

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 343/TT/2022

Coram:

**Shri I.S. Jha, Member
Shri Arun Goyal, Member
Shri P. K. Singh, Member**

Date of Order: 20.01.2024

In the matter of:

Approval under Regulation 86 of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 for determination of transmission tariff from 1.4.2019 to 31.3.2024 under the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 for Bhadrawati (Chandrapur) HVDC back to back station (2x500 MW) in Southern Region and Western Region.

And in the matter of:

Power Grid Corporation of India Limited,
"Saudamini", Plot No. 2,
Sector 29, Gurgaon-122001 (Haryana).

.... Petitioner

Vs.

1. Karnataka Power Transmission Corporation Limited,
Kaveri Bhavan, Bangalore-560009.
2. Transmission Corporation of Andhra Pradesh Limited,
Vidyut Soudha, Hyderabad-500082.
3. Kerala State Electricity Board,
Vaidyuthi Bhavanam, Pattom,
Thiruvananthapuram-695004.
4. Tamil Nadu Generation and Distribution Corporation Limited,
(Formerly Tamil Nadu Electricity Board-TNEB),
NPKRR Maaligai, 800, Anna Salai, Chennai-600002.
5. Electricity Department,
Government of Pondicherry, Pondicherry-605001.
6. Eastern Power Distribution Company of Andhra Pradesh Limited,
P&T Colony, Seethmmadhara,
Vishakhapatnam, Andhra Pradesh.



7. Southern Power Distribution Company of Andhra Pradesh Limited, Srinivasasa Kalyana Mandapam Backside, Tiruchanoor Road, Kesavayana Gunta, Tirupati-517501, Chittoor District, Andhra Pradesh.
8. Southern Power Distribution Company of Telangana Limited, Corporate Office, Mint Compound, Hyderabad-500063, Telangana.
9. Northern Power Distribution Company of Telangana Limited, Opp. NIT Petrol Pump, Chaitanyapuri, Kazipet, Warangal-506004, Telangana.
10. Bangalore Electricity Supply Company Limited, K.R. Circle, Bangalore-560001, Karnataka.
11. Gulbarga Electricity Supply Company Limited, Station Main Road, Gulbarga, Karnataka.
12. Hubli Electricity Supply Company Limited, Navanagar, PB Road, Hubli, Karnataka.
13. MESCOM Corporate Office, Paradigm Plaza, AB Shetty Circle, Mangalore-575001, Karnataka.
14. Chamundeswari Electricity Supply Corporation Limited, 927, L J Avenue, Ground Floor, New Kantharaj Urs Road, Saraswatipuram, Mysore-570009, Karnataka.
15. Electricity Department, Government of Goa, Vidyuti Bhawan, Panaji, Goa-403001.
16. Transmission Corporation of Telangana Limited, Vidhyut Sudha, Khairatabad, Hyderabad-500082.
17. Tamil Nadu Transmission Corporation, NPKRR Maaligai, 800, Anna Salai, Chennai-600002.
18. Madhya Pradesh Power Trading Company Limited, Shakti Bhawan, Rampur, Jabalpur-482008.
19. Maharashtra State Electricity Distribution Company Limited, Prakashgad, 4th Floor, Andheri (East), Mumbai-400052.



20. Gujarat Urja Vikas Nigam Limited,
Sardar Patel Vidyut Bhawan,
Race Course Road,
Vadodara-390007.
21. Electricity Department,
Administration of Daman & Diu,
Daman-396210.
22. Electricity Department,
Administration of Dadra Nagar Haveli,
U.T., Silvassa-396230.
23. Chhattisgarh State Electricity Board,
P.O. Sunder Nagar, Dangania, Raipur,
Chhatisgaarh-492013.
24. Madhya Pradesh Audyogik Kendra,
Vikas Nigam (Indore) Limited,
3/54, Press Complex, Agra-Bombay Road,
Indore-452008.

...Respondent(s)

For Petitioner : Ms. Swapna Seshadri, Advocate, PGCIL
Ms. Neha Garg, Advocate, PGCIL
Ms. Surbhi Gupta, Advocate, PGCIL
Shri S.S. Raju, PGCIL
Shri D.K. Biswal, PGCIL
Shri Ved Prakash Rastogi, PGCIL
Shri Zafrul Hasan, PGCIL
Shri Amit Yadav, PGCIL

For Respondents : Shri Anindya Khare, MPPMCL

ORDER

Power Grid Corporation of India Limited has filed the instant petition for determination of transmission tariff for the period from 1.4.2019 to 31.3.2024 under the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 (hereinafter referred to as “the 2019 Tariff Regulations”) for Bhadrawati (Chandrapur) HVDC back-to-back station (2x500 MW) (hereinafter referred to as the “transmission asset”) in Southern and Western Region.



2. The Petitioner has made the following prayers in the instant petition:

“1) The Transmission tariff approved by Hon’ble Commission vide order dated 17.10.2021 in Petition No. 353/TT/2020 for Ramagundam-Hyderabad 400 kV S/C line-2 (Asset-I) for 2001-04, 2004-09, 2009-14, 2014-19 and 2019-24 tariff block shall be same and will continue as per para 5.0 above.

2) The Transmission tariff approved by Hon’ble Commission vide order dated 17.10.2021 in Petition No. 353/TT/2020 for Bhadrawati (Chandrapur) HVDC back to back station (2x500 MW) in Southern Region and Western Region (Asset-II) for 2001-04, 2004-09, 2009-14 and 2014-19 tariff block shall be same and will continue as per para 5.0 above.

3) Approve the revised Transmission Tariff for 2019-24 block for Bhadrawati (Chandrapur) HVDC back to back station (2x500 MW) in Southern Region and Western Region (Asset-II) under this petition.

4) A. Allow the petitioner to recover the shortfall or refund the excess Annual Fixed Charges, on account of Return on Equity due to change in applicable Minimum Alternate/Corporate Income Tax rate as per the Income Tax Act, 1961 (as amended from time to time) of the respective financial year directly without making any application before the Commission as provided in Tariff Regulation 2014 and Tariff regulations 2019 as per para 6.4 above for respective block.

B. Further it is submitted that deferred tax liability before 01.04.2009 shall be recoverable from the beneficiaries or long-term customers / DIC as the case may be, as and when the same is materialized as per regulation 49 of 2014 and regulation 67 of 2019 tariff regulation. The petitioner may be allow to recover the deferred tax liability materialized directly without making any application before the commission as provided in the regulation.

5) Approve the reimbursement of expenditure by the beneficiaries towards petition filing fee, and expenditure on publishing of notices in newspapers in terms of Regulation 70 (1) Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019, and other expenditure (if any) in relation to the filing of petition.

6) Allow the petitioner to bill and recover Licensee fee and RLDC fees and charges, separately from the respondents in terms of Regulation 70 (3) and (4) Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019.

7) Allow the Petitioner to claim the overall security expenses and consequential IOWC on that security expenses separately.

8) Allow the petitioner to adjust the cumulative depreciation by taking into account the depreciation recovered in tariff by the decapitalized asset during its useful life and to recover the unrecovered depreciation in case of Asset-I separately on account of de-capitalization.

9) Allow the petitioner to claim the capital spares at the end of tariff block as per actual.

10) Allow the Petitioner to bill and recover GST on Transmission Charges



separately from the respondents, if GST on transmission is levied at any rate in future. Further, any taxes including GST and duties including cess etc. imposed by any statutory/Govt./municipal authorities shall be allowed to be recovered from the beneficiaries.

and pass such other relief as Hon'ble Commission deems fit and appropriate under the circumstances of the case and in the interest of justice”

Background

3. The brief facts of the case are as follows:

(a) The Ministry of Power (MoP) vide letter dated 12.11.1993 conveyed the approval of the Central Government to the capital investment for setting up transmission assets associated with the transmission project.

(b) The transmission project was to be commissioned within 48 months from the date of issue of the sanction i.e. by 11.11.1997 against which transmission asset were put into commercial operation on 1.10.1997.

(c) MoP vide letter 10.1.2000 conveyed revised sanction for expenditure of the transmission assets associated with the transmission project at a cost ₹102859.00 lakh, including IDC of ₹7694.00 lakh (based on 1st Quarter, 1998 price level).

(d) In line with the terms and conditions of tariff contained in the MoP notification dated 16.12.1997, the provisional transmission tariff asset for the period from their respective COD up to 31.3.2001 was allowed by the Commission vide order dated 20.8.2002 in Petition No. 46/2000. The said provisional transmission tariff order pertaining to Chandrapur HVDC back-to-back component was revised vide order dated 31.3.2003 in Review Petition No. 145/2002 (in Petition No. 46/2000).



(e) Based on the terms and conditions of tariff contained in the Commission's Notification dated 26.3.2001, the transmission tariff of the transmission asset for the period from 1.4.2001 to 31.3.2004 was allowed [after considering Foreign Exchange Rate Variation (FERV) on the outstanding loan as on 31.3.2001] by the Commission vide order dated 19.7.2004 in Petition No. 69/2002.

(f) The Appellate Tribunal for Electricity (APTEL) vide a common judgment dated 4.10.2006 in Appeal No. 135/2005 (against the Commission's order dated 30.6.2006 in Petition No. 40/2002) and other related appeals, inter-alia, held that addition of notional equity on account of FERV is not to be considered for computation of Return on Equity (RoE) and as a consequence, the entire amount of FERV shall form part of loan. The said decision was reiterated by the APTEL vide judgment dated 22.12.2006 in Appeal No. 161/2006 (M.P. State Electricity Board vs. Power Grid Corporation of India Limited & Ors.).

(g) The APTEL vide judgment dated 31.10.2007 in Appeal No. 159/2005, inter-alia, held that Interest on Loan (IoL) capital should be determined based on normative debt repayment formula.

(h) The above judgments of the APTEL involving interpretation of MoP's notification dated 16.12.1997 and question of apportionment of FERV and computation of IoL have been considered to be judgments in rem and, therefore, based on the implementation of the above-mentioned judgments in the instant case, the revised transmission tariff of the transmission assets for



the 2001-04 tariff period was allowed vide order dated 17.1.2008 in Petition No. 69/2002.

(i) The transmission tariff of asset for the period from 1.4.2004 to 31.3.2009 was allowed vide order dated 2.5.2006 in Petition No. 137/2004. While allowing tariff, the Commission adopted capital cost, loan, equity etc. considered for determination of tariff for the 2001-04 tariff period and FERV for the period upto 31.3.2004 was capitalized and apportioned between debt and equity in the same ratio as considered for the period 1.4.2001 to 31.3.2004.

(j) Based on the above-mentioned judgments of the APTEL, the transmission tariff of the asset for the 2004-09 tariff period was revised vide order dated 16.4.2008 in Petition No. 137/2004.

(k) The transmission tariff of the transmission asset for the period from 1.4.2009 to 31.3.2014 was allowed vide order dated 20.6.2011 in Petition No. 178/2010 which was subsequently trued-up with determination of tariff of the transmission assets for the 2014-19 tariff period vide order dated 11.1.2016 in Petition No. 493/TT/2014.

(l) The Petitioner filed Petition No. 353/TT/2020 for revision of transmission tariff of the 2001-04, 2004-09 and 2009-14 tariff periods and truing up of transmission tariff of the 2014-19 tariff period and determination of transmission tariff of the 2019-24 tariff period for Asset-I: 400 kV S/C line-2 Ramagundam-Hyderabad in Southern Region and Asset-II: Bhadrawati (Chandrapur) HVDC back-to-back station (2x500 MW) between Western



Region and Southern Region associated with Chandrapur HVDC back-to-back project (2x500 MW). The Commission vide order dated 17.10.2021 in Petition No. 353/TT/2020 revised the transmission tariff of the 2001-04, 2004-09 and 2009-14 tariff periods and trued up transmission tariff of the 2014-19 tariff period and approved the transmission tariff of the 2019-24 tariff period for Asset-I and Asset-II. However, the Commission did not approve ACE claimed by the Petitioner in case of Asset-II for 2019-24 tariff period and directed to file a separate petition to claim the projected ACE for Asset-II during the 2019-24 tariff period.

(m) As per the direction vide order dated 17.10.2021 in Petition No. 353/TT/2020, the Petitioner has filed the instant petition for determination of tariff for 2019-24 tariff period.

4. The Respondents are distribution licensees, power departments and transmission licensees, who are procuring transmission services from the Petitioner, mainly beneficiaries of the Southern Region and Western Region.

5. The Petitioner has served the petition on the Respondents and notice regarding filing of this petition has also been published in the newspapers in accordance with Section 64 of the Electricity Act, 2003. No comments or suggestions have been received from the general public in response to the aforesaid notices published in the newspapers by the Petitioner.

6. It is observed that M.P. Power Trading Company Limited has been impleaded as Respondent No.18 in the instant petition by the Petitioner. However, the Government of Madhya Pradesh has changed the name of M.P. Power Trading



Company Limited to Madhya Pradesh Power Management Company Limited (MPPMCL). Accordingly, MPPMCL has filed reply in the matter vide affidavit dated 19.12.2022 and the same is considered by us in this order. MPPMCL has raised issue of ACE claimed in 2019-24 period and Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) i.e. Respondent No. 4, has filed a reply vide affidavit dated 19.12.2022 and raised issue of ACE claimed in 2019-24 period. In response, the Petitioner has filed rejoinder to the reply filed by MPPMCL and TANGEDCO vide affidavit dated 29.12.2022.

7. The hearing in this matter was held on 12.1.2023 and the order was reserved.
8. Having heard the Petitioner and representatives of the Respondents and having perused the material on record, we proceed to dispose of the petition.

Determination of Annual Fixed Charges from 1.4.2019 to 31.3.2024 for the 2019-24 Tariff Period

9. The Annual Fixed Charges (AFC) claimed by the Petitioner in respect of the transmission asset for 2019-24 tariff period are as follows:

Particulars	(₹ in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	871.92	871.92	871.92	6391.40	3367.77
Interest on Loan	0.00	0.00	0.00	35.11	428.46
Return on Equity	1486.99	1486.99	1486.99	1832.55	2937.36
Interest on Working Capital	108.16	110.95	113.57	205.25	184.76
O&M Expenses	1668.00	1728.00	1788.00	1850.00	1916.00
Total	4135.07	4197.86	4260.48	10314.31	8834.35

10. The details of the Interest on Working Capital (IWC) claimed by the Petitioner in respect of the transmission asset are as follows:

Particulars	(₹ in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
O&M Expenses	139.00	144.00	149.00	154.17	159.67
Maintenance Spares	250.20	259.20	268.20	277.50	287.40



Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Receivables	508.41	517.54	525.26	1271.63	1086.19
Total	897.61	920.74	942.46	1703.30	1533.26
Rate of Interest (in %)	12.05	12.05	12.05	12.05	12.05
Interest on Working Capital	108.16	110.95	113.57	205.25	184.76

Capital Cost

11. Regulation 19 of the 2019 Tariff Regulations provides as follows:

“19 Capital Cost: (1) *The Capital cost of the generating station or the transmission system, as the case may be, as determined by the Commission after prudence check in accordance with these regulations shall form the basis for determination of tariff for existing and new projects.*

(2) *The Capital Cost of a new project shall include the following:*

- (a) *The expenditure incurred or projected to be incurred up to the date of commercial operation of the project;*
- (b) *Interest during construction and financing charges, on the loans (i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or (ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed;*
- (c) *Any gain or loss on account of foreign exchange risk variation pertaining to the loan amount availed during the construction period;*
- (d) *Interest during construction and incidental expenditure during construction as computed in accordance with these regulations;*
- (e) *Capitalised Initial Spares subject to the ceiling rates in accordance with these regulations;*
- (f) *Expenditure on account of additional capitalization and de-capitalisation determined in accordance with these regulations;*
- (g) *Adjustment of revenue due to sale of infirm power in excess of fuel cost prior to the date of commercial operation as specified under Regulation 7 of these regulations;*
- (h) *Adjustment of revenue earned by the transmission licensee by using the Asset-before the date of commercial operation;*
- (i) *Capital expenditure on account of ash disposal and utilization including handling and transportation facility;*
- (j) *Capital expenditure incurred towards railway infrastructure and its augmentation for transportation of coal up to the receiving end of the generating station but does not include the transportation cost and any other appurtenant cost paid to the railway.*
- (k) *Capital expenditure on account of biomass handling equipment and facilities, for co-firing;*
- (l) *Capital expenditure on account of emission control system necessary to meet the revised emission standards and sewage treatment plant;*
- (m) *Expenditure on account of fulfilment of any conditions for obtaining environment clearance for the project;*
- (n) *Expenditure on account of change in law and force majeure events; and*
- (o) *Capital cost incurred or projected to be incurred by a thermal generating station, on account of implementation of the norms under Perform, Achieve and Trade (PAT) scheme of Government of India shall be considered by the*



Commission subject to sharing of benefits accrued under the PAT scheme with the beneficiaries.

- (3) *The Capital cost of an existing project shall include the following:*
- (a) 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 regulations;*
 - (c) Capital expenditure on account of ash disposal and utilization including handling and transportation facility;*
 - (d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility;*
 - (e) Capital expenditure incurred towards railway infrastructure and its augmentation for transportation of coal up to the receiving end of generating station but does not include the transportation cost and any other appurtenant cost paid to the railway; and*
 - (f) Capital cost incurred or projected to be incurred by a thermal generating station, on account of implementation of the norms under Perform, Achieve and Trade (PAT) scheme of Government of India shall be considered by the Commission subject to sharing of benefits accrued under the PAT scheme with the beneficiaries.”*

- (4) *The capital cost in case of existing or new hydro generating station shall also include:*

- (a) cost of approved rehabilitation and resettlement (R&R) plan of the project in conformity with National R&R Policy and R&R package as approved; and*
- (b) cost of the developer's 10% contribution towards Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) and Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY) project in the affected area.*

- (5) *The following shall be excluded from the capital cost of the existing and new projects:*

- (a) The Asset-forming part of the project, but not in use, as declared in the tariff petition;*
- (b) De-capitalised Asset-after the date of commercial operation on account of replacement or removal on account of obsolescence or shifting from one project to another project:*

Provided that in case replacement of transmission Asset-is recommended by Regional Power Committee, such Asset-shall be decapitalised only after its redeployment;

Provided further that unless shifting of an Asset-from one project to another is of permanent nature, there shall be no de-capitalization of the concerned asset.

- (c) In case of hydro generating stations, any expenditure incurred or committed to be incurred by a project developer for getting the project site allotted by the State Government by following a transparent process;*
- (d) Proportionate cost of land of the existing project which is being used for generating power from generating station based on renewable energy; and*



(e) Any grant received from the Central or State Government or any statutory body or authority for the execution of the project which does not carry any liability of repayment.”

12. The Commission vide order dated 17.10.2021 in Petition No. 353/TT/2020 has approved the trued-up capital cost of ₹69107.40 lakh as on 31.3.2019. The Petitioner has claimed the capital cost of ₹69107.40 lakh as on 31.3.2019.

13. We have considered the submission of the Petitioner. The approved capital cost of ₹69107.40 lakh as on 31.3.2019 has been considered as the opening capital cost as on 1.4.2019 for determination of tariff in accordance with Regulation 19 of the 2019 Tariff Regulations.

Additional Capital Expenditure (“ACE”)

14. The Commission vide order dated 17.10.2021 in Petition No. 353/TT/2020 directed the Petitioner to file separate petition for claiming ACE in 2019-24 period.

The relevant portion of the order dated 17.10.2021 is as follows:

“68. TANGEDCO in its reply has submitted that the Petitioner has not furnished the details of discussion held during the operation coordination committee meetings along with minutes and the Petitioner must bring on record the benefits derived from the instant assets from COD to till date and cost benefit analysis for upgradation of the HVDC equipment. TANGEDCO has submitted that as the beneficiaries are liable to pay the transmission charges, the Petitioner must obtain RPC Approval/beneficiaries’ approval for ACE in case of necessary replacement. TANGEDCO has further submitted that the budgetary quotations for Supply and Services received from ABB and GE may also be furnished and to be discussed in RPC meeting as SIEMENS has increased its budgetary offer. TANGEDCO has requested to direct the Petitioner to discuss the proposal with the beneficiaries and get the consents apart from compliance of the mandatory requirements under the Regulations. In response, the Petitioner has submitted that vide Record of Proceedings dated 22.6.2021, the Commission had directed the Petitioner to obtain and submit the technical approval and report of CTU and POSOCO on the requirement and usefulness of Asset-II. Further, the Commission had granted liberty to the Petitioner to file a separate petition, if required under the provisions of Regulation 27 of the 2019 Tariff Regulations for the proposed ACE along with the detailed study and report from CTU and POSOCO for the system and day-to-day operation. The Petitioner has submitted that accordingly the matter is being taken up with CTU and POSOCO and the reports so obtained shall be submitted along with justification and details of ACE claimed in a separate petition.”



“69. We have considered the submissions of the Petitioner, MPPMCL and TANGEDCO. In view of the observations made by the Commission during the hearing held on 22.6.2021, the said ACE projected during the 2019-24 tariff period will not be considered in the instant petition and the Petitioner is directed to file a separate petition to claim the projected ACE for Asset-II during the 2019-24 tariff period as above.”

15. In compliance of the Commission’s direction, the Petitioner has filed the instant petition. The Petitioner has claimed projected ACE of ₹49062.00 lakh and de-capitalization of ₹25777.24 lakh in the 2019-24 tariff period towards replacement/ refurbishment works of Bhadrawati back-to-back station has been projected and claimed under Regulation 25(2)(c) of the 2019 Tariff Regulations. The details of the proposed ACE for 2019-24 tariff period is as follows:

(₹ in lakh)		
Particulars	Amount	Description
Additional capitalisation in 2022-23	12265.50	Additional capitalisation is towards replacement of old and obsolete equipment whose maintenance is not supported by the OEMs.
Additional capitalisation in 2023-24	36796.50	
Decapitalisation in 2023-24	25777.24	
Total Additional capitalisation	49062.00	
Total Decapitalisation	25777.24	
Net of Additional capitalisation and Decapitalisation	23284.76	
Total capital cost as on 31.3.2024	92392.16	

16. The Petitioner has submitted that some of the equipment proposed to be replaced was commissioned in 1997 and their useful life is getting completed during the 2019-24 tariff period. The DC control and Protection are of GEC Alstom Series IV which are out of production. The spare cards for DC controls such as Valve Base Electronics, Valve Control, Master Control etc. are series IV based and are not easily available leading to long outages of HVDC system. The Petitioner has submitted that recently problem in different areas have been encountered which has resulted in frequent interruption of power flow, long outage periods such as outage of Block 1 from 27.9.2021 to 12.10.2021 and from 1.11.2021 to 3.11.2021. Further, the mal-functioning has increased considerably in the last two



to three years mainly due to ageing of equipment, non-availability of spares and service support. Frequent tripping of HVDC system has decreased its availability and reliability. The Petitioner has further submitted that the designs have undergone substantial changes over the period and manufacturers have discontinued the product models. The suppliers are unable to replenish parts required for quick restoration and are unviable and in view of the absence of proper support from suppliers, due to obsolescence of design, the maintenance of this equipment is not possible anymore and this is a serious threat to the reliability and security of grid operation.

17. The Petitioner has submitted that Thyristor Valve and Gate units at Chandrapur HVDC are also old and obsolete and will pose interfacing issues with new Control and Protection System and OEM is also unable to supply the thyristor owing to very old design and, therefore, the Petitioner has proposed to replace the control and protection system at Chandrapur HVDC, Thyristor Valves, Valve Cooling System, PLC filters and Battery Chargers based on failure rates, non-availability of spare for control cards and non-availability of support from OEM for series IV controls.

18. The Petitioner has submitted DPR of the project for refurbishment of Bhadrawati HVDC (2X500 MW) back-to-back system under ACE which involves the following:

(₹ in crore)		
A.	HVDC STATION REFURBISHMENT	
	Replacement of items	Amount
a.	Valve Hall Equipment which includes	490.62
	i) Thyristor Valves and its structures,	
	ii) Valve Arrestors,	
	iii) Measuring Instrument i.e. DC CT and DC VD,	
	iv) Bus works	



	v) Valve Cooling Pile line from Valve Cooling	
b.	HVDC C&P and AC C&P	
c.	PLCC Filters	
d.	Battery Chargers	

19. The Petitioner has also submitted the Report on requirement and usefulness of 2x500 MW Bhadrawati Back-to-back HVDC by Power System Operation Corporation Limited (POSOCO) and Central Transmission Utility of India Limited (CTUIL).

20. MPPMCL vide affidavit dated 19.12.2022 has submitted that in the report submitted by POSOCO, POSOCO has suggested some alternative options which may provide greater value than HVDC refurbishment. Further, MPPMCL has submitted that based on the POSOCO report and recommendation the proposal of the Petitioner of HVDC refurbishing is not feasible in long term and ACE proposed in 2019-24 without long term benefits is neither feasible nor economically viable.

21. TANGEDCO vide affidavit dated 19.12.2022 has submitted that POSOCO in the report has recommended that the suggestion may be evaluated by CEA and CTUIL. The Petitioner did not attach the CEA report. Further, TANGEDCO has submitted that the Petitioner may be directed to submit the feasibility report on the alternative options submitted by POSOCO.

22. In response to the reply submitted by MPPMCL and TANGEDCO, the Petitioner has submitted that the POSOCO had recommended to evaluate both options by the CEA and the CTUIL. The Petitioner has submitted that the alternatives recommended by POSOCO for long term perspective have already been examined in the scenarios considered in the CTUIL report wherein it is mentioned that Bypassing of Bhadrawati HVDC and reconductoring of Bhadrawati-



Ramagundam 400 kV D/C line does not provide a feasible technical solution, as it will lead to enhanced Short Circuit levels at both the stations beyond their design limits. Further, bus splitting at Bhadrawati along with rearrangement of line sections in order to control the fault level/line loadings is not feasible. Further, the Petitioner has submitted that refurbishment of the HVDC has long-term benefits. The malfunctioning of instant HVDC equipment's have been increased considerably in last two to three years mainly due to ageing of equipment, non-availability of spares and service support which resulted in frequent interruption of power flow. Frequent tripping of HVDC system has decreased its reliability. Further, the designs have undergone substantial changes over the period and manufacturers have discontinued the product models. The suppliers are unable to provide spare parts required for quick restoration and repairs have turned out to be unviable. The Petitioner has submitted that in absence of support from suppliers and due to obsolescence of design, it is difficult to maintain the HVDC system which may disrupt the power market operations in addition to threat to reliable and secure grid operation. Therefore, immediate replacement of the obsolete equipment in existing scheme is required for reliable operation.

23. In view of the above contentions of the Petitioner, MPPMCL and TANGEDCO, it is necessary for us to refer to the provisions of Regulation 25 and Regulation 27(1) of the 2019 Tariff Regulations.

“25. Additional Capitalisation within the original scope and after the cut-off date:

(1) The ACE incurred or projected to be incurred in respect of an existing project or a new project on the following counts within the original scope of work and after the cut-off date may be admitted by the Commission, subject to prudence check:

a) Liabilities to meet award of arbitration or for compliance of the directions or order of any statutory authority, or order or decree of any court of law;



- b) Change in law or compliance of any existing law;
- c) Deferred works relating to ash pond or ash handling system in the original scope of work;
- d) Liability for works executed prior to the cut-off date;
- e) Force Majeure events;
- f) Liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments; and g) Raising of ash dyke as a part of ash disposal system.

(2) In case of replacement of assets deployed under the original scope of the existing project after cut-off date, the additional capitalization may be admitted by the Commission, after making necessary adjustments in the gross fixed assets and the cumulative depreciation, subject to prudence check on the following grounds:

(a) The useful life of the assets is not commensurate with the useful life of the project and such assets have been fully depreciated in accordance with the provisions of these regulations.

(b) The replacement of the asset or equipment is necessary on account of change in law or Force Majeure conditions;

(c) The replacement of such asset or equipment is necessary on account of

(d) The replacement of such asset or equipment has otherwise been allowed by the Commission.”

“27. Additional Capitalisation on account of Renovation and Modernisation

(1) The generating company or the transmission licensee, as the case may be, intending to undertake renovation and modernization (R&M) of the generating station or unit thereof or transmission system or element thereof for the purpose of extension of life beyond the originally recognised useful life for the purpose of tariff, shall file a petition before the Commission for approval of the proposal with a Detailed Project Report giving complete scope, justification, cost-benefit analysis, estimated life extension from a reference date, financial package, phasing of expenditure, schedule of completion, reference price level, estimated completion cost including foreign exchange component, if any, and any other information considered to be relevant by the generating company or the transmission licensee:

Provided that the generating company making the applications for renovation and modernization (R&M) shall not be eligible for Special Allowance under Regulation 28 of these regulations;

Provided further that the generating company or the transmission licensee intending to undertake renovation and modernization (R&M) shall be required to obtain the consent of the beneficiaries or the long term customers, as the case may be, for such renovation and modernization (R&M) and submit the same along with the petition.”

24. The clause 2 to Regulation 25 of the 2019 Tariff Regulations provides for replacement of assets deployed under the original scope of the existing project after the cut-off date, the additional capitalization may be admitted by the



Commission, after making necessary adjustments in the gross fixed assets and the cumulative depreciation, subject to a prudence check on the grounds enumerated in clause (a) to (d) of Regulation 25(2) of the 2019 Tariff Regulations.

25. As per clause 1 of Regulation 27 of the 2019 Tariff Regulations, a transmission licensee intending to undertake renovation and modernization (R&M) of the transmission system or element thereof for the purpose of extension of life beyond the originally recognized useful life for the purpose of tariff, shall file a petition before the Commission for approval of the proposal with Detailed Project Report with certain details. Further, the second proviso to Regulation 27(1) of the 2019 Tariff Regulations provides that the transmission licensee intending to undertake renovation and modernization (R&M) shall be required to obtain the consent of the beneficiaries or the long-term customers for such renovation and modernization (R&M) and submit the same along with the petition.

26. It is pertinent to mention here that in Petition No. 353/TT/2020, the Commission tried up the tariff of the 2014-19 period in respect of the transmission asset. On scrutiny of the record, we note that the present petition is filed by the Petitioner under Regulation 25(2) of the 2019 Tariff Regulations. Along with the petition, the Petitioner has also placed on record recommendations and reports of CTUIL and POSOCO as directed by the Commission in order dated 17.10.2021 in Petition No. 353/TT/2020.

27. However, the Commission vide order dated 17.10.2021, in paragraph 68 further directed the Petitioner to follow the process laid down in Regulation 27 of the 2019 Tariff Regulations and file a petition accordingly. As discussed above,



Regulation 27 of the 2019 Tariff Regulations requires a transmission licensee intending to undertake renovation and modernization to obtain the consent of the beneficiaries or the long-term customers as the case may be. The Petitioner has neither placed on record the consent of the beneficiaries or the long-term customers for renovation and modernization mandated under Regulation 27 of the 2019 Tariff Regulations nor has made any such submissions in the present petition. Thus, we find that the Petitioner has not obtained the consent of beneficiaries for renovation and modernization as per Regulation 27 of the 2019 Tariff Regulations. However, keeping in view the criticality of the transmission asset, the Commission vide RoP dated 22.6.2021 in Petition No. 353/TT/2020 was already given liberty to the Petitioner to file reports of System Operator Studies in respect of ACE for the 2019-24 period, and this arrangement is in accordance with Regulation 25(2)(c) and Regulation 25(2)(d) of the 2019 Tariff Regulations which provide that ACE within the original scope and after the cut-off date can be allowed by the Commission if replacement of such asset or equipment is necessary on account of obsolescence of technology or equipment has otherwise been allowed by the Commission.

28. Be that as it may, the Commission vide Petition No. 121/TT/2020 considered ACE for the works during the 2014-19 tariff while ACE proposed during the 2019-24 tariff period was observed to be considered only after the receipt of the reports. The Commission vide RoP dated 22.6.2021 gave the liberty to the Petitioner to approach the Commission for the grant of ACE in the 2019-24 tariff period with the approved study reports of the competent committee.

29. The Petitioner has also placed on record letter of GCIL dated 8.9.2021 along



with a report on the requirement and usefulness of the 2X500 MW Bhadrawati BtB HVDC, which has recommended retention of the same for reliability and flexibility of the grid operations. The recommendations of GCIL for the retention of the transmission asset are as follows:

“5. Recommendations

As brought out in chapter 2, the operational flexibility provided by HVDC Bhadrawati for controlling the power flow on WR-SR/intra WR AC lines during normal operation, high/low RE generation and during contingencies as well as the voltages in the vicinity is critical for reliable grid operation. HVDC Bhadrawati, therefore, is required in the near future i.e. till the implementation of all planned network in Western Region (at Wardha/Solapur/Kolhapur area) as well as WR-SR inter-regional corridor (reconductoring of 400 kV Kolhapur PG-Kolhapur MS D/C, commissioning of 765 kV Warora-Warangal D/C etc.) for providing requisite flexibility during system operation.”

30. The Petitioner in the present petition has placed the report of the CTUIL of December, 2021 regarding the need and relevance of the transmission asset. Based on the detailed study conducted by CTUIL, the following conclusions were drawn with regard to the transmission asset:

“I. In case of HVDC BtB (2X500 MW) retires after completion of its successful life, it shall lead to reduction in import TTC of SR by about 700 MW during 2024-25 (studies were carried out in this time frame) time frame. Further there may be overall reduction of import TTC by about 4000 MW in case of delay in commissioning of Warora-Warangal 765 kV D/C line which is presently stuck-up in severe in severe RoW issues in Singareni collaries coal fields. In the present time frame, TTC of 19650 MW is expected to be reduced to 17500 MW

Furthermore, under such scenario, the existing infrastructures viz HVDC Bhadrawati BtB(2x500 MW) and Bhadrawati-Ramagundam 400 kV D/c line of 178 km line length shall have to be abandoned.

II. Refurbishment of Bhadrawati (Chandrapur) BtB HVDC (2X500 MW) may be carried out for prevention of reduction in import TTC as well as for utilisation of existing infrastructure. The HVDC BtB shall also facilitate controlled transfer of power between NEW Grid & SR Grid as well as during the blackout conditions.”

31. As per the above, CTUIL is of the view that *Refurbishment of Bhadrawati (Chandrapur) BtB HVDC (2X500 MW)* of the transmission asset would facilitate the controlled transfer of power between NEW Grid and SR Grid and it would provide operational flexibility.



32. TANGEDCO has submitted that as per the Central Electricity Regulatory Commission (Grant of Regulatory Approval for execution of Inter-State Transmission Scheme to Central Transmission Utility) Regulations, 2010 (hereinafter referred to as “2010 Regulatory Approval Regulations”), the proposal needs to be discussed with all the beneficiaries in RPC meeting before starting the replacement work. MPPMCL has submitted that proposal of the Petitioner for refurbishing HVDC is not feasible in long term. The objections raised by the Respondents in the present case for the replacement of equipment are not tenable in view of the reports and approval of CTUIL and POSOCO as discussed in detail above. Even otherwise, the Respondents’ objections are not tenable in view of the Commission’s RoP dated 22.6.2021, whereby it was observed that the Petitioner’s claim of ACE in the 2019-24 tariff period may be considered only on submission of the results of System Operator Studies/ Comprehensive Proposal regarding the need for and relevance of the HVDC Back-to-Back at Bhadrawati as per with Regulation 25(2)(c) and Regulation 25(2)(d) of the 2019 Tariff Regulations.

33. From the reports of CTUIL and POSOCO along with justifications for the replacement of equipment of the transmission asset, as discussed above, we are of the view that ACE of ₹23284.76 lakh for the 2019- 24 period for the transmission asset, should be allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations. The projected ACE allowed is subject to truing up in respect of the transmission asset and it is as follows:

Particulars	Proposed ACE	
	2022-23	2023-24
Proposed ACE allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations	12265.50	36796.50
Decapitalisation	0.00	(25777.24)
Total	12265.50	11019.26

(₹ in lakh)



Capital Cost as on 31.3.2024

34. Accordingly, capital cost allowed in respect of the transmission asset as on 31.3.2024 is as follows:

Capital cost allowed as on COD	Projected ACE		(₹ in lakh)
	2022-23	2023-24	Total capital cost as on 31.3 2024
69107.40	12265.50	11019.26	92392.16

Debt-Equity Ratio

35. Regulations 18 of the 2019 Tariff Regulations provides as follows:

“18. Debt-Equity Ratio: (1) For new projects, the debt-equity ratio of 70:30 as on date of commercial operation shall be considered. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that:

- i. where equity actually deployed is less than 30% of the capital cost, actual equity shall be considered for determination of tariff:
- ii. the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:
- iii. any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt: equity ratio.

Explanation. -The premium, if any, raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid-up capital for the purpose of computing return on equity, only if such premium amount and internal resources are actually utilised for meeting the capital expenditure of the generating station or the transmission system.

(2) The generating company or the transmission licensee, as the case may be, shall submit the resolution of the Board of the company or approval of the competent authority in other cases regarding infusion of funds from internal resources in support of the utilization made or proposed to be made to meet the capital expenditure of the generating station or the transmission system including communication system, as the case may be.

(3) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2019, debt: equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2019 shall be considered:

Provided that in case of a generating station or a transmission system including communication, system which has completed its useful life as on or after 1.4.2019, if



the equity actually deployed as on 1.4.2019 is more than 30% of the capital cost, equity in excess of 30% shall not be taken into account for tariff computation;

Provided further that in case of projects owned by Damodar Valley Corporation, the debt: equity ratio shall be governed as per sub-clause (ii) of clause (2) of Regulation 72 of these regulations.

(4) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2019, but where debt: equity ratio has not been determined by the Commission for determination of tariff for the period ending 31.3.2019, the Commission shall approve the debt: equity ratio in accordance with clause (1) of this Regulation.

(5) Any expenditure incurred or projected to be incurred on or after 1.4.2019 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernisation expenditure for life extension shall be serviced in the manner specified in clause (1) of this Regulation.

(6) Any expenditure incurred for the emission control system during the tariff period as may be admitted by the Commission as additional capital expenditure for determination of supplementary tariff, shall be serviced in the manner specified in clause (1) of this Regulation.”

36. The details of debt-equity considered for the purpose of computation of tariff for 2019-24 period in respect of the transmission asset is as follows:

Particulars	Capital cost as on COD (₹ in lakh)	(in %)	Capital cost as on 31.3.2024 (₹ in lakh)	(in %)
Debt	61190.27	88.54	77489.25	83.87
Equity	7917.13	11.46	14902.41	16.13
Total	69107.40	100.00	92391.66	100.00

Depreciation

37. Regulation 33 of the 2019 Tariff Regulations provides as follows:

“**33. Depreciation:** (1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system or element thereof including communication system. In case of the tariff of all the units of a generating station or all elements of a transmission system including communication system for which a single tariff needs to be determined, the depreciation shall be computed from the effective date of commercial operation of the generating station or the transmission system taking into consideration the depreciation of individual units:

Provided that effective date of commercial operation shall be worked out by considering the actual date of commercial operation and installed capacity of all the units of the generating station or capital cost of all elements of the transmission system, for which single tariff needs to be determined.



(2) The value base for the purpose of depreciation shall be the capital cost of the Asset-admitted by the Commission. In case of multiple units of a generating station or multiple elements of a transmission system, weighted average life for the generating station of the transmission system shall be applied. Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the Asset-for part of the year, depreciation shall be charged on pro rata basis.”

(3) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset:

Provided that the salvage value for IT equipment and software shall be considered as NIL and 100% value of the assets shall be considered depreciable;

Provided further that in case of hydro generating stations, the salvage value shall be as provided in the agreement, if any, signed by the developers with the State Government for development of the generating station

Provided also that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciated value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff:

Provided also that any depreciation disallowed on account of lower availability of the generating station or unit or transmission system as the case may be, shall not be allowed to be recovered at a later stage during the useful life or the extended life.

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

(5) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-I to these regulations for the Asset-of the generating station and transmission system:

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the asset

6) In case of the existing projects, the balance depreciable value as on 1.4.2019 shall be worked out by deducting the cumulative depreciation as admitted by the Commission up to 31.3.2019 from the gross depreciable value of the assets.

(7) The generating company or the transmission licensee, as the case may be, shall submit the details of proposed capital expenditure five years before the completion of useful life of the project along with justification and proposed life extension. The Commission based on prudence check of such submissions shall approve the depreciation on capital expenditure.

(8) In case of de-capitalization of assets in respect of generating station or unit thereof or transmission system or element thereof, the cumulative depreciation shall be adjusted by taking into account the depreciation recovered in tariff by the de-capitalized asset during its useful services.



(9) Where the emission control system is implemented within the original scope of the generating station and the date of commercial operation of the generating station or unit thereof and the date of operation of the emission control system are the same, depreciation of the generating station or unit thereof including the emission control system shall be computed in accordance with Clauses (1) to (8) of this Regulation.

(10) Depreciation of the emission control system of an existing or a new generating station or unit thereof where the date of operation of the emission control system is subsequent to the date of commercial operation of the generating station or unit thereof, shall be computed annually from the date of operation of such emission control system based on straight line method, with salvage value of 10%, over a period of

a) twenty-five years, in case the generating station or unit thereof is in operation for fifteen years or less as on the date of operation of the emission control system; or

b) balance useful life of the generating station or unit thereof plus fifteen years, in case the generating station or unit thereof is in operation for more than fifteen years as on the date of operation of the emission control system; or

c) ten years or a period mutually agreed by the generating company and the beneficiaries, whichever is higher, in case the generating station or unit thereof has completed its useful life.”

38. We have considered the submissions of the Petitioner. The transmission asset was put under commercial operation on 1.10.1997, accordingly, the transmission asset has already completed 12 years of life as on 31.3.2014. Consequently, depreciation has been calculated based on the remaining depreciable value (up to 90% of existing gross block of assets) to be recovered over the balance useful life i.e. up to 2022-23. As discussed above, the Petitioner has proposed other ACE towards replacement of sub-station equipment, hence, depreciation corresponding to ACE (new additions) claimed for 2019-20 onwards is allowed at rate of depreciation as specified in the 2019 Tariff Regulations. The depreciation allowed in respect of the transmission asset for 2019-24 tariff period is as follows:

(₹ in lakh)					
	Existing Assets	2019-20	2020-21	2021-22	2022-23
A	Opening Gross Block	69107.40	69107.40	69107.40	69107.40
B	Addition during the year 2019-24 due to projected ACE	0.00	0.00	0.00	0.00



C	Closing Gross Block (A+B)	69107.40	69107.40	69107.40	69107.40
D	Average Gross Block (A+C)/2	69107.40	69107.40	69107.40	69107.40
E	Freehold Land	56.42	56.42	56.42	56.42
F	Average Gross Block (90% depreciable assets)	69050.98	69050.98	69050.98	69050.98
G	Depreciable value (F*90%)	62145.88	62145.88	62145.88	62145.88
H	Weighted average rate of Depreciation (WAROD) (in %)	1.26	1.26	1.26	1.26
I	Elapsed useful life at the beginning of the year (Year)	21.00	22.00	23.00	24.00
J	Balance useful life at the beginning of the year (Year)	4.00	3.00	2.00	1.00
K	Depreciation during the year (D*H)	871.92	871.92	871.92	871.92
L	Cumulative Depreciation at the end of the year	59530.12	60402.04	61273.96	62145.88
M	Remaining Aggregate Depreciable Value at the end of the year	2615.76	1743.84	871.92	0.00

(₹ in lakh)

	New Additions	2022-23	2023-24
A	Opening Gross Block	0.00	12265.50
B	Addition during the year 2019-24 due to projected ACE	12265.50	11019.26
C	Closing Gross Block (A+B)	12265.50	23284.76
D	Average Gross Block (A+C)/2	6132.75	17775.13
E	Depreciable value (D*90%)	5519.25	15997.62
F	Weighted average rate of Depreciation (WAROD) (in %)	5.28	5.28
G	Depreciation during the year (D*F)	291.43	844.67
H	Cumulative Depreciation at the end of the year	291.43	1136.10
I	Remaining Aggregate Depreciable Value at the end of the year	5228.05	14861.51

(₹ in lakh)

	Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
A	Existing Assets	871.92	871.92	871.92	871.92	0.00
B	New Assets	0.00	0.00	0.00	291.43	844.67
C	Total	871.92	871.92	871.92	1163.35	844.67

Interest on Loan ("IoL")

39. Regulation 32 of the 2019 Tariff Regulations provides as follows:

"32. Interest on loan capital: (1) The loans arrived at in the manner indicated in Regulation 18 of these regulations shall be considered as gross normative loan for calculation of interest on loan.

(2) The normative loan outstanding as on 1.4.2019 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2019 from the gross normative loan.

(3) The repayment for each of the year of the tariff period 2019-24 shall be deemed to be equal to the depreciation allowed for the corresponding year/period. In case of de-capitalization of asset, 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 up to the date of de-capitalisation of such asset.

(4) Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the depreciation allowed for the year or part of the year.

(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio after providing appropriate accounting adjustment for interest capitalized:

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

Provided further that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.

(5a) The rate of interest on loan for installation of emission control system shall be the weighted average rate of interest of actual loan portfolio of the emission control system or in the absence of actual loan portfolio, the weighted average rate of interest of the generating company as a whole shall be considered.

(6) The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.

(7) The changes to the terms and conditions of the loans shall be reflected from the date of such re-financing”.

40. The weighted average rate of interest of IoL has been considered on the basis of the rates prevailing as on COD for respective loans. The Petitioner has prayed that the change in interest rate due to floating rate of interest applicable, if any, during 2019-24 tariff period will be adjusted. Accordingly, the floating rate of interest, if any, shall be considered at the time of true-up.

41. In view of above, IoL has been worked out in accordance with Regulation 32 of the 2019 Tariff Regulations. IoL allowed in respect of the transmission asset is as follows:



(₹ in lakh)

	Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
A	Gross Normative Loan	61190.28	61190.28	61190.28	61190.28	69776.13
B	Cumulative Repayments up to Previous Year	61190.28	61190.28	61190.28	61190.28	62353.63
C	Net Loan-Opening (A-B)	0.00	0.00	0.00	0.00	7422.50
D	Addition due to ACE	0.00	0.00	0.00	8585.85	7713.48
E	Repayment during the year	0.00	0.00	0.00	1163.35	844.67
F	Net Loan-Closing (C+D-E)	0.00	0.00	0.00	7422.50	14291.31
G	Average Loan (C+F)/2	0.00	0.00	0.00	3711.25	10856.91
H	Weighted Average Rate of Interest on Loan (in %)	3.20	3.20	3.20	3.20	3.20
I	Interest on Loan (G*H)	0.00	0.00	0.00	118.76	347.42

Return on Equity (“RoE”)

42. Regulation 30 and Regulation 31 of the 2019 Tariff Regulations provide as follows:

“30. Return on Equity: (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with Regulation 18 of these regulations.

(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating station, transmission system including communication system and run-of-river hydro generating station, and at the base rate of 16.50% for the storage type hydro generating stations including pumped storage hydro generating stations and run-of-river generating station with pondage:

Provided that return on equity in respect of Additional Capitalization after cut-off date beyond the original scope excluding Additional Capitalization due to Change in Law, shall be computed at the weighted average rate of interest on actual loan portfolio of the generating station or the transmission system or in the absence of actual loan portfolio of the generating station or the transmission system, the weighted average rate of interest of the generating company or the transmission licensee, as the case may be, as a whole shall be considered, subject to ceiling of 14%.

Provided further that:

- i. In case of a new project, the rate of return on equity shall be reduced by 1.00% for such period as may be decided by the Commission, if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of the Restricted Governor Mode Operation (RGMO) or Free Governor Mode Operation (FGMO), data telemetry, communication system up to load dispatch centre or protection system based on the report submitted by the respective RLDC;*
- ii. in case of existing generating station, as and when any of the requirements under (i) above of this Regulation are found lacking based on the report submitted by the concerned RLDC, rate of return on equity shall be reduced by 1.00% for the period for which the deficiency continues;*
- iii. in case of a thermal generating station, with effect from 1.4.2020:*



- a) rate of return on equity shall be reduced by 0.25% in case of failure to achieve the ramp rate of 1% per minute;
- b) an additional rate of return on equity of 0.25% shall be allowed for every incremental ramp rate of 1% per minute achieved over and above the ramp rate of 1% per minute, subject to ceiling of additional rate of return on equity of 1.00%:

Provided that the detailed guidelines in this regard shall be issued by National Load Dispatch Centre by 30.6.2019.

(3) The return on equity in respect of additional capitalization on account of emission control system shall be computed at the base rate of one year marginal cost of lending rate (MCLR) of the State Bank of India as on 1st April of the year in which the date of operation (ODe) occurs plus 350 basis point, subject to ceiling of 14%.”

31. Tax on Return on Equity:(1) The base rate of return on equity as allowed by the Commission under Regulation 30 of these regulations shall be grossed up with the effective tax rate of the respective financial year. For this purpose, the effective tax rate shall be considered on the basis of actual tax paid in respect of the financial year in line with the provisions of the relevant Finance Acts by the concerned generating company or the transmission licensee, as the case may be. The actual tax paid on income from other businesses including deferred tax liability (i.e. income from business other than business of generation or transmission, as the case may be) shall be excluded for the calculation of effective tax rate.

(2) Rate of return on equity shall be rounded off to three decimal places and shall be computed as per the formula given below:

$$\text{Rate of pre-tax return on equity} = \text{Base rate} / (1-t)$$

Where “t” is the effective tax rate in accordance with clause (1) of this Regulation and shall be calculated at the beginning of every financial year based on the estimated profit and tax to be paid estimated in line with the provisions of the relevant Finance Act applicable for that financial year to the company on pro-rata basis by excluding the income of non-generation or non-transmission business, as the case may be, and the corresponding tax thereon. In case of generating company or transmission licensee paying Minimum Alternate Tax (MAT), “t” shall be considered as MAT rate including surcharge and cess.

Illustration-

(i) In case of a generating company or a transmission licensee paying Minimum Alternate Tax (MAT) @ 21.55% including surcharge and cess:

$$\text{Rate of return on equity} = 15.50 / (1-0.2155) = 19.758\%$$

(ii) In case of a generating company or a transmission licensee paying normal corporate tax including surcharge and cess:

- (a) Estimated Gross Income from generation or transmission business for FY 2019-20 is Rs 1,000 crore;
- (b) Estimated Advance Tax for the year on above is Rs 240 crore;



(c) Effective Tax Rate for the year 2019-20 = Rs 240 Crore/Rs 1000 Crore = 24%;

(d) Rate of return on equity = $15.50 / (1 - 0.24) = 20.395\%$.

(3) The generating company or the transmission licensee, as the case may be, shall true up the grossed-up rate of return on equity at the end of every financial year based on actual tax paid together with any additional tax demand including interest thereon, duly adjusted for any refund of tax including interest received from the income tax authorities pertaining to the tariff period 2019-24 on actual gross income of any financial year. However, penalty, if any, arising on account of delay in deposit or short deposit of tax amount shall not be claimed by the generating company or the transmission licensee, as the case may be. Any under-recovery or over-recovery of grossed up rate on return on equity after truing up, shall be recovered or refunded to beneficiaries or the long-term customers, as the case may be, on year to year basis.”

43. The Petitioner has submitted that MAT rate is applicable to it. MAT rate applicable in the year 2019-20 has been considered for the purpose of RoE which shall be trued up with actual tax rate in accordance with Regulation 31(3) of the 2019 Tariff Regulations. RoE allowed in respect of the transmission assets is as follows:

		(₹ in lakh)				
	Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
A	Opening Equity	7917.12	7917.12	7917.12	7917.12	11596.77
B	Addition due to ACE	0.00	0.00	0.00	3679.65	11038.95
C	Less: Decapitalization	0.00	0.00	0.00	0.00	-2953.11
D	Closing Equity (A+B-C)	7917.12	7917.12	7917.12	11596.77	19682.61
E	Average Equity (A+D)/2	7917.12	7917.12	7917.12	9756.95	15639.69
F	Return on Equity (Base Rate) (in %)	15.500	15.500	15.500	15.500	15.500
G	Tax Rate applicable (in %)	17.472	17.472	17.472	17.472	17.472
H	Rate of Return on Equity (Pre-tax)	18.782	18.782	18.782	18.782	18.782
	Return on Equity (Pre-tax) (E*H)	1486.99	1486.99	1486.99	1832.54	2937.45

Operation & Maintenance Expenses (“O&M Expenses”)

44. The O&M Expenses claimed by the Petitioner for the transmission for the 2019-24 tariff period is as follows:

(₹ in lakh)				
2019-20	2020-21	2021-22	2022-23	2023-24
1668.00	1728.00	1788.00	1850.00	1916.00

45. Regulation 35(3)(a) and Regulation 35(4) of the 2019 Tariff Regulations provides as follows:



“35 (3) Transmission system: (a) The following normative operation and maintenance expenses shall be admissible for the combined transmission system:

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Norms for sub-station Bays (₹ Lakh per bay)					
765 Kv	45.01	46.60	48.23	49.93	51.68
400 kV	32.15	33.28	34.45	35.66	36.91
220 kV	22.51	23.30	24.12	24.96	25.84
132 kV and below	16.08	16.64	17.23	17.83	18.46
Norms for Transformers (₹ Lakh per MVA)					
765 kV	0.491	0.508	0.526	0.545	0.564
400 kV	0.358	0.371	0.384	0.398	0.411
220 kV	0.245	0.254	0.263	0.272	0.282
132 kV and below	0.245	0.254	0.263	0.272	0.282
Norms for AC and HVDC lines (₹ Lakh per km)					
Single Circuit (Bundled Conductor with six or more sub-conductors)	0.881	0.912	0.944	0.977	1.011
Single Circuit (Bundled conductor with four sub-conductors)	0.755	0.781	0.809	0.837	0.867
Single Circuit (Twin & Triple Conductor)	0.503	0.521	0.539	0.558	0.578
Single Circuit (Single Conductor)	0.252	0.260	0.270	0.279	0.289
Double Circuit (Bundled conductor with four or more sub-conductors)	1.322	1.368	1.416	1.466	1.517
Double Circuit (Twin & Triple Conductor)	0.881	0.912	0.944	0.977	1.011
Double Circuit (Single Conductor)	0.377	0.391	0.404	0.419	0.433
Multi Circuit (Bundled Conductor with four or more sub-conductor)	2.319	2.401	2.485	2.572	2.662
Multi Circuit (Twin & Triple Conductor)	1.544	1.598	1.654	1.713	1.773
Norms for HVDC stations					
HVDC Back-to-Back stations (Rs Lakh per 500 MW) (Except Gazuwaka BTB)	834	864	894	925	958
Gazuwaka HVDC Back-to-Back station (₹ Lakh per 500 MW)	1,666	1,725	1,785	1,848	1,913
500 kV Rihand-Dadri HVDC bipole scheme (Rs Lakh) (1500 MW)	2,252	2,331	2,413	2,498	2,586
±500 kV Talcher- Kolar HVDC bipole scheme (Rs Lakh) (2000 MW)	2,468	2,555	2,645	2,738	2,834



Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
<i>±500 kV Bhiwadi-Balia HVDC bipole scheme (Rs Lakh) (2500 MW)</i>	1,696	1,756	1,817	1,881	1,947
<i>±800 kV, Bishwanath-Agra HVDC bipole scheme (Rs Lakh) (3000 MW)</i>	2,563	2,653	2,746	2,842	2,942

Provided that the O&M expenses for the GIS bays shall be allowed as worked out by multiplying 0.70 of the O&M expenses of the normative O&M expenses for bays;

Provided further that:

- i. the operation and maintenance expenses for new HVDC bi-pole schemes commissioned after 1.4.2019 for a particular year shall be allowed pro-rata on the basis of normative rate of operation and maintenance expenses of similar HVDC bi-pole scheme for the corresponding year of the tariff period;*
- ii. the O&M expenses norms for HVDC bi-pole line shall be considered as Double Circuit quad AC line;*
- iii. the O&M expenses of ±500 kV Mundra-Mohindergarh HVDC bipole scheme (2000 MW) shall be allowed as worked out by multiplying 0.80 of the normative O&M expenses for ±500 kV Talchar-Kolar HVDC bi-pole scheme (2000 MW);*
- iv. the O&M expenses of ±800 kV Champa-Kurukshetra HVDC bi-pole scheme (3000 MW) shall be on the basis of the normative O&M expenses for ±800 kV, Bishwanath-Agra HVDC bi-pole scheme;*
- v. the O&M expenses of ±800 kV, Alipurduar-Agra HVDC bi-pole scheme (3000 MW) shall be allowed as worked out by multiplying 0.80 of the normative O&M expenses for ±800 kV, Bishwanath-Agra HVDC bi-pole scheme; and*
- vi. the O&M expenses of Static Synchronous Compensator and Static Var Compensator shall be worked at 1.5% of original project cost as on commercial operation which shall be escalated at the rate of 3.51% to work out the O&M expenses during the tariff period. The O&M expenses of Static Synchronous Compensator and Static Var Compensator, if required, may be reviewed after three years.*

(b) The total allowable operation and maintenance expenses for the transmission system shall be calculated by multiplying the number of sub-station bays, transformer capacity of the transformer (in MVA) and km of line length with the applicable norms for the operation and maintenance expenses per bay, per MVA and per km respectively.

(c) The Security Expenses and Capital Spares for transmission system shall be allowed separately after prudence check:



Provided that the transmission licensee shall submit the assessment of the security requirement and estimated security expenses, the details of year-wise actual capital spares consumed at the time of truing up with appropriate justification.

(4) Communication system: *The operation and maintenance expenses for the communication system shall be worked out at 2.0% of the original project cost related to such communication system. The transmission licensee shall submit the actual operation and maintenance expenses for truing up.”*

46. O&M Expenses claimed by the Petitioner is within the norms specified under the 2019 Tariff Regulations. O&M Expenses approved in respect of the transmission asset for 2019-24 tariff period are as follows:

(₹ in lakh)					
Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
HVDC back-to-back sub-station (2X500 MW)					
Norms (₹ lakh/500MW)	834.00	864.00	894.00	925.00	958.00
Total O&M Expenses allowed	1668.00	1728.00	1788.00	1850.00	1916.00

Interest on Working Capital (“IWC”)

47. Regulation 34(1)(c), Regulation 34(3) and Regulation 34(4) and Regulation 3(7) of the 2019 Tariff Regulations provide as follows:

“34. Interest on Working Capital: (1) *The working capital shall cover:*

.....

(c) For Hydro Generating Station (including Pumped Storage Hydro Generating Station) and Transmission System:

(i) *Receivables equivalent to 45 days of annual fixed cost;*

(ii) *Maintenance spares @ 15% of operation and maintenance expenses including security expenses; and*

(iii) *Operation and maintenance expenses, including security expenses for one month.”*

“(3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-24 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later:

Provided that in case of truing-up, the rate of interest on working capital shall be considered at bank rate as on 1st April of each of the financial year during the tariff period 2019-24.



(4) Interest on working capital shall be payable on normative basis notwithstanding that the generating company or the transmission licensee has not taken loan for working capital from any outside agency.”

“3. **Definition** - In these regulations, unless the context otherwise requires: -

(7) ‘**Bank Rate**’ means the one-year marginal cost of lending rate (MCLR) of the State Bank of India issued from time to time plus 350 basis points;”

48. The Petitioner has submitted that it has computed the IWC for the 2019-24 period considering the SBI Base Rate plus 350 basis points as on 1.4.2019. The Petitioner has considered the rate of IWC as 12.05%.The IWC is worked out in accordance with Regulation 34 of the 2019 Tariff Regulations. The rate of IWC considered is 12.05% (SBI 1 year MCLR applicable as on 1.4.2019 of 8.55% plus 350 basis points) for 2019-20, 11.25% (SBI 1 year MCLR applicable as on 1.4.2020 of 7.75% plus 350 basis points) for 2020-21, 10.50% (SBI 1 year MCLR applicable as on 1.4.2021 of 7.00% plus 350 basis points) for 2021-22 and 2022-23 and 12.00% (SBI 1 year MCLR applicable as on 1.4.2023 of 8.50% plus 350 basis points) for 2023-24. The components of the working capital and interest allowed thereon are as follows:

(₹ in lakh)					
Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Working Capital for O&M Expenses (O&M expenses for one month)	139.00	144.00	149.00	154.17	159.67
Working Capital for Maintenance Spares (15% of O&M expenses)	250.20	259.20	268.20	277.50	287.40
Working Capital for Receivables (Equivalent to 45 days of annual fixed cost /annual transmission charges)	508.41	516.62	523.44	625.77	761.13
Total Working Capital	897.61	919.82	940.64	1057.44	1208.19
Rate of Interest for working capital (in %)	12.05	11.25	10.50	10.50	12.00
Interest of working capital	108.16	103.48	98.77	111.03	144.98

Annual Fixed Charges for 2019-24 Tariff Period

49. The transmission charges allowed in respect of the transmission asset for 2019-24 tariff period are as follows:



(₹ in lakh)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	871.92	871.92	871.92	1163.35	844.67
Interest on Loan	0.00	0.00	0.00	118.76	347.42
Return on Equity	1486.99	1486.99	1486.99	1832.55	2937.45
O&M Expenses	1668.00	1728.00	1788.00	1850.00	1916.00
Interest on Working Capital	108.16	103.48	98.77	111.03	144.98
Total	4135.07	4190.39	4245.68	5075.69	6190.53

Filing Fee and Publication Expenses

50. The Petitioner has sought reimbursement of fee paid by it for filing the petition and publication expenses. The Petitioner shall be entitled for reimbursement of the filing fees and publication expenses in connection with the present petition, directly from the beneficiaries on pro-rata basis in accordance with Regulation 70(1) of the 2019 Tariff Regulations.

Licence Fee and RLDC Fees and Charges

51. The Petitioner shall be entitled for reimbursement of licence fee in accordance with Regulation 70(4) of the 2019 Tariff Regulations for 2019-24 tariff period. The Petitioner shall also be entitled for recovery of RLDC fee and charges in accordance with Regulations 70(3) of the 2019 Tariff Regulations for 2019-24 tariff period.

Goods and Services Tax

52. The Petitioner has submitted that if GST is levied at any rate and at any point of time in future on charges of transmission of electricity, the same has to be borne and additionally paid by the Respondent(s) to the Petitioner and the same will be charged and billed separately by the Petitioner. Further additional taxes, if any, are to be paid by the Petitioner on account of demand from Government/Statutory Authorities, the same may be allowed to be recovered from the beneficiaries.



53. We have considered the submissions of the Petitioner. Since GST is not levied on transmission service at present, we are of the view that Petitioner's prayer is pre-mature.

Security Expenses

54. The Petitioner has submitted that security expenses in respect of transmission assets is not claimed in the instant petition and it would file a separate petition for claiming the overall security expenses and consequential IWC.

55. We have considered the above submissions of Petitioner. The Petitioner has claimed consolidated security expenses for all the transmission assets owned by it on projected basis for 2019-24 tariff period on the basis of actual security expenses incurred in 2018-19 in Petition No. 260/MP/2020. The said petition has already been disposed of by the Commission vide order dated 3.8.2021. Therefore, the Petitioner's prayer in the instant petition for allowing it to file a separate petition for claiming the overall security expenses and consequential IWC has become infructuous.

Capital Spares

56. The Petitioner has prayed that to claim the capital spares at the end of tariff period as per actual.

57. The Petitioner's claim, if any, shall be dealt with in accordance with the provisions of the 2019 Tariff Regulations at the time of truing up of 2019-24 tariff period.



Sharing of Transmission Charges

58. With effect from 1.7.2011, sharing of transmission charges for inter-State transmission systems was governed by the provisions of the 2010 Sharing Regulations. With effect from 1.11.2020, the 2010 Sharing Regulations has been repealed and sharing of transmission charges is governed by the provisions of the 2020 Sharing Regulations. Accordingly, the transmission charges approved for the transmission asset in the instant order for the 2019-24 tariff period shall be governed by the applicable Sharing Regulations as provided under Regulation 57 of the 2019 Tariff Regulations.

59. To summarise,

(a) AFC allowed in respect of the transmission assets for 2019-24 tariff period in the instant order are as follows:

Particulars	(₹ in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
AFC	4135.07	4190.39	4245.68	5075.69	6190.53

60. Annexure given hereinafter form part of the order.

61. This order disposes of Petition No. 343/TT/2022 in terms of the above discussions and findings.

sd/-

(P.K. Singh)
Member

sd/-

(Arun Goyal)
Member

sd/-

(I.S. Jha)
Member



Annexure

2019-24 Capital Expenditure as on COD	Admitted Capital Cost as on 1.4.2019 (₹ in lakh)	Projected ACE		Admitted Capital Cost as on 31.3.2024 (₹ in lakh)	Rate of Depreciation (in %)	Annual Depreciation as per Regulations				
		2022-23 (₹ in lakh)	2023-24 (₹ in lakh)			2019-20 (₹ in lakh)	2020-21 (₹ in lakh)	2021-22 (₹ in lakh)	2022-23 (₹ in lakh)	2023-24 (₹ in lakh)
Freehold Land	56.42	0.00	0.00	56.42	0.00	Spreading				
Building	2591.89	0.00	0.00	2591.89	3.34					
Sub-station	66328.10	12265.50	11019.26	89612.36	5.28					
PLCC	130.99	0.00	0.00	130.99	6.33					
Total	69107.40	12265.50	11019.26	92392.16		871.92	871.92	871.92	1163.35	844.65
				Average Gross Block (₹ in lakh)		69107.40	69107.40	69107.40	75240.15	17774.63
				Weighted Average Rate of Depreciation (in %)		1.26	1.26	1.26	1.68	5.28

