637	3637	3637	3637	3637
Price of Coal	Rs./MT	2412	2533	2660	2793	2932
Heat Contribution from SFO	Kcal/kWh	5.31	5.31	5.31	5.31	5.31
Oil Consumption	KL	3723	3723	3723	3723	3723
Heat Contribution from Coal	Kcal/kWh	2369	2369	2369	2369	2369
Specific Coal Consumption	kg/kWh	0.65	0.65	0.65	0.65	0.65
Coal Consumption	MMT	4.85	4.85	4.85	4.85	4.85
Total Cost of Oil	Rs Cr	21.49	22.56	23.69	24.88	26.12
Total Cost of Coal	Rs Cr	1,170.00	1,228.50	1,289.93	1,354.42	1,422.14
Total Fuel Cost	Rs Cr	1,191.49	1,251.07	1,313.62	1,379.30	1,448.26
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	3.08	3.23	3.39	3.56	3.74
Rate of Energy Charge from Coal ex-bus	Paise/kWh	167.61	175.99	184.79	194.03	203.73
Rate of Energy Charge ex-bus per kWh	Paise/kWh	170.69	179.22	188.18	197.59	207.47

*Sandeep* *Singh* *...*

**Graph: Variable Cost per unit in the Control Period**



#### 4.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

*Sandeep* → *M. Shyam*

*[Signature]*

*[Signature]*  
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 उ०प्र०रा०वि०उ०नि०धि०  
 शक्ति भवन विस्तार, लखनऊ

**Obra B**  
**Additional Submission in MYT petition for the**  
**period FY 2019-20 to FY 2023-24**

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**Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited**

*Sandeep*

*Singh*

*...*

*(Signature)*

( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
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## 5. OBRA B TPS

### 5.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- m) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- n) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- o) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- p) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19.

However, no additional capitalization is being envisaged at this stage during the next control period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:



**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24***(All figures in Rs Crs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
<b>Opening GFA</b>	1,780.38	1,780.38	1,780.38	1,780.38	1,780.38
<b>Capitalisation</b>	-	-	-	-	-
<b>Deletions</b>	-	-	-	-	-
<b>Closing GFA</b>	1,780.38	1,780.38	1,780.38	1,780.38	1,780.38

**5.1.2. Means of Finance**

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing***Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	1,780.38	1,780.38	1,780.38	1,780.38	1,780.38
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>1,780.38</b>	<b>1,780.38</b>	<b>1,780.38</b>	<b>1,780.38</b>	<b>1,780.38</b>
<b>Closing Net FA</b>	<b>926.76</b>	<b>828.74</b>	<b>730.72</b>	<b>632.70</b>	<b>534.68</b>
<b>Financing:</b>					
Opening Equity	513.76	513.76	513.76	513.76	513.76
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>513.76</b>	<b>513.76</b>	<b>513.76</b>	<b>513.76</b>	<b>513.76</b>
Open. Accumulated Depreciation	755.60	853.62	951.64	1,049.66	1,147.68
Depreciation during the year	98.02	98.02	98.02	98.02	98.02

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
<b>Closing Accumulated Depreciation</b>	<b>853.62</b>	<b>951.64</b>	<b>1,049.66</b>	<b>1,147.68</b>	<b>1,245.70</b>
Opening Debts	513.49	415.47	317.46	219.44	121.42
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	98.02	98.02	98.02	98.02	98.02
<b>Closing Debts</b>	<b>415.47</b>	<b>317.46</b>	<b>219.44</b>	<b>121.42</b>	<b>23.40</b>

### 5.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.40%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	513.49	415.47	317.46	219.44	121.42
Additions	-	-	-	-	-
Less: Normative repayment	98.02	98.02	98.02	98.02	98.02
<b>Closing Debts</b>	<b>415.47</b>	<b>317.46</b>	<b>219.44</b>	<b>121.42</b>	<b>23.40</b>
Average Debt	464.48	366.46	268.45	170.43	72.41
<b>Interest on Loan</b>	<b>52.95</b>	<b>41.78</b>	<b>30.60</b>	<b>19.43</b>	<b>8.25</b>

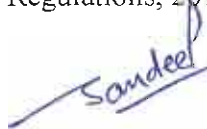

#### 5.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

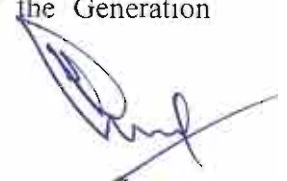
The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.







The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

*(All figures in Rs Crs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	98.02	98.02	98.02	98.02	98.02
Allowable Depreciation subject to maximum of 90% of the Capital Cost	98.02	98.02	98.02	98.02	98.02

#### 5.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity base determined in accordance with these Regulation @15.0% per annum.

The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

*(All figures in Rs Crs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	513.76	513.76	513.76	513.76	513.76
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>513.76</b>	<b>513.76</b>	<b>513.76</b>	<b>513.76</b>	<b>513.76</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>77.06</b>	<b>77.06</b>	<b>77.06</b>	<b>77.06</b>	<b>77.06</b>

*Sandeep*

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*[Signature]*  
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मुख्य अधिवक्ता (वाणिज्य)

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 5.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7)& Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7)& Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in Rs Crs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	1000	1000	1000	1000	1000
Norms	32.96	34.12	35.31	36.56	37.84
<b>O&amp;M Expenses</b>	<b>329.60</b>	<b>341.20</b>	<b>353.10</b>	<b>365.60</b>	<b>378.40</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special

allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 5.1.7. Interest on Working Capital

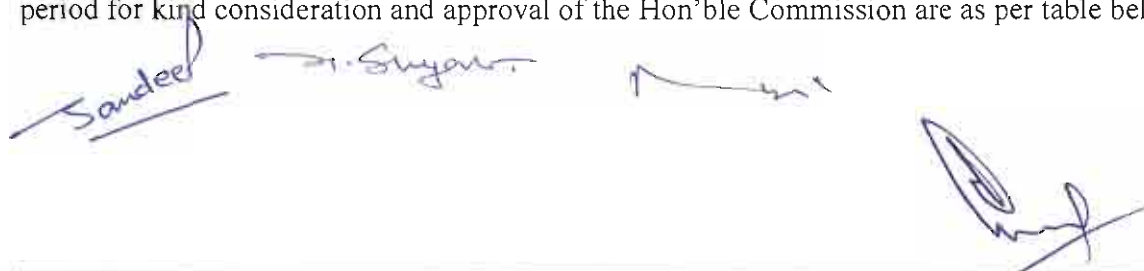
The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

- i. Cost of coal 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 stock storage capacity whichever is lower
- ii. Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- iii. Operation and Maintenance expenses including water charges for one month;
- iv. Maintenance spares @ 20% of operation and maintenance expenses; and
- v. Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:



**Table: Interest on Working Capital for the Control Period***(All figures in Rs Crs)*

<b>Obra B</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Cost of Coal	91.13	95.68	100.47	105.49	110.77
Cost of Main Secondary Fuel Oil	13.58	14.26	14.97	15.72	16.50
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	27.47	28.43	29.43	30.47	31.53
Maintenance Spares	65.92	68.24	70.62	73.12	75.68
Receivables	222.64	230.31	238.39	246.94	255.95
Total Working Capital	420.73	436.92	453.87	471.74	490.44
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>58.06</b>	<b>60.29</b>	<b>62.63</b>	<b>65.10</b>	<b>67.68</b>

**5.1.8. Summary of Annual Capacity (Fixed) Charges**

In view of the above submissions, the fixed cost of the Petitioner's Obra B TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period***(All figures in Rs Crs)*

<b>Particulars</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Depreciation	98.02	98.02	98.02	98.02	98.02
Interest on Loan Capital	52.95	41.78	30.60	19.43	8.25
Return on Equity	77.06	77.06	77.06	77.06	77.06
O&M Expenses	329.60	341.20	353.10	365.60	378.40
Interest on Working Capital	58.06	60.29	62.63	65.10	67.68
<b>Total Capacity Charges</b>	<b>615.70</b>	<b>618.35</b>	<b>621.42</b>	<b>625.21</b>	<b>629.42</b>
Energy ex bus	5933	5933	5933	5933	5933
<b>FC per unit</b>	<b>1.04</b>	<b>1.04</b>	<b>1.05</b>	<b>1.05</b>	<b>1.06</b>

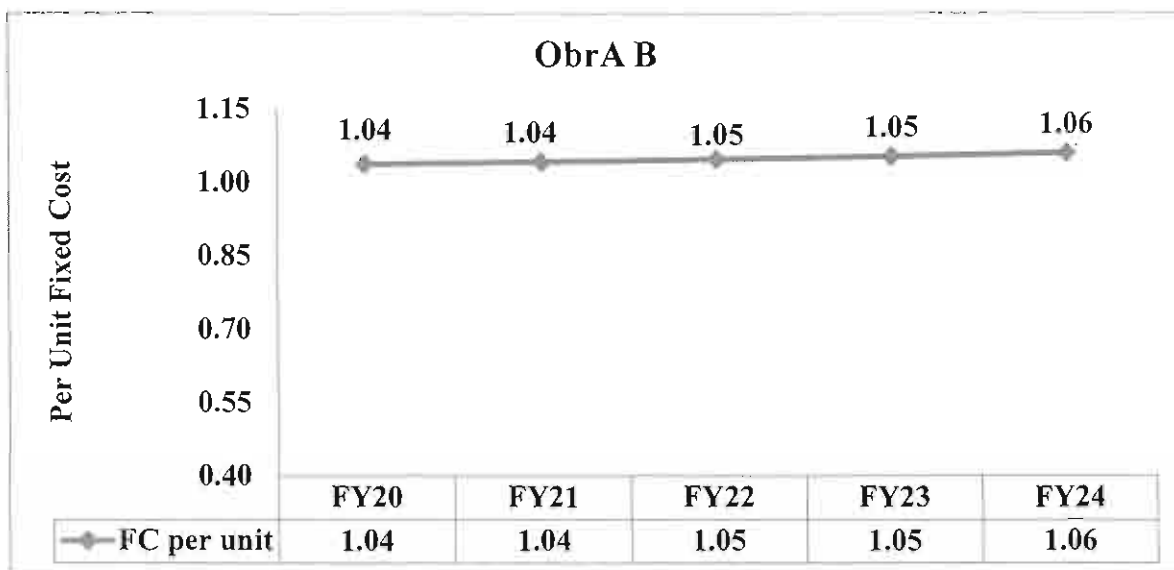
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शक्ति भवन विस्तार, लखनऊ



Graph: Fixed Cost per unit in the Control Period



## 5.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	80%	80%	80%	80%	80%
Target PLF	%	75%	75%	75%	75%	75%
Aux Energy Consumption	%	9.70%	9.70%	9.70%	9.70%	9.70%
Gross Heat Rate	Kcal/kWh	2755	2755	2755	2755	2755
Specific Fuel Oil Cons	ml/kWh	2.10	2.10	2.10	2.10	2.10

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges. The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges

proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

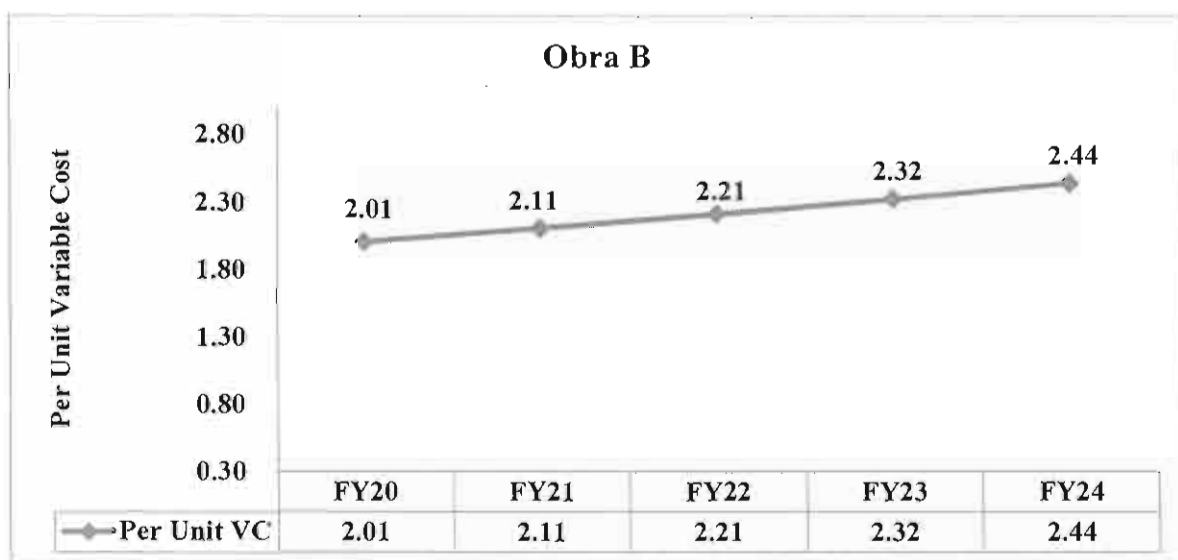
**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Capacity	MW	1000	1000	1000	1000	1000
PLF	%	75%	75%	75%	75%	75%
Gross Station Heat Rate	Kcal/kWh	2755	2755	2755	2755	2755
Auxiliary Energy Consumption	%	9.70%	9.70%	9.70%	9.70%	9.70%
Energy Generation - Gross	MU	6,570	6,570	6,570	6,570	6,570
Auxiliary Energy Consumption	MU	637	637	637	637	637
Ex-bus Energy Sent Out	MU	5,933	5,933	5,933	5,933	5,933
Specific Oil Consumption	ml/kWh	2.10	2.10	2.10	2.10	2.10
Wt. Avg. GCV of Oil	KCal/Lt	10,429	10,429	10,429	10,429	10,429
Price of Oil	Rs./KL	59,040	61,992	65,092	68,347	71,764
Wt. Avg. GCV of Coal	kCal/kg	3830	3830	3830	3830	3830
GCV of Primary Fuel (Coal) less 85 Kcal/Kg on account of variation during storage	kCal/kg	3745	3745	3745	3745	3745
Price of Coal	Rs./MT	2313	2428	2550	2677	2811
Heat Contribution from SFO	Kcal/kWh	21.90	21.90	21.90	21.90	21.90
Oil Consumption	KL	13797	13797	13797	13797	13797
Heat Contribution from Coal	Kcal/kWh	2733	2733	2733	2733	2733
Specific Coal Consumption	kg/kWh	0.73	0.73	0.73	0.73	0.73
Coal Consumption	MMT	4.79	4.79	4.79	4.79	4.79
Total Cost of Oil	Rs Cr	81.46	85.53	89.81	94.30	99.01
Total Cost of Coal	Rs Cr	1,108.71	1,164.15	1,222.36	1,283.47	1,347.65
Total Fuel Cost	Rs Cr	1,190.17	1,249.68	1,312.16	1,377.77	1,446.66
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	13.73	14.42	15.14	15.89	16.69
Rate of Energy Charge from Coal ex-bus	Paise/kWh	186.88	196.23	206.04	216.34	227.16
Rate of Energy Charge ex-bus per kWh	Paise/kWh	200.61	210.64	221.17	232.23	243.84

*Sandeep* *Dr. Suresh* *...*

*[Signature]*

**Graph: Variable Cost per unit in the Control Period**



### 5.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly, the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

*Sauder* *Dr. Shyam* *Amal* *[Signature]*

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Obra B\_Additional Submission\_MYT Petition for Determination of Tariff ( इ० रमेश चन्द्र )  
मुख्य अभियन्ता (वाणिज्य)  
उपप्रशासक (उ०नि०वि०)  
शक्ति भवन विस्तार, लखनऊ

**Harduaganj U#7**  
**Additional Submission in MYT petition for the**  
**period FY 2019-20 to FY 2023-24**

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**Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited**

*Sandeep* *Shyam*

*man*

*[Signature]*

( ई० रमेश चन्द्र )  
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उ०प्र०रा०वि०उ०नि०वि०  
शक्ति भवन विस्तार, लखनऊ



## 6. HARDUAGANJ U#7 TPS

Harduaganj Unit 5 with a capacity of 60MW has been operational from 14th May 1977 beyond the useful life of 25 years. An approval from the Government of Uttar Pradesh vide letter with reference 1022/24-1-17-295/2017 was forwarded to Petitioner wherein the deletion of the said units was acknowledged. Thereafter, vide Office Memorandum no 592 dated 15th July 2017, the said directive was adopted by the Petitioner and Unit 5 of Harduaganj stands deleted from the operational capacity with effect from 12th January 2017.

Harduaganj Unit 7 with capacity 105MW has underwent R&M and the same scheme envisages the unit to attain an uprated capacity of 120MW. The current matter towards uprating of the scheme and approved normative parameters is under consideration vide petition no 1354 of 2018 filed by UPPCL to the Hon'ble Commission. Till finalisation of the said petition, and as per the various submissions made by the Petitioner in the matter, it is humbly submitted that the uprated capacity for the Unit 7 of Harduaganj after R&M has been considered at 110MW.

### 6.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

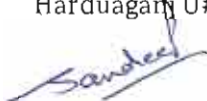
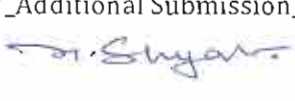
- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.


In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19.

However, no additional capitalization is being envisaged at this stage during the next control

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period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

(All figures in RsCr)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
<b>Opening GFA</b>	398.49	398.49	398.49	398.49	398.49
<b>Capitalisation</b>	-	-	-	-	-
<b>Deletions</b>	-	-	-	-	-
<b>Closing GFA</b>	<b>398.49</b>	<b>398.49</b>	<b>398.49</b>	<b>398.49</b>	<b>398.49</b>

#### 6.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing**

Figures in Rs Crore

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	398.49	398.49	398.49	398.49	398.49
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>398.49</b>	<b>398.49</b>	<b>398.49</b>	<b>398.49</b>	<b>398.49</b>

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*Sandeep* → *Sugan*

*N. M.*

*[Signature]*

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MoF	2019-20	2020-21	2021-22	2022-23	2023-24
<b>Closing Net FA</b>	<b>188.50</b>	<b>166.13</b>	<b>143.76</b>	<b>121.39</b>	<b>99.02</b>
<b>Financing:</b>					
Opening Equity	120.54	120.54	120.54	120.54	120.54
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>120.54</b>	<b>120.54</b>	<b>120.54</b>	<b>120.54</b>	<b>120.54</b>
Open. Accumulated Depreciation	187.62	209.99	232.36	254.72	277.09
Depreciation during the year	22.37	22.37	22.37	22.37	22.37
<b>Closing Accumulated Depreciation</b>	<b>209.99</b>	<b>232.36</b>	<b>254.72</b>	<b>277.09</b>	<b>299.46</b>
Opening Debts	275.22	252.85	230.49	208.12	185.75
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	22.37	22.37	22.37	22.37	22.37
<b>Closing Debts</b>	<b>252.85</b>	<b>230.49</b>	<b>208.12</b>	<b>185.75</b>	<b>163.38</b>

### 6.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

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Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.40%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	275.22	252.85	230.49	208.12	185.75
Additions	-	-	-	-	-
Less: Normative repayment	22.37	22.37	22.37	22.37	22.37
<b>Closing Debts</b>	<b>252.85</b>	<b>230.49</b>	<b>208.12</b>	<b>185.75</b>	<b>163.38</b>
Average Debt	264.04	241.67	219.30	196.93	174.56
<b>Interest on Loan</b>	<b>30.10</b>	<b>27.55</b>	<b>25.00</b>	<b>22.45</b>	<b>19.90</b>

#### 6.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

*Sd/-* *Dr. Sugan*

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संयोजक निदेशक



While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	22.37	22.37	22.37	22.37	22.37
Allowable Depreciation subject to maximum of 90% of the Capital Cost	22.37	22.37	22.37	22.37	22.37

#### 6.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity base determined in accordance with these Regulation @15.0% per annum.

The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

*Sandeep Singh* *Singh* *Singh*

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शक्ति भवन विस्तार, लखनऊ

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)***(All figures in RsCr/s)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	120.54	120.54	120.54	120.54	120.54
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>120.54</b>	<b>120.54</b>	<b>120.54</b>	<b>120.54</b>	<b>120.54</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>18.08</b>	<b>18.08</b>	<b>18.08</b>	<b>18.08</b>	<b>18.08</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 6.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7) & Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7) & Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period***(All figures in RsCr/s)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	110	110	110	110	110
Norms	64.80	67.07	69.43	71.86	74.39
<b>O&amp;M Expenses</b>	<b>71.28</b>	<b>73.78</b>	<b>76.37</b>	<b>79.05</b>	<b>81.83</b>

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*Sandoel*

*Singh*

*Chand*

(डॉ० रमेश चन्द्र)  
मुख्य अभियन्ता (ग्रामिणज्य)

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### **6.1.7. Interest on Working Capital**

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

- i. Cost of coal 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 stock storage capacity whichever is lower
- ii. Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- iii. Operation and Maintenance expenses including water charges for one month;
- iv. Maintenance spares @ 20% of operation and maintenance expenses; and
- v. Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

*Sandeep* *Singh*

*[Signature]*

*[Signature]*

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCr\$)

<b>Harduaganj U#7</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Cost of Coal	16.02	16.82	17.66	18.55	19.47
Cost of Main Secondary Fuel Oil	1.27	1.33	1.40	1.47	1.54
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	5.94	6.15	6.36	6.59	6.82
Maintenance Spares	14.26	14.76	15.27	15.81	16.37
Receivables	43.84	45.13	46.50	47.95	49.48
Total Working Capital	81.33	84.19	87.20	90.36	93.68
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>11.22</b>	<b>11.62</b>	<b>12.03</b>	<b>12.47</b>	<b>12.93</b>

#### 6.1.8. Summary of Annual Capacity (Fixed) Charges

In view of the above submissions, the fixed cost of the Petitioner's Harduaganj U#7 TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCr\$)

<b>Particulars</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Depreciation	22.37	22.37	22.37	22.37	22.37
Interest on Loan Capital	30.10	27.55	25.00	22.45	19.90
Return on Equity	18.08	18.08	18.08	18.08	18.08
O&M Expenses	71.28	73.78	76.37	79.05	81.83
Interest on Working Capital	11.22	11.62	12.03	12.47	12.93
<b>Total Capacity Charges</b>	<b>153.05</b>	<b>153.40</b>	<b>153.86</b>	<b>154.42</b>	<b>155.11</b>
Energy ex bus	523	523	523	523	523
<b>FC per unit</b>	<b>2.93</b>	<b>2.93</b>	<b>2.94</b>	<b>2.95</b>	<b>2.96</b>

*Sandil*

*Shyam*

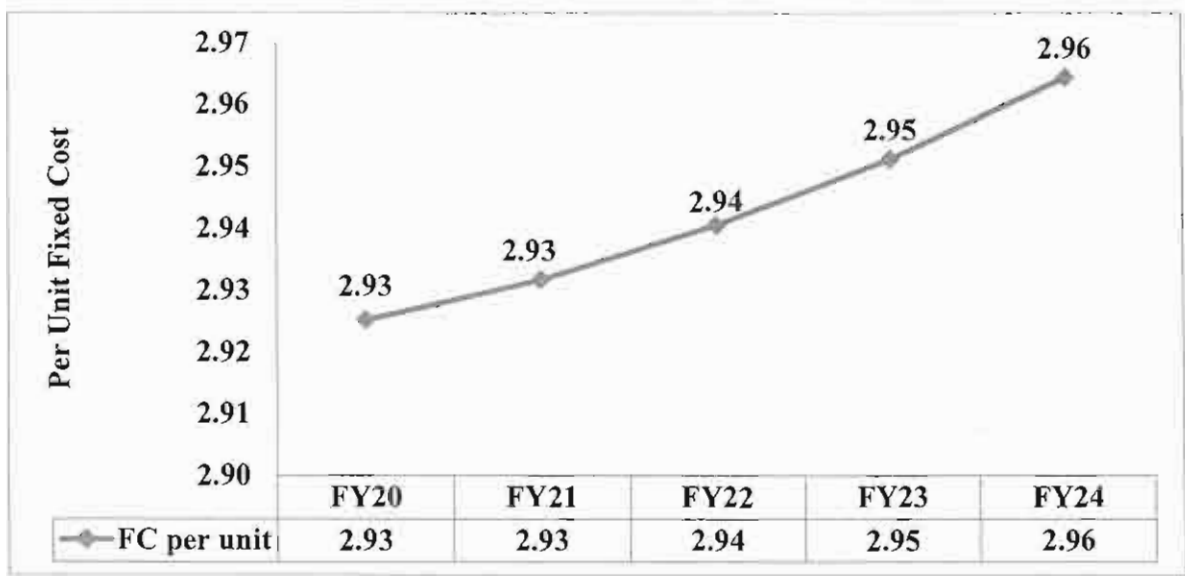
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शक्ति भवन विस्तार, लखनऊ



**Graph: Fixed Cost per unit in the Control Period**



## 6.2. Energy Charges

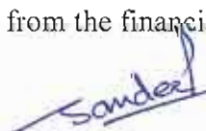
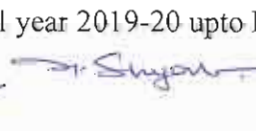


The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	65%	65%	65%	65%	65%
Target PLF	%	60%	60%	60%	60%	60%
Aux Energy Consumption	%	9.50%	9.50%	9.50%	9.50%	9.50%
Gross Heat Rate	Kcal/kWh	2625	2625	2625	2625	2625
Specific Fuel Oil Cons	ml/kWh	2.50	2.50	2.50	2.50	2.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges. The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

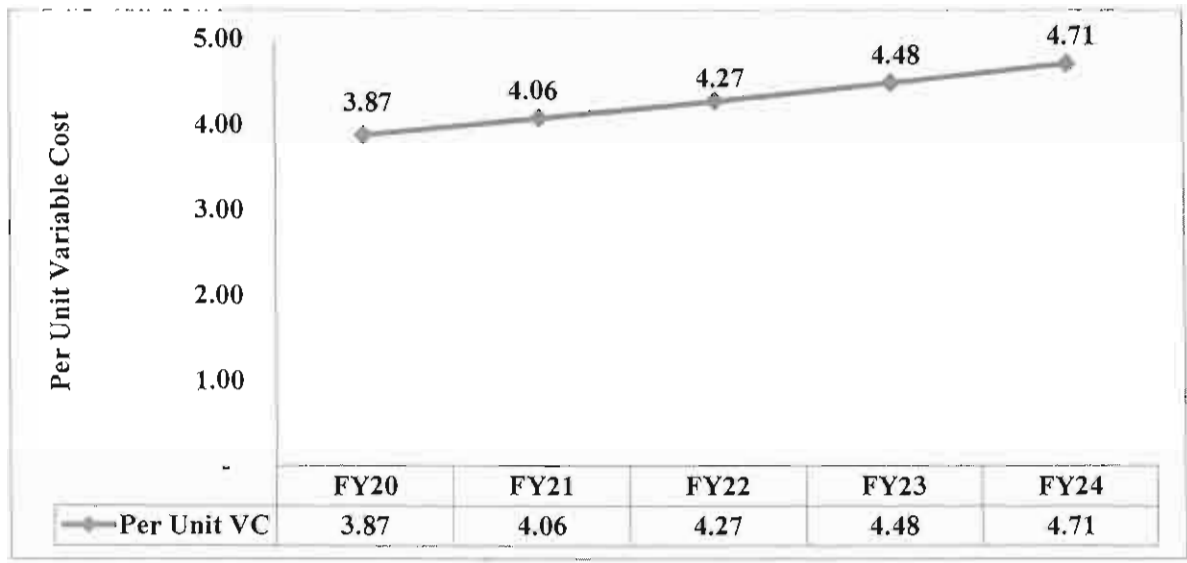
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 मुख्य अभियन्ता (वाणिज्य)  
 उपभोक्ता विभाग  
 शक्ति भवन विस्तार, लखनऊ

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Capacity	MW	110	110	110	110	110
PLF	%	60%	60%	60%	60%	60%
Gross Station Heat Rate	Kcal/kWh	2625	2625	2625	2625	2625
Auxiliary Energy Consumption	%	9.50%	9.50%	9.50%	9.50%	9.50%
Energy Generation - Gross	MU	578	578	578	578	578
Auxiliary Energy Consumption	MU	55	55	55	55	55
Ex-bus Energy Sent Out	MU	523	523	523	523	523
Specific Oil Consumption	ml/kWh	2.50	2.50	2.50	2.50	2.50
Wt. Avg. GCV of Oil	KCal/Lt	9,482	9,482	9,482	9,482	9,482
Price of Oil	Rs./KL	52,721	55,357	58,125	61,031	64,082
Wt. Avg. GCV of Coal	kCal/kg	3560	3560	3560	3560	3560
GCV of Primary Fuel (Coal) less 85 Kcal/Kg on account of variation during storage	kCal/kg	3475	3475	3475	3475	3475
Price of Coal	Rs./MT	4504	4730	4966	5215	5475
Heat Contribution from SFO	Kcal/kWh	23.71	23.71	23.71	23.71	23.71
Oil Consumption	KL	1445	1445	1445	1445	1445
Heat Contribution from Coal	Kcal/kWh	2601	2601	2601	2601	2601
Specific Coal Consumption	kg/kWh	0.75	0.75	0.75	0.75	0.75
Coal Consumption	MMT	0.43	0.43	0.43	0.43	0.43
Total Cost of Oil	Rs Cr	7.62	8.00	8.40	8.82	9.26
Total Cost of Coal	Rs Cr	194.93	204.68	214.91	225.66	236.94
Total Fuel Cost	Rs Cr	202.55	212.68	223.32	234.48	246.21
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	14.56	15.29	16.06	16.86	17.70
Rate of Energy Charge from Coal ex-bus	Paise/kWh	372.56	391.18	410.74	431.28	452.84
Rate of Energy Charge ex-bus per kWh	Paise/kWh	387.12	406.48	426.80	448.14	470.55

Graph: Variable Cost per unit in the Control Period



#### 6.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

  
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शक्ति भवन विस्तार, लखनौ

**Harduaganj Extension  
Additional Submission in MYT petition for the  
period FY 2019-20 to FY 2023-24**

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**Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited**

*Sandeep*

*Dr. Singh*

*Manu*

*(Signature)*

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शक्ति भवन विस्तार, लखनऊ



## 7. HARDUAGANJ EXTENSION TPS

### 7.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19.

Additional capitalization of Rs. 59.83 crore projected during the control period due to installation of FGD and Nox. The approval of the same is attached herewith as Annexure-4.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	3,126.13	3,185.96	3,185.96	3,185.96	3,185.96
Capitalisation	59.83	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	3,185.96	3,185.96	3,185.96	3,185.96	3,185.96

Harduaganj Extension\_Additional Submission\_MYT Petition for Determination of Tariff

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### 7.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing**

*Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	3,126.13	3,185.96	3,185.96	3,185.96	3,185.96
Additions	59.83	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>3,185.96</b>	<b>3,185.96</b>	<b>3,185.96</b>	<b>3,185.96</b>	<b>3,185.96</b>
<b>Closing Net FA</b>	<b>2,054.85</b>	<b>1,887.53</b>	<b>1,720.21</b>	<b>1,552.89</b>	<b>1,385.57</b>
<b>Financing:</b>					
Opening Equity	937.86	955.81	955.81	955.81	955.81
Additions	17.95	-	-	-	-
<b>Closing Equity</b>	<b>955.81</b>	<b>955.81</b>	<b>955.81</b>	<b>955.81</b>	<b>955.81</b>
Open. Accumulated Depreciation	965.53	1,131.11	1,298.43	1,465.75	1,633.07
Depreciation during the year	165.58	167.32	167.32	167.32	167.32
<b>Closing Accumulated Depreciation</b>	<b>1,131.11</b>	<b>1,298.43</b>	<b>1,465.75</b>	<b>1,633.07</b>	<b>1,800.39</b>
Opening Debts	1,211.09	1,087.39	920.07	752.75	585.43
Additions	41.88	-	-	-	-
Less: Depreciation (normative repayment)	165.58	167.32	167.32	167.32	167.32
<b>Closing Debts</b>	<b>1,087.39</b>	<b>920.07</b>	<b>752.75</b>	<b>585.43</b>	<b>418.11</b>

*Sd/-* *M. Sanyal*

*M. Sanyal*

*[Signature]*

### 7.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

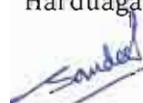
Considering the debt worked out as above and applying the rate of 10.90%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	1,211.09	1,087.39	920.07	752.75	585.43
Additions	41.88	-	-	-	-
Less: Normative repayment	165.58	167.32	167.32	167.32	167.32
<b>Closing Debts</b>	<b>1,087.39</b>	<b>920.07</b>	<b>752.75</b>	<b>585.43</b>	<b>418.11</b>
Average Debt	1,149.24	1,003.73	836.41	669.09	501.77
<b>Interest on Loan</b>	<b>125.27</b>	<b>109.41</b>	<b>91.17</b>	<b>72.93</b>	<b>54.69</b>

Harduaganj Extension\_Additional Submission\_MYT Petition for Determination of Tariff

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#### 7.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	165.58	167.32	167.32	167.32	167.32
Allowable Depreciation subject to maximum of 90% of the Capital Cost	165.58	167.32	167.32	167.32	167.32

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### 7.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity base determined in accordance with these Regulation @15.0% per annum.

The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

*(All figures in Rs Crs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	937.86	955.81	955.81	955.81	955.81
Additions	17.95	-	-	-	-
<b>Closing Equity</b>	<b>955.81</b>	<b>955.81</b>	<b>955.81</b>	<b>955.81</b>	<b>955.81</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>142.03</b>	<b>143.37</b>	<b>143.37</b>	<b>143.37</b>	<b>143.37</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

### 7.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a)

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(a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7) & Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7) & Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in Rs Crs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	500	500	500	500	500
Norms	32.96	34.12	35.31	36.56	37.84
<b>O&amp;M Expenses</b>	<b>164.80</b>	<b>170.60</b>	<b>176.55</b>	<b>182.80</b>	<b>189.20</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 7.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.






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Harduaganj Extension\_Additional Submission\_MYT Petition for Determination of Tariff

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 शक्ति भवन विस्तार, लखनऊ

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in Rs Crs)

<b>HARDUAGANJ EXTENSION</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Cost of Coal	96.19	101.00	106.05	111.35	116.92
Cost of Main Secondary Fuel Oil	1.64	1.72	1.80	1.89	1.99
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	13.73	14.22	14.71	15.23	15.77
Maintenance Spares	32.96	34.12	35.31	36.56	37.84
Receivables	225.48	232.11	238.46	245.24	252.45
Total Working Capital	369.99	383.17	396.34	410.28	424.97
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>51.06</b>	<b>52.88</b>	<b>54.69</b>	<b>56.62</b>	<b>58.65</b>

*Sandeep*

*Sugan*

*Mark*

*[Signature]*

### 7.1.8. Summary of Annual Capacity (Fixed) Charges

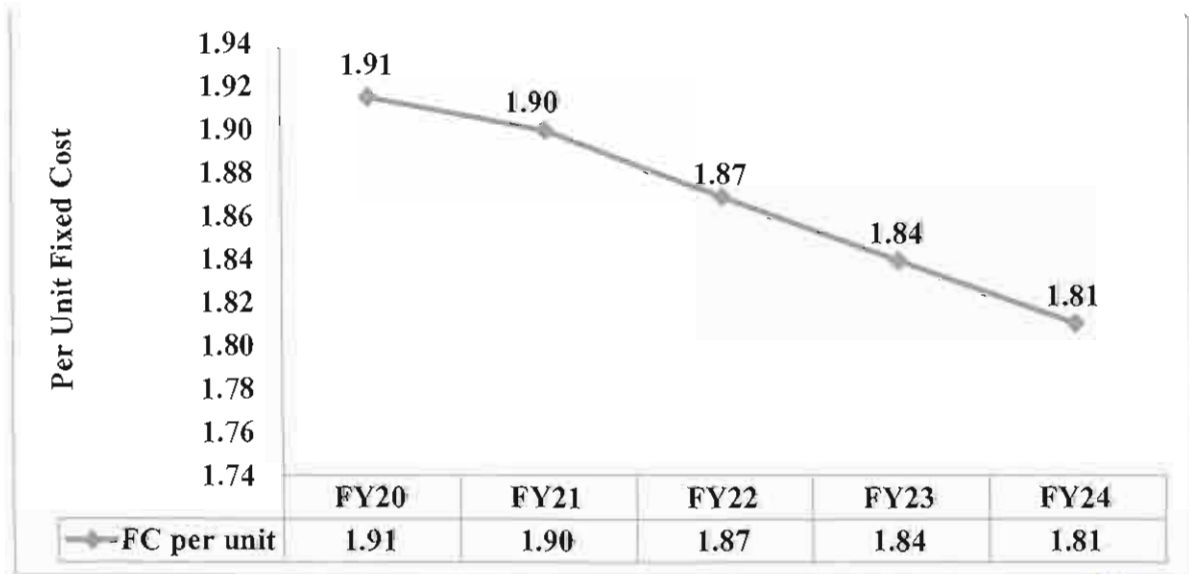
In view of the above submissions, the fixed cost of the Petitioner's Harduaganj Extension TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in Rs Crs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	165.58	167.32	167.32	167.32	167.32
Interest on Loan Capital	125.27	109.41	91.17	72.93	54.69
Return on Equity	142.03	143.37	143.37	143.37	143.37
O&M Expenses	164.80	170.60	176.55	182.80	189.20
Interest on Working Capital	51.06	52.88	54.69	56.62	58.65
<b>Total Capacity Charges</b>	<b>648.73</b>	<b>643.58</b>	<b>633.11</b>	<b>623.04</b>	<b>613.23</b>
Energy ex bus	3388	3388	3388	3388	3388
<b>FC per unit</b>	<b>1.91</b>	<b>1.90</b>	<b>1.87</b>	<b>1.84</b>	<b>1.81</b>

**Graph: Fixed Cost per unit in the Control Period**



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## 7.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	9.00%	9.00%	9.00%	9.00%	9.00%
Gross Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges. The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Capacity	MW	500	500	500	500	500
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Auxiliary Energy Consumption	%	9.00%	9.00%	9.00%	9.00%	9.00%
Energy Generation - Gross	MU	3,723	3,723	3,723	3,723	3,723
Auxiliary Energy Consumption	MU	335	335	335	335	335
Ex-bus Energy Sent Out	MU	3,388	3,388	3,388	3,388	3,388
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	9,482	9,482	9,482	9,482	9,482
Price of Oil	Rs./KL	52,721	55,357	58,125	61,031	64,082
Wt. Avg. GCV of Coal	kCal/kg	3560	3560	3560	3560	3560

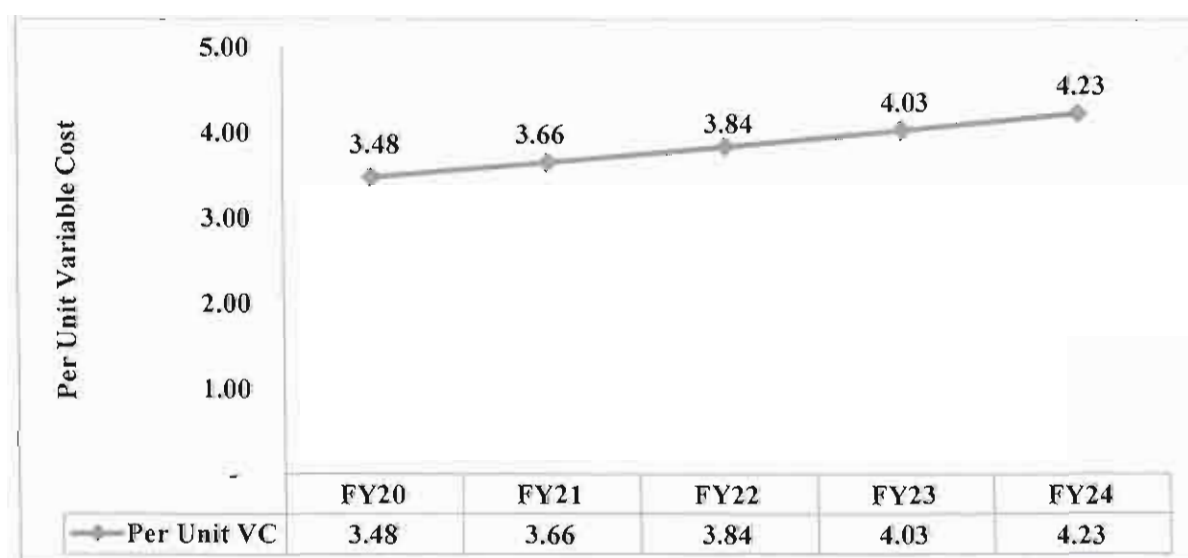
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Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
GCV of Primary Fuel (Coal) less 85 Kcal/Kg on account of variation during storage	kCal/kg	3475	3475	3475	3475	3475
Price of Coal	Rs./MT	4504	4730	4966	5215	5475
Heat Contribution from SFO	Kcal/kWh	4.74	4.74	4.74	4.74	4.74
Oil Consumption	KL	1862	1862	1862	1862	1862
Heat Contribution from Coal	Kcal/kWh	2425	2425	2425	2425	2425
Specific Coal Consumption	kg/kWh	0.70	0.70	0.70	0.70	0.70
Coal Consumption	MMT	2.60	2.60	2.60	2.60	2.60
Total Cost of Oil	Rs Cr	9.81	10.30	10.82	11.36	11.93
Total Cost of Coal	Rs Cr	1,170.31	1,228.83	1,290.27	1,354.78	1,422.52
Total Fuel Cost	Rs Cr	1,180.12	1,239.13	1,301.09	1,366.14	1,434.45
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	2.90	3.04	3.19	3.35	3.52
Rate of Energy Charge from Coal ex-bus	Paise/kWh	345.44	362.71	380.84	399.88	419.88
Rate of Energy Charge ex-bus per kWh	Paise/kWh	348.33	365.75	384.04	403.24	423.40

**Graph: Variable Cost per unit in the Control Period**



*Sandeep* → *Sugan*

*Manu*


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### 7.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.



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**Parichha U#2**  
**Additional Submission in MYT petition for the**  
**period FY 2019-20 to FY 2023-24**

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**Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited**

*Sandeep*

*Dr. Shyam*

*Ram*

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## 8. PARICHHA UNIT#2 TPS

### 8.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. However, no additional capitalization is being envisaged at this stage during the next control period and accordingly, no additional capitalization has been claimed for FY 2019-20 to FY 2023-24 as considered in the foregoing sections. However, the Petitioner prays leave, that in case any additional capitalization is necessitated at a later stage for efficient running of the plant, such schemes would be implemented after due approval from the Hon'ble Commission as per extant regulations.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:



**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24***(All figures in RsCrS)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
<b>Opening GFA</b>	485.76	485.76	485.76	485.76	485.76
<b>Capitalisation</b>	-	-	-	-	-
<b>Deletions</b>	-	-	-	-	-
<b>Closing GFA</b>	485.76	485.76	485.76	485.76	485.76

**8.1.2. Means of Finance**

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing***Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	485.76	485.76	485.76	485.76	485.76
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>485.76</b>	<b>485.76</b>	<b>485.76</b>	<b>485.76</b>	<b>485.76</b>
<b>Closing Net FA</b>	<b>168.85</b>	<b>142.50</b>	<b>116.16</b>	<b>89.81</b>	<b>63.47</b>
<b>Financing:</b>					
Opening Equity	133.18	133.18	133.18	133.18	133.18
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>133.18</b>	<b>133.18</b>	<b>133.18</b>	<b>133.18</b>	<b>133.18</b>
Open. Accumulated Depreciation	290.57	316.91	343.26	369.61	395.95
Depreciation during the year	26.35	26.35	26.35	26.35	26.35
<b>Closing Accumulated Depreciation</b>	<b>316.91</b>	<b>343.26</b>	<b>369.61</b>	<b>395.95</b>	<b>422.30</b>
Opening Debts	62.90	36.56	10.21	-	-

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MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	26.35	26.35	10.21	-	-
Closing Debts	36.56	10.21	-	-	-

### 8.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.40%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period***(All figures in RsCrs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	62.90	36.56	10.21	62.90	36.56
Additions	-	-	-	-	-
Less: Normative repayment	26.35	26.35	10.21	26.35	26.35
<b>Closing Debts</b>	<b>36.56</b>	<b>10.21</b>	<b>-</b>	<b>36.56</b>	<b>10.21</b>
Average Debt	49.71	23.38	5.11	-	-
<b>Interest on Loan</b>	<b>5.72</b>	<b>2.69</b>	<b>0.59</b>	<b>-</b>	<b>-</b>

**8.1.4. Depreciation**

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

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The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

*(All figures in RsCr/s)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	26.35	26.35	26.35	26.35	26.35
Allowable Depreciation subject to maximum of 90% of the Capital Cost	26.35	26.35	26.35	26.35	26.35

#### 8.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity base determined in accordance with these Regulation @15.0% per annum.

The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:





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**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)***(All figures in RsCrS)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	133.18	133.18	133.18	133.18	133.18
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>133.18</b>	<b>133.18</b>	<b>133.18</b>	<b>133.18</b>	<b>133.18</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>19.98</b>	<b>19.98</b>	<b>19.98</b>	<b>19.98</b>	<b>19.98</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

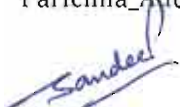
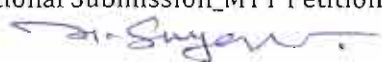
#### 8.1.6. Operation & Maintenance Expenses

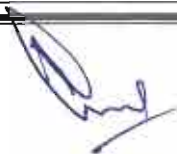
Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7) & Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7) & Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period***(All figures in RsCrS)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	110	110	110	110	110
Norms	38.38	40.16	41.57	43.03	44.54
<b>O&amp;M Expenses</b>	<b>42.22</b>	<b>44.18</b>	<b>45.73</b>	<b>47.33</b>	<b>48.99</b>



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Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.


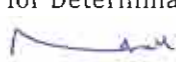
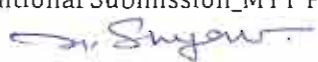
#### **8.1.7. Interest on Working Capital**

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

- i. Cost of coal 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 stock storage capacity whichever is lower
- ii. Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- iii. Operation and Maintenance expenses including water charges for one month;
- iv. Maintenance spares @ 20% of operation and maintenance expenses; and
- v. Receivables equivalent to 45 days of capacity charges and energy charges for sale of electricity calculated on the target availability.



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Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCrS)

PARICHHA U#2	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	20.50	21.53	22.60	23.73	24.92
Cost of Main Secondary Fuel Oil	1.51	1.59	1.67	1.75	1.84
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	3.52	3.68	3.81	3.94	4.08
Maintenance Spares	8.44	8.84	9.15	9.47	9.80
Receivables	44.83	46.35	48.01	49.96	52.07
Total Working Capital	78.81	81.98	85.24	88.85	92.71
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>10.88</b>	<b>11.31</b>	<b>11.76</b>	<b>12.26</b>	<b>12.79</b>

#### 8.1.8. Summary of Annual Capacity (Fixed) Charges

In view of the above submissions, the fixed cost of the Petitioner's Parichha U#2 TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCrS)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	26.35	26.35	26.35	26.35	26.35
Interest on Loan Capital	5.67	2.67	0.58	0.00	0.00
Return on Equity	19.98	19.98	19.98	19.98	19.98
O&M Expenses	42.22	44.18	45.73	47.33	48.99
Interest on Working Capital	10.88	11.31	11.76	12.26	12.79
<b>Total Capacity Charges</b>	<b>105.09</b>	<b>104.48</b>	<b>104.40</b>	<b>105.92</b>	<b>108.11</b>
Energy ex bus	602	602	602	602	602
<b>FC per unit</b>	<b>1.74</b>	<b>1.73</b>	<b>1.73</b>	<b>1.76</b>	<b>1.79</b>

*Sandeep*

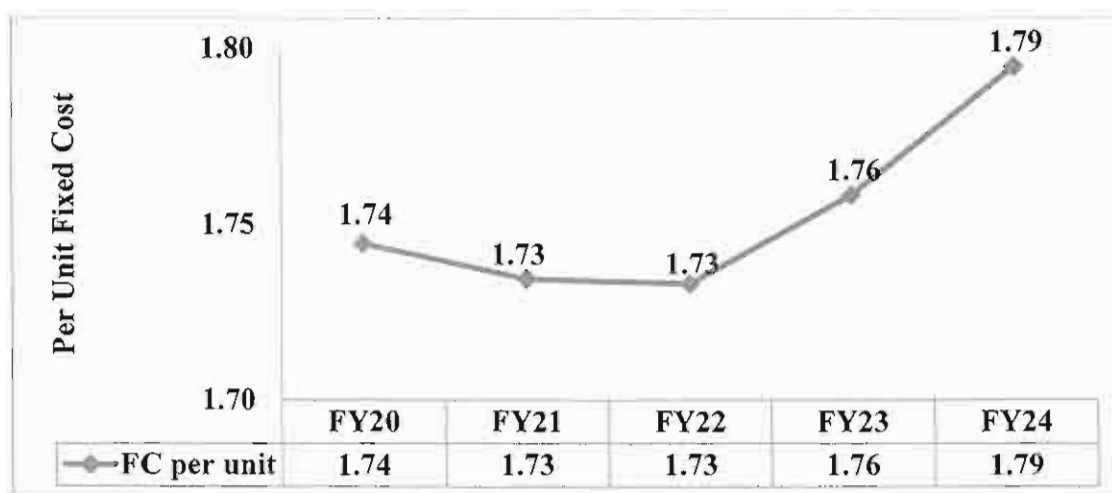
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**Graph: Fixed Cost per unit in the Control Period**



## 8.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	75%	75%	75%	75%	75%
Target PLF	%	70%	70%	70%	70%	70%
Aux Energy Consumption	%	10.70%	10.70%	10.70%	10.70%	10.70%
Gross Heat Rate	Kcal/kWh	2980	2980	2980	2980	2980
Specific Fuel Oil Cons	ml/kWh	2.60	2.60	2.60	2.60	2.60

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges. The Petitioner has assumed

an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

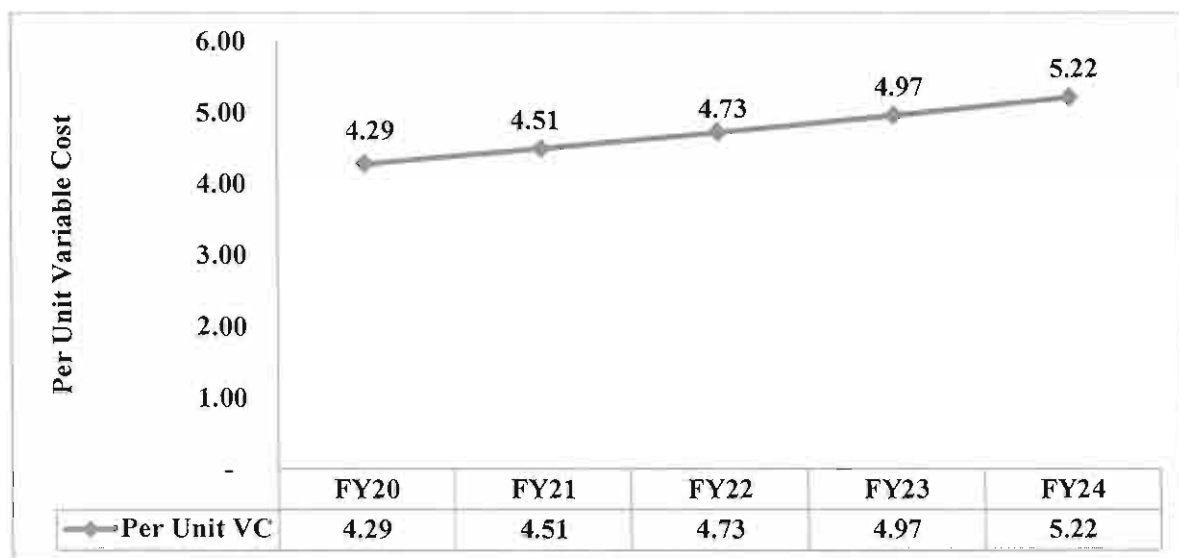
Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Capacity	MW	110	110	110	110	110
PLF	%	70%	70%	70%	70%	70%
Gross Station Heat Rate	Kcal/kWh	2980	2980	2980	2980	2980
Auxiliary Energy Consumption	%	10.70%	10.70%	10.70%	10.70%	10.70%
Energy Generation - Gross	MU	675	675	675	675	675
Auxiliary Energy Consumption	MU	72	72	72	72	72
Ex-bus Energy Sent Out	MU	602	602	602	602	602
Specific Oil Consumption	ml/kWh	2.60	2.60	2.60	2.60	2.60
Wt. Avg. GCV of Oil	KCal/Lt	9,509	9,509	9,509	9,509	9,509
Price of Oil	Rs./KL	51,735	54,321	57,037	59,889	62,884
Wt. Avg. GCV of Coal	kCal/kg	3566	3566	3566	3566	3566
GCV of Primary Fuel (Coal) less 85 Kcal/Kg on account of variation during storage	kCal/kg	3481	3481	3481	3481	3481
Price of Coal	Rs./MT	4356	4574	4803	5043	5295
Heat Contribution from SFO	Kcal/kWh	24.72	24.72	24.72	24.72	24.72
Oil Consumption	KL	1754	1754	1754	1754	1754
Heat Contribution from Coal	Kcal/kWh	2955	2955	2955	2955	2955
Specific Coal Consumption	kg/kWh	0.85	0.85	0.85	0.85	0.85
Coal Consumption	MMT	0.57	0.57	0.57	0.57	0.57
Total Cost of Oil	Rs Cr	9.07	9.53	10.00	10.50	11.03
Total Cost of Coal	Rs Cr	249.45	261.92	275.02	288.77	303.21
Total Fuel Cost	Rs Cr	258.53	271.45	285.02	299.28	314.24
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	15.06	15.82	16.61	17.44	18.31
Rate of Energy Charge from Coal ex-bus	Paise/kWh	414.13	434.84	456.58	479.41	503.38
Rate of Energy Charge ex-bus per kWh	Paise/kWh	429.20	450.66	473.19	496.85	521.69

*Sandeep*

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Graph: Variable Cost per unit in the Control Period



#### 8.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

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**Parichha Extension**  
**Additional Submission in MYT petition for the**  
**period FY 2019-20 to FY 2023-24**

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**Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited**

*Sandeep*

*Dr. Sanyal*

*Manu*

*[Signature]*

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## 9. PARICHHA EXTENSION TPS

### 9.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. Additional capitalization of Rs. 105.86 crore is projected during the control period due to installation of FGD and Nox. The approval of the same is attached herewith as Annexure-5.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

*(All figures in RsCrs)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
<b>Opening GFA</b>	1,849.12	1,849.12	1,849.12	1,849.12	1,954.98
<b>Capitalisation</b>	-	-	-	105.86	-
<b>Deletions</b>	-	-	-	-	-
<b>Closing GFA</b>	<b>1,849.12</b>	<b>1,849.12</b>	<b>1,849.12</b>	<b>1,954.98</b>	<b>1,954.98</b>

Parichha Extension\_Additional Submission\_MYT Petition for Determination of Tariff

*Sandeep*

*Shyam*

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### 9.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing**

*Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	1,849.12	1,849.12	1,849.12	1,849.12	1,954.98
Additions	-	-	-	105.86	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>1,849.12</b>	<b>1,849.12</b>	<b>1,849.12</b>	<b>1,954.98</b>	<b>1,954.98</b>
<b>Closing Net FA</b>	<b>803.54</b>	<b>702.12</b>	<b>600.71</b>	<b>602.06</b>	<b>494.47</b>
<b>Financing:</b>					
Opening Equity	384.99	384.99	384.99	384.99	416.75
Additions	-	-	-	31.76	-
<b>Closing Equity</b>	<b>384.99</b>	<b>384.99</b>	<b>384.99</b>	<b>416.75</b>	<b>416.75</b>
Open. Accumulated Depreciation	944.17	1,045.59	1,147.00	1,248.42	1,352.92
Depreciation during the year	101.42	101.42	101.42	104.50	107.59
<b>Closing Accumulated Depreciation</b>	<b>1,045.59</b>	<b>1,147.00</b>	<b>1,248.42</b>	<b>1,352.92</b>	<b>1,460.51</b>
Opening Debts	524.58	423.16	321.75	220.33	189.93
Additions	-	-	-	74.10	-
Less: Depreciation (normative repayment)	101.42	101.42	101.42	104.50	107.59
<b>Closing Debts</b>	<b>423.16</b>	<b>321.75</b>	<b>220.33</b>	<b>189.93</b>	<b>82.35</b>

### 9.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus

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cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 10.90%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

(All figures in RsCrS)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	524.58	423.16	321.75	220.33	189.93
Additions	-	-	-	74.10	-
Less: Normative repayment	101.42	101.42	101.42	104.50	107.59
<b>Closing Debts</b>	<b>423.16</b>	<b>321.75</b>	<b>220.33</b>	<b>189.93</b>	<b>82.35</b>
Average Debt	473.87	372.46	271.04	205.13	136.14
<b>Interest on Loan</b>	<b>51.65</b>	<b>40.60</b>	<b>29.54</b>	<b>22.36</b>	<b>14.84</b>

*Sandeep*

*Singh*

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#### 9.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	101.42	101.42	101.42	104.50	107.59
Allowable Depreciation subject to maximum of 90% of the Capital Cost	101.42	101.42	101.42	104.50	107.59

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#### 9.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity base determined in accordance with these Regulation @15.0% per annum.

The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCrS)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	384.99	384.99	384.99	384.99	416.75
Additions	-	-	-	31.76	-
<b>Closing Equity</b>	<b>384.99</b>	<b>384.99</b>	<b>384.99</b>	<b>416.75</b>	<b>416.75</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>57.75</b>	<b>57.75</b>	<b>57.75</b>	<b>60.13</b>	<b>62.51</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 9.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a)

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(डॉ० रमेश चन्द्र)  
मुख्य अभियन्ता (वाणिज्य)

(a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7) & Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7) & Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	420	420	420	420	420
Norms	32.96	34.12	35.31	36.56	37.84
<b>O&amp;M Expenses</b>	<b>138.43</b>	<b>143.30</b>	<b>148.30</b>	<b>153.55</b>	<b>158.93</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### 9.1.7. Interest on Working Capital

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, which ever is later.

*Sandeep*

*Shyam*

*Ram*

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCrrs)

PARICHHA EXTENSION	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	78.00	81.90	86.00	90.30	94.81
Cost of Main Secondary Fuel Oil	1.35	1.42	1.49	1.56	1.64
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	11.54	11.94	12.36	12.80	13.24
Maintenance Spares	27.69	28.66	29.66	30.71	31.79
Receivables	165.90	171.22	176.86	184.02	191.49
Total Working Capital	284.48	295.14	306.37	319.39	332.98
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
Interest on Working Capital	39.26	40.73	42.28	44.08	45.95

*Sandeep*

### 9.1.8. Summary of Annual Capacity (Fixed) Charges

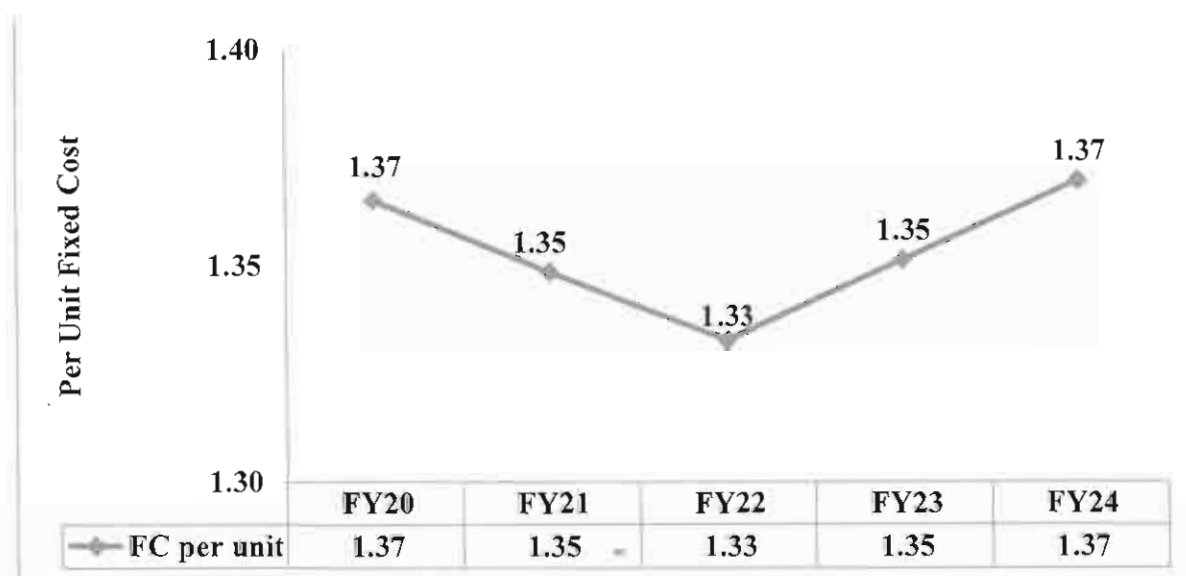
In view of the above submissions, the fixed cost of the Petitioner's Parichha Extension TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	101.42	101.42	101.42	104.50	107.59
Interest on Loan Capital	51.65	40.60	29.54	22.36	14.84
Return on Equity	57.75	57.75	57.75	60.13	62.51
O&M Expenses	138.43	143.30	148.30	153.55	158.93
Interest on Working Capital	39.26	40.73	42.28	44.08	45.95
<b>Total Capacity Charges</b>	<b>388.51</b>	<b>383.80</b>	<b>379.29</b>	<b>384.62</b>	<b>389.82</b>
Energy ex bus	2846	2846	2846	2846	2846
<b>FC per unit</b>	<b>1.37</b>	<b>1.35</b>	<b>1.33</b>	<b>1.35</b>	<b>1.37</b>

**Graph: Fixed Cost per unit in the Control Period**



### 9.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

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**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	9.00%	9.00%	9.00%	9.00%	9.00%
Gross Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges. The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Capacity	MW	420	420	420	420	420
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Auxiliary Energy Consumption	%	9.0%	9.0%	9.0%	9.0%	9.0%
Energy Generation - Gross	MU	3,127	3,127	3,127	3,127	3,127
Auxiliary Energy Consumption	MU	281	281	281	281	281
Ex-bus Energy Sent Out	MU	2,846	2,846	2,846	2,846	2,846
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	9,858	9,858	9,858	9,858	9,858
Price of Oil	Rs./KL	51,735	54,321	57,037	59,889	62,884
Wt. Avg. GCV of Coal	kCal/kg	3566	3566	3566	3566	3566
GCV of Primary Fuel (Coal) less 85 Kcal/Kg on account of variation during storage	kCal/kg	3481	3481	3481	3481	3481
Price of Coal	Rs./MT	4356	4574	4803	5043	5295
Heat Contribution from SFO		4.93	4.93	4.93	4.93	4.93

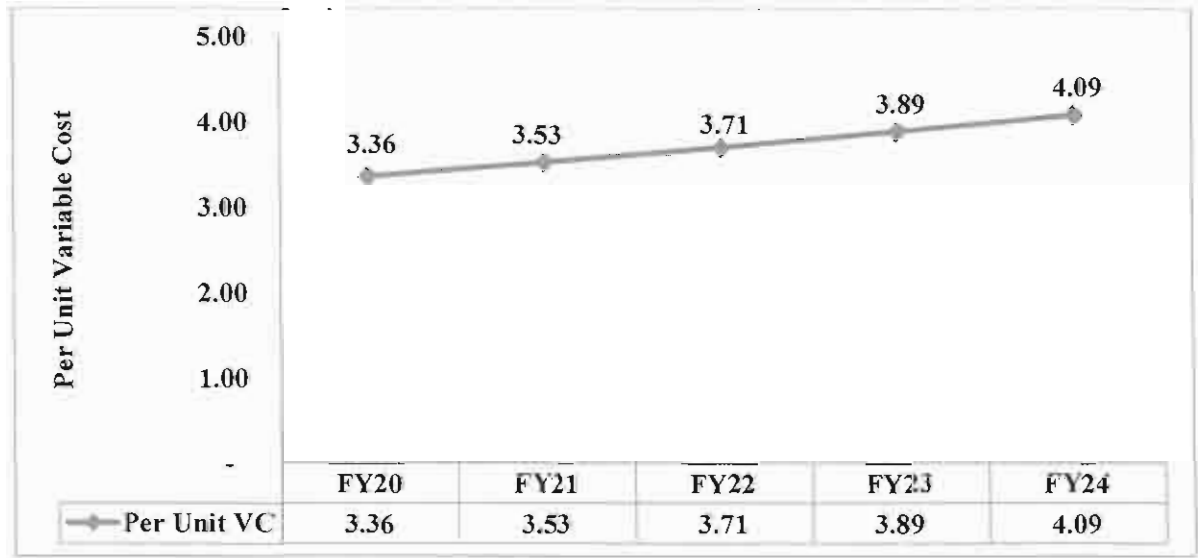
Parichha Extension Additional Submission MYT Petition for Determination of Tariff

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Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
	Kcal/kWh					
Oil Consumption	KL	1564	1564	1564	1564	1564
Heat Contribution from Coal	Kcal/kWh	2425	2425	2425	2425	2425
Specific Coal Consumption	kg/kWh	0.70	0.70	0.70	0.70	0.70
Coal Consumption	MMT	2.18	2.18	2.18	2.18	2.18
Total Cost of Oil	Rs Cr	8.09	8.49	8.92	9.36	9.83
Total Cost of Coal	Rs Cr	949.05	996.51	1,046.33	1,098.65	1,153.58
Total Fuel Cost	Rs Cr	957.14	1,005.00	1,055.25	1,108.01	1,163.41
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	2.84	2.98	3.13	3.29	3.46
Rate of Energy Charge from Coal ex-bus	Paise/kWh	333.49	350.16	367.67	386.05	405.35
Rate of Energy Charge ex-bus per kWh	Paise/kWh	336.33	353.14	370.80	389.34	408.81

**Graph: Variable Cost per unit in the Control Period**



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शक्ति भवन विस्तार, लखनऊ

### 9.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

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*Dr. Shyam*

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**Parichha Extension Stage II**  
**Additional Submission in MYT petition for the**  
**period FY 2019-20 to FY 2023-24**

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**Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited**

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*(Signature)*

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राजिा भवन विस्तार, लखनऊ



## 10. PARICHAHA EXTENSION SATGE II TPS

### 10.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the closing GFA balance submitted in the final true-up petition for FY 2014-15 to FY 2018-19.

In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. The Petitioner has considered the opening Gross Fixed Assets for FY 2019-20 on the basis of Final Accounts of FY 2018-19. Additional capitalization of Rs. 11.06 crore is projected during the control period due to installation of Nox. The approval of the same is attached herewith as Annexure-6.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

(All figures in RsCr)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	2,790.62	2,790.62	2,790.62	2,790.62	2,801.67
Capitalisation	-	-	-	11.05	-
Deletions	-	-	-	-	-
Closing GFA	2,790.62	2,790.62	2,790.62	2,801.67	2,801.67

Parichha Ext'n. Stage-II\_Additional Submission\_MYT Petition for Determination of Tariff

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### 10.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted from the true-up petition filed for FY 2014-15 to FY 2018-19. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing**

*Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	2,790.62	2,790.62	2,790.62	2,790.62	2,801.67
Additions	-	-	-	11.05	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>2,790.62</b>	<b>2,790.62</b>	<b>2,790.62</b>	<b>2,801.67</b>	<b>2,801.67</b>
<b>Closing Net FA</b>	<b>1,749.35</b>	<b>1,594.71</b>	<b>1,440.06</b>	<b>1,296.14</b>	<b>1,140.85</b>
<b>Financing:</b>					
Opening Equity	837.15	837.15	837.15	837.15	840.47
Additions	-	-	-	3.32	-
<b>Closing Equity</b>	<b>837.15</b>	<b>837.15</b>	<b>837.15</b>	<b>840.47</b>	<b>840.47</b>
Open. Accumulated Depreciation	886.62	1,041.26	1,195.91	1,350.56	1,505.53
Depreciation during the year	154.65	154.65	154.65	154.97	155.29
<b>Closing Accumulated Depreciation</b>	<b>1,041.26</b>	<b>1,195.91</b>	<b>1,350.56</b>	<b>1,505.53</b>	<b>1,660.82</b>
Opening Debts	1,106.31	951.66	797.02	642.37	495.14
Additions	-	-	-	7.74	-
Less: Depreciation (normative repayment)	154.65	154.65	154.65	154.97	155.29
<b>Closing Debts</b>	<b>951.66</b>	<b>797.02</b>	<b>642.37</b>	<b>495.14</b>	<b>339.85</b>

### 10.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived

Parichha Extn Stage-II Additional Submission\_MYT Petition for Determination of Tariff

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मह्य अमियन्ता (वाणिज्य)

at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year. In case of decapitalisation of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of decapitalisation of such asset.

Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 10.90%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	1,106.31	951.66	797.02	642.37	495.14
Additions	-	-	-	7.74	-
Less: Normative repayment	154.65	154.65	154.65	154.97	155.29
<b>Closing Debts</b>	<b>951.66</b>	<b>797.02</b>	<b>642.37</b>	<b>495.14</b>	<b>339.85</b>
Average Debt	1,028.99	874.34	719.69	568.75	417.49
<b>Interest on Loan</b>	<b>112.16</b>	<b>95.30</b>	<b>78.45</b>	<b>61.99</b>	<b>45.51</b>

#### 10.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The Petitioner reiterates that the detailed asset wise list is now available with the Hon'ble Commission. Such values are in accordance with the audited financial statements of the Petitioner. The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

While calculating the allowable depreciation, the petitioner has considered the residual life of the asset as 10% and depreciation has been considered up to maximum of 90% of the historical capital cost of the asset being in line with the provisions of the Generation Regulations, 2019.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

**Table: Depreciation Summary for the Control Period**

*(All figures in RsCrS)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	154.65	154.65	154.65	154.97	155.29
Allowable Depreciation subject to maximum of 90% of the Capital Cost	154.65	154.65	154.65	154.97	155.29



#### 10.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said regulations state that the Return on equity shall be computed in rupee terms on the equity base determined in accordance with these Regulation @15.0% per annum.

The equity base for the thermal power station as on 01.04.2019 has been considered as the closing equity balance for FY 2018-19 as submitted by the petitioner in its final true-up petition for FY 2018-19. Thereafter 30% of the total capitalisation has been considered to be funded from equity infusion in each year of the control period.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCr/s)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	837.15	837.15	837.15	837.15	840.47
Additions	-	-	-	3.32	-
<b>Closing Equity</b>	<b>837.15</b>	<b>837.15</b>	<b>837.15</b>	<b>840.47</b>	<b>840.47</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>125.57</b>	<b>125.57</b>	<b>125.57</b>	<b>125.82</b>	<b>126.07</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 10.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a)

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*(इं० रमेश चन्द्र)*  
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(a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for Harduaganj (U#7) & Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7) & Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation.

Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	500	500	500	500	500
Norms	32.96	34.12	35.31	36.56	37.84
<b>O&amp;M Expenses</b>	<b>164.80</b>	<b>170.60</b>	<b>176.55</b>	<b>182.80</b>	<b>189.20</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### **10.1.7. Interest on Working Capital**

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

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Parichha Extn. Stage-II\_Additional Submission\_MYT Petition for Determination of Tariff ( इ० रमेश चन्द्र ) 9  
मुख्य अभियन्ता (वाणिज्य)  
उपग्राम वि० उ० नि० वि०  
शक्ति भवन विस्तार मार्ग

The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCrS)

PARICHHA EXTENSION SATGE II	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	92.87	97.51	102.39	107.51	112.88
Cost of Main Secondary Fuel Oil	1.61	1.69	1.77	1.86	1.95
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel Stock	0.00	0.00	0.00	0.00	0.00
O & M Expenses	13.73	14.22	14.71	15.23	15.77
Maintenance Spares	32.96	34.12	35.31	36.56	37.84
Receivables	215.25	221.12	227.37	234.16	241.36
Total Working Capital	356.41	368.65	381.55	395.32	409.80
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
Interest on Working Capital	49.19	50.87	52.65	54.55	56.55

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### 10.1.8. Summary of Annual Capacity (Fixed) Charges

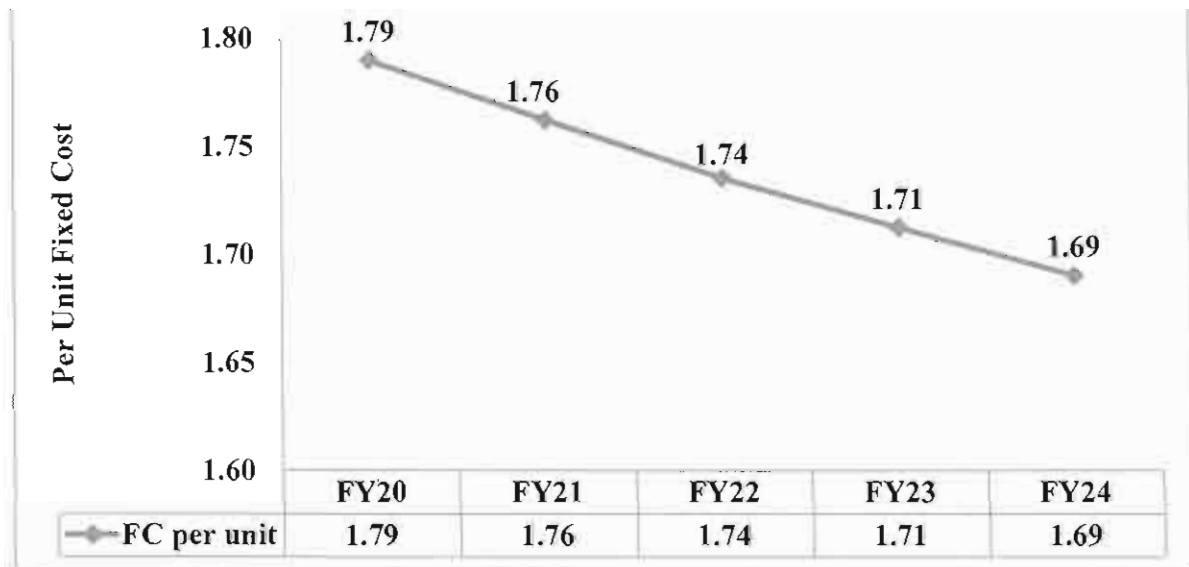
In view of the above submissions, the fixed cost of the Petitioner's Parichha Extension Satge II TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	154.65	154.65	154.65	154.97	155.29
Interest on Loan Capital	112.16	95.30	78.45	61.99	45.51
Return on Equity	125.57	125.57	125.57	125.82	126.07
O&M Expenses	164.80	170.60	176.55	182.80	189.20
Interest on Working Capital	49.19	50.87	52.65	54.55	56.55
<b>Total Capacity Charges</b>	<b>606.36</b>	<b>597.00</b>	<b>587.87</b>	<b>580.14</b>	<b>572.62</b>
Energy ex bus	3388	3388	3388	3388	3388
<b>FC per unit</b>	<b>1.79</b>	<b>1.76</b>	<b>1.74</b>	<b>1.71</b>	<b>1.69</b>

**Graph: Fixed Cost per unit in the Control Period**



### 10.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:



**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	9.00%	9.00%	9.00%	9.00%	9.00%
Gross Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) has been taken for the purpose of calculations of energy charges. The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five year control period starting from the financial year 2019-20 upto FY 2023-24

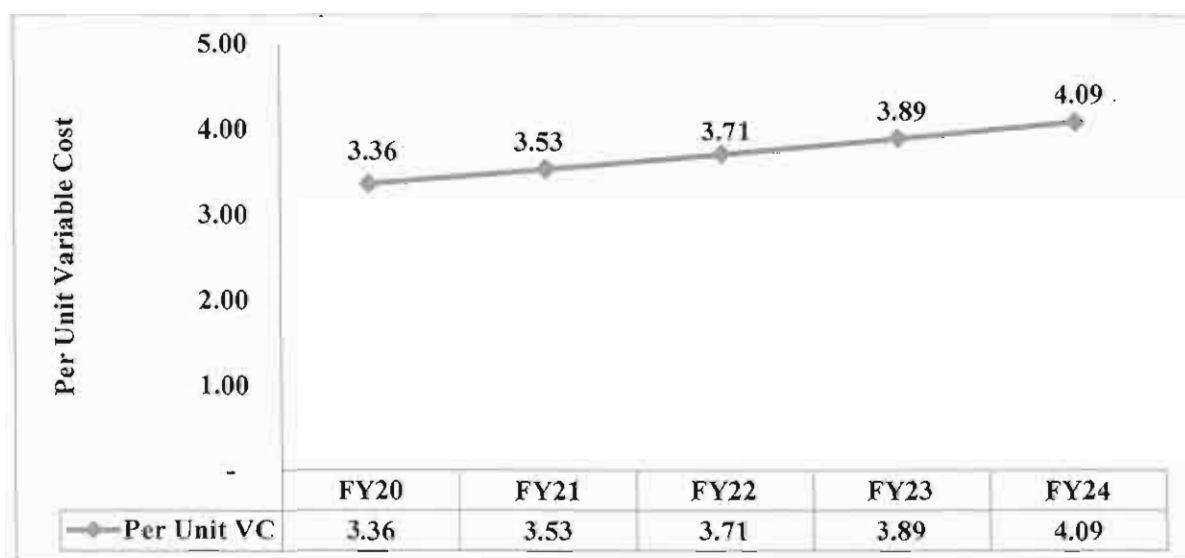
Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Capacity	MW	500	500	500	500	500
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2430	2430	2430	2430	2430
Auxiliary Energy Consumption	%	9.00%	9.00%	9.00%	9.00%	9.00%
Energy Generation - Gross	MU	3,723	3,723	3,723	3,723	3,723
Auxiliary Energy Consumption	MU	335	335	335	335	335
Ex-bus Energy Sent Out	MU	3,388	3,388	3,388	3,388	3,388
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	9,549	9,549	9,549	9,549	9,549
Price of Oil	Rs./KL	51,735	54,321	57,037	59,889	62,884
Wt. Avg. GCV of Coal	kCal/kg	3566	3566	3566	3566	3566
GCV of Primary Fuel (Coal) less 85 Kcal/Kg on account of variation during storage	kCal/kg	3481	3481	3481	3481	3481
Price of Coal	Rs./MT	4356	4574	4803	5043	5295

Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Heat Contribution from SFO	Kcal/kWh	4.77	4.77	4.77	4.77	4.77
Oil Consumption	KL	1862	1862	1862	1862	1862
Heat Contribution from Coal	Kcal/kWh	2425	2425	2425	2425	2425
Specific Coal Consumption	kg/kWh	0.70	0.70	0.70	0.70	0.70
Coal Consumption	MMT	2.59	2.59	2.59	2.59	2.59
Total Cost of Oil	Rs Cr	9.63	10.11	10.62	11.15	11.71
Total Cost of Coal	Rs Cr	1,129.90	1,186.39	1,245.71	1,308.00	1,373.40
Total Fuel Cost	Rs Cr	1,139.53	1,196.51	1,256.33	1,319.15	1,385.10
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	2.84	2.98	3.13	3.29	3.46
Rate of Energy Charge from Coal ex-bus	Paise/kWh	333.51	350.18	367.69	386.08	405.38
Rate of Energy Charge ex-bus per kWh	Paise/kWh	336.35	353.17	370.83	389.37	408.83

**Graph: Variable Cost per unit in the Control Period**



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### 10.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

  
  
  
  
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**Harduaganj Extension Stage II  
Additional Submission in MYT petition for the  
period FY 2019-20 to FY 2023-24**

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**Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited**

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*Dr. Sugam*

*Manish*

*(Signature)*

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## 11.HARDUAGANJ EXTENSION SATGE II TPS

Harduaganj Extension Stage II TPS consisting of 1x660 MW supercritical Unit had been envisaged as a brownfield project in the land space available of the erstwhile Harduaganj 'A' units. The project will be installed, as an extension project, in the premises of Harduaganj Thermal Power Project, the site being located near Kasimpur village near Aligarh city of Uttar Pradesh. The Land required for the project was already owned by UP Rajya Vidyut Utpadan Nigam Ltd and the project was to be developed after dismantling of Power Block and old colony and relocation of 132/11/6.6 KV Substation of UPPCL. The scheme was accorded approval of the Government of Uttar Pradesh vide letter no. 2801/24-1-2011-3485/2009 dated 22<sup>nd</sup> September 2011. The initial estimated cost of the said project was estimated at Rs 4826.5 Crores. In light of the MOEF&CC notification S.O. 3305(E) dated 7<sup>th</sup> December 2015, additional expenditure towards installation of SCR and FGD systems was necessitated. This additional expenditure to the tune of Rs 674.48 Crores was accorded approval from the Government vide letter no 2390/24-1-2016-2356/2016 dated 24<sup>th</sup> November 2016, thereby increasing the overall project cost to Rs 5500.98 crores. The detailed project report towards the aforementioned project was prepared by M/s NTPC, the same has already been submitted before the Hon'ble Commission.

The cost estimate of the Thermal Power Station is given in table below:

**Table: Abstract of Cost Estimate of Harduaganj Extension Stage II TPS**

S No	Name/No. of Construction / Supply / Service Package	Cost Estimate of (Rs Crore)
1	<b>Preliminary &amp; Civil Works</b>	
1.1	Land & Civil Construction Works	811.97
1.2	Physical Contingency	12.18
	<b>Sub-Total 1</b>	<b>824.15</b>
2	<b>Plant &amp; Equipment</b>	
2.1	Mechanical Equipment	2,203.55
2.2	Electrical Equipment	151.17
2.3	Coal Transportation System	43.51
2.4	Spares	102.67
2.5	Misc. Tools & Plants	9.04
2.6	Customs Duty	128.21
2.7	Excise Duty	143.94
2.8	Central Sales Tax	31.28

S No	Name/No. of Construction / Supply / Service Package	Cost Estimate of (Rs Crore)
2.9	Physical Contingency	42.20
	<b>Sub-Total 2</b>	<b>2,855.57</b>
<b>3</b>	<b>Pre Commissioning Expenses</b>	<b>18.40</b>
<b>4</b>	<b>Project Management</b>	
4.1	Establishment Audit & Accounts	82.79
4.2	Consultancy	36.80
4.3	training of O&M Staff	2.00
4.4	Losses on Stocks	0.50
	<b>Sub-Total 4</b>	<b>122.09</b>
<b>5</b>	<b>Interest During Construction (IDC)</b>	<b>874.23</b>
<b>6</b>	<b>Working Capital Margin (WCM)</b>	<b>132.05</b>
<b>7</b>	<b>installation of SCR and FGD</b>	<b>674.48</b>
	<b>Total</b>	<b>5500.98</b>

The total expenditure incurred till 30<sup>th</sup> September, 2019 is to the tune of Rs. 3095.90 crore, the statutory auditor certificate in this regard has already been submitted before the commission. The unit of this power station is expected to get commissioned by 7<sup>th</sup> January 2020. Based on actual audited expenditure till 30<sup>th</sup> September 2019 and the aforementioned scheduled date of commissioning the Annual Revenue Requirement for determination of Provisional Tariff is detailed in the upcoming sections. It is submitted, that the data towards the forms have been determined based on actual expenditure levels till 30<sup>th</sup> September and the allowable ARR of the station would be finalized after determination of final Project cost. The additional expenditures envisaged, as detailed in the DPR, with respect to the estimated final project cost of Rs 5500.98 crores would be furnished to the Hon'ble Commission after incurring of the same at actual basis through Final Project Cost Petition and during true up stages. The Petitioner prays leave that the current submission is limited to the actual incurred expense levels only without prejudice to the rights of the entire actual project cost of Rs 5500.98 Crores.

Based on the above submission, the following sections detail the Annual Revenue Requirement and Tariff Petition of Harduaganj Extension Stage II TPS for the five-year control period of FY 2019-20 to FY 2023-24

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Harduaganj Extn. Stage-II\_Additional Submission\_MYT Petition for Determination of Tariff 102

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### 11.1.1. Gross Fixed Assets

Regulation 17(3) of the UPERC Generation Regulations, 2019 provide the basis for determination of final tariff of an existing project based on the admitted capital cost which shall include:

- a) the capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;
- b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these Regulation; and
- c) Expenditure on account of renovation and modernization as admitted by this Commission in accordance with these Regulation.
- d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility,

Accordingly, the Petitioner for the purpose of this MYT petition for the control period FY 2019-20 to FY 2023-24 has considered the opening GFA balance as on 01.04.2019 equal to the audited expenditure incurred till 30<sup>th</sup> September 2019 towards the project. The petitioner reiterates that the current submission is based on actual expenses only and additional capitalization during the control period would be carried out as per the DPR.

In this MYT Tariff Petition, the Petitioner is submitting the detailed asset wise list of its fixed assets for the control period FY 2019-20 to FY 2023-24. However, the Petitioner prays leave, that additional capitalization as per the approved project cost.

Accordingly, the following table depicts the proposed Gross Fixed Asset balances along with the yearly capitalizations (if any) for the Control period FY 2019-20 to FY 2023-24:

**Table: - Gross Fixed Assets Summary - FY 2019-20 to FY 2023-24**

*(All figures in RsCr)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	3,095.90	3,095.90	3,095.90	3,095.90	3,095.90
Capitalisation	-	-	-	-	-
Deletions	-	-	-	-	-
Closing GFA	3,095.90	3,095.90	3,095.90	3,095.90	3,095.90

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Harduaganj Extn. Stage-II\_Additional Submission\_MYT Petition for Determination of Tariff 103

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उत्प्रेषण विस्तार निदेश  
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### 11.1.2. Means of Finance

The Hon'ble Commission in its order dated 29<sup>th</sup> April 2016 and review order dated 18<sup>th</sup> January, 2017 had prescribed a normative approach of financing of the capital expenditure in the ratio of 70% debt and 30% equity in line with the Tariff Regulations. Further the allowable depreciation had been considered as normative loan repayment.

In order to maintain consistency in approach, the Petitioner has considered the aforementioned philosophy and calculated the normative debt and normative equity. The opening values of accumulated depreciation, normative loan and normative equity as on 1.4.2019 has been adopted based on the scheduled COD of the unit and the actual expenditure incurred till 30<sup>th</sup> September 2019. Accordingly the gross fixed asset balance, the net fixed asset balance and its financing is presented in the table below:

**Table: Calculation of GFA, NFA and its financing**

*Figures in Rs Crore*

MoF	2019-20	2020-21	2021-22	2022-23	2023-24
Opening GFA	3,095.90	3,095.90	3,095.90	3,095.90	3,095.90
Additions	-	-	-	-	-
Deletions	-	-	-	-	-
<b>Closing GFA</b>	<b>3,095.90</b>	<b>3,095.90</b>	<b>3,095.90</b>	<b>3,095.90</b>	<b>3,095.90</b>
<b>Closing Net FA</b>	<b>2,928.49</b>	<b>2,761.08</b>	<b>2,593.67</b>	<b>2,426.26</b>	<b>2,258.85</b>
<b>Financing:</b>					
Opening Equity	928.77	928.77	928.77	928.77	928.77
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>928.77</b>	<b>928.77</b>	<b>928.77</b>	<b>928.77</b>	<b>928.77</b>
Open. Accumulated Depreciation	-	167.41	334.82	502.23	669.64
Depreciation during the year	167.41	167.41	167.41	167.41	167.41
<b>Closing Accumulated Depreciation</b>	<b>167.41</b>	<b>334.82</b>	<b>502.23</b>	<b>669.64</b>	<b>837.05</b>
Opening Debts	2,167.13	1,999.72	1,832.31	1,664.90	1,497.49
Additions	-	-	-	-	-
Less: Depreciation (normative repayment)	167.41	167.41	167.41	167.41	167.41
<b>Closing Debts</b>	<b>1,999.72</b>	<b>1,832.31</b>	<b>1,664.90</b>	<b>1,497.49</b>	<b>1,330.08</b>



### 11.1.3. Interest on Loan Capital

Regulation 24(ii) of the UPERC Generation Regulations, 2019 provide the basis for computation of Interest on loan capital. It states that the Interest on loan capital shall be computed on the loans arrived at in the manner indicated in these Regulation i.e in the approved Debt: Equity ratio. The loan outstanding as on 1st April 2019 shall be worked out as the gross loan as per Regulation minus cumulative repayment as admitted by the Commission up to 31st March 2019. Further, the rate of the interest shall be the weighted average rate of interest calculated on the basis of actual loans at the beginning of each year and shall be adjusted based on actual loan each year accordingly. If there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average of interest shall be considered.

Further, It is reiterated that the Petitioner has considered a normative tariff approach with a gearing of 70:30 as considered by the Hon'ble Commission in its True-up Order dated 29<sup>th</sup> April 2016. In this approach, 70% of the capital expenditure undertaken in any year has been considered to be financed through loan and balance 30% has been considered to be funded through equity contributions.

Allowable depreciation for the year has been considered as normative loan repayment. The weighted average rate of interest of overall long term loan portfolio for FY 2018-19 has been considered for FY 2019-20 to FY 2023-24, as it seems to be fair and equitable.

Considering the debt worked out as above and applying the rate of 11.40%, the interest on loan capital has been worked out in the table below:

**Table: Summary of Interest on Loan for the Control Period**

(All figures in RsCrS)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Debts	2,167.13	1,999.72	1,832.31	1,664.90	1,505.23
Additions	-	-	-	7.74	-
Less: Normative repayment	167.41	167.41	167.41	167.41	167.41
<b>Closing Debts</b>	<b>1,999.72</b>	<b>1,832.31</b>	<b>1,664.90</b>	<b>1,505.23</b>	<b>1,337.82</b>
Average Debt	2,083.43	1,916.02	1,748.60	1,585.06	1,421.52
<b>Interest on Loan</b>	<b>237.51</b>	<b>218.43</b>	<b>199.34</b>	<b>180.26</b>	<b>161.17</b>

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उपप्रशासक (वि० उ० वि०)  
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#### 11.1.4. Depreciation

The Petitioner submits that the depreciation as per accounts is calculated as per the prescription of New Companies Act, 2013 which is depicted in the accounting policies annexed with the audited accounts. However the Tariff Regulations prescribe that the eligible depreciation shall be calculated annually, based on straight line method over the useful life of the asset and the rates prescribed in Appendix III of such regulations. It is noteworthy of mentioning that the Appendix III prescribes distinct depreciation rates for each class of assets.

The Petitioner has provided the asset class wise list of gross fixed assets in Form 12 of the tariff formats submitted along with this petition. Accordingly the Petitioner has calculated the eligible depreciation based on the rates prescribed in the tariff regulations.

The rates of depreciation prescribed by the Hon'ble Commission in Appendix 3 of the Generation Tariff Regulations prescribe different depreciation rates for different assets. In such circumstances it would only be fit to consider station wise depreciation calculated at the rates prescribed in Appendix 3 for different asset classes and not at the average rate.

The value of Gross Fixed Assets has been discussed in foregoing sections. The Petitioner has calculated station wise depreciation, on the Gross Fixed Asset (GFA) value of all the plants owned by it, at the rates specified in the Appendix 3 of Generation Tariff Regulations 2019.

The allowable depreciation is depicted in the table below:

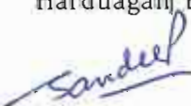


**Table: Depreciation Summary for the Control Period**

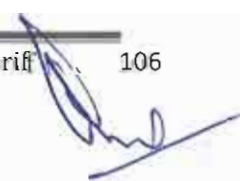
*(All figures in RsCrS)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation as per Annexure III of the Regulations	167.41	167.41	167.41	167.41	167.41
Allowable Depreciation subject to maximum of 90% of the Capital Cost	167.41	167.41	167.41	167.41	167.41

#### 11.1.5. Return on Equity

Regulation 24(i) of the UPERC Generation Regulations, 2019 provides the base for determination of Return on Equity for the purpose of computation of fixed charges. The said

  
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regulations state that the Return on equity shall be computed in rupee terms on the equity base determined in accordance with this Regulations @ 15.0% per annum.

The opening Equity base for computation of ROE for the generating station has been considered based on 30% normative funding of the total expenditure incurred till 30<sup>th</sup> September 2019 through equity. However, the Petitioner also prays that additional capitalization as per the estimated project cost of Rs 5500.98 crores would also be claimed under similar principles of regulation.

As per the Generation Tariff Regulations, equity would be eligible for return when the asset is commissioned. Accordingly the table below provides the summary of equity base eligible for return and the Return on Equity claimed by the petitioner for the control period:

**Table: Return on Equity for the Control Period (FY 2019-20 to FY 2023-24)**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Equity	928.77	928.77	928.77	928.77	928.77
Additions	-	-	-	-	-
<b>Closing Equity</b>	<b>928.77</b>	<b>928.77</b>	<b>928.77</b>	<b>928.77</b>	<b>928.77</b>
Rate of Return on Equity (%)	15.0%	15.0%	15.0%	15.0%	15.0%
<b>Allowable RoE</b>	<b>139.32</b>	<b>139.32</b>	<b>139.32</b>	<b>139.32</b>	<b>139.32</b>

However, it is brought to the attention of the Hon'ble Commission that based on the Government Order dated 31st July 2017 and subsequent adoption of the same by Board of Directors on 9th April 2018 of the Petitioner, the Petitioner would continue to bill the beneficiary considering the RoE at 2% and rest of 13% would forego to take its advantage in Merit Order Despatch (MOD) schedule as per Hon'ble Commission Order dt 21.06.2016 against Petition No. 1070/2015 till further direction regarding the same. It is requested to Hon'ble Commission to approve the Capacity Charge with RoE @ 15%.

#### 11.1.6. Operation & Maintenance Expenses

Regulation 24(iv) of the UPERC Generation Regulations, 2019 deals with the allowance of O&M expenses. The Hon'ble Commission in the generation tariff regulations – Para 25 (iv)(a) (a) have prescribed the yearly O&M expenses for the control period FY 2019-20 to FY 2023-24 based upon the Installed Capacity for the thermal power stations other than plant for

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*Amu*

(*डॉ. रमेश चन्द*)  
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Harduaganj (U#7) & Parichha (U#2) TPS. The Hon'ble Commission has provided special dispensation in the O&M norms for the Thermal power plants namely Harduaganj (U#7) & Parichha (U#2) TPS, the same have been provided in the Para 24(iv)(b) of the Generation Regulation. For the current generating station, normative parameters for O&M norms have been considered for 600 MW and above sets.

Accordingly based on the above stated norms the O&M expenses allowed for the power station for the Control period is depicted in the table below:

**Table: O&M expense for the Control Period**

*(All figures in RsCr/s)*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity	660	660	660	660	660
Norms	20.26	20.97	21.71	22.47	23.26
<b>O&amp;M Expenses</b>	<b>133.72</b>	<b>138.40</b>	<b>143.29</b>	<b>148.30</b>	<b>153.52</b>

Further the Hon'ble Commission in its Para 25(iv) Note (c) has stated that the expenses on account of water charges shall be paid additionally at actuals subject to prudence check.

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 compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization.

#### **11.1.7. Interest on Working Capital**

The Petitioner has worked out the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC Generation Tariff Regulations 2019. The rate of interest on working capital has been considered on normative basis as the Bank Rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-20 to 2023-24 in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

*Sunder*

*Sunder*

*[Signature]*



The Petitioner for this Petition has considered the interest rate on working capital requirement at 13.80% including margin being the Bank rate as specified by the Reserve Bank of India as on 1st April 2019.

Further the Hon'ble Commission has provided the following norms for the purpose of calculating of the normative working capital for coal based generating stations:

- Cost of coal 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 stock storage capacity whichever is lower
- Cost of secondary fuel oil for two months corresponding to the target availability and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
- Operation and Maintenance expenses including water charges for one month;
- Maintenance spares @ 20% of operation and maintenance expenses; and
- Receivables equivalent to 45days of capacity charges and energy charges for sale of electricity calculated on the target availability.

Based on the above premise, the computation of interest on working capital for the control period for kind consideration and approval of the Hon'ble Commission are as per table below:

**Table: Interest on Working Capital for the Control Period**

(All figures in RsCrS)

PARICHHA EXTENSION SATGE II	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal	118.59	124.52	130.75	137.29	144.15
Cost of Main Secondary Fuel Oil	2.16	2.27	2.38	2.50	2.62
Fuel Cost	-	-	-	-	-
Liquid Fuel Stock	-	-	-	-	-
O & M Expenses	11.14	11.53	11.94	12.36	12.79
Maintenance Spares	26.74	27.68	28.66	29.66	30.70
Receivables	270.37	277.82	285.76	294.20	303.18
Total Working Capital	429.01	443.83	459.49	476.01	493.45
Rate of Interest	13.80%	13.80%	13.80%	13.80%	13.80%
<b>Interest on Working Capital</b>	<b>59.20</b>	<b>61.25</b>	<b>63.41</b>	<b>65.69</b>	<b>68.10</b>

### 11.1.8. Summary of Annual Capacity (Fixed) Charges

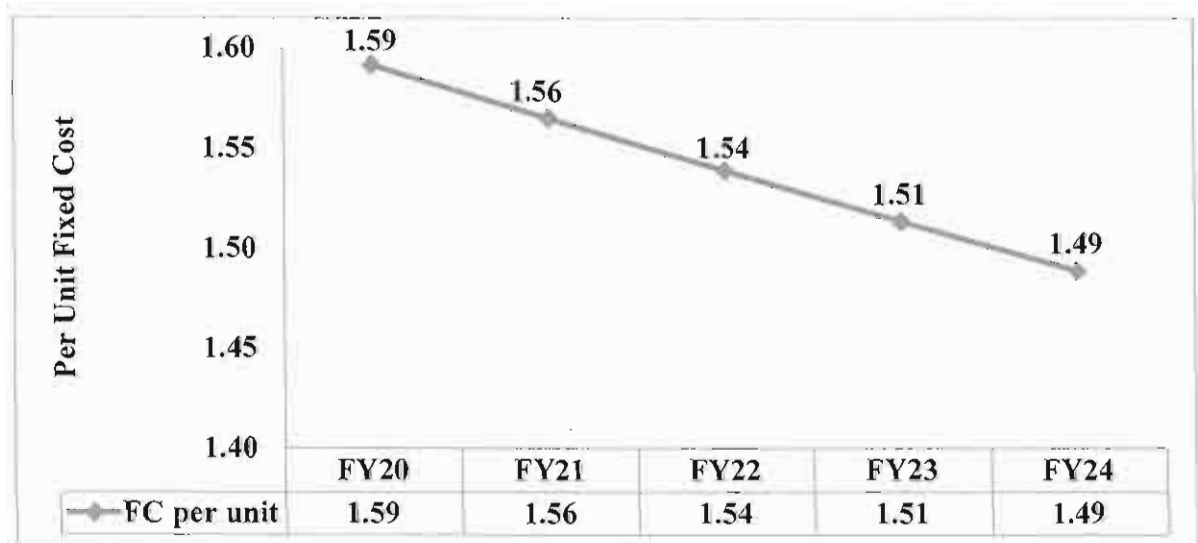
In view of the above submissions, the fixed cost of the Petitioner's Parichha Extension Satge II TPS for the control period under consideration works out at as under:

**Table: Summary of Annual Capacity (Fixed) Charges for the Control Period**

(All figures in RsCrs)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	167.41	167.41	167.41	167.41	167.41
Interest on Loan Capital	237.51	218.43	199.34	180.26	161.17
Return on Equity	139.32	139.32	139.32	139.32	139.32
O&M Expenses	133.72	138.40	143.29	148.30	153.52
Interest on Working Capital	59.20	61.25	63.41	65.69	68.10
<b>Total Capacity Charges</b>	<b>737.16</b>	<b>724.80</b>	<b>712.76</b>	<b>700.97</b>	<b>689.51</b>
Energy ex bus	4632	4632	4632	4632	4632
<b>FC per unit</b>	<b>1.59</b>	<b>1.56</b>	<b>1.54</b>	<b>1.51</b>	<b>1.49</b>

**Graph: Fixed Cost per unit in the Control Period**



### 11.2. Energy Charges

The following table highlights the normative parameters which the Hon'ble Commission has prescribed for the control period of FY 2019-20 to FY 2023-24:

*(Signatures of officials)*

**Table Normative Operating Parameters for the Control Period**

**As per Tariff Generation Regulations for MYT FY 2020 to FY 2023**

Normative Parameters	Unit	2019-20	2020-21	2021-22	2022-23	2023-24
Target Availability	%	85%	85%	85%	85%	85%
Target PLF	%	85%	85%	85%	85%	85%
Aux Energy Consumption	%	5.75%	5.75%	5.75%	5.75%	5.75%
Gross Heat Rate	Kcal/kWh	2270	2270	2270	2270	2270
Specific Fuel Oil Cons	ml/kWh	0.50	0.50	0.50	0.50	0.50

In light of this being an upcoming generating station, the petitioner has estimated the energy charges based on the actual prices of coal and oil being delivered at other stations at Harduaganj, being similarly located geographically. However, the Petitioner also prays leave for recovery of excess energy charge in case of variations of quality and prices of the primary and secondary fuel as per terms and conditions of the Regulations. For the purpose of calculations of energy charges for FY 2019-20, the average of the actual GCV of coal and oil and actual cost thereof of the ending three months (June to August 2019) for Harduaganj Extension has been taken for the purpose of calculations of energy charges. The Petitioner has assumed an annual Escalation Rate of 5% in the price of fuels over the five-year control period starting from the financial year 2019-20 upto FY 2023-24

Energy charges for the control period have been projected based on the operating parameters prescribed in the Generation Tariff Regulations. A summarized position of energy charges proposed for the control period is given in Table below: (The details are available in tariff filing formats prescribed by the Hon'ble Commission)

**Table: Calculation of Energy Charges for the Control Period**

Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Capacity	MW	660	660	660	660	660
PLF	%	85%	85%	85%	85%	85%
Gross Station Heat Rate	Kcal/kWh	2270	2270	2270	2270	2270
Auxiliary Energy Consumption	%	5.75%	5.75%	5.75%	5.75%	5.75%
Energy Generation - Gross	MU	4,914	4,914	4,914	4,914	4,914
Auxiliary Energy Consumption	MU	283	283	283	283	283
Ex-bus Energy Sent Out	MU	4,632	4,632	4,632	4,632	4,632
Specific Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50
Wt. Avg. GCV of Oil	KCal/Lt	9,482	9,482	9,482	9,482	9,482

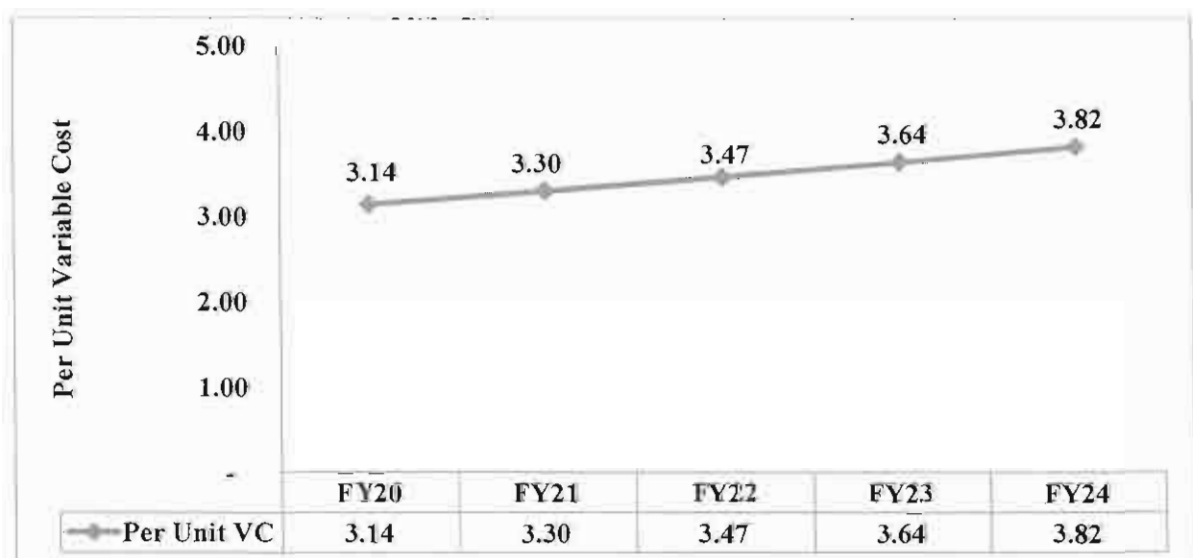
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Description	Unit	2019-20	2020-21	2021-22	2022-23	23023-24
Price of Oil	Rs./KL	52,721	55,357	58,125	61,031	64,082
Wt. Avg. GCV of Coal	kCal/kg	3560	3560	3560	3560	3560
GCV of Primary Fuel (Coal) less 85 Kcal/Kg on account of variation during storage	kCal/kg	3475	3475	3475	3475	3475
Price of Coal	Rs./MT	4504	4730	4966	5215	5475
Heat Contribution from SFO	Kcal/kWh	4.74	4.74	4.74	4.74	4.74
Oil Consumption	KL	2457	2457	2457	2457	2457
Heat Contribution from Coal	Kcal/kWh	2265	2265	2265	2265	2265
Specific Coal Consumption	kg/kWh	0.65	0.65	0.65	0.65	0.65
Coal Consumption	MMT	3.20	3.20	3.20	3.20	3.20
Total Cost of Oil	Rs Cr	12.95	13.60	14.28	15.00	15.75
Total Cost of Coal	Rs Cr	1,442.89	1,515.04	1,590.79	1,670.33	1,753.85
Total Fuel Cost	Rs Cr	1,455.85	1,528.64	1,605.07	1,685.33	1,769.59
Rate of Energy Charge from Secondary Fuel Oil ex-bus	Paise/kWh	2.80	2.94	3.08	3.24	3.40
Rate of Energy Charge from Coal ex-bus	Paise/kWh	311.52	327.10	343.45	360.62	378.65
Rate of Energy Charge ex-bus per kWh	Paise/kWh	314.32	330.03	346.53	363.86	382.05

**Graph: Variable Cost per unit in the Control Period**



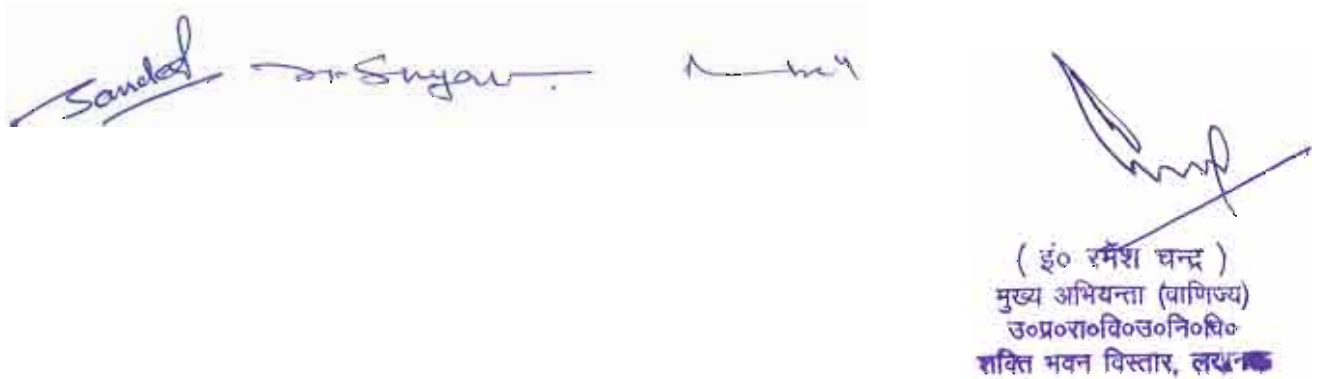


### 11.2.1. Fuel Cost Adjustment

Regulation 28 (ii) of the Generation Tariff Regulations 2019, provides the mechanism for claiming the adjustment of rate of energy charges on account of variation in price and heat values of fuels.

*“(a) Initially, Gross Calorific Value of coal shall be taken (on as received basis) of the preceding three months. Any variation shall be adjusted on month to month basis on the basis of Gross Calorific Value of coal received and landed cost incurred by the generating company for procurement of coal or oil, as the case may be. No separate petition need to be filed with the Commission for fuel price adjustment. In case of any dispute, an appropriate application in accordance with Uttar Pradesh Electricity Regulatory Commission (Conduct of Business) Regulations 2004, as amended from time to time or any statutory reenactment thereof, shall be made before the Commission.”*

Accordingly the Petitioner would raise bills for recovery of Fuel Cost Adjustment.

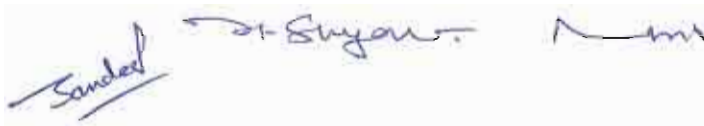



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राजिब भवन विस्तार, लखनऊ

## 12. Prayer:

The Petitioner respectfully prays to the Hon'ble Commission:

1. Accept this Additional submission petition as application towards Multi Year Tariff of each Power Station for the control period comprising FY 2019-20 to FY 2023-24.
2. Approve Annual Revenue Requirement for the generating stations of the Petitioner for each of the Financial years of the period 2019-20 to 2023-24.
3. Accept this Petition for provisional Capital cost of Harduaganj Extension-II and determine provisional tariff for the years FY 2019-20 onwards based on such provisional Capital cost.
4. Permit recovery of Statutory charges like water cost, water cess, payment to Pollution Control Board, Regulatory fee, Tax on income including Fringe Benefit Tax, Forest cess, 7<sup>th</sup> pay Commission revision impact, Gratuity and Provident fund etc. and others as it was allowed in Tariff Order dt 29.04.2016 and 18.01.2017 for for UPRVUNL for MYT period FY 2014-15 to FY 2018-19.
5. Permit recovery of Generation Incentive as per UPERC (Terms & Conditions of Generation Tariff) Regulation-2019 for MYT period 2019-20 to 2023-24.
6. Permit Efficiency Gain shared with Beneficiaries on a Corporate level as overall basis instead of Station wise.
7. Permit recovery of expenses understated/ not considered in this Petition subsequent to the submission of this petition.
8. Condone any inadvertent omissions / errors / short comings and permit the applicant to add /change /modify / alter this Petition and make further submissions as may be required at later stages from time to time.
9. Pass such orders as Hon'ble Commission may deem fit and proper and necessary in the facts and circumstances of the case, to grant relief to the petitioner.



  
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