CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 685/TT/2020

Coram:

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

Date of Order : 29.09.2022

In the matter of:

Approval under Regulation 86 of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 and determination of transmission tariff from the date of commercial operation (COD) to 31.3.2024 under the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 in respect of ± 800 kV 6000 MW Raigarh (HVDC Station)-Pugalur (HVDC Station) HVDC Link along with ± 800 kV 1500 MW (Pole-I) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station) under " HVDC Bipole link between Western Region (Raigarh, Chattisgarh) and Southern Region (Pugalur, Tamil Nadu)-North Trichur (Kerala)-Scheme 1: Raigarh-Pugalur 6000 MW HVDC System" in the Southern Regional grid.

And in the matter of:

Power Grid Corporation of India Limited,
SAUDAMINI, Plot No-2,
Sector-29, Gurgaon-122001 (Haryana). **.....Petitioner**

Versus

1. Tamil Nadu Generation and Distribution Corporation Limited,
   NPKRR Maaligai, 800, Anna Salai,
   Chennai-600002.

2. Transmission Corporation of Andhra Pradesh Limited,
   Vidyut Soudha, Near Axis Bank, Eluru Road,
   Gunadala, Vijaywada-520004.

3. Kerala State Electricity Board,
   Vaidyuthi Bhavanam
   Pattom, Thiruvananthapuram-695004.

4. Tamil Nadu Electricity Board,
   NPKRR Maaligai, 800, Anna Salai,
   Chennai-600002.

5. Electricity Department,
   Government of Goa,
   Vidyuti Bhawan, Panaji,
   Goa-403001.

6. Electricity Department,
   Government of Pondicherry,
   Pondicherry-605001.

7. Eastern Power Distribution Company of Andhra Pradesh Limited,
   P&T Colony, Seethmmadhara, Vishakhapatanam,
   Andhra Pradesh.

8. Southern Power Distribution Company of Andhra Pradesh Limited,
   D. No.: 19-13-65/A, Srinivasapuram, Corporate Office,
   Tiruchanoor Road, Tirupati-517503
   Chittoor District, Andhra Pradesh.

9. Southern Power Distribution Company of Telangana Limited,
   6-1-50, Corporate Office, Mint Compound,
   Hyderabad-500063 (Telangana).

10. Northern Power Distribution Company of Telangana Limited,
    H. No. 2-5-3 1 / 2, Vidyut Bhawan, Corporate Office,
    Nakkal Gutta, Hanamkonda,
    Warangal-506001, Telangana.

11. Bangalore Electricity Supply Company Limited,
    Corporate Office, K.R. Circle,
    Bangalore-560001 (Karnataka).

12. Gulbarga Electricity Supply Company Limited,
    Station Main Road, Gulbarga,
    Karnataka.

13. Hubli Electricity Supply Company Limited,
    Navanagar, PB Road,
    Hubli, Karnataka.

14. MESCOM Corporate Office,
    Paradigm Plaza, AB Shetty Circle,

Mangalore-575001 (Karnataka).

15. Chamundeswari Electricity Supply Corporation Limited,
927, LJ Avenue, Ground Floor, New Kantharaj Urs Road,
Saraswatipuram, Mysore-570009 (Karnataka).

16. Transmission Corporation of Telangana Limited,
Vidhyut Sudha, Khairatabad,
Hyderabad-500082.

17. Karnataka Power Transmission Corporation Limited,
Kaveri Bhawan, Bangalore-560009.

18. Tamil Nadu Transmission Corporation,
NPKRR Maaligai, 800, Anna Salai,
Chennai-600002.

19. Madhya Pradesh Power Management Company Limited,
Shakti Bhawan, Rampur,
Jabalpur - 482008.

20. Maharashtra State Electricity Distribution Company Limited,
Prakashgad, 4th Floor,
Andheri (East), Mumbai - 400052.

21. Gujarat Urja Vikas Nigam Limited,
Sardar Patel Vidyut Bhawan,
RaceCourse Road, Vadodara - 390007.

22. Union territory of Dadra & Nagar Haveli and Daman & Diu,
Secretariat, Fort Area, Moti Daman-396220.

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
Shri Aditya H. Dubey, Advocate, PGCIL
Shri S.S. Raju, PGCIL
Ms. Anshul Garg, PGCIL

Shri Ved PrakashRastogi, PGCIL
Shri D.K Biswal, PGCIL

For Respondents: Shri S. Vallinyagam, Advocate, TANGEDCO
Shri Sri Harsha Peechara, Advocate, TSSPDCL & TSNPDCL
Shri Diptiman Acharyya, Advocate, TSSPDCL & TSNPDCL
Shri Prabhas Bajaj, Advocate, KSEBL
Dr. R. Kathivaran, TANGEDCO
Shri R. Ramalakshmi, TANGEDCO
Shri R. Srinivasan, TANGEDCO
Shri Anindya Khare, MPPMCL

ORDER

The instant petition has been filed by Power Grid Corporation of India Limited, a deemed transmission licensee, for determination of tariff under the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 (hereinafter referred to as "the 2019 Tariff Regulations") from the date of commercial operation (COD) to 31.3.2024 in respectof ± 800 kV 6000 MW Raigarh (HVDC Station)-Pugalur (HVDC Station) HVDC link along with ± 800 kV 1500 MW (Pole-I) HVDC terminals each at Raigarh (HVDC Station) and Pugalur (HVDC Station) (hereinafter referred to as "the transmission asset") under "HVDC Bipole link between Western Region (Raigarh, Chattisgarh) and Southern Region (Pugalur, Tamil Nadu)–North Trichur (Kerala)–Scheme 1: Raigarh - Pugalur 6000 MW HVDC System" in the Southern Regional grid (hereinafter referred to as the "transmissionproject").

2. The Petitioner has made the following prayers in the instantpetition:

"1)Admit the capital cost as claimed in the Petition and approve the Additional Capitalisation incurred / projected to be incurred.

2) Approve the Transmission Tariff for the tariff block 2019-24 block for the asset covered under this petition.

3) 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 2019 as per para 8 above for respective block.

4) 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.

5) 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.

6) Allow the petitioner to bill and adjust impact on Interest on Loan due to change in Interest rate on account of floating rate of interest applicable during 2019-24 period, if any, from the beneficiaries.

7) Allow the petitioner to file a separate petition before Hon'ble Commission for claiming the overall security expenses and consequential IOWC on that security expenses.

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

9) 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.

10) Allow interim tariff in accordance with Regulation 10 (3) of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 for purpose of inclusion in the PoC charges.

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. Investment Approval (IA) of the transmission project/scheme was accorded by Board of Directors of Petitioner's Company vide Memorandum No. C/CP/IA/HVDC RP dated 9.5.2016 in its 328th meeting held on 5.5.2016 with an estimated cost of ₹1473337 lakh including Interest During Construction (IDC) of ₹99528 lakh, based on December, 2015 price level.

b. The scope of the transmission project was discussed and agreed in various meetings of the Standing Committees and Regional Power Committees of Southern and Western Regions which are as follows:

Sl.No.	Dated	Particulars
1	4.1.2013	35th Meeting of Standing Committee on Power System planning in Southern Region
2	29.8.2013	36thMeeting of Standing Committee on Power System planning in Western Region
3	4.9.2013	36thmeeting of Standing Committee on Power System planning in Southern Region
4	9.10.2013	24thMeeting of Western Regional power committee
5	26.10.2013	23rd Meeting of Southern Regional Power Committee
6	15.3.2014	24th Meeting of Southern Regional Power Committee
7	31.7.2014	37thMeeting of Standing Committee on Power System planning in Southern Region
8	26.7.2014	25th Meeting of Southern Regional Power Committee
9	5.9.2014	37thMeeting of Standing Committee on Power System planning in Western Region
10	30.9.2014	33rdMeeting of Empowered Committee on Transmission
11	20.12.2014	26th Meeting of Southern Regional Power Committee
12	7.3.2015	38thMeeting of Standing Committee on Power System planning in Southern Region
13	13.4.2015	34thMeeting of Empowered Committee on Transmission
14	20.4.2015	Joint Meeting of Standing Committee on Power System planning in Southern Region and Western Region
15	12.5.2015	27th Meeting of Southern Regional Power Committee
16	28.5.2015	Joint Meeting of Standing Committee on Power System planning in Southern Region
17	28.5.2015	Corrigendum-Joint Meeting of Standing Committee on Power System planning in Southern Region and Western Region
18	29.9.2015	Prior Approval Letter of the Government under Section-68(1) ofElectricity Act, 2003

c. The scope of work covered under the transmission project are as follows:

±800 kV 6000 MW HVDC link with terminals at Raigarh & Pugalur along with VSC based 2000 MW HVDC link between Pugalur and North Trichur (Kerala) was to be implemented as three separate schemes which are as follows:

Scheme # 1: Raigarh-Pugalur 6000 MW HVDC System

1. Establishment of Raigarh HVDC Station ±800kV with 6000 MW HVDC terminals. This Raigarh Station would be implemented with extended bus of Raigarh (Kotra) existing 400kV Sub-station. The HVDC Station would have GIS for 400kV part and AIS for HVDC part.

2. Establishment of Pugalur HVDC Station ±800kV with 6000 MW HVDC terminals. The HVDC Station would have GIS for 400kV part and AIS for HVDC part.

3. ± 800 kV Raigarh (HVDC Station) – Pugalur (HVDC Station) HVDC Bipole link with 6000 MW capacity.

This system would be designed with normal 20% overload for 30 minutes and 10% overload for 2 hours.

Scheme # 2: AC System strengthening at Pugalur end

1. Pugalur HVDC Station – Pugalur (Existing) 400kV (quad) D/C line.
2. Pugalur HVDC Station – Arasur 400kV (quad) D/C line.
3. Pugalur HVDC Station – Thiruvalam 400kV (quad) D/C line with 2x80 MVAR line reactor at Pugalur HVDC Station end and 2x63 MVAR line reactor at Thiruvalam 400kV end (existing 1x63 MVAR bus reactor shall be utilized as line reactor in one circuit and the second circuit shall have new 63 MVAR line reactor).
4. Pugalur HVDC Station – Edayarpalayam 400kV (quad) D/C line.
5. Edayarpalayam – Udumulpet 400kV (quad) D/C line.
6. 4 number of 400kV line bays at Edayarpalayam (TN station) for terminating Pugalur HVDC Station – Edayarpalayam 400kV (quad) D/C line and Edayarpalayam – Udumulpet 400kV (quad) D/C lines.

Scheme # 3: Pugalur- Trichur 2000 MW VSC Based HVDC System

1. ±320kV, 2000 MW VSC based HVDC terminal at Pugalur. The HVDC Station would have GIS for 400kV part and AIS for HVDC part.
2. ±320kV, 2000 MW VSC based HVDC terminal at North Trichur. The HVDC Station would have GIS for 400kV part and AIS for HVDC part.
3. Establishment of VSC based 2000 MW HVDC link between Pugalur and North Trichur* (Kerala). (*part/parts of this link, in the Kerala portion, may be implemented as underground cable where implementation as overhead transmission line is difficult because of RoW issues).

4. LILO of North-Trichur – Cochin 400 kV (Quad) D/C line at North Trichur HVDC Station.

The scope of work covered under "HVDC Bipole link between Western Region (Raigarh, Chattisgarh) and Southern Region (Pugalur, Tamil Nadu) – North Trichur (Kerala) – Scheme #1: Raigarh-Pugalur 6000MW HVDC System" in Southern Region is as follows:

Transmission Line

i. ± 800 kV 6000 MW Raigarh (HVDC Station)-Pugalur (HVDC Station) HVDC Bipole Link with 6000 MW capacity-1838 km

Sub Station

i. Establishment of Raigarh ± 800 kV HVDC Station with 6000 MW HVDC terminals.
ii. Establishment of Pugalur ± 800 kV HVDC Station with 6000 MW HVDC terminals.

4. The Petitioner vide affidavit dated 11.8.2021 has submitted status of the transmission project as follows:

Sl. No	Name of Asset	Schedule Commissioning as per IA	Actual COD	Covered under Petition No.
A	**Scheme # 1: Raigarh-Pugalur 6000 MW HVDC System**			
1	±800 kV 6000MW Raigarh (HVDC Station) – Pugalur (HVDC Station) HVDC Link along with ±800 kV 1500 MW(Pole-I) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)	5.11.2019	6.9.2020	685/TT/2020 (Instant Petition)
2	±800kV 1500 MW (Pole-II) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)	5.11.2019	9.3.2021	173/TT/2021
3	±800kV 1500 MW (Pole-III) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)	5.11.2019	13.7.2021	
4	±800kV 1500 MW (Pole-IV) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)	5.11.2019	25.10.2021	242/TT/2021
B	**Scheme # 2:AC System strengthening at Pugalur end**			

Sl. No	Name of Asset	Schedule Commissioning as per IA	Actual COD	Covered under Petition No.
1	a) 400kV Pugalur (HVDC Station)-Pugalur (Existing) (Quad) D/C Transmission Line alongwith associated bays at Pugalur (HVDC Station) & Pugalur (Existing) Sub-station and b) 400kV Pugalur (HVDC Station) – Arasur (Quad) D/C Transmission line along with associated bays at Pugalur (HVDC Station) & Arasur station	16.2.2020	6.9.2020	693/TT/2020
2	Pugalur HVDC Station – Edayarpalayam (TANTRANSCO) 400kV (quad) D/C line along with associated bays at Pugalur HVDC station and Edayarpalayam (TANTRANSCO) Sub-station and 2 numbers 80 MVAR line reactors at Pugalur HVDC station and Edayarpalayam (TANTRANSCO) – Udumulpet 400kV (quad) D/C line (Pugalur – Edayarpalayam line and Edayarpalayam – Udumalpet line are bypassed at Edayapalyam Sub-station to make Pugalur – Udumalpet line)	16.2.2020	13.7.2021	243/TT/2021
3	Pugalur HVDC Station– Thiruvalam 400kV (quad) D/C line along with associated bays at Pugalur HVDC station and Thiruvalm Sub-station and 2 numbers 63 MVAR line reactors at Thiruvalam Sub-station	16.2.2020	25.10.2021	
4	4 number of 400kV line bays at Edayarpalayam (TN stn) for terminating Pugalur HVDC Station–Edayarpalayam 400kV (quad) D/c line and Edayarpalayam–Udumulpet 400kV(quad)D/c lines.	16.2.2021	**Yet to be executed***	
	**Bay extension works at Edayarpalayam (TANTRANSCO) Sub-station is envisaged to be implemented by TANTRASCO on behalf of the Petitioner on deposit work basis.*			
C	**Scheme # 3:Pugalur- Trichur 2000 MW VSC Based HVDC System**			
1	±320kV VSC based 2000 MW Pugalur(HVDC)-North Trichur HVDC(Kerala) HVDC link along with ±320kV 1000 MW (Mono Pole-II) HVDC terminals each at Pugalur (HVDC Station) & North Trichur (HVDC Station, Kerala)	9.4.2020	9.3.2021	172/TT/2021
2	±320- kV 1000 MW (Mono Pole-I) HVDC terminals each at Pugalur	9.4.2020	8.6.2021	

Sl. No	Name of Asset	Schedule Commissioning as per IA	Actual COD	Covered under Petition No.
	(HVDC Station) & North Trichur (HVDC Station, Kerala)			
3	LILO of North Trichur-Cochin 400 kV (Quad) D/C line at North Trichur HVDC station along with associated bays & equipment(GIS) at North Trichur HVDC station.	9.4.2020	9.3.2021	
4	2 X 315 MVA 400/220/33kV 3 Ph Auto Transformer along with its associated bays & equipment's(GIS) at North Trichur HVDC station.	9.4.2020	9.3.2021	
5	2 Numbers additional 220 kV line bays(GIS) at North Trichur HVDC for implementation of 220 kV feeder of Kerala	9.4.2020	9.3.2021	

5. Commercial operation date (COD) along with details of time over-run in respect of the transmission asset is as follows:

I.A. date	SCOD	COD	Time over-run
5.5.2016	5.11.2019	6.9.2020 (Anticipated COD-31.8.2020)	10 months (306 days)

6. The Respondents are distribution licensees, transmission licensees and power departments, which are procuring transmission services from the Petitioner, mainly beneficiaries ofthe Southernand Western Regions.

7. The Petitioner has served the petition on the Respondents and notice regarding filing of this petition has 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. Madhya Pradesh Power Management Company Ltd. (MPPMCL), Respondent No. 19, has filed its reply vide affidavit dated 23.2.2021 and has raised

issues of time over-run, cost over-run, Additional Capital Expenditure (ACE), interim tariff and GST. Kerala State Electricity Board Limited (KSEB), Respondent No. 3 has filed its reply vide affidavit dated 27.4.2021. KSEB has raised issues of capital cost, time over-run, high cost of preliminary works, mismatch in tariff claimed and cost as per Auditor's certificate, recovery of security expenses,sharing of transmission charges and funding from PSDF/National Energy Clean Fund.Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO), Respondent No. 1, has filed its reply vide dated 8.9.2021 and additional submissions on 23.11.2021 and has raised issues of techno-economical aspect of the transmission project, time over-run, cost variation and imprudent cost estimation,cost over-run, excess Initial Spares, sharing of transmission charges imprudent claim of O&M Expenses and funding from PSDF/National Energy Clean Fund. TANGEDCO has also requested the Commission to declare the asset to be of 'Strategic and National Importance'. Telangana State Southern Power Distribution Company Limited (TSSPDCL) and Telangana State Northern Power Distribution Company Ltd. (TSNPDCL), Respondent Nos. 9 and 10 respectively, have filed a combined reply vide dated 22.2.2022 and have raised issues of time over-run, cost variation and imprudent cost estimation, cost over-run, excess Initial Spares and sharing of transmission charges. TSSPDCL and TNSPDCL have also requested the Commission to declare the asset to be of 'Strategic and National Importance. Bangalore Electricity Supply Company Limited (BESCOM), Respondent No. 11, has filed its reply vide dated 7.3.2022 and has raised issues of time over-run, cost over-run, excess Initial Spares, O&M Expenses/ACE, sharing of transmission charges and funding from PSDF/National Energy Clean Fund. TANGEDCO has also requested the Commission to declare the asset to be of 'Strategic and National

Importance'. The Petitioner vide affidavits dated 20.8.2021, 14.12.2021, 14.12.2021, 15.3.2022 and 17.3.2022 has submitted its rejoinder to the replies of MPPMCL, KSEB, TANGEDCO, TSSPDCL and TSNPDCL and BESCOM respectively. The issues raised by MPPMCL, KSEB, TANGEDCO,TSSPDCL, TNSPDCL and BESCOM and clarifications thereto given by the Petitioner have been dealt in the relevant portions of this order.

8. The matter was heard on various dates through video conference and order in this matter was reserved on 11.2.2022.

9. This order is issued considering the submissions made by the Petitioner vide affidavits dated 26.8.2020,11.8.2021, 8.9.2021, 15.12.2021, 23.2.2022 and 28.2.2022, MPPMCL's reply filed vide affidavit dated 23.2.2021, KSEB's reply filed vide affidavit dated 27.4.2021, TANGEDCO's reply filed vide affidavit dated 8.9.2021 and additional submission dated 23.11.2021, TSSPDCL's and TSNPDCL's reply filed vide affidavit dated 22.2.2022, BESCOM's reply filed vide affidavit dated 7.3.2022and Petitioner's rejoindersfiled vide affidavitsdated 20.8.2021, 14.12.2021, 14.12.2021, 15.3.2022 and 17.3.2022 respectively.

10. We have heardlearned counsels for the Petitioner, KSEB, TANGEDCO, TSSPDCL, TSNPDCL and representative of MPPMCL and perused the material on record. The issues raised by KSEB, TANGEDCO, TSSPDCL, TSNPDCL and representative of MPPMCL will be dealt in relevant paras in the order. Accordingly, we now proceed to dispose of the petition.

Determination of Annual Fixed Charges for 2019-24 Tariff Period

11. The Petitioner has claimed the following transmission charges in respect ofthe transmission asset for 2019-24 tariff period:

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Depreciation	26511.68	48426.88	49594.22	49702.24
Interest on Loan	14300.64	24659.18	23373.26	21383.97
Return on Equity	28326.37	51768.79	53045.85	53164.53
O&M Expenses	2121.74	3872.45	4008.71	4148.73
Interest on Working Capital	1058.75	1913.62	1935.46	1911.36
Total	**72319.18**	**130640.92**	**131957.50**	**130310.83**

12. The Petitioner has claimed the following Interest on Working Capital (IWC)in respect oftransmission asset for 2019-24 tariff period:

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
O&M Expenses	311.77	322.70	334.06	345.73
Maintenance Spares	561.18	580.87	601.31	622.31
Receivables	15721.56	16106.41	16268.73	16021.83
Total Working Capital	16594.51	17009.98	17204.10	16989.87
Rate of Interest (in %)	11.25%	11.25%	11.25%	11.25%
Interest on Working Capital	**1058.75**	**1913.62**	**1935.46**	**1911.36**

Data of Commercial Operation ("COD")

13. Regulation 5 of the 2019 Tariff Regulations provides as follows:

> ***"5. Date of Commercial Operation:*** *(1) The date of commercial operation of a generating station or unit thereof or a transmission system or element thereof and associated communication system shall be determined in accordance with the provisions of the Grid Code.*
>
> *(2) In case the transmission system or element thereof executed by a transmission licensee is ready for commercial operation but the interconnected generating station or the transmission system of other transmission licensee as per the agreed project implementation schedule is not ready for commercial operation, the transmission licensee may file petition before the Commission for approval of the date of commercial operation of such transmission system or element thereof:*

Provided that the transmission licensee seeking the approval of the date of commercial operation under this clause shall give prior notice of at least one month, to the generating company or the other transmission licensee and the long term customers of its transmission system, as the case may be, regarding the date of commercial operation:

Provided further that the transmission licensee seeking the approval of the date of commercial operation of the transmission system under this clause shall be required to submit the following documents along with the petition:

(a) Energisation certificate issued by the Regional Electrical Inspector under Central Electricity Authority;
(b) Trial operation certificate issued by the concerned RLDC for charging element with or without electrical load;
(c) Implementation Agreement, if any, executed by the parties;
(d) Minutes of the coordination meetings or related correspondences regarding the monitoring of the progress of the generating station and transmission systems;
(e) Notice issued by the transmission licensee as per the first proviso under this clause and the response;
(f) Certificate of the CEO or MD of the company regarding the completion of the transmission system including associated communication system in all respects."

14. The Petitioner has claimed COD of the transmission asset as 6.9.2020.

15. The Petitioner has submitted that it discussed part execution of Raigarh-Pugalur HVDC transmission. The relevant extracts of minutes of the meeting held on 21.8.2020 are as follows:

"

1. *Chief Engineer (PSP&A-I), CEA, welcomed the participants and informed that the meeting had been convened to deliberate on the proposal of CTU for part commissioning of Raigarh- Pugalur HVDC transmission system.*

2. *Director (PSPA-I), CEA, informed that the Raigarh- Pugalur + 800 kV, 600 MW HVDC transmission system had been planned in the year 2014 for import of power to Southern Region was facing huge power deficit. The scheme was discussed in the 37th SCPSPSR meeting held on 31.7.2014. Subsequently, the scheme was discussed and agreed in the Joint Standing Committee meeting of SR & WR constituents held on 20.04.2015. Details of the scheme are as given below:*

Scheme # 1: Raigarh-Pugalur 6000 MW HVDC Transmission System:

i. *Establishment of Raigarh HVDC Station + 800 KV 6000 MW HVDC terminals.*
ii. *Establishment of Pugalur HVDC Station + 800 KV 6000 MW HVDC terminals.*
iii. *+ 800 KV Raigarh (HVDC Staion) – Pugalur (HVDC Station) HVDC Bipole link with 6000 MW capacity.*

Scheme # 2: AC System strengthening at Pugalur end:

i. *Pugalur HVDC Station – Pugalur (Existing) 400 kV (quad) D/c line*
ii. *Pugalur HVDC Staion – Arasur 400 kV with (quad) D/c line.*

iii. *Pugalur HVDC Station – Thiruvalam 400 kV (quad) D/c line with 2x80 MVAR line reactor at Pugalur HVDC Station end and 2x63 MVAR line reactors at Thiruvalam 400 kV end.*
iv. *Pugalur HVDC Station – Edayaroakayam 400kV D/c line.*
v. *Edayarpalayam – Udumulpeta 400 kV (quad) D/c line.*

Scheme # 3: Pugalur –Trichur 2000 MW VSC Based HVDC System:

i. *+320 kV, 2000 MW VSC based HVDC terminal at Pugalur. The HVDC Station would have GIS for 400kV part and AIS for HVDC part.*

ii. *+320 kV, 2000 MW VSC based HVDC terminal at North Trichur. The HVDC Station would have GIS for 400kV part for AIS for HVDC part.*
iii. *Establishment of VSC based 2000 MW HVDC link between Pugalur and North Trichur* (Kerala). (*participants of this link, in the Kerala portion, may be implemented as underground cable where implementation as overhead transmission line is difficult because of RoW issues).*
iv. *LILO of North-Trichur – Cochin 400 kV (Quad) D/c line at North Trichur HVDC Station*

In the Joint Standing Committee meeting, it was also decided that the schemes may be implemented as separate schemes, however, it is important that the Scheme no. 2 Scheme no. 3 should be in place before commissioning of 6000 MW Raighar – Pugalur link.

3. *Director (PSPA-I), CEA, further informed that subsequently the matter regarding sequence of commissioning of three schemes, in view of uncertainties on account of RoW and land issues, was discussed in the 39th meeting of SCPSPSR held on 28-29 December, 2015. In the meeting it was brought out that even if Scheme-3 commissioned (prior to Scheme-1), it can be utilized for export of power to Kerala which is facing transmission constraints. Similarly, in case part system of Cheme-2 and one pole Raigarh–Pugalur HVDC link and/or VSC based HVDC to Kerala is commissioned, the system would be benefitted by enabling additional transfer of power to Southern Region.*

   It is decided in the 39th SCPSPSR meeting that in case of nay mismatch in the execution of these schemes, their usefulness shall be discussed with CEA before their commissioning.

4. *As per discussion in the 39th SCPSPSR, CTU vide letter dated 10.07.2020, has submitted the proposal for part commissioning of Raigarh – Pugalur HVDC Transmission System (part of Scheme -1 part of Scheme-2) for consideration of CEA as under:*

   - *Raigarh – Pugalur HVDC line and Pole 1 (1500 MW) are ready for commissioning and test are in progress.*
   - *Pugalur (HVDC) – Pugalur (existing) 400 kV D/c line is ready for commissioning.*
   - *Pugalur – Arasur 400 kV D/c line would be ready for Commissioning by 31.08.2020.*

   Commissioning of above transmission system will facilitate additional import of 1500 MW power in Southern Region. Director (PSPA-I), CEA, informed that the proposal has been examined and technically it has been found to be generally in order for transfer of 1500 MW power of Southern Region. He requested CTU to present the detailed proposal.

5. *CGM (CTU-Plg) informed that the Raigarh – Pugalur HVDC transmission system was planned in 2015 for import of power in Southern Region from NEW Grid. Southern Region was facing acute shortage of power due to delay in large number of generation projects in the NEW (North, East & West) Grid, however, due to constraints in inter-regional links, power import was limited and region could not meet the electricity demand. He further stated that the Raigarh – Pugalur – Trichur HVDC transmission system is a large scheme and considering the ROW/ land issues, it is not possible to complete and charge all the elements of the scheme at one go. Further, it will be beneficial from grid security point of view if the scheme is commissioned in stages so that its impact on grid, if any, can be analysed and appropriate action could be taken. Further, details of elements ready for commissioning as part of Scheme#1 and Scheme#2 are as given below.*

Elements ready for commissioning from Scheme #1

i. *+800 kV Raigarh HVDC Station with 1500 MW HVDC terminal (Pole-1)*
ii. *+800 kV Pugalur HVDC Station with 1500 MW HVDC terminal (Pole-1)*
iii. *+800 kV Rarigarh (HVDC Stn) – Pugalur (HVDC Stn) HVDC line.*

Elements ready for commissioning from Scheme #2

i. *Pugalur (HVDC) – Pugalur (Existing) 400 kV D/c line*
ii. *Pugalur (HVDC) – Arasur 400 kV D/c line*

Details of commissioning schedule of other elements are enclosed at Annex-2.

6. *CGM (CTU-Plg) further informed that based on the study result it was observed that 1500 MW power can be transferred over this Raigarh – Pugalur HVDC system even under N-1-1 contingency criteria. It was also informed that commissioning of above transmission system will facilitate enhancement in import ATC of Southern Region by 1500 MW and it shall provide additional control flexibility to the grid operator in power flow management and maintaining system parameters.*

7. *Chief Engineer (PSPA-I), CEA, requested Southern Region constituents to express their views/observations on the part commissioning of the transmission system.*

8. *Representative of TSTRANSCO congratulated PGCIL for their efforts in implementation and readiness for part commissioning for Raigarh-Pugalur HVDC transmission system and informed that they welcome the part commissioning of the system. It was also stated that as explained by CTU, it will enhance the import capability of the Region – Pugalur HVDC transmission system is of National importance and may be considered as National Component.*

9. *Chief Engineer, KSEB, stated that they also welcome the part commissioning of the Raigarh – Pugalur HVDC transmission system and are of same opinion as that of TSTRANSCO for declaring the assets as National Component.*

10. *Chief Engineer (PSPA-1), CEA, informed that the Raigarh – Pugalur HVDC transmission was planned for import of power to Southern Region and subject meeting was regarding part commissioning of the Raighar – Pugalur HVDC transmission system. The matter regarding considering Raighar-Pugalur-Trichur HVDC transmission system as National Component has been taken up separately through a VIP reference and the matter has been flagged in Ministry of Power, Government of India. Matter regarding considering the Raigarh – Pugalur –Trichur HVDC*

transmission system as a National Component is beyond the scope of this forum and is under the purview of CERC.

11. Representatives of TANTRANSCO enquired about the impact on grid in case of outrage of 1500 MW Pole-1 of Raigarh – Pugalur HVDC transmission system. DGM(CTU-Plg) informed that transmission system has been planned considering the Transmission Planning Criteria of CEA and existing AC inter-regional links shall facilitate and withstand the contingency of one pole outrage.

12. Member Secretary, SRPC, informed that power flow on HVDC system will relieve loading on AC networks, especially inter-regional links between SR and WR/ER which may cause high voltage situations in SR grid. He also stated that a number of 400 kV & 765 kV transmission line are required to be kept open to keep the voltage within the limits. COO(CTU-Plg) informed that the Raigarh-Pugalur HVDC transmission system would also facilitate in voltage regulation. In addition, a number of bus reactors have been planned for installation in SR grid to keep voltages within permissible limits. He also informed that reactive power planning is a continuous process to review the network condition & system parameters and a committee has been formed by CEA for reactive power planning on all-India basis in order to address the high voltage conditions.

Member, Secretary, SRPC, further stated that various issue related to software maloperation and issue in DMR had been observed during initial phase of operation of Champa-Kurukshetra HVDC transmission system, which let to tripping of poles on several occasions and enquired about the steps taken-up to avoid such tripping in the Raigarh-Pugalur HVDC system. ED (HVDC), PGCIL informed that Champa-Kurukshetra HVDC transmission system was planned and awarded in phase wise manner i.e. DK-1 (3000MW) and CK-2 (3000MW) and the software was originally designed for operation of Bipole-1 with DMR and not for parallel operation of Bipole-1 and Bipole-2. Software integration was carried out at a later stage, which let to frequent tripping during various combination of operation of Pole-1 and Pole-2 and Pole-3. However, in case of Raigarh – Pugalur HVDC transmission system, the software and control system have been designed in totality and will facilitate multiple combinations of operation without any problem.

13. Member Secretary, SRPC, further enquired about the status of readiness of reactor at Arasur substation. ED (RPT), PGCIL, informed that Pugalur (HVDC) – Arasur 400kV D/c line has already charged and regarding reactor he would check and inform. Subsequently, PGCIL has informed that no reactor is planned at Arasur substation. 80 MVAR bus reactor has been planned at Thiruvalam S/s which shall be commissioned along with 400kV Pugalur (HVDC) – Thiruvalam D/c line.

14. ED (SRLDC), POSOCO, stated that they also welcome the part commissioning of the Raigarh-Pugalur HVDC transmission system, however, under certain operational conditions especially during high RE generation in Southern Region, high loading on Neyveli TS-II – NNTPS 400 kV S/c line to the extent of about 700 MW has been observed and the same may be looked into.

15. DGM (CTU-Plg) informed that matter regarding high loadings on Neyveli TS-II NNTPS 400 kV S/s line has already been deliberated in 2nd SRSCT and 1st SRPC(TP) meeting held on 10.06.2019 and 16.12.2019 respectively, while panning the transmission system for grant of connectivity to Neyveli TS-II 2nd Expansion (2x600

MW) and to address the growing short circuit level at NEyveli Complex, Wherein it had been agreed to bypass Neyveli TS II – NNTPS 400 kv S/s line and one circuit of Neyveli TS II – Salem 400 kV D/c line at Nayveli TS II to form NNTPS –Salem 400 kV S/c line. This arrangement shall address the high loading issues of Neyveli TS II – NNTPS 400 kV S/c line. CGM (SRLDC0, POSOCO, also stated that the bypassing arrangements may resolve the issue of high loading on the line.

16. Sr. GM (NLDC), POSOCO, stated that power flow on the Raigarh – Pugalur HVDC Pole-1 (1500 MW) may not be 1500 MW on continuous basis. It shall depend on prevailing grid conditions and RE generation in Southern Region. The Raigarh-Pugalur HVDC transmission system shall also be utilized to control voltage by regulating the power flow on the HVDC link and parallel inter-regional AC links. He also informed that similar operational practices are being followed for other HVDC systems. He also added that part commissioning of Raigarh – Pugalur HVDC transmission system is expected to enhance import ATC of Southern Region from New grid by 1500 MW and shall provide additional flexibility for grid operation and shall enhance the grid security.

He further stated that loading on Kolhapur PG-Kolhapur MS 400 kV D/c line and NNTPS-Neyveli TS-II 400 kV S/C line may be high under certain grid conditions and power flow on the Raigarh-Pugalur HVDC transmission system may be regulated under these conditions to keep the flow on the above AC lines within limits. It was suggested that CTU may plan and suggest alternatives to address high loading on 400 kV Kolhapur PG-Kolhapur MS S/c line.

17. Chief Engineer (PSPA-I), CEA, opined that as the Southern Region constituents and POSOCO are in agreement for part commissioning of the Raigarh – Pugalur HVDC transmission system, PGCIL may commission the part transmission system as per their proposal, subject to the following:

a) Commissioning of Pugalur (HVDC) – Pugalur (Existing) 400 kV d/c line and Pugalur (HVDC) –Arasur 400 kV D/c line to be ensure before commissioning of Single pole of Raigarh-Pugalur HVDC transmission system.
b) Technical issue and other contraints observed consequent to commissioning shall be flagged for discussion and review in the next SRPC(TP) Meeting.

18. After detailed deliberations, it was agreed that PGCIL may commission part of Raigarh-Pugalur HVDC transmission system comprising of the following elements:

Part of Scheme # 1: Raigarh-Pugalur 6000 MW HVDC System

i. + 800kV Raigarh HVDC Station with 1500 MW HVDC terminal (Pole-1)
ii. + 800kV Pugalur HVDC Station with 1500 MW HVDC terminal (Pole-1)
iii. + 800kV Raigarh (HVDC Stn)-Pugalur (HVDC Stn) HVDC line.

Part of Scheme#2: AC System Strengthening at Pugalur end

i. Pugalur (HVDC) –Pugalur (Existing) 400 kV D/c line
ii. Pugalur (HVDC) –Arasur 400 D/c line."

16. In view of above discussions, we approve part execution of Raigarh-Pugalur HVDC transmission system.

17. The Petitioner has submitted CEA energization certificatesand details of the same are as follows:

Sl. No	Particulars	CEA Clearance date
1	± 800kV HVDC Raigarh–Pugalur transmission link-1765.15 km	13.4.2020
2	HVDC Pole-I Convertor Transformer, Thyristor Valves including PLC area and other value equipment at Raigarh	12.12.2019
3	HVDC Pole-I DC Yard equipment, filters including DC common area at Raigarh	12.12.2019
4	AC Yard filter Zone-1 comprising 5 numbers of Filter sub banks of HVDC station at Raigarh	12.12.2019
5	400kV GIS Bays (401-421) at Pugalur HVDC station	30.8.2019
6	33kV Auxiliary System for Bipole-I at Raigarh	2.12.2019
7	400kV GIS Bays (401-414) BP-I at Raigarh	2.12.2019
8	AC Yard filter Zone-2 comprising 4 numbers of Filter sub banks of HVDC station at Raigarh	6.2.2020
9	HVDC Station-33kV Auxiliary System, Convertor transformer, Filters, values at Pugalur Station	9.12.2019

18. The Petitioner has submitted RLDC charging certificates dated 4.9.2020, 6.10.2020 and 29.10.2020 certifying that trial operation was completed on 6.9.2020 and CMD certificate as required under the Grid Code.Taking into consideration CEA energization certificate, RLDC charging certificate and CMD certificate, COD of the transmission asset is approved as 6.9.2020.

Capital Cost

19. 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 assets 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 upto 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 renovation and modernisation as admitted by this Commission in accordance with these regulations;*

(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 upto 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 assets forming part of the project, but not in use, as declared in the tariff petition;*

(b) *De-capitalised Assets 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 de-capitalised 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 assets.

(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."*

20. The Petitioner vide affidavit dated 15.12.2021 has claimed the following capital cost incurred as on COD and Additional Capital Expenditure (ACE) projected to be incurred in respect of the transmission asset and has submitted Auditor's Certificate dated 18.11.2021 in support of the same:

(₹ in lakh)

FR approved cost	Capital cost up to COD	Projected ACE				Capital Cost as on 31.3.2024
		2020-21	2021-22	2022-23	2023-24	
965798.73	878821.09	20463.91	40218.82	4141.41	71.03	943716.26

Cost Over-run

21. The Petitioner has submitted that the following major reasons for cost variation with respect to FR cost:

a) There is reduction of cost of about ₹33956 lakh with respect to FR on account of compensation against transmission line construction for crops, trees, PTCC and Forest/NPV. The variation is due to actual assessment of crops/trees/land and household and forest area encountered in line corridor by concerned Government officials of the respective States, forest department, quantity and value of which are much less than notional estimate.Tree compensation has been worked out/paid based on trees enumeration in the corridor and rates obtained from Horticulture Department/DC and Forest Department. Similarly crop compensation has been paid/estimated based on the rates obtained from Agriculture Department. The corridor compensation for construction of the line has been estimated based on the individual orders received from respective Deputy Commissioners of the district through which line is passing in line with MoP guidelines dated 15.10.2015 for tower footing and corridor.

b) The estimate was prepared by considering compensation @15 lakh/acre (mostly agricultural land in rural), compensation @25 lakh/acre (mostly urban/semi-urban land near cities/towns), compensation @50 lakh/acre (mostly urban land near big cities/metro towns) for 800kV HVDC line of approximate 1838 km. However, due to actual site condition and route alignment, the line length is approximately 1765 km. So, there is reduction of

around 73 km of line length from FR estimate, which is also the factor of reduction of cost for compensation.

c) Due to RoW issues encountered during construction of line in Chhattisgarh, Maharashtra and Tamil Nadu States, actual line length and routing changed due to severe RoW issues which increased the number of angle and extension towers and the same resulted in increase of the cost of tower steel by about ₹66 lakh with respect to FR. The Raigarh-Pugalur transmission line also unavoidably passes through reserved forest area of Gadchiroli which is populated by forest dwellers. A committee for identification of habitats of endangered species and ascertaining locations for raising the height of towers was formed. In line with the recommendations and assessment of the Committee/officials, special tower body extensions had to be adopted for towers that fall under reserved forest areas of Gadchiroli. Increase in number of extension andtension/suspension towers due to actual line routing and line length, there was increase in tower steel.

d) Cost variation with respect to conductors, insulators and hardware fittings are due to the rates received through competitive biddings. The contracts for various packages under this project were awarded to the lowest evaluated and responsive bidder on the basis of open international/ domestic competitive bidding. Award prices represent the lowest prices available at the time of bidding of various packages and as such the price level captured at the bidding stage.

e) There is reduction of ₹34991 lakhwith respect to FR cost on account of erection, stringing and civil works including foundation. The cost variation is due to actual site condition encountered during execution. In addition, the rate received through competitive biddings also effect the actual variation of the item with respect to estimate. The contracts for various packages under this project were awarded to the lowest evaluated and responsive bidder on the basis of open International/Domestic Competitive Bidding. The award prices represent the lowest prices available at the time of bidding of various packages and therefore captured the price level at the bidding stage.

f) The FR costs of individual items/materials are exclusive of taxes and duties which have been indicated under a separate head while the cost of items as per the actual expenditure is inclusive of taxes and duties. The increase of about ₹45030 lakh is mainly on accounts of actual taxes and duties, octori, custom duty, excise duty, GST etc. paid based on the prevailing rates and charges raised by respective district, State and statutory authorities at the time of execution of project.

g) As per approved cost, IEDC for asset was estimated at ₹36113 lakh whereas based on the actual expenditure incurred, IEDC works out to ₹33626 lakh. Thus, IEDC for the transmission asset has decreased by ₹2486 lakh with respect to FR cost in case of the transmission asset. During estimation of FR, 3% and 5% of capital cost (excluding IEDC andIDC) has been considered for contingency and IEDC respectively. The actual amount of IEDC has been considered for claiming the tariff. The project timeline was 42 months as per

FR, against which the transmission asset has been executed in around 52 months due to various uncontrollable factors as explained in the petition and thus on account of delay of almost 10 months in execution of the transmission asset. According to the Petitioner, IEDC should be considered proportionately as against 5% as per FR considering the actual completion period of 52 months in case of transmission asset. However, actual IEDC claimed is ₹33367 lakhin respect of the transmission asset which comes out to 4.29% of the hard cost and thus within the percentages envisaged in FR.

h) IDC for the transmission asset as per FR cost was estimated at ₹65033 lakh and IDC for the transmission asset works out to ₹57907 lakh. Thus, there is decrease of ₹7132 lakh with respect to FR in IDC in case of transmission asset. The main reason for reduction in IDC is due to deployment of loan of lower interest rate as compared to interest rates considered in FR.

i) On account of deployment of foreign loan (ADB/ KFW) in the transmission asset, there is increase in FERV liability from FR cost to the tune of ₹26197 lakh with respect to FR cost of the transmission asset due to revaluation of the said loans. The exchange rate at the time of preparation of FR was 1 US$ = ₹67.57, EURO=₹74.66. However, at the time of actual payment/deployment, the exchange rate was to the extent of 1 US$ = ₹76.13, EURO= ₹85.12 (present rate). The variation in exchange rate increased FERV in overall cost of the transmission asset.

22. From the above, it is evident that variation in cost is mainly due to increase/decrease in tower steel, HVDC packages, IDC, IEDC and FERV etc. Further, the overall all cost of the transmission asset is under apportioned FR cost.

23. In response, MPPMCL has submitted that the Petitioner has submitted that the apportioned approved cost of all the transmission assets taken together is ₹965798.73 lakh against which the estimated completion cost is₹949401.26 lakh and, therefore, there is no cost over-run. The Petitioner has also submitted that decrease in IDC is on account of lower interest rates. In this way, the Petitioner has admitted that estimate was framed in a haphazard manner, on very high side and with utter carelessness. If the claim of the Petitioner is accepted that IDC has reduced due to early completion of work, even then it is evident that the Petitioner has not practiced due diligence and did market study before provisioning of such high rate of interest. The Petitioner is CTU and in routine arranges loans for its project. Hence, such ignorance is totally unacceptable. MPPMCL has further submitted that intention of the Petitioner to increase the cost of original estimate is for the purpose of showing in future that there is no cost over-run owing to the fact that actual expenditure in any case would fall below the original estimate. The Petitioner is hiding its inefficiency and carelessness under the cover of estimation. MPPMCL has submitted that prudence check may be applied on this issue while deciding the completion cost and to disallow excess cost incurred by the Petitioner.

24. In response, the Petitionerhas submitted that estimated completion cost of the transmission asset is within apportioned approved cost (FR). Raigarh-Pugalur ±800kV, 6000 MW HVDC bipole line is a unique and one of its kind of project in the country and

being a Government enterprise, the Petitioner has the obligation for indigenous development of manufacturer as well as to adhere to Government of India guidelines in vogue. Accordingly, the Petitioner has been following a well laid down procurement policy which ensures both transparency and competitiveness in the bidding process. Route of International Competitive Bidding (ICB) as well as Domestic Competitive Bidding (DCB) process have been followed to award this special mega project. Through this process, lowest possible market prices for required product/services/as per detailed designing is obtained and contracts are awarded on the basis of lowest evaluated eligible bidder. The best competitive bid prices against tenders may vary as compared to the cost estimate depending upon prevailing market conditions, design and site requirements. The Petitioner has submitted that estimates are prepared as per well-defined procedures for cost estimate. The FR cost estimate is broad indicative cost worked out generally on the basis of average unit rates of recently awarded contracts/general practice. The Petitioner has further submitted that cost estimate of the project is on the basis of December, 2015 price level whereas the contract date is May, 2016 price level. The Petitioner has further submitted that the major reasons of cost variation with respect to FR have been submitted in the petition and has prayed to allow the tariff on estimated completion cost of the transmission asset.

25. KSEB has submitted that on analyzing capital cost claimed in the petition with benchmark cost for HVDC pole cost considered by the Commission vide order dated 18.3.2016 in Petition No.184/TT/2013, it is observed that cost claimed in the petition is very high as compared to the benchmark cost considered by the Commission and the same is extracted as follows:

> *"42. We have gone through the submission of the petitioner on the comparison of hard cost of bi-pole Mundra-Mohindergarh terminals with cost of Balia-Bhiwadi bipole. In our*

view, for a prudent comparison, hard cost on completion of the project should be examined. Mundra-Mohindergarh HVDC poles were commissioned on 12.7.2012 and 9.10.2012 respectively, whereas Balia-Bhiwadi HVDC poles were commissioned on and 1.7.2012 respectively. The petitioner in support of its claims has submitted that the price range in respect of 2000-2500 MW capacity worldwide is in the range ofRs., 170000-220000 lakh, which may vary based on the type of technology used. The petitioner has also submitted the management certificate of Powergrid in respect of Pole-I and Pole-II of Balia-Bhiwadi HVDC. The total cost of sub-station (Pole-I) together with 790 km transmission line of Balia- Bhiwadi HVDC lakh including IDC and IEDC of Rs. 20205 lakh and Rs.5008 lakh respectively as per the management certificates. The cost of HVDC transmission line is Rs. 90224 lakh including IDC and IEDC and including estimated expenditure upto 31.3.2024. The total capital cost for Pole-II of HVDC Balia-Bhiwadi line on its COD 1.7.2012 is Rs. 53513 lakh including Rs. 6731 lakh IDC and IEDC and also includes FERV gain of Rs.1107 lakh and estimated expenditure upto 31.3.2014. If pro-rata apportionment of IDC and IEDC is considered, the apportioned amount for transmission line works out to approximately around Rs.10242 lakh. Thus, the hard cost for 790 km Balia-Bhiwadi HVDC line commissioned on 1st September 2010, works out to approximately Rs. 79982 lakh, which includes all cost upto 31.3.2014. On the other hand, the petitioner has submitted the hard cost ofRs. 100291 lakh for 990 Km Mundra-Mohindergarh HVDC transmission line commissioned on 12.7.2012. The per km cost of both HVDC lines are comparable i.e. Rs. 101.11 lakh per km for the system of Powergrid as against lakh per for system of the petitioner. In view of the above discussion, the cost of HVDC line as claimed by the petitioner is allowed."

26. KSEB has further submitted that as per the above order, hard cost of HVDC line comes to ₹101 lakh per km inclusive of all taxes and HVDC system cost of ±500kV Mundra - Mohindergarh HVDC bi-pole transmission line consisting of 990 km of HVDC bipole line is ₹370027.00 lakh. The per km cost of HVDC system comes to ₹373.76 lakh per km which is considered by the Commission whereas the cost that claimed by the Petitioner in the instant petition for ±800 kV Raigarh-Pugalur HVDC system is ₹537.90 lakh per km which is much higher than the benchmark cost considered by the Commission in the above order. Such increase in capital cost is not justified and the Commission may consider prudence checkof the capital cost and limit to the benchmark capital cost considered by the Commission. The Petitioner has claimed huge amount of ₹92727 lakh towards preliminary works and compensation. However, the Petitioner has not provided any supporting documents for the compensation paid by the Petitioner. KSEB has prayed that the Petitioner may be directed to furnish the details of the same.

27. In response, the Petitioner has refuted the submissions of KSEB and submitted that the present petition needs to be decided in terms of the provisions of 2019 Tariff Regulationswhich do not provide for any benchmark cost for the type of HVDC installed by the Petitioner in the present case. Regulation 20(1) and (4) of the 2019 Tariff Regulations provides as follows:

> *"20 (1) In case of the thermal generating station and the transmission system, prudence check of capital cost shall include scrutiny of the capital expenditure, in the light of capital cost of similar projects based on past historical data, wherever available, reasonableness of financing plan, interest during construction, incidental expenditure during construction, use of efficient technology, cost over-run and time over-run, procurement of equipment and materials through competitive bidding and such other matters as may be considered appropriate by the Commission:*
>
> *Provided that, while carrying out the prudence check, the Commission shall also examine whether the generating company or transmission licensee, as the case may be, has been careful in its judgments and decisions in execution of the project.*
>
> *……*
>
> *20(4) The generating company or the transmission licensee, as the case may be, shall furnish the capital cost for execution of the existing and new projects as per Annexure-I to these regulations along with tariff petition for the purpose of creating a database of benchmark capital cost of various components."*

28. The Petitioner has further submitted that benchmarking can be done only if a database is created of various components by collecting the capital cost of all existing and new projects as per Annexure-1 of the 2019 Tariff Regulations which are relevant tariff filing forms for determination of tariff. As far as the present assets are concerned, the details as per Annexure 1 (tariff forms) referred to in Regulation 20(4) has already been submitted before the Commission vide affidavit dated 11.8.2021**.** The Petitioner has, however, submitted that benchmarking analysis for determination of prudent costs cannot be on the basis of one order passed by the Commission and the same needs to be based on a substantially bigger database which at present is not available for HVDC systems. Multiple variables influence the capital costs and in the context of transmission assets, the capital cost primarily depends on the following variables:

a. Project specific conditions such as terrain, project location, right of way constraints, including urbanization, river/highway/railway line crossings, intersection of other transmission lines, forest area etc. Further, weather conditions are also an important factor which differentiate capital cost of similar transmission assets.

b. Market forces driven by demand-supply balance i.e. availability of competition among vendors, purchase quantum (one time order as against repeat orders), input cost variations, economic and environmental factors, etc.

c. Technology adopted for implementation of the transmission assets especially the sub-stations and the requirement of the active compensation, etc.

29. The Petitioner has submitted that all the above factors influence price discovery and assessment of prudent costs for HVDC assets need to be done on a project specific basis. It is practically impossible for any benchmarking of capital cost for HVDC assets at this stage. The Petitioner has furnished a table that illustrates variation in cost per km of transmission lines even if such lines fall under same wind zones, soil conditions and topography. The table shows that cost of a 765 kV line varies from ₹166.50 lakh per km to ₹210.79 lakh per km even with similar regions. The table further demonstrates variation in cost per km of transmission lines falling under different wind zones, soil conditions and topography.

Asset Name	Region	COD	Line length in km	Completion cost (₹lakh)	Cost per km (₹lakh)
765 kV S/C Transmission Lines under same Wind zone/Soil condition/Plain area					
Bareilly-Lucknow S/C	NR-III	1.4.2014	251	41704.85	166.15
Gaya-Varanasi S/C	NR-III	21.4.2015	273	57546.81	210.79
Jaipur-Bhiwani S/C	NR-I	7.10.2016	276	49343.72	178.78
765 kV D/C Transmission lines under different wind zone/Soil condition/ plain area					
Champa-Raipur D/C	WR-I	24.5.2014	149	67005.6	449.70

Asset Name	Region	COD	Line length in km	Completion cost (₹lakh)	Cost per km (₹lakh)
Angul-Srikakulam D/C	SR-I/ ER-II	1.2.2017	276.49	139487.89	504.50
Chittorgarh-Ajmer D/C	NR-I	31.12.2017	211	101482.97	480.96
400 kV Transmission Lines under same wind zone/Soil condition/plain area					
Barh-Gorakhpur D/C	NR-III	7.6.2015	349.17	97166.05	278.28
Sikar-Jaipur D/C	NR-I	16.2.2017	169.00	22820.21	135.03
Lucknow-Kanpur D/C	NR-III	1.6.2017	159.61	25221.01	158.02
400 kV D/C Transmission lines under different wind zone/Soil condition/ plain area					
Ranchi-Chandwa-Gaya D/C	ER-I	12.7.2016	190.00	55996.46	294.72
Betul-Khandwa D/C	WR-I	24.8.2017	168.64	40241.28	238.62
400 kV D/C Transmission lines under different wind zone/Soil condition/ Hilly area					
Balipara -Bongaigaon D/C	NER	7.11.2014	309.00	107030.77	346.38
Silcher-PK Bari D/C	NER	1.8.2015	128.76	40879.20	317.48
Kishenpur - New Wanpoh D/C	NR-II	31.7.2017	135.00	54324.00	402.40

30. The Petitioner has submitted that results of any benchmarking in the case of such HVDC assets will cause severe losses to the transmission licensee if the benchmarks have no relation to the actual cost incurred. Similarly, benchmarking on the basis of one or two cases on a higher level will affect the consumers and the distribution licensees since the actual capital cost incurred may be much lower. The Petitioner has submitted that it would be better that if an independent prudence check is applied by the Commission on the capital cost incurred and claimed by the Petitioner in the present case.

31. In response to preliminary works including compensation, the Petitioner has submitted that all the compensation payments made are as per the directions of various Court orders issued by District Court of Kerala, High Court or any other Court as received from time to time. Although, trees compensation has been worked out/paid based on treese numeration in the corridor and rates obtained from Horticulture Department/DC and Forest Department. Similarly crop compensation has been

paid/estimated based on the rates obtained from Agriculture Department. The corridor compensation for construction of line has been estimated based on individual orders received from respective Deputy Commissioners of the district through which line is passing in line with the MoP guidelines dated15.10.2015 for tower footing and corridor. The estimate was prepared by considering compensation @15 lakh/acre (mostly agricultural land in rural), compensation @ 25 lakh/ acre (mostly urban/semi-urban land near cities/towns), compensation @ 50 lakh/ acre (mostly urban land near big cities/metro towns) for 800kV HVDC line of approximately 1838 km. However, due to actual site condition and route alignment, the line length is approximate 1765 km. Hence, there is reduction of around 73 km of line length from FR estimate which is also factor of reduction of cost for compensation.The Petitioner has further submitted that it has only claimed the compensation actually paid by it subject to audit to various land-owners for obtaining the RoW in terms of the orders passed by the Government of respective States. The Petitioner has not claimed any amounts which have not been paid by it in the present petition. The specimen of documentary evidence for compensation has been submitted by the Petitioner.

32. TANGEDCO, TSSPDCL and TNSPDCL have submitted the following issues with regard to cost variation and cost estimation:

a. The Petitioner has over-estimated cost of land compensation, erection, stringing and civil works, HVDC package and used this cushion comfortably and has submitted that overall completion cost is within apportioned approved cost.

b. The Petitioner has claimed exorbitant amount of ₹92727 lakh towards preliminary works and compensation. In this regard, the Petitioner did not

produce any documentary proof on account of land compensation paid. The Petitioner may be directed to upload statement of compensation paid to the individual land-owners.

c. If individual component cost is too high when compared to recent orders/benchmark rates, then it is the duty of the Petitioner to negotiate the rates with the lowest bidder.

d. There is 33.29 % drop in expenditure incurred on erection, stringing and civil works of the transmission line. It indicates that the Petitioner has not followed prudent method in estimation.

e. For taxes and duties, there is increase of 76.32% and the reason submitted by the Petitioner is FR costs of individual items/materials are exclusive of taxes and duties which have been indicated under a separate head while the cost of items as per the actual expenditure is inclusive of taxes and duties. The reason submitted by the Petitioner is not acceptable as they have exposure in this field and in preparation of estimate also.

f. The Petitioner has been executing number of HVDC projects and they should have benchmark data for each and every component of the project. They should have considered such basic date for FR estimation.

33. In response, the Petitioner has reiterated its submissions as stated in the petition and rejoinder to the reply of MPPMCL. Further, the Petitioner has submitted major reasons of cost variation with respect to FR in the petition.

34. The Petitioner has submitted that against the total approved cost as per IA of ₹965798.73 lakh the estimated completion cost is ₹945532.08 lakh.

35. We have considered the submissions of the Petitioner and the Respondents, MPPMCL, KSEB, TANGEDCO, TSSPDCL and TNSPDCL. As compared with FR cost, the estimated completion cost is reduced by an amount of ₹22082.47 lakh. As Per Form-5 submitted by the Petitioner, it is observed that major reduction on capital cost is due to the following:

(₹ in lakh)

Particulars	As per Original Estimate	Actual and Projected expenditure	Variation
(a) Preliminary Investigation. RoW, forest clearance, PTCC, general civil works	126683.09	89535.53	-37147.56
(b) Transmission line	586880.08	561613.9	-25266.18
(c) Sub-station Equipment	205691.62	165090.82	-40600.80

36. We have considered the submisions of the Petitioner and we allow the cost reduced. It is further observed that as per FR apportioned approved cost, the estimated completion cost is within FR cost. Hence there is no cost over-run.

Time over-run

37. As per IA dated 5.5.2016, the transmission project was scheduled to be put into commercial operation within 42 months from the date of IA i.e. by 5.11.2019. However, the transmission asset was put into commercial operation on 6.9.2020. Thus, there is a time over-run of 306 days.

38. The Petitioner has submitted that the time over-run is mainly because of delay in grant of forest clearance in Gadchiroli-Chandrapur, Bellampalli, Ramgiri, Vellore and Dharampuri for HVDC transmission line, court case during award of HVDC terminal, Right of Way (RoW) vis-à-vis law and order problems during construction of transmission lines, litigations and Covid 19 Pandemic. The Petitioner has submitted

that after managing intense statutory clearances, difficult terrain conditions, court cases throughout the stretch of the transmission line, RoW problems and other construction challenges in the Western and Southern Regions, the Petitioner has finally squeezed the prolonged delay and put the transmission asset into commercial operation on 6.9.2020. The reasons submitted by the Petitioner for time over-run are as follows:

(i) <u>Court case during award of HVDC terminal (8 months and 9 days)</u>

- The project is the first of its kind in the country and involves the latest state of the art technologies. There are only few bidders in the world who participate in bidding of HVDC projects of such complexity and size. Considering the complexity, the Petitioner had adopted two stage bidding process for supply cum installation of HVDC terminal package wherein the first stage bids were Techno-Commercial Bids without any reference to prices and the second stage bids were the price bids. The package was funded by Asian Development Bank (ADB) and is covered under Prior Review Procedure of the Bank meaning that ADB's approval ('No Objection') was required at every stage of the bidding process for proceeding further.

- Considering the time required for finalization of bidding process, the Petitioner started the process in advance and the first stage bids under International Competitive Bidding were invited on 27.5.2015 and opened on 28.7.2015. Upon examination of the Bidders' qualifications and responsiveness of first stage bids, clarification meetings were conducted with all the bidders who participated in the bidding process for requisite tie-ups and finalization of the technical and contractual terms and conditions including Bill of Quantity (BOQ). Pursuant to

finalization of the same and on receipt of 'No Objection' from ADB, the second stage bid was invited on 4.3.2016 and opened on 11.4.2016.

- After completion of evaluation of the second stage bids, the Petitioner forwarded award recommendation to the funding agency – ADB on 9.5.2016. In the meanwhile, one of the bidders viz.-JV of ABB AB & BHEL preferred litigation and filed Writ Petition being W.P. (C) No. 4469/2016 before the Hon'ble High Court of Delhi on 13.5.2016 contending that they have made a typographical error in the bid and accordingly excess quantities of Converter Transformers and Thyristors Valves should be reduced. However, their bid price should not be reduced on this account.
- In the meanwhile, ADB approved award recommendation for the subject package on JV of ABB AB & BHEL vide its communication dated 3.6.2016. Accordingly, NOAs for the subject package were issued to JV of ABB AB & BHEL/Associate i.e. ABB-India on 8.6.2016.

- The Hon'ble High Court of Delhi concluded the arguments on 9.9.2016 and reserved judgment. In the meanwhile, ABB and BHEL withdrew their case and agreed to work upon the order placed on them and the matter was disposed by the Hon'ble High Court on 6.1.2017. Thereafter, the contract agreement for HVDC terminal executed on 16.1.2017. The Petitioner has given the details of the proceedings before the Hon'ble High Court of Delhi from 13.5.2016 to 13.1.2017 in the petition. For brevity, the same have not been mentioned here.

- There was an initial delay of 8 months and 9 days on account of court case in award which was beyond the control of the Petitioner. The contract for the

transmission line remained on hold due to above court case. The same was resumed after the issue resolved in HVDC terminal contract and contract of transmission line was awarded on priority basis in the month of March, 2017 – May, 2017.

(ii) <u>Statutory clearances in various reserve forest areas (6 months to 17 months):</u>

- The transmission line is traversing through 5 States i.e. Chhattisgarh, Maharashtra, Telangana, Andhra Pradesh and Tamil Nadu. The total line length is 1765 km (approximately) and total forest area involved is 462.327 ha. The transmission line encountered five forest divisions which are spread in over 5 number of districts. Further, there are total 7 District Forest Office (DFOs) designated zones in these Forest Divisions.
- Following are the forest areas falling along the line length:

  i) Gadchiroli Reserve Forest
  ii) Bellampalli Reserve Forest
  iii) Ramgiri Reserve forest
  iv) Vellore
  v) Dharampuri

- After IA dated 5.5.2016, preliminary action was initiated promptly for taking up survey works in forest/ non-forest areas for this line. The Petitioner acted proactively and intimated the concerned State/district authorities regarding this upcoming project involving construction of 800 kV level transmission line. The Petitioner has intimated the Forest Authorities (vide letter dated 11.3.2016) in advance before the start of survey related works.

- The works related to survey were awarded timely and vide letters dated 16.2.2016, DFOs of Gadchiroli Divisions were requested to allow the surveying agency to execute its function in the forest area.
- The survey related works were to be completed before finalization and submission of forest proposal for diversion of above forest areas for non-forest purpose. This is a pre-requisite requirement for forest proposal and for completing this task, the Petitioner was to work in close association with respective Forest & Revenue Authorities for completion of activities in shortest possible time. However, it took considerable time for completion of survey work, even though the Petitioner started the works timely and also intimated the related authorities well in advance. The Petitioner carried out detailed survey along the tentative route of line for ascertaining forest areas and gathered voluminous inputs necessary details covering the various aspects for timely finalisation and validation of the data.
- The Petitioner completed task at its end in an efficient and time bound manner. However, the validation and certification of land scheduling could not be obtained from the concerned Land & Revenue Authorities as expected. The Petitioner pursued the matter through a number of meetings and also brought out issue of cascading effect of this delay on the eventual completion target of the line in addition to verbal persuasions and requests. After rigorous follow up with forest department, the forest survey was completed and identified the route with minimal forest area. Substantial amount of time was lost in this activity before the submission of forest proposal. The forest proposal was prepared and submitted on 18.4.2017 for Gadchiroli area on 27.7.2016 for Bellampalli and for Ramgiri

area and for Vellore and Dharampuri areas on 20.4.2017. The Petitioner, after submission of proposal and effecting various necessary compliances could obtain the forest clearance by October, 2018, May, 2018 and September, 2019 (Stage-I working permission clearance) which is as follows:

Sl.No	Forest	Area (Ha)	Proposal submission date	Stage-I (Working permission) Clearance	Stage-II Clearance
1	Gadchiroli Reserve Forest	432.6791	18.4.2017	31.10.2018	Awaited
2	Bellampalli Reserve Forest	5.4842	27.7.2016	28.5.2018	
3	Ramgiri Reserve forest	15.044	27.7.2016	28.5.2018	
4	Vellore	2.76	20.4.2017	24.9.2019	30.1.2020
5	Dharampuri	6.36	20.4.2017	24.9.2019	30.1.2020

- The details of chronology relating to forest proposal and clearance in the said reasons is as follows:

Gadchiroli Area:

Sl.No	Brief details of force majeure event	Date
1	Submission of online forest proposal No. FP/MH/TRANS/25055/2017	18.4.2017
2	Letter to DCF Wadsa regarding permission for detailed survey work in forest area.	19.4.2017
3	Submission of forest proposal	1.6.2017
4	Queries raised by DCF, Wadsa	9.6.2017
5	Letter to APCCF, Nagpur for identification of combining officer.	12.7.2017
6	Letter reply from APCCF, Nagpur to CCF Gadchiroli regarding the combining officer	10.8.2017
7	Request for withdrawal of online forest proposal due to involvement of one more forest division.	8.9.2017
8	Submission of revised proposal along with area statement of forest and non-forest land at DFO Office (hard copy as well as online)	12.9.2017
9	Letter to Asstt. Director for NOC regarding archealogy	11.10.2017
10	Clearance from ASI after site visit of the entire line.	13.11.2017
11	Request letter for issuance of FRA certificate to Collector.	14.11.2017
12	Site Inspection by DCF.	13.12.2017
13	Site Inspection report	13.12.2017
14	Forwarding of proposal by DCF to CCF	13.12.2017

Sl.No	Brief details of force majeure event	Date
15	Request letter for issuance of minimum demand certificate to Collector.	15.12.2017
16	Site inspection by CCF	24.1.2018
17	Proposal from 03 divisions complied by CCF, Chandrapur and forwarded to CCF, Gadchiroli	8.3.2018
18	Letter for FRA proposal to Collector	8.3.2018
19	Forwarding of proposal from CCF, Gadchiroli to Nodal Officer, Nagpur alongwith proposal of Tiger Corridor	11.4.2018
20	Minimum demand certificate issued by Collector Gadchiroli	27.4.2018
21	Minimum demand certificate issued by Collector Chandrapur	2.5.2018
22	Forwarding of proposal from CCF Nagpur to Mantralaya	23.5.2018
23	FRA certificate issued by Collector Chandrapur	31.5.2018
24	FRA certificate issued by Collector Gadchiroli	4.6.2018
25	Submission of FRA reports to APCCF, Nagpur.	6.6.2018
26	Forwarding of proposal from CCF, Mantralaya to APCCF to RMoEF, Nagpur	7.6.2018
27	Certain queries raised by RMoEF, Nagpur	29.6.2018
28	Letter from APCCF, Nagpur to CCF, Gadchiroli regarding queries raised by RMoEF, Nagpur	5.7.2018
29	Letter from CCF, Gadchiroli regarding queries raised by RMoEF, Nagpur to concerned DCFs and Powergrid, Bramhapuri.	6.7.2018
30	Site inspection by representative of RMoEF, Nagpur	13.7.2018
31	Compliance of queries to DCF, Bramhapuri was forwarded by Powergrid Bramhapuri.	14.7.2018
32	Forwarding of compliance from DCF, Bramhapuri to CCF, Gadchiroli	19.7.2018
33	Regional Empowered Committee 37th meeting held on -	30.7.2018
34	Queries clarified by CCF, Gadchiroli to APCCF, Nagpur	1.8.2018
35	Receipt of Stage I clearance	5.9.2018
36	Issuance of working permission by CCF, Gadchiroli	31.10.2018

- Meanwhile, during the above forest approval, the Chief Forest Conservator and Area Operator of Tadoba-Andhari Tiger Project intimated vide letter dated 12.12.2017 that the transmission line is passing through the Tiger Reserved Corridor. On intimation, further proposal for Wildlife Clearance for Tiger Reserved Corridor was submitted on 5.1.2018. The final approval was received from Ministry of Environment, Forest and Climate change (National Tiger Conservation Authority), New Delhi on 11.7.2019. The chronology of events are as follows:

Sl.No	Brief details of force majeure event	Date
1	Intimation of Tiger Reserve Corridor by Forest	12.12.2017
2	Submission of wildlife proposal to DCF, Wadsa.	5.1.2018
3	Clarification of queries by Powergrid, Bramhapuri.	18.1.2018
4	Submission of wildlife proposal to DCF, Bramhapuri.	1.3.2018
5	Re-submission of wildlife proposal to DFO, Chandrapur.	20.3.2018
6	DCF, Bramhapuri for submission of mitigation plan to Powergrid, Bramhapuri.	7.4.2018
7	Submission of mitigation plan by Powergrid, Bramhapuri to DCF, Bramhapuri.	10.4.2018
8	Forwarding of Tiger Corridor proposal from CCF, Gadchiroli to Nodal Officer, Nagpur	11.4.2018
9	DCF, Bramhapuri to CCF, Chandrapur.	24.4.2018
10	Queries raised by APCCF, Nagpur	2.5.2018
11	Compliance letter to APCCF, Nagpur	3.5.2018
12	APCCF, Nagpur requested for comments to AIG of Forest NTCA, New Delhi.	11.7.2018
13	Comments of NTCA, New Delhi.	8.8.2018
14	Opinion of Chief Wildlife Warden Maharashtra.	16.10.2018
15	Forwarding of proposal from Chief Wildlife Warden & PCCF, Wildlife Nagpur Maharashtra to Secretary Forest, Mantralay Mumbai.	23.10.2018
16	Proposal discussed and recommended in 14th SBWL meeting at Mumbai.	5.12.2018
17	Chief Wildlife Warden Maharashtra & PCCF, Wildlife Nagpur forwarded the proposal to Director General of Forest & Special Secretary, MOEF, NewDelhi.	31.1.2019
18	Observations & recommendations by NTCA.	22.2.2019
19	Letter from PCCF (Wildlife), Nagpur to Principal Secretary Forest, Mantralay Mumbai	4.5.2019
20	APCCF, Mantralay Mumbai forward letter to Director General of Forest & Special Secretary, MOEF, NewDelhi	6.5.2019
21	Office Memorandum issued by NTCA, New Delhi	11.7.2019
22	54th NBWL meeting	18.7.2019
23	Minutes of Meeting	29.8.2019
24	Wildlife proposal approved by Chief Wildlife Warden & PCCF, Wildlife Nagpur Maharashtra and requested for submission of 2 % amount in TATR, Chandrapur & Indrawati Tiger Reserve.	13.9.2019
25	Information to TATR, Chandrapur regarding deposition of 2% amount.	9.10.2019
26	Information to Indrawati Tiger Reserve regarding deposition of 2% amount.	4.11.2019

- Moreover, there was considerable delay in the construction activities in the stretch of line on encountering habitation of Vanhakka along the alignment of the line. A high-level Committee comprising of CCF- Forest Divisions, and other expert members was formed for suggesting mitigative measures including translocation and habitat improvement. The Vanhakka Committee suggested providing extensions of towers and compensation payments in the affected locations/areas.

Bellampally and Ramagiri RF Area:

Sl.No	Brief details of force majeure event	Date
1	Submission of online Forest Proposal Ref No.STRS-I/Engg./ESMD/2016/176	27.7.2016
2	Receipt of Stage I clearance (MoEF)	5.4.2018
3	Issuance of working permission by PCCF, Telangana	25.5.2018

Vellore District and Dharmapuri district Area:

S. No	Brief details of force majeure event	Date
1	Forest clearance application submitted	20.4.2017
2	Clarification received	5.6.2017
3	Reply to the clarification submitted	17.7.2017
4	On follow up and consecutive meeting with PCCF	25.9.2017 12.10.2017
5	The certificate on non-availability of alternate non-forest land, a pre-requisite in TN & FRA certificate received from DC Vellore	26.3.2018
6	The certificate on non-availability of alternate non-forest land, a pre-requisite in TN & FRA certificate received from DC Dharmapuri	10.5.2018
7	DFO Dharmapuri inspected the site and forwarded the recommendation to CF	18.5.2018
8	DFO Vellore inspected the site and forwarded recommendation to CF	17.5.2018
9	PCCF recommended the proposal to SG	18.5.2018
10	State Government recommended to RMOEFCC, GoI	21.5.2018
11	Stage 1 Forest clearance issued	7.6.2018
12	After stage-1 clearance, the demand from DFO, Dharmapuri & DFO, Vellore was received	14.8.2018 7.9.2018
13	PCCF office communicated to DFO, Dharmapuri to revise the demand	16.11.2018
14	PCCF communicated to DFO to revisit his demand	8.1.2019

S. No	Brief details of force majeure event	Date
15	Demand received from DFO, Dharmapuri	14.3.2019
16	Payment made by generating challan	30.4.2019
17	Stage-1 compliance forwarded by PCCF to State Government	31.7.2019
18	RMoEFCC sought clarification from forest department	5.9.2019
19	CGM (TN Projects) met Additional PCCF (Act) submitted and requested for issuance of clarification to RMoEF regarding stage-2 approval. and met Special Secretary (Forest) of TN Govt. & Energy Secretary and requested for issuance of working permission.	9.9.2019
20	Powergrid officials met the Special Secretary (Forest) of TN Govt. & PCCF (HoD, Forest) and requested for issuance of working permission.	13.9.2019
21	PCCF (HoD, Forest) sent a communication to Principal Secretary to Govt (Environment and Forest department)	24.9.2019
22	Request was submitted to the State Government to issue working permission and accordingly, working permission obtained from DFO, Vellore	16.10.2019
23	Powergrid officials met Dy. Director General of Forest (Central) (I/C) and requested for early issuance of Stage-2 forest clearance	24.10.2019
24	Stage 2 forest clearance issued by RMoEFCC	30.1.2020

- The Petitioner submitted the proposal for forest clearance on 18.4.2017, 27.7.2016 and 20.4.2017. Generally, the forest clearance is granted in 10-12 months. In the instant case, the proposal was approved on 31.10.2018, 28.5.2018 and 24.9.2019 (Stage-I). This led to delay of around 6 months to 17 months. The Petitioner has submitted the documentary evidence along with the Petition. The delay in forest clearance, wildlife clearance and livelihood rehabilitation from Forest Department had affected the starting phase of the line construction and spilled over as cascading effect and ultimately pushed the project timeline beyond its schedule completion target.

(iii) <u>RoW Issues throughout the stretch:</u>

- The transmission line is traversing through various districts of Chhattisgarh, Maharashtra, Telangana, Andhra Pradesh and Tamil Nadu. Due to increased industrialization and infra projects, an increasing number of severe RoW issues

were encountered right from the onset of transmission line works including during the stage of preliminary survey, line plotting and land scheduling. The RoW issues involved demand of exorbitant amount of crop compensation, land compensation, man-handling of gang workers, etc. Further, wherever possible, persuasive measures were adopted to pacify the land-owners/ villagers agitating against the line construction. However, at certain locations verbal persuasions did not suffice and eventually the help and assistance of district administration, police department was sought to mitigate the RoW issues. Many of the land-owners had also taken the course of Courts to oppose the construction of line through their premises.

- Intervention was also sought from State/ district /local authorities under Government of respective States as a bottom down approach to get the said issues resolved without further delay. The chronology of RoW issues faced and steps undertaken by the Petitioner for mitigating are submitted by the Petitioner in the petition.

- The Petitioner commenced the execution of the project of HVDC transmission lines in July, 2017 in the State of Tamil Nadu. The works were hampered due to severe agitation, posed by a group of people under the banner “Thamizhaga Vivasayigal Padhukappu Sangam”, Tiruppur District during the execution of construction activities in HVDC & HVAC lines. Severe protests/ agitations by farmers association hampered the construction activities in many of the districts on the following issues:

    - Emphasizing there is severe environmental issues.
    - Health hazards to animals/ human beings due to EMF caused by the overhead transmission line.

- Insisted to adopt alternative ways for overhead transmission line i.e., using the underground cable.
- Issues related to payment of full compensation towards crop/tree/land along right of way.
- Staged protest against implementation of overhead transmission line under the provision of Telegraph Act, 1885 and burning of the said Act copies in various districts to oppose high-tension line.

- The details of locations which faced severe RoW issue are given below. The Petitioner had submitted that the land owners filed numerous petitions before the District Collector and Writ Petitions before the High Court and in some cases before the Supreme Court and has also submitted the details of Writ Petitions like the date of filing and the date of disposal. The RoW issues were settelled by the Petitioner by 9.9.2020 by continuous follow-up with the State government authorities and deligently pursuing the Writ Petitions filed by the land owners before the High Court and the Supreme Court.

Srl. No.	**Location**	**Date of settlement of RoW issues**
1.	Re-alignment of line route in Thopalangunda Village, Natrampalli Taluk, Vellore district (TW09)	Tower erection completed in December, 2019
2.	Vellore District: Location: CM 54/0 (TW09)	Escalation work completed in 29.11.2019
3.	Vellore District: 132/0-133/0 (TW09)	Stringing work in January, 2020
4.	Krishnagiri District: Location Nos. MD14/0 and Corridor Nos. 10/0 – 15/0 (TW09)	**Jumpering work completed by 16.3.2020**
5.	Krishnagiri District: Location (26/0) & Corridor (25A/0-26/0) - (TW09)	Tower erection completed on 27.1.2019
6.	Dharmapuri District: Location (43/0, 44/0, 55/0 & 56/0) - (TW09)	Stringing completed in August, 2019
7.	Dharmapuri District: Loc 3/0 (TW10)	Stringing work completed on 3.10.2019
8.	Salem District: Loc.65/0 (TW10)	Stringing completed on 27.2.2020 and OPGW on 7.3.2020
9.	Salem District: Loc. 71/3 (TW10)	Stringing work completed in November, 2019
10.	Salem District: Loc.85/0, 87/0 (TW10)	Stringing work completed on 7.3.2020 and OPGW work on 15.3.2020
11.	Salem District: Loc.105/0 (TW10)	Tower erection work completed on 30.1.2020

12.	Salem District: Loc.106/0 & 108/0 (TW10)	Stringing work completed on 7.1.2020
13.	Salem District: corridor 149/0-150/0 (TW 10)	Stringing work completed on 24.2.2020
14.	Namakkal district: Loc. 160/1 (TW10)	Tower erection completed on 2.11.2019
15.	Namakkal District: Loc. 168/0 (TW10)	Tower erection completed on 7.1.2020 and Stringing on 30.1.2020
16.	Namakkal District: Loc 171/3 (TW 10)	Tower erection completed by November, 2019 and Stringing by February, 2020
17.	Namakkal District: Loc 178/3 (TW10)	Stringing work completed on 11.2.2020 and OPGW and jumpering work on 29.2.2020
18.	Erode District: (TW10)	-
19.	Erode District: Loc:185/4 (TW10)	Stringing by September, 2019 and OPGW by December, 2019
20.	Tiruppur District: (Re-location of the tower) Loc. 218/3 (TW10)	Stringing in January, 2020
21.	Tiruppur District: Loc. 225/2, 225/4, 255/5 (TW10)	Stringing on 9.2.2020

(iv) <u>Delay due to Court Cases:</u>

Besides the agitation at sites, 91 number of Writ Petitions were filed against the projects of the Petitioner and TANTRANSCO before the Hon'ble High Courts and other forums on one pretext or the other to sabotage the works at the behest of a group with vested interests in order to thwart the public purpose project. Out of 91 cases, 73 case were disposed of while 18 cases are still under proceedings at different courts. Works were stopped by land-owners referring to persisting court cases. However, all such cases were effectively handled and orders obtained in favour of the Petitioner and TANTRANSCO. Apart from above, the construction work of the Petitioner remained stranded from 29.5.2019 to 26.6.2019 on account of Writ Petition No. 15077 of 2019; Writ Appeal No. 2167 of 2019 arising out of Writ Petition No. 15077 of 2019 from 16.7.2019 to 29.7.2019; Petition No. 59-A/18/2018 filed before the Civil Judge at Raigarh from 11.6.2018 to 25.9.2018 and Writ Petition No. 468 of 2019 filed before

High Court of Chattisgarh at Bilaspur from 7.2.2019 to 20.6.2019. The work of the Petitioner remained hampered due to the following pending cases:

(i) From 12.2.2019 to till date viz- MCA Nos. 27 of 2019, 28 of 2019 and 29 of 2019 at District Court, Chandrapur, W.P. No. 1709 to 2019 before Hon'ble High Court of Chattisgarh at Bilaspur.

(ii) Writ Petition No. 1709 of 2019 before High Court of Chattisgarh at Bilaspur from 5.5.2019 to till date. (However, work completed with the help of Administration).

(iii) Contempt Petition (Civil) No. 424 of 2019 from 12.6.2019 to till date (However, work completed with the help of Administration).

Objection removal petitions filed by the Petitioner before District Collectors:

Objections were raised by the land-owners and to deal with the same, objection removal petitions were filed for the following locations under Section 16(1) of Indian Telegraph Act, 1885 before the concerned District Collectors to issue enter upon order/permissions to carry out the construction works. The details of the petitions filed are as follows:

Vellore District: Filed petition for 10 locations
Krishnagiri District: Filed petition for 11 locations
Dharmapuri District: TW09 – Filed petition for 08 locations
TW10 - Filed petition for 06 locations/stringing stretch
Salem District: Petition filed for 41 locations
Erode District: Petition filed for 46 locations
Namakkal District: Petition filed for 65 locations
Tirrupur District: Filed petition for 26 locations

(v) **Delay due to COVID-19 Pandemic:**

- Due to Covid 19 Pandemic, the Government imposed lock down throughout the country for around 3-4 months which restricted the movement from one place to another. The movement and restrictions affected the suppliers chain, transportation shortage, workers absenteeism due to illness/quarantine/migration labour shortages which resulted in decrease in output and delayed all country-wide ongoing projects. The lock-down imposition was unavoidable and complicating things further. The site was closed or access was restricted as a result of measures to contain the COVID-19 outbreak. The contractor was not able to carry out the works as a result of action by Governments to prevent the spread of the outbreak.

39. The Petitioner has submitted that time over-run was mainly due to Court cases during award of the HVDC terminal contract, late receipt of forest approvals, severe ROW problems and court cases in construction of transmission line and COVID-19 pandemic. The Petitioner has submitted that the above unforeseen delay reasons may be condoned on merits as the same were out of control of Petitioner and are covered under Regulation 22(2)(c) of the 2019 Tariff Regulations.

40. MPPMCL has submitted that the Petitioner has mentioned time over-run is because of various issues like Court cases, forest clearance approvals and various RoW issues etc. The Petitioner has not submitted any documentary evidence to resolve the RoW issues with the help of local administration. The delay in completion is basically due to lethargic approach of the Petitioner. Had the Petitioner approached timely to the District Administration, the RoW issues would have been resolved earlier. The Petitioner has also not submitted any documentary evidence which caused delay in obtaining

forest aspproval. Therefore, MPPMCL has submitted that delay due to RoW issues are solely attributed to the Petitioner and, therefore, prayed that delay on this ground may not be condoned.

41. In response, the Petitioner has reiterated and relied on the facts as set out by it in the petition. The Petitioner has further submitted that details of time over-run and supporting documents have already been submitted along with the petition. PERT and CPM chart i.e. planned as against actual have already been submitted vide affidavit dated 11.8.2021.

42. KSEB has submitted that the Petitioner has claimed delay was due to RoW issues, forest clearance, wildlife clearance and livelihood rehabilitation from forest department and the delay in getting clearance from forest department and revenue authorities could have been avoided and controlled.

43. In response, the Petitioner has reiterated reasons for time over-run as submitted in rejoinder to the reply of MPPMCL. Further, the details of execution of other assets under the Transmission Scheme 1, Scheme 2 and Scheme 3 have already been submitted alongwith the relevant minutes of meeting with SR constituents and CEA vide affidavit dated 8.9.2021.

44. TANGEDCO has submitted that COD of the transmission asset has to be declared matching with COD of Scheme–II i.e. AC System strengthening at Pugalur end. TANGEDCO has further submitted that execution of transmission lines, RoW issues, Court cases litigation are common and they are not force majeure conditions.

Hence, the reasons given by the Petitioner are unjustifiable and delay may not be condoned.

45. Similar issues on time over-run have been raised by TSSPDCL and TNPDCL as were raised by TANGEDCO in its reply. Therefore, the issues as raised by TSSPDCL and TNPDCL are not being repeated here once again for brevity.

46. In response, the Petitioner has reiterated the submissions as made in rejoinder to the reply of MPPMCL. The Petitioner has further referred to the provisions of Regulation 22(2) of the 2019 Tariff Regulations to submit that delay was on account of uncontrollable factors which were beyond the control of the Petitioner.

47. The Petitioner vide affidavit dated 8.9.2021 in response to technical validation letter has made the following additional submissions on time over-run:

a) The assets ± 800 kV, 6000 MW Raigarh – Pugalur – Trichur HVDC Transmission System was discussed in 37th SCPSPSR held on 31.7.2014. The scheme was again discussed and agreed in the Joint Standing Committee meeting of SR & WR constituents held on 20.4.2015. Scheme details are as follows:

   i. Scheme # 1: Raigarh-Pugalur 6000 MW HVDC System
   ii. Scheme # 2: AC System strengthening at Pugalur end
   iii. Scheme # 3: Pugalur- Trichur 2000 MW VSC Based HVDC System

b) In the Joint Standing Committee meeting, it had been decided that the transmission schemes may be implemented as separate schemes. However, it is important that the Scheme 2 and Scheme 3 should be in place before execution of 6000 MW Raigarh-Pugalur link. Further, the Raigarh-Pugalur-

Trichur HVDC transmission scheme was further discussed in the 39th meeting of SCPSRSR held on 28-29 December, 2015. In the meeting, it had been agreed that schedule of Scheme 3 viz. Pugalur-Trichur 2000 MW VSC based HVDC System shall be kept with Bi-Pole-II (i.e. 3000 MW) of Scheme 1. It had also been decided in the 39th SCPSPSR meeting that in case of any mismatch in the execution of these schemes, their usefulness shall be discussed with CEA before their execution.

c) The Petitioner has further submitted that execution of Scheme 2: AC System strengthening at Pugalur end and Scheme 3 viz. Pugalur-Trichur 2000 MW VSC based HVDC link was delayed due to severe RoW in the areas of States Tamilnadu and Kerala. The assets a) 400 kV Pugalur (HVDC Station) - Pugalur (Existing) (Quad) D/C transmission line along with associate ed bays at Pugalur (HVDC Station) and Pugalur (Existing) Sub-station and b) 400 kV Pugalur (HVDC Station) – Arasur (Quad) D/C transmission line along with associated bays at Pugalur (HVDC Station) and Arasur station is covered under Petition No. 693/TT/2020.

d) The execution of Scheme 2: AC System strengthening at Pugalur end and Scheme 3 viz. Pugalur-Trichur 2000 MW VSC based HVDC link was delayed due to sever ROW in the areas of States Tamil Nadu and Kerala. The assets are a) 400 kV Pugalur (HVDC Station)-Pugalur (Existing) (Quad) D/C transmission line along with associated bays at Pugalur (HVDC Station) & Pugalur (Existing) Sub-station and b) 400 kV Pugalur (HVDC Station)-Arasur (Quad) D/C transmission line along with associated bays at Pugalur (HVDC Station) & Arasur station is covered under Petition No. 693/TT/2020.

e) Accordingly, on 21.8.2020 meeting was convened by CEA/constituents to discuss the issue of part execution of Raigarh-Pugalur-Trichur HVDC transmission system. After discussion, it was agreed that Scheme 1 (Phase I: ± 800 kV, 1500 MW HVDC terminal at Raigarh and Pugalur of Bipole-I) along with ± 800 kV, 6000 MW Raigarh-Pugalur HVDC transmission link shall be executed alongwith Scheme 2: 400 kV D/C Pugalur (HVDC)-Pugalur (existing) transmission line and 400 kV D/C Pugalur (HVDC)-Arasur transmission line. Therefore, the Petitioner had put the transmission asset: ± 800 kV 6000 MW Raigarh (HVDC Station)-Pugalur (HVDC Station) HVDC link alongwith ±800 kV 1500 MW (Pole-I) HVDC terminals each at Raigarh (HVDC Station) and Pugalur (HVDC Station) under commercial operation w.e.f. 6.9.2020. The minutes of CEA meeting have already been placed on record before the Commission vide affidavit dated 11.8.2021.

48. We have considered the submissions of the Petitioner, MPPMCL, KSEB, TANGEDCO, TSSPDCL and TNSPDCL. We have also gone through the documentary evidence placed on record by the Petitioner to justify time over-run. The transmission assets were scheduled to be put into commercial operation within 42 months from the date of IA dated 5.5.2016. Accordingly, the scheduled COD was 5.11.2019. However, the transmission asset was put into commercial operation on 6.9.2020. Therefore, there is time over-run of 306 days in execution of the transmission asset.

49. The Petitioner has attributed time over-run due to court cases in award of HVDC terminal contract, delay in getting forest clearance in Gadchiroli-Chandrapur, Bellampalli, Ramgiri, Vellore and Dharampuri for HVDC transmission line, Right of Way (RoW), law and order problems during construction of transmission lines, litigations

and Covid 19 Pandemic. Further, the Petitioner vide affidavit dated 11.8.2021 has submitted the details of the activites as planned and their actual execution, which are as follows:

Particulars	**Planned**		**Actual**	
	From	**To**	**From**	**To**
HVDC Bipole link between WR (Raigarh, Chhattisgarh) and SR (Pugalur, TM)-North Trichur (Kerala)-Scheme-I: Raigarh-Pugulur 600 MW HVDC System	**5.5.2016**	**5.11.2019**	**5.5.2016**	**6.9.2020**
Investment Approval	5.5.2016	5.5.2016	5.5.2016	5.5.2016
± 800 kV Raigarh (HVDC Stn.)-Pugalur (HVDC Stn.) HVDC Bipole link	**6.5.2016**	**4.5.2019**	**27.7.2016**	**14.5.2020**
NOA/LOA	6.5.2016	5.9.2016	31.3.2017	8.6.2017
Forest Clearance Submission and Approval	7.11.2016	6.9.2017	27.7.2016	24.9.2019
Supplies	5.12.2016	5.3.2019	9.5.2017	30.9.2019
Foundation	4.1.2017	4.12.2018	25.5.2017	31.12.2019
Tower Erection	4.4.2017	5.2.2019	25.9.2017	19.3.2020
Stringing	5.9.2017	4.4.2019	23.1.2018	31.3.2020
Testing & Pre-Commissioning	5.4.2019	4.5.2019	25.2.2020	14.5.2020

Particulars	Planned		Actual	
	From	To	From	To
800 kV HVDC Raigarh Station with 600 MW HVDC Terminal	**6.5.2016**	**5.11.2019**	**8.6.2016**	**6.9.2020**
NOA	6.5.2016	6.7.2016	8.6.2016	25.1.2017
Supplies	6.2.2017	6.5.2019	29.6.2017	27.7.2019
Civil work and Erection	6.12.2016	5.6.2019	5.5.2017	30.11.2019
System Testing & Pre-Commissioning	**5.4.2019**	**4.10.2019**	**24.6.2019**	**11.12.2019**
Pole-I with HVDC Link	5.4.2019	4.7.2019	24.6.2019	11.12.2019
Final execution of Pole-I	**7.10.2019**	**5.11.2019**	**16.5.2020**	**6.9.2020**

Delay in placing the NOA due to Court case

50. One of the bidders, a joint venture of ABB AB and BHEL filed a Writ Petition before the Delhi High Court on 13.5.2016 and the same was disposed on 6.1.2017. As per the submissions of the Petitioner, NOA was planned to be issued from 6.5.2016 to 5.9.2016. However, the NOA could be placed during 31.3.2017 to 8.6.2017. Thus, there is delay in placing of NOA by around 8 months due to court case and this delay cannot be attributed to the Petitioner.

Delay in grant of forest clearance

51. The Petitioner has submitted that the transmission line is traversing through 5 States i.e. Chhattisgarh, Maharashtra, Telangana, Andhra Pradesh and Tamil Nadu. The total line length is 1765 km (approximate) and the total forest area involved is 462.327 Ha. The transmission line encountered five forest divisions which are spread in over 5 number of districts i.e. Gadchiroli Reserve Forest, Bellampalli Reserve Forest, Ramgiri Reserve forest, Vellore and Dharampuri. The details of the proposal, submission of forest clearance and stage-I and Stage-II clearance obtained by the Petitioner are as follows:

Forest	Area	Proposal Submission date	Stage-I clearance	Stage-II clearance	Time taken	As per the Forest (Conservation) Amendment Rules, 2004 timeline for forest approval	Time condonable
GadchiroII Reserve Forest	432.6791	18.4.2017	31.10.2018	29.9.2020	1260	300	960
BellampalII Reserve Forest	5.482	27.10.2016	28.5.2018	28.9.2020	1432	300	1132
Ramgiri Reserve forest	15.044	27.7.2016	28.5.2018	28.9.2020	1524	300	1224
Vellore	2.76	20.4.2017	24.9.2019	30.1.2020	1015	300	715
Dharampuri	6.36	20.4.2017	24.9.2019	30.1.2020	1015	300	715

52. The Petitioner applied for grant of forest clearance on 18.4.2017, 27.7.2016 and 20.4.2017 in Gadchiroli, Bellampally & Ramgiri Area and Vellore & Dhramapuri District areas respectively. As per the Forest (Conservation) Amendment Rules, 2004 notified by Ministry of Environment & Forests on 3.2.2004, the timeline for forest approval after submission of proposal is 210 days by the State Government and 90 days by the Forest

Advisory Committee of Central Government, resulting in processing time of 300 days. As against the statutory period of 300 days for processing and obtaining the forest clearance, the forest authorities have taken additional time of 960 days in case of Gadchiroli Reserve Forest, 1132 days for Bellampalli Reserve Forest,1224 days for Ramgiri Reserve forest and 715 days for Vellore and Dharampuri for issuing forest clearance. We are of the view that the time taken beyond the mandatory period of 300 days, which in the present case is upto 30.1.2020, is beyond the control of the Petitioner.

Time over-run due to RoW issues

53. The third reason given by the Petitioner for time over-run is serious RoW issues faced by the Petitioner right from the beginning of the transmission line works which included preliminary survey, line plotting, line scheduling, demand of exorbitant amount of crop compensation, land compensation by land-owners, manhandling of gang workers etc. The detailed account of the RoW issues is given in paragraph 38 above. It is apparent that land-owners filed numerous petitions before the District Collector and Writ Petitions before the Hon'ble High Court and Hon'ble Supreme Court. From the submissions of the Petitioner and documents on record, we find that the Petitioner faced RoW issues from 16.6.2017 till 9.2.2020. We also note that foundation, tower erection and stringing were envisaged to begin on 5.9.2017 and were to be completed by 4.4.2019. However, the Petitioner was able to resolve the RoW issues and thereafter could complete the stringing work by 16.3.2020. The RoW issues persisted upto 9.2.2020 and only thereafter the Petitioner could complete the stringing work by 16.3.2020. Thus, the period from 16.6.2017 to 16.3.2020, in our opinion is beyond the control of the Petitioner on account of persisting RoW issues and Court cases.

54. As stated above, the transmission asset was scheduled to be put into commercial operation on 5.11.2019 and it was put into commercial operation on 6.9.2020. Thus, there is a time over-run of 306 days. It is evident from the above discussion that the implementation of the transmission asset was affected by various court cases initially at the time of issue of NOA and latter while construction of the transmission line. Apart from this, there was delay in grant of forest clearance. It is observed that the first Court case was filed by one of the bidders before the Delhi Court High Court on 13.5.2016 that was disposed on 6.1.2017. Further, numerous Court cases were filed by the land owners seeking more compensation before various forums starting from 16.6.2017 and the Petitoner could resolve them only by 30.1.2020. Besides this, as stated above there was considerable delay in grant of forest clearance and the last Stage-I clearance was granted on 24.9.2019. However, the time taken for grant of forest clearance is subsumed by the time taken for resolving the RoW issues. Thus, the Petitioner faced serious issues from 13.5.2016 to 30.1.2020, i.e. more than three years and thereafter the Petitioner could complete the stringing finally on 16.3.2020. We are of the view that the issues faced by the Petitioner from 13.5.2016 to 24.9.2019, as enumerated above, are beyond the control of the Petitioner and accordingly the time over-run from 6.11.2019 upto 16.3.2020 (completion of stringing), i.e. 133 days is condoned.

COVID 19 Pandemic

55. In March, 2020 Covid-19 pandemic broke out in the country due to which the Government imposed strict lock down as a result of which transportation services such as road, air and railways were suspended with exception of essential goods and emergency services and strict restrictions were imposed for movement from one place to another. The restriction on movement imposed affected suppliers' chains of supply,

led to transporation shortage and resulted in worker absenteeism due to illness/quarantine/migrant labour shortages. Thus, the sites were closed on account of Covid-19 outbrek restrictions imposed by the Government of India. The Government unlocked Covid-19 restrictions on 31.8.2020. The Petitioner has submitted that after unlock of Covid-19 restrictions, the Petitioner declared COD of the transmission asset on 6.9.2020.

56. It is observed that Government of India, Ministry of Finance, Department of Expenditure, Procurement Policy Division, vide Office Memorandum No. F.18/4/2020-PPD dated 13.5.2020 extended the contracts for a period of three months to six months from 20.2.2020 due to prevailing force majeure conditions. The relevant portion of the O.M. dated 20.2.2020 is extracted hereunder:

> *"4. It is recognized that in view of the restrictions placed on the movement of goods, services and manpower on account of the lock-down situation prevailing overseas and in the country in terms of the guidelines issued by the MHA under the DM Act, 2005 and the respective State and UT Governments, it may not be possible for the parties to the contract to fulfil contractual obligations. In respect of Public-Private Partnership (PPP) concession contracts, a period of the contract may have become unremunerative. Therefore, after fulfilling due procedure and wherever applicable parties to the contract may invoke FMC for all construction/works contracts, goods and services contracts and PPP contracts with Government Agencies and in such event, date for completrion of contractual obligations which had to be completed on or after 20th February, 2020 shall stand extended for a period of not less than three months and not more than six months without impostion of any cost or penalty on the contractor/concessionaire. Concession period in PPP contracts ending on or after 20th Febuary, 2020 shall be extended by not less than three and not more than six months. The period of extension (between three and six months) may be decided based on the specific circumstances of the case and the period for which performance was affected by the force majeure events."*

57. Taking into consideration the OM dated 13.5.2020 on force majeure and the fact that Government unlocked the Covid-19 restrictions on 31.8.2020 and thereafter the Petitioner declared COD of the transmission asset on 6.9.2020. In view of the facts and circumstances of the case, we condone the time over-run of 173 days from 17.3.2020 to 5.9.2020 on account of Covid-19 pandemic as the same falls under Regulation 22(2)

of the 2019 Tariff Regulations and is beyond the control of the Petitioner. Accrodingly, we condone the total time over-run of 306 days in case of the instant transmission asset.

Interest During Construction (IDC) and Incidental Expenditure During Construction (IEDC)

58. The Petitioner has claimed IDC in respect of the transmission asset covered in the instant petition and has submitted statement showing IDC claim, discharge of IDC liability as on COD and thereafter are as follows:

(₹ in lakh)

IDC as per Auditor's Certificate	IDC Discharged upto COD	IDC discharged during 2020-21	IDC discharged during 2021-22
62659.78	58689.85	2966.74	1003.19

59. The Petitioner vide affidavit dated 15.12.2021 has submitted the revised submission with regard to IDC and the same is as follows:

(₹ in lakh)

IDC as per Auditor's Certificate	IDC Discharged upto COD	IDC discharged during 2020-21	IDC discharged during 2021-22
62625.43	58659.87	2996.73	968.83

60. BESCOM has submitted that as per IA, the transmission scheme was scheduled to be executed within 42 months from the date of approval of the Board of Directors i.e.5.5.2016, hence SCOD was 5.11.2019. Against this, the transmission asset was put under commercial w.e.f. 31.8.2020. Hence, there is time over-run of 9 months and 13 days in execution of the transmission asset. Therefore, due to time over-run, allowable IDC and IEDC need to be considered in relation to SCOD and not as on the date of actual COD of the transmission asset.The Petitioner has indicated that ₹16397 lakh additional cost has been incurred due to delay in execution of the transmission asset.

BESCOM has further submitted that this will have a major impact on the transmission charges and, therefore, requested to consider IDC and IEDC form the original SCOD.

61. In response, the Petitioner has reiterated the submission made with respect to the reasons for time over-run.

62. We have considered the submissions of the Petitioner and BESCOM. As discussed above in this order, time over-run in execution of the transmission asset has been fully condoned. Accordingly, IDC on cash basis up to COD has been worked out on the basis of the loan details given in the statement showing discharge of IDC and Form-9C in respect ofthe transmission asset. The Petitioner is directed to submit reconciliation of ADB loan applied to this project with petition-wise and asset-wise details of loans deployed along with computation of IDC at the time of truing-up.IDC claimed and considered as on COD and summary of discharge of IDC liability up to COD and thereafter for the purpose of tariff determination in respect of the transmission asset is as follows:

(₹ in lakh)

IDC as per Auditor's Certificate	**IDC disallowed due to computa-tional difference**	**IDC Allowed**	**Undis-charged IDC**	**IDC allowed on COD**	**IDC discharged in 2020-21**	**IDC discharged in 2021-22**
62625.43	3229.25	59396.18	4107.39	55288.79	2557.04	1550.34

63. The Petitioner has claimed IEDC in respect of the transmission asset as per the Auditor's Certificate.The Petitioner has further submitted that the entire amount of IEDC in respect ofthe transmission asset has been discharged up to COD. As the time over-run for the transmission asset has been condoned completely, there is no disallowance

of IEDC. Accordingly, details of IEDC claimed as per Auditor's Certificate and IEDC allowed is as follows:

(₹ in lakh)

IEDC as per Auditor'sCertificate (A)	IEDC disallowed (B)	IEDC allowed (C=A-B)
33971.36	0.00	33971.36

Initial Spares

64. Regulation 23(d) of the 2019 Tariff Regulations provides that Initial Spares shall be capitalised as a percentage of plant and machinery cost up to cut-off date, subject to the following ceiling norms:

"(d) Transmission System
i. Transmission line: 1.00%
ii. Transmission sub-station
- *Green Field: 4.00%*
- *Brown Field: 6.00%*

iii. Series Compensation devices and HVDC Station: 4.00%
iv. Gas Insulated Sub-station (GIS)
- *Green Field: 5.00%*
- *Brown Field: 7.00%*

v. Communication System: 3.50%
vi. Static Synchronous Compensator: 6.00%"

65. Initial Spares as claimed by the Petitioner vide affidavit dated 15.12.2021 are as follows:

(₹ in lakh)

Particulars	Plant and machinery cost as on cut-off Date	Initial Spares Capitalised as per Books of Account up to Cut-off Date	Initial Spares Claimed (in %)	Ceiling as per Regulation
	A	B		C
Transmission Line	572938.66	6034.53	1.06%	1.00%
Sub-station (HVDC)	215363.42	7958.62	3.84%	4.00%
PLCC	7670.03	512.61	7.16%	3.50%

66. Initial Spares dischargewith respect to transmission asset as per Form-13 submitted by the Petitioner vide affidavit dated 15.12.2021is as follows:

Particulars	Initial Spares Claimed	Initial Spares Discharge			
		As on COD	2020-21	2021-22	Total
Transmission Line	6034.53	5387.58	48.83	598.12	6034.53
Sub-station (HVDC)	7958.62	3035.86	4922.76	0.00	7958.62
PLCC	512.61	217.99	294.62	0.00	512.61

67. TANGEDCO, TSSPDCL and TNSPDCL have submitted that the Petitioner in the petition has submitted that the Initial Spares for transmission line is marginally high i.e., 1.24% compared to the ceiling of 1% as per Regulation 23 of the 2019 TariffRegulations. TANGEDCO, TSSPDCL and TNSPDCL have submitted that this is not acceptable and requested to restrict the Initial Spares as per Regulation.

68. BESCOM has submitted that Initial Spares as per the Tariff Regulations are allowed only for 1%, as against the claim of the Petitioner for 2.21% relying on the provisions of Power to Relax and Power to Remove Difficulty. Hence, this claim deserves to be disallowed.

69. In response, the Petitioner has submitted that Initial Spares for HVDC sub-stations covered under the petition are within the specified limit under Regulation 23 of the 2019 Tariff Regulations. However, Initial Spares for transmission line is marginally high as per Regulation 23 of the 2019 Tariff Regulations. The Petitioner has requested to allow the Initial Spares as claimed in the instant petition.

70. We have considered the submissions of Petitioner and the Respondents, BESCOM, TANGEDCO, TSSPDCL and TNSPDCL. The Petitioner has claimed the Initial Spares of PLCC separately. The Commission vide order dated 24.1.2021 in

Petition No.126/TT/2020 has already considered PLCC to be a part of sub-station. Therefore, the Initial Spares have been computed by combing the cost of both PLCC and sub-station and allowed as per the norms specified for sub-station in the 2019 Tariff Regulations. The Petitioner has claimed excess Initial Spares of transmission line under Power to Relax and Power to Remove Difficulty. However, the Petitioner has not justified excess claim for Initial Spares towards the transmission line. Therefore, Initial Spares claimed towards transmission line is restricted to ceiling of 1%.

71. Initial Spares in respect ofthe transmission asset are allowed as per respective percentage of the plant and machinery cost as on the cut-off date on individual basis. Initial Spares allowed in respect ofthe transmission asset are as follows:

Particulars	Plant and Machinery cost (excluding IDC/IEDC, land cost & Cost of Civil Works) (₹ in lakh)	Initial Spares claimed (₹ in lakh)	Norms as per 2019 Tariff Regulations (in %)	Initial Spares allowable (₹ in lakh)	Initial Spares disallowed (₹ in lakh)	Initial Spares Allowed (₹ in lakh)
	A	B	C	D=(A-B)*C/(100-C)	E=B-D	
Transmission Line	572938.66	6034.53	1.00%	5726.30	308.23	5726.30
Sub-station (HVDC) and PLCC	223033.45	8471.23	4.00%	8940.09	NIL	8471.23

72. The capital cost allowed as on COD in respect of the transmission asset after adjusting excess Initial Spares and disallowed/undischarged IDC is as follows:

(₹ in lakh)

Capital Cost claimed as on COD (Auditor's Certificate) (A)	IDC disallowed (B)	Undischarged IDC (C)	Capital Cost as on COD (D=A-B-C)
878821.09	3229.25	4107.39	871484.45

Additional Capital Expenditure ("ACE")

73. Regulation 24 and Regulation 25 of the 2019 Tariff Regulations provide as follows:

*"**24. Additional Capitalisation within the original scope and upto the cut-off date***

25. *The additional capital expenditure in respect of a new project or an existing project incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:*

(a) Undischarged liabilities recognized to be payable at a future date;
(b) Works deferred for execution;
(c) Procurement of initial capital spares within the original scope of work, in accordance with the provisions of Regulation 23 of these regulations;
(d) 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;
(e) Change in law or compliance of any existing law; and
(f) Force Majeure events:

Provided that in case of any replacement of the assets, the additional capitalization shall be worked out after adjusting the gross fixed assets and cumulative depreciation of the assets replaced on account of de-capitalization.

(2) The generating company or the transmission licensee, as the case may be shall submit the details of works asset wise/work wise included in the original scope of work along with estimates of expenditure, liabilities recognized to be payable at a future date and the works deferred for execution.

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:

(g) 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;
(h) Change in law or compliance of any existing law;
(i) Deferred works relating to ash pond or ash handling system in the original scope of work;
(j) Liability for works executed prior to the cut-off date;
(k) Force Majeure events;
(l) Liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments; and
(m) 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 obsolescence of technology; and

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

74. The Petitioner has claimed that ACE incurred/projected to be incurred is mainly on account of balance/retention payments, hence the same is claimed under Regulation 24(1)(a) and Regulation 24(1)(b) of the 2019 Tariff Regulations. The Petitioner vide affidavit dated 15.12.2021 in respect of the transmission asset has claimed capital cost as on 31.3.2024 and the same is as follows:

(₹ in lakh)

FR approved cost	Capital cost up to COD	Projected ACE				Capital Cost as on 31.3.2024
		2020-21	2021-22	2022-23	2023-24	
965798.73	874948.82	52765.62	20627.91	987.88	71.03	949401.26

75. The Petitioner vide affidavit dated 15.12.2021 has updated the claimed capital cost as on 31.3.2024 and the same is as follows:

(₹ in lakh)

FR approved cost	Capital cost up to COD	Projected ACE				Capital Cost as on 31.3.2024
		2020-21	2021-22	2022-23	2023-24	
965798.73	878821.09	20463.91	40218.82	4141.41	71.03	943716.26

76. MPPMCL has submitted that the Petitioner has claimed ACE under Regulation 24(1) of the 2019 Tariff Regulationson account of balance/retention payment without providing proper details and justification. MPPMCL has further submitted that the claims of the Petitioner may be allowed in true-up on the basis of actual.

77. In response, the Petitioner has submitted that ACE claimedis on account of balance and retention payments as well as balance work under Regulation 24(1)(a) and Regulation 24(1)(b) of the 2019 Tariff Regulations. Accordingly, contractor wise details of the ACE (liabilities flow statement) claimed including details of balance and retention payments havealready been submitted vide affidavit dated11.8.2021 and has requested to allow the same as claimed.

78. TANGEDCO, TSSPDCL and TNSPDCL have submitted that the Petitioner has submitted that ACE incurred/ projected to be incurred in respect of the transmission asset is mainly on account of balance/ retention payments, hence, the same may be allowed by the Commission under Regulation 24(1)(a) and Regulation 24(1)(b) of the 2019 Tariff Regulations. TANGEDCO, TSSPDCL and TNSPDCL has requested the Commission to direct the Petitioner to submit the liability flow statement and details of the works deferred for execution.

79. BESCOM has submitted that ACE incurred/ projected to be incurred in the context of the transmissionasset is mainly on account of balance/retention paymentswhich can only be allowed as per Regulation 24(1)(a) and Regulation 24(1)(b) of the 2019 Tariff Regulations.

80. In response, the Petitioner has submitted that ACE claimed by the Petitioner is on account of balance and retention payments as well as balance work under Regulation 24(1)(a) and Regulation 24(1)(b) of the 2019 Tariff Regulations. Accordingly, the contractor wise details of ACE (liabilities flow statement) claimed including details of balance and retention payments have already been submitted vide affidavit dated 11.8.2021and the same may be allowed as claimed.

81. We have considered the submissions made by the Petitioner and the Respondents, MPPMCL, TANGEDCO, BESCOM, TSSPDCL and TNSPDCL. ACE claimed by the Petitioner has been allowed towardsbalance and retention payments as well as balance workunder Regulation 24(1)(a) and Regulation 24(1)(b) of the 2019 Tariff Regulations.Accordingly,ACE allowed in respect of the transmission asset for 2019-24 period is as follows:

(₹ in lakh)

ACE 2019-24				
Particulars	**2020-21**	**2021-22**	**2022-23**	**2023-24**
ACE claimed as per Auditor's Certificate	20463.91	40218.82	4141.41	71.03
Add: IDC Discharged	2557.04	1550.34	0.00	0.00
Less: Initial Spares Disallowed	0.00	308.23	0.00	0.00
ACE allowed	**23020.95**	**41460.93**	**4141.41**	**71.03**

82. Capital cost considered in respect ofthe transmission asset for 2019-24 tariff period is as follows:

(₹ in lakh)

Capital Cost as on COD	**ACE 2019-24**				**Capital Cost as on 31.3.2024**
	2020-21	**2021-22**	**2022-23**	**2023-24**	
871484.45	**23020.95**	**41460.93**	**4141.41**	**71.03**	**940178.78**

Debt-Equity ratio

83. Regulation 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."

84. Debt-equity ratio considered for the purpose of computation of tariff for 2019-24 tariff periodin respect ofthe transmission asset is as follows:

Particulars	Capital Cost as on COD (₹ in lakh)	(in %)	ACE during 2019-24 (₹ in lakh)	(in %)	Capital Cost as on 31.3.2024 (₹ in lakh)	(in %)
Debt	610039.12	70.00	48086.03	70.00	658125.15	70.00
Equity	261445.34	30.00	20608.30	30.00	282053.63	30.00
Total	**871484.45**	**100.00**	**68694.33**	**100.00**	**940178.78**	**100.00**

Depreciation

85. 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 assets 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 assets.

(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 upto 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."

86. Depreciation has been worked out considering the admitted capital expenditure as on COD. The weighted average rate of depreciation (WAROD) has been worked as

per the rates of depreciation prescribed in the 2019 Tariff Regulations and WAROD is placed in the Annexure. Depreciation allowed in respect ofthe transmission asset is as follows:

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Depreciation				
Opening Gross Block	871484.45	894505.41	935966.34	940107.75
ACE	23020.95	41460.94	4141.41	71.03
Closing Gross Block	894505.41	935966.34	940107.75	940178.78
Average Gross Block	882994.93	915235.87	938037.05	940143.27
Freehold Land	1926.52	1926.52	1926.52	1926.52
Weighted average rate of Depreciation (WAROD) (in %)	5.27	5.27	5.27	5.27
Balance useful life of the asset (Year)	32	32	31	30
Lapsed life at the beginning of the year (Year)	0	0	1	2
Aggregate Depreciable Value	793699.36	822746.89	843297.55	845193.15
Combined Depreciation during the year	**26404.06**	**48232.73**	**49407.28**	**49515.32**
Aggregate Cumulative Depreciation	26404.06	74636.79	124044.07	173559.38
Remaining Aggregate Depreciable Value	767295.30	748110.11	719253.48	671633.76

Interest on Loan ("IoL")

87. 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 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 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."

88. The Petitioner has claimed the weighted average rate of IoL, based on its actual loan portfolio and rate of interest. Accordingly, IoL has been calculated based on actual interest rate submitted by the Petitioner, in accordance with Regulation 32of the 2019Tariff Regulations. IoL allowed in respect of the transmission asset for 2019-24 tariff period is as follows:

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Interest on Loan				
Gross Normative Loan	610039.12	626153.78	655176.44	658075.43
Cumulative Repayments upto Previous Year	0.00	26404.06	74636.79	124044.07
Net Loan-Opening	610039.12	599749.73	580539.65	534031.36
Additions	16114.67	29022.66	2898.99	49.72
Repayment during the year	26404.06	48232.73	49407.28	49515.32
Net Loan-Closing	599749.73	580539.65	534031.36	484565.76
Average Loan	604894.42	590144.69	557285.51	509298.56
Weighted Average Rate of Interest on Loan (in %)	4.1515	4.1615	4.1782	4.1828
Interest on Loan	**14241.70**	**24558.93**	**23284.31**	**21303.12**

Return on Equity ("RoE")

89. 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 cutoff date beyond the original scope, excluding additional capitalization on 7 account of emission control system, 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:

Rate of pre-tax return on equity = 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:

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."

90. The Petitioner has submitted that MAT rate is applicable to it. Accordingly, MAT rate applicable in 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 in respect of the transmission asset has been worked out and allowed as follows:

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Return on Equity				
Opening Equity	261445.34	268351.62	280789.90	282032.33
Additions	6906.29	12438.28	1242.42	21.31
Closing Equity	268351.62	280789.90	282032.33	282053.63
Average Equity	264898.48	274570.76	281411.11	282042.98
Return on Equity (Base Rate) (in %)	15.500	15.500	15.500	15.500
MAT Rate for respective year (in %)	17.472	17.472	17.472	17.472
Rate of Return on Equity (in %)	18.782	18.782	18.782	18.782

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Return on Equity	**28216.22**	**51569.88**	**52854.64**	**52973.31**

Operation & Maintenance Expenses ("O&M Expenses")

91. The Petitioner has submitted that O&M Expenses for 800kV HVDC line and HVDC terminal havebeen calculated as per Regulation35 (3)(i) & (ii) of the 2019 Tariff Regulations. O&M Expenses claimed by the Petitioner in respect ofthe transmission asset for 2019-24 period are as follows:

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Transmission Lines ±800 kV HVDC Bipole Raigarh-Puglur Transmission Line (1765.15 km)				
Double Circuit (Bundled conductor with four or more sub-conductors) (km)	1765.15	1765.15	1765.15	1765.15
Norms (₹ lakh/km)	1.368	1.416	1.466	1.517
O&M expenses of line	1369.45	2499.45	2587.71	2677.73
HVDC Terminal: Biswanth -Agra Pole				
Units (Numbers)	1	1	1	1
Norms (₹ lakh/units)	1326.50	1373.00	1421.00	1471.00
O&M expenses of HVDC Raigarh: 1500 MW terminal and associated equipments	752.29	1373.00	1421.00	1471.00
Total O&M Expenses	**2121.74**	**3872.45**	**4008.71**	**4148.73**

92. The norms specified under Regulation 35(3)(a) of the 2019 Tariff Regulations provide that:

> ***"35. Operation and Maintenance Expenses:***
> *…*
> *(3) Transmission system: (a) The following normative operation and maintenance expenses shall be admissible for the 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*
±500 kV Bhiwadi-Balia HVDC bipole scheme (Rs Lakh) (2500 MW)	*1,696*	*1,756*	*1,817*	*1,881*	*1,947*
±800 kV, Bishwanath-Agra HVDC bipole scheme (Rs Lakh) (3000 MW)	*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."*

93. TANGEDCO, TSSPDCL and TNSPDCL have submitted that in computation of the O&M Expenses for communication system, the Petitioner has included the project cost of switchable line reactor in addition to that of communication system's project cost. Regulation 35(4) of the 2019 Tariff Regulations is very clear that only the original project cost of communication system has to be included in calculating the O&M Expenses and the same is extracted as follows:

> "*Communication system: The operation and maintenance expenses for thecommunication 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."*

94. TANGEDCO, TSSPDCL and TNSPDCL have submitted that the Commission may exclude the project cost of switchable line reactors in calculating O&M Expenses of communication system and the Petitioner should avoid such imprudent claims in future.

95. In response, the Petitioner has submitted that TANGEDCO, TSSPDCL and TNSPDCL have objected to O&M Expenses claimed for the transmission asset. The Petitioner has submitted that O&M Expenses for 800 kV HVDC terminal has been calculated as per Regualtion 35(3)(i) & (ii) of the 2019 Tariff Regulations. The relevant extract of the Regulation is as follows:

> *"(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;"*
>
> *(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."*

96. Accordingly, the Petitioner has calculated O&M Expenses for HVDC terminal considering the pro-rata of O&M Expenses allowed for similar HVDC i.e. ±800kV Bishwanath-Agra HVDC bipole scheme (₹ lakh) (3000 MW) and O&M Expenses for HVDC transmission line calculated considering O&M Expenses allowed for double circuit quad AC line.

97. We have considered the submission of the Petitioner and the Respondents, TANGEDCO, TSSPDCL and TNSPDCL. It is observed that the Petitioner has not claimed any O&M Expenses towards PLCC under Communication System. Therefore, the contentions of the Respondents TANGEDCO, TSSPDCL and TNSPDCL are rejected.

98. As per Regulation 35(3)(i) of the 2019 Tariff Regulations the O&M Expenses for new HVDC bi-pole schemes put into commercial operation 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. The ±800 kV Bishwanath-Agra HVDC bipole scheme (₹ lakh) (3000MW) is similar to the the instant transmission asset. Accordingly the O&M Expenses for instant HVDC Asset i.e. +/- 800 kV HVDC Bipole Raigarh-Puglur Transmission line has been calculated considering the pro-rata of O&M norms of ±800 kV Bishwanath -Agra HVDC bipole scheme (₹ lakh) (3000MW) .

99. O&M Expenses in respect of the transmission asset for 2019-24 tariff period are as follows:

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Transmission Lines +/- 800 kV HVDC Bipole Raigarh-Puglur Transmission Line (1765.15 km)				
Double Circuit (Bundled conductor with four or more sub-conductors) (km)	1765.15	1765.15	1765.15	1765.15
Norms (₹ lakh/km)	1.368	1.416	1.466	1.517
O&M Expenses of line	1369.45	2499.45	2587.71	2677.73
HVDC Terminal: HVDC Raigarh: 1500 MW Terminal and associated equipments				
Units (Number)	1	1	1	1
Norms (₹ lakh/units)	1326.50	1373.00	1421.00	1471.00
O&M Expenses of HVDC Raigarh: 1500 MW terminal and associated equipments	752.29	1373.00	1421.00	1471.00
Total O&M Expenses allowed	**2121.74**	**3872.45**	**4008.71**	**4148.73**

Interest on Working Capital ("IWC")

100. Regulation 34(1)(c), Regulation 34(3), Regulation 34(4) and Regulation 3(7) of the 2019 Tariff Regulations specify as under:

> ***"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*
>
> *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. Definitions. -** 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;"*

101. The Petitioner has submitted that it has computed IWC for 2019-24 period considering SBI Base Rate plus 350 basis points as on 1.4.2019. The Petitioner has considered the rate of IWC as 12.05%.

102. IWC is worked out in accordance with Regulation 34 of the 2019 Tariff Regulations. The Rate of Interest (RoI) considered is 12.05% (SBI 1-year MCLR applicable as on 1.4.2019 of 8.55% plus 350 basis points) for 2019-20, RoI for 2020-21 has been considered as 11.25% (SBI 1-year MCLR applicable as on 1.4.2020 of 7.75% plus 350 basis points) whereas RoI for 2021-22 onwards has been considered as 10.50% (SBI 1-year MCLR applicable as on 1.4.2021 of 7.00% plus 350 basis points). The components of the working capital and interest allowed thereon are as follows:

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Interest on Working Capital				
Working Capital for O&M Expenses (O&M Expenses for one month)	311.77	322.70	334.06	345.73
Working Capital for Maintenance Spares (15% of O&M Expenses)	561.18	580.87	601.31	622.31
Working Capitalfor Receivables (Equivalent to	15660.56	16028.86	16194.27	15948.78

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
45 days of annualfixed cost/ annual transmission charges)				
Total Working Capital	**16533.51**	**16932.43**	**17129.64**	**16916.82**
Rate of Interest (in %)	11.25	10.50	10.50	10.50
Interest on Working Capital	**1054.86**	**1777.91**	**1798.61**	**1776.27**

Annual Fixed Charges for 2019-24 Tariff Period

103. The transmission charges allowed in respect ofthe transmission asset for 2019-24 tariff period areas follows:

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Annual Transmission Charges				
Depreciation	26404.06	48232.73	49407.28	49515.32
Interest on Loan	14241.70	24558.93	23284.31	21303.12
Return on Equity	28216.22	51569.88	52854.64	52973.31
O&M Expenses	2121.74	3872.45	4008.71	4148.73
Interest on Working Capital	1054.86	1777.91	1798.61	1776.27
Total	**72038.58**	**130011.90**	**131353.55**	**129716.75**

Filing Fee and Publication Expenses

104. The Petitioner has sought reimbursement of fees 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 Fees& RLDC Fees and Charges

105. The Petitioner shall be entitled for reimbursement of licence fees 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 fees and charges in accordance with Regulations 70(3) of the 2019 Tariff Regulations for 2019-24 tariff period.

Security Expenses

106. KSEB has submitted that the Petitioner has claimed recovery of security expenses from the beneficiaries directly on quarterly basis. This claim is against the provisions of Regulation 35(3)(c)of the 2019 Tariff Regulations, which allows the recovery only at the time of truing up. Regulation 35(3) (c) of the 2019 Tariff Regulations is extracted as follows:

> *"(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."*

107. In response, the Petitioner has submitted that KSEB has objected to the claim recovery of security expenses from the beneficiary directly on a quarterly basis. KSEB has further submitted that such a request is against the provisions of the Tariff Regulations. The above Regulation only requires the transmission licensee to submit assessment of security expenses and the details of year wise actual spare consumption at the time of truing up with appropriate justification. The Regulation further provides that the security expenses shall be allowed separately after prudence check. The

methodology proposed by the Petitioner, namely, recovery on a quarterly basis is not prohibited by the above Regulations. In fact, if the recovery is made on quarterly basis, regular cash flow is ensured to the Petitioner and at the same time, the carrying cost burden on the KSEB will be reduced at the time of truing up.

108. The Petitioner has further submitted that separate petition has been filed before the Commission for approval and recovery of security expenses already incurred or to be incurred in relation to the transmission systems of the Petitioner from 1.4.2019 to 31.3.2024. (Petition No. 260/MP/2020).

109. We have considered the submissions of the Petitioner and KSEB. 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 Commission vide order dated 3.8.2021 in Petition No. 260/MP/2020 has approved security expenses from 1.4.2019 to 31.3.2024. Therefore, security expenses will be shared in terms of the order dated 3.8.2021 in Petition No. 260/MP/2020. Accordingly, the Petitioner's prayer in theinstant petition for allowing it to file a separate petition for claiming the overall security expenses and consequential IWC has become infructuous.

Goods and Services Tax

110. MPPMCL has submitted that the Petitioner has claimed the implementation of GST. MPPMCL has further submitted that GST isnot applicable on electricity sector and as such the demand of GST shall be disallowed.

111. 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 shall be borne and

additionally paid by the Respondent(s) to the Petitioner and the same shall 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.

112. We have considered the submissions of the Petitioner and Respondent, MPPMCL. Since GST is not levied on transmission service at present, we are of the view that the Petitioner's prayer is premature.

Capital Spares

113. The Petitioner has sought reimbursement of capital spares at the end of tariff period. The Petitioner's claim, if any, shall be dealt with in accordance with the provisions of the 2019 Tariff Regulations.

Grant from PSDF/ NCEF

114. KSEB has submitted that considering the importance of the transmission asset for renewable energy integration, it is requested that the funding from PSDF/National Clean Energy Fund may be used for reducing the cost of the transmission project.

115. In response, the Petitioner has submitted that as on date, the entire capital cost of the transmission asset has been incurred by the Petitioner and tariff must be determined based on full capital cost incurred. In case, MoP allocates any amount from Power System Development Fund (PSDF)/ National Clean Energy Fund (NCEF), as an when amount is available, the same can be considered and decision on the same can be taken by the Commission at the time of truing up.

116. BESCOM has submitted that the Petitioner may be directed to approach the PSDF or NCEF for financial assistance so as to reduce the burden of the transmission charges on the DICs.

117. We have considered the submissions of the Petitioner, KSEB and BESCOM. The Commission is aware of the fact that capital investments of the instant transmission scheme/transmission project is huge. The Commission feels that there is a strong necessity to share the burden of capital cost of transmission scheme by way of assistance from the PSDF by way of one time grant. Accordingly, we direct the Petitioner to take up the matter with the Monitoring Committee of the PSDF for assistance in the form of one time grant from the PSDF and with Ministry of Power for grant to reduce the burden of transmission charges on the DICs. We, in the facts and circumstances of the present case, are of the considered view that Ministry of Power, Government of India to arrange for funds from PSDF as well as Government grant, considering the benefits that would accrue to the power sector and the economy of the country.

Sharing of Transmission Charges

118. The Petitioner has prayed that the transmission charges for 2019-24 tariff period may be allowed to be recovered on monthly basis in accordance with Regulation 57 of the 2019 Tariff Regulations and may be shared by the Respondents in accordance with the Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2010 (hereinafter referred to as “the 2010 Sharing Regulations”).

119. The Petitioner has further submitted tariff in respect of the transmission assset in this petition may be allowed to be shared from the beneficiaries in view of para 45.17 of

the Statement of Reasons (SOR) of Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) (Third Amendment) Regulations, 2015.

Submissions of KSEB

120. KSEB has made the following submissions on the issue of sharing of transmission charges:

(a) Transmission asset will serve multiple purpose of evacuating RE from the Southern Region especially Tamil Nadu to the rest of the country. This link plays an important role in integrating the entire Indian electrical Grid. Since the transmission asset is of strategic and national importance and benefits will be derived by the entire country, 100% of the yearly transmission charges may be included under National Component.

(b) The entire associated transmission system with Raigarh-Pugalur-Thrissur is not executed. Part execution of the transmission system has been done based on the recommendations of CEA and beneficiaries. In terms of Regualtion 13(5) of the 2010 Sharing Regulations, where only some of the transmission elements of the associated Transmission System have achieved COD before the COD of Associated Transmission System, the transmission charges for such transmission elements can be included for determination of transmission charges of DICs only if the respective Regional Power Committee certifies the requirement of the same. The Petitioner has not obtained SRPC certificate in respect of Raigarh-Pugalur-Thrissur HVDC system. Since all the elements of Raigarh-Pugalur-Thrissur HVDC system are not executed, recovery of

transmission charges of these transmission elements from DICs may be only based on the certification from SRPC.

121. In response to the submissions of KSEB, the Petitioner has submitted that the issue of stragetic national importance of the present HVDC system was discussed in the SRPC meeting held on 1.2.2020 pursuant to which SRPC vide its letter dated 7.1.2021 approached the MoP seeking such declaration. Further, the MoP vide letter dated 18.3.2021 has intimated that the issue would be decided by the Commission. An appropriate view may be taken by the Commission on sharing of transmission charges considering Regulation 5 and Regulation 6 of the 2020 Sharing Regulations and para 12.2.8 of the Statement of Reasons of 2020 Sharing Regulations.

Submissions of BESCOM

122. The main submissions of the BESCOM are as follows:

(a) In the 35th, 36th and 39th meetings of Southern Regional Standing Committee on Power System Planning, the transmission schemes were discussed and concurred by the constituents. In the minutes of the meetings, it was mainly discussed that as per the statement and justification of Member (PS)/CEA, in the absence of identified beneficiaries for the generators in Chattisgarh, the surplus power can be transferred through this corridor to Southern Region to meet the growing demand. It was further stated that this link would also strengthen its inter-connection with rest of all India grid. The Petitioner proposed to upgrade the corridor from 4000 MW to 6000 MW based on the anticipated demand growth and market requirements. However, as suggested by POSOCO, no cost-benefit analysis/ tariff impact analysis was carried out by the planning

agencies. Since there were no identified beneficiaries/ firmed up generators, the scheme was implemented as System Strengthening Scheme.

(b) CEA did mid term corrections in their long-term demand projections given in EPS reports based on the actual data and steep decline in the demand. Large number of IPPs across the country have started relinquishing their LTA due to difficulties in identifying the beneficiaries in their target region, hence huge transmission capacity has become stranded. Since there was a huge redundant capacity being created due to exit of many generators and decline in projected demand, CTU revisited some of the high-capacity corridors and planned to operate at 400 kV level instead of the design voltage of 765 kV. However, CTU did not carry out any study with regard to requirement and putting into beneficial use of the Raigarh-Pugalur HVDC corridor considering the enhanced capacity of 6000 MW from the initially proposed 4000 MW under the revised demand/generation scenario.

(c) The intended purpose of Raigarh-Pugalur HVDC corridor is altered due to change in power scenario, possibilities to explore the utilization of the HVDC corridor instead of creating additional AC corridors was requested to be carried out. CTU ascertained that about 3000 MW of RE power can be exported from SR to rest of the country.

(d) The system was designed as a System Strengthening Scheme where there is no identified generator or PPA to tie up. It is ascertained from the

power flow data taken from the monthly reports of POSOCO that the loading of the other AC inter regional corridors (SR-WR and SR-ER) are drastically reduced and relieved after execution of Raigarh-Pugalur HVDC corridor. The Raigarh-Pugalur-Trissur 6000 MW HVDC System is proposed to be used for evacuation of RE power from SR to rest of the country.

(e) The Chairperson, SRPC, vide letters dated 7.1.2021 and 22.3.2021 requested that the Commission to consider the request of SR Constituents to include WRSR 6000 MW HVDC Bipole link Raigarh (Chhatisgarh)-Pugalur (Tamil Nadu) and 2000 MW Pugalur (Tamil Nadu) Trissur (Kerala) under National Component (NC) and share 100% of the transmission charges of this HVDC link under National Component as it is likely to benefit the States/stakeholders across the country.

(f) The Chairperson, SRPC took up the issue with Secretary (Power), Ministry of Power (MoP), Government of India. In response, Ministry of Power (MoP) vide letter dated 18.3.2021 conveyed that sharing of ISTS charges is a regulatory issue and falls within the jurisdiction of the Commission. In view of the possibility of bi-directional power flow i.e., from WR to SR as well as SR to WR on this link, CTUIL and SRLDC strongly recommended that the Commission may be requested to consider 100% sharing of the Yearly Transmission Charges of Raigarh (Chhatisgarh)-Pugalur (TN)-Trissur (KER) HVDC system under National Component-HVDC.

(g) In the 3rd interaction meeting of the Commission with RPCs held on 17.11.2021, SRPC requested the Commission to consider ± 800 kV Raigarh Pugalur - Thrissur HVDC system under National Component for sharing of 100% transmission charges. In that meeting, the Commission conveyed that while hearing the tariff petition in respect of the said HVDC system, the issue would be considered.

(h) In the 39th meeting of SRPC held on 6.12.2021, the Constituents requested the Chairperson, SRPC to take up the matter with the Commission regarding consideration of Raigarh (Chhatisgarh)-Pugalur (TN)-Trissur (KER) HVDC system under National Component for sharing 100% transmission charges. CTUIL has reiterated their stand that they fully support SR-Constituents for including the Raigarh (Chhatisgarh)-Pugalur (TN)-Trissur (KER) HVDC system under National Component since the HVDC link would be utilized in both directions (Export to other regions and Import to SR from other regions). SRPC vide letter dated 13.12.2021 had written to the Commission to consider the request of SR Constituents to include WRSR 6000 MW HVDC Bipole Link Raigarh (Chhattisgarh)-Pugalur and 2000 MW VSC based HVDC System Pugalur (TN)-Trissur (KER) under National Component (NC) for sharing 100% transmission charges under National Component-HVDC (NCHVDC). The transmission scheme is developed as a “System Strengthening Scheme” for the national grid in order to boost usage and transmission of renewable energy across India. It was, therefore, for the benefit of entire country and not for the Southern Region alone. Particularly, in the present scenario,

where there is an anticipated surplus in the SR, the Project will be used for the benefit of other regions, given the bi-directional flow of power. The assets may be declared to be of strategic and national importance by the Commission. Consequently, the transmission charges may be directed to be shared by DICs of all regions, and not the Southern Region alone. Otherwise, the same would result in an unfairly high financial burden on the Karnataka ESCOMs/ DICs of the Sothern Region.

123. In response, the Petitioner has made the following submissions:

(a) Since there were no identified generators in Raigarh to supply electricity to the beneficiaries of the Southern Region, the transmission scheme was involved as a System Strengthening Scheme. The techno-economical aspects were not deliberated or brought on record by the CTU at the time of discussions with regard to the transmission scheme.

(b) HVDC scheme is an inter-regional scheme linking the Western Region to the Southern Region which is evolved after detailed discussions and deliberations as a System Strengthening Scheme with full participation of all beneficiaries including BESCOM and as such it cannot simply be termed as not having considered the techno-economical aspects. BESCOM was involved and consulted at every stage of the planning and approval by SRPC. After 39th meeting of SRPC on Power System Planning, there were three meetings held by SRPC, CEA and all the Southern Region beneficiaries including BESCOM on 21.8.2020, 30.12.2020 and 5.7.2021 wherein execution and commercial operation

date of the individual assets of the three schemes were discussed and only thereafter the respective CODs were declared by the Petitioner after obtaining the consent from the Southern Region beneficiaries including BESCOM.

(c) All the schemes are evolved by discussions and deliberations and there is no material placed on record by BESCOM to support its contention that the techno-economical aspects of the scheme have not been deliberated at any stage.

(d) Due to exit of many generators from the long-term open access granted by the CTU to such generators, CTU has revisited some of the high-capacity corridors and planned to operate the same at 400 kV level instead of the designated voltage of 765 kV level. The Petitioner denied that it had to carry out any study with regard to the requirement or use of the Raigarh–Pugalur HVDC corridor after the corridor already stood approved in the respective SRPC/WRPC meetings.

(e) The Petitioner has denied that the intended purpose of the present scheme which was developed for transfer of surplus power from the IPPs in Chhattiagarh Region to the beneficiaries of the Southern Region has not been fulfilled due to non-firming of the generation projects in Chhattisgarh for there being no takers in the Southern Region. The Petitioner can only implement the transmission system which have been entrusted to it after the discussions and deliberations in the RPC meetings. The Petitioner also denied that Raigarh-Pugalur-Trichur transmission

corridor is redundant in any manner or is not economically viable. The efforts to use the corridor for transfer of RE power from Southern Region to other regions does not mean that the corridor has no use at present. It is only an option which is being explored for transfer of excess RE power.

(f) Entire effort of BESCOM is to seek a declaration from this Commission that the instant HVDC assets are of strategic and national importance and the charges for the same ought to be shared by the beneficiaries of all the regions. All the orders referred to by BESCOM also include the amendments to the Sharing Regulations pertaining to the period of the 2010 Sharing Regulations. The dispensation given in the Biswanath-Chariali case was also under the 3rd amendment to the 2010 Sharing Regulations along with the Statement of Reasons.

(g) Referring to the provisions of Regulation 5 and Regulation 6 of the 2020 Sharing Regulations and suggestions of SRPC on sharing of HVDC system as contained in para 12.2.8 of Statement of Reasons while framing of 2020 Sharing Regulations, it is contended that the Commission may take an appropriate decision on the sharing of the transmission charges of the transmission assets.

(h) Entire capital cost in respect of the transmission asset has been incurred by the Petitioner and tariff must be determined based on full capital cost incurred. In case, MoP allocates any amount from PSDF/NCEF fund as an when amount is available, the same can be considered and decided by the Commission.

Submissions of TANGEDCO, TSSPDCL and TSNPDCL

124. The main submissions of TANGEDCO, TSSPDCL and TSNPDCL are as follows:

(a) During the 42nd Standing Committee meeting held at Ernakulam, Kerala on 27.4.2018, CTU brought a proposal for upgradation of the following transmission lines along with connectivity sub-stations based on the projected RE capacity addition in Southern Region identified as Wind/Solar Energy Zones. During the meeting, TANGEDCO insisted that the transmission infrastructure created for the purpose of these RE generators will become redundant/under-utilized due to non-firming up of the generators/target beneficiaries. The intended purpose of the Raigarh–Pugalur ± 800 kV, 6000 MW HVDC, being developed for transfer of surplus power from the IPPs in Chhattisgarh to Southern region is altered due to non-firming up of generation projects in Chhattisgarh and also no takers in Southern Region.

(b) ±500 kV HVDC Mundra-Mohindergarh HVDC transmission system along with associated transmission system was initially built as a dedicated transmission system. It is observed from the Statement of Reasons to the third amendment to 2010 Sharing Regulations that Mundra-Mohidergarh HVDC was treated as National Asset for the capacity of 1005 MW, even though the transmission lines were dedicated in nature and the intended purpose was to evacuate power from Mundra Power Station (uni-directional). None of the other regional beneficiaries were availing power using that corridor other than NR.

(c) The Commission notified the 2020 Sharing Regulations, based on which it is submitted that since Raigarh-Pugalur–Trissur HVDC was not executed at the time of notification of the 2020 Sharing Regulations, the Commission would consider sharing based on bi-directional flow of power as and when the assets are brought to beneficial use. In view of the above, the Raigarh-Pugalur-Trissur HVDC system is providing all the benefits and the same are as follows:

a. The HVDC lines will relieve the load in the intervening AC network.
b. HVDC lines will help in voltage control, as power flow through parallel AC line can be increased/decreased as per the requirement.
c. HVDC lines will enhance the power transfer capability of the transmission systems.
d. HVDC lines will accommodate renewable-variation and intermittency can be taken care of.

(d) 6000 MW Raigarh-Pugalur HVDC links alongwith Pole-I, Pole-II, Pole-III were put to execution on 6.9.2020, 9.3.2021 and 13.7.2021 respectively. It has been established that power through parallel AC lines like Raichur-Sholapur 765 kV D/C line has been drastically reduced after execution of Raigarh-Pugalur HVDC line.

(e) ±320 kV VSC based 2000 MW Pugalur (HVDC)-North Trichur HVDC (Kerala) HVDC link was inaugurated on 19.2.2021. Hence, the importance of the subject HVDC system in strengthening the national grid and benefits to be derived by all in the long run is evident.

(f) Since the Southern Regional States are renewable rich States and the corridor would be of strategic importance to transfer RE power across the

country. Due to change in load-generation scenario and bi-directional utilization of HVDC corridor for transfer of RE power from Southern Region to rest of the country, the Raigarh-Pugalur-Trissur HVDC system very well qualify at par with Biswanath-Chariali-Agra HVDC System as well as Mundra-Mohindergarh HVDC system for declaration as an asset of Strategic and National importance.

125. Besides above, TANGEDCO has made the following submissions:

(a) POSOCO vide its letter dated 21.10.2021 (annexed with Agenda for 39th SRPC TCC meeting scheduled on 3.12.2021) communicated that import of SR from WR will reduce by 2300 MW and SR export to WR will reduce by 1300 MW in view of N-1 violation. To facilitate import of power into Southern Region and considering long distance from the pit head generating station located in Chhattisgarh area, ±800 kV 6000 MW HVDC link with terminals at Raigarh and Pugalur along with VSC based 2000 MW HVDC link between Pugalur and North Trichur (Kerala) was agreed in the Standing Committee and concurred in the SRPC meetings and executed now.

(b) TANTRANSCO has also invested in the Edayarpalayam 400/230 kV Sub-station and work is under progress for drawl and dispersal of power received from Raigarh-Pugalur HVDC line as System Strengthening Scheme for intra State network. According to TANGEDCO this shows CTU's improper study and planning before making such huge investment which increases the burden of beneficiaries without full benefit.

i. Power flow/energy transaction in Biswanath Chariali-Agra and Mundra-Mohindergarh HVDC corridors and usability/benefits of these corridors to SR.

(a) On analysis of power flow data of two HVDC corridors available in POSOCO website, it is ascertained that the total energy transferred through Biswanath Chariali-Agra corridor from September, 2015 to March, 2021 is around 24,503 MUs (16355 MUs export to NR from NER and 8148 MUs import from NR to NER). The total energy transferred through Mundra-Mohindergarh HVDC corridor from April, 2015 to March, 2021 is around MUs (1,20,593 MUs export to NR from WR and there was no import from NR to WR).

(b) The energy transferred through Biswanath Chariali-Agra HVDC corridor is very low as compared to the design capacity of the corridor. Whereas in the case of Mundra-Mohindergarh HVDC corridor, power is being transferred uni-direction from Mundra to Mohindergarh from WR to NR. The Southern Regional beneficiaries are in no way benefitted out of the above two corridors as of now.

ii. Transmission charges paid by TANGEDCO and other beneficiaries towards Biswanath Chariali-Agra and Mundra-Mohindergarh HVDC systems

(a) Despite the fact that the above two corridors are not utilized by SR beneficiaries, the cost of these assets are being recovered from all the beneficiaries including SR beneficiaries. The energy charges for the energy

transferred through this corridor as against the transmission charges for this corridor is compared in the table which is as follows:

Cost of energy transacted vis-à-vis transmission charges					
Year	**Average Power procure-ment cost in ₹/Unit**	**Total Energy transferred (MU)**	**Total cost of energy transacted (₹ in crore)**	**Transmis-sion charges (₹ in crore)**	**% of T.C w.r.t E.C**
2015-16	3.4	1168.83	397.402	188.94	47.54%
2016-17	3.4	4073.85	1385.109	834.058	60.22%
2017-18	3.48	4225.02	1470.306	1009.86	68.68%
2018-19	3.53	4738.75	1672.778	1380.09	82.50%
2019-20	3.6	4198.08	1511.308	1472.82	97.45%
2020-21	3.85	4152.18	1598.589	1555.503	97.30%

(b) The transmission charges being recovered for this corridor is exorbitantly high (as high as 98% of the cost of total energy transferred annually). This has made the energy charges very expensive. Hence, the transmission system itself has become economically unviable even after six years of putting into service, which is being shared by SR beneficiaries. The intended benefits from the corridors are neither yielded by the intended beneficiaries nor by the national grid.

(c) Whereas, in the case of Raigarh-Pugalur-Trissur HVDC transmission system, the corridor is going to benefit the entire country and facilitate seamless integration and transfer of RE power from SR to rest of the country.

(d) Declare the Raigarh-Pugalur-Trissur HVDC system, which has become the key element of National grid in terms of providing flexibility, stability and RE integration, as asset of “Strategic and National importance” as was done in the case of Biswanath-Chariali-Agra HVDC system and direct the implementing agency to include the Raigarh-Pugalur-Trissur HVDC system

under National Component on HVDC for the purpose of calculating ISTS transmission charges and losses.

126. In response, the Petitioner has made the following submissions:

(a) Instant HVDC scheme which was an inter-regional scheme linking the Western Region to the Southern Region evolved after detailed discussions and deliberations as a System Strengthening Scheme with full participation of all beneficiaries including TANGEDCO. TANGEDCO was involved/consulted at every stage of the planning and approval by SRPC. A specific issue with regard to mismatch during execution of individual assets involved in the schemes was also discussed and if such mismatch arises, any decision of the usefulness of the scheme was to be discussed with the Central Electricity Authority ('CEA') before execution of any of the assets by the Petitioner. This was specifically discussed at the 39th meeting of the SRPC on Power System Planning. There were three meetings held by SRPC, CEA and all the southern region beneficiaries wherein the execution and COD of the individual assets of the three schemes were discussed and only thereafter the respective CODs were declared by the Petitioner after obtaining the consent from the Southern Region beneficiaries. All schemes are evolved by discussions and deliberations and there is no material placed on record by TANGEDCO to support its contention that techno-economical aspects of the scheme were not deliberated at any stage.

(b) Reliance is placed on the orders passed by this Commission in Petition No. 67/TT/2015 and Petition No. 184/TT/2016 which related to ±800 kV

Biswanath-Chairali HVDC System. In the said orders, the Commission came to a finding that HVDC system was an asset of national importance as well as strategic importance and that the benefits would be derived by the entire country and, therefore, the charges for the HVDC assets would be shared by all DICs of the country. Reliance is also placed on the order of the Commission in the case of Mundra-Mohendargarh HVDC system.

(c) Entire capital cost for the transmission asset has been incurred by the Petitioner and tariff must be determined based on full capital cost incurred. In case, MoP allocates any amount from PSDF/ NCEF fund, as an when the amount is received, the same may be considered and decided by the Commission.

(d) Issues such as N-1, total transfer capability and loading of sub-stations are real time Grid issues which need to be resolved by discussions and deliberations. The practical Grid issues being faced by TANGEDCO, cannot be a ground to challenge the entire discussions in earlier SRPC and WRPC meetings where the transmission scheme was approved and in fact, where the Petitioner has extensively consulted with the beneficiaries at each level and obtained their consent for declaration of COD for individual assets involved in all three schemes.

127. We have considered the submissions of the Petitioner, KSEB, TANGEDCO, TSSPDCL, TSNPDCL (Telangana DISCOMS) and BESCOM. The transmission asset (Pole-I of RPT) was put into commercial operation on 6.9.2020.

128. The respondent KSEBL has contended that with the execution of the 320 kV VSC based HVDC Pugalur-Thrissur line, effective import of Kerala will get reduced to around 500 MW in view of N-1 security violation of Kochi ICTs. The instant Petition is filed for tariff Pole-I of ± 800 kV 1500 MW Raigarh (HVDC Station)-Pugalur (HVDC Station) HVDC Link along with ± 800 kV 1500 MW (Pole-I) HVDC terminals each at Raigarh (HVDC Station) and Pugalur (HVDC Station). The Petitioner has filed separate tariff petition for 320 kV VSC based HVDC Pugalur-Thrissur line under Scheme-3 in Petition No. 172/TT/2021. Accordingly, the issues raised by KSEBL will dealt in Petition No. 172/TT/2021.

129. BESCOM has contend that no cost benefit analysis/ tariff impact analysis was carried out by the planning agencies. We are of the view that the scheme was discussed and agreed in 35th SCM of SR,36th meeting of SCM of WR,36th meeting of SCM of SR, 37th meeting of SCM of SR and WR, 38th meeting of SCM of SR,24th meeting of WRPC, 23rd, 24th, 25th, 26th and 27th meeting of SRPC, joint SCM of SR and WR held on 20.4.2015, 33rd and 34th Empowered committee on transmission where all the benefiacires are agrred for the scheme. Accordingly the Petitioner has implemented the scheme.

130. The main contention of the respondents is that Raigarh-Pugalur-Trissur HVDC system is one of the important elements of the National Grid which will provide flexibility, stability and RE integration, therefore, Raigarh-Pugalur-Trissur HVDC system may be treated as a national and strategic transmission system of national importance and 100% yearly transmission charges may be considered under National Component.

131. We are of the view that the Commission is not the appropriate forum for declaring any transmission asset to be of national and strategic importance. It is further observed that transmission system being of national importance and a transmission system considered as a National Component are two different aspects. Therfore, we are not inclined to approve the 100% yearly transmission charges of Raigarh-Pugalur-Trissur HVDC system under National Component.

132. KSEB, TANGEDCO, BESCOM, TSSPDCL and TSNPDCL have contended that the transmission asset will serve the purpose of evacuation of RE power from Southern Region to the rest of the country. We are of the view that if need be to consider the sharing based on bi-directional flow of Raigarh-Pugalur-Thrissur HVDC transmission system due to change in load-generation mix, the same shall be dealt with by the Commission at the appropriate stage.

133. The COD of the transmission asset is 6.9.2020. The payment of transmission charges for the period from 6.9.2020 to 31.10.2020 shall be as per the 2010 Sharing Regulations and transmission charges w.e.f. 1.11.2020 shall be as per Regulation 11(4) of the 2010 Sharing Regulations, which provides as follows;

Regulation 11(4) of the 2010 Sharing Regulations provides as under:

"(4) The first part of the bill shall recover charges for use of the transmission assets of the ISTS Licensees based on the Point of Connection methodology. This part of the bill shall be computed in three sub-parts as under:

3. HVDC charge

(i) 10% of Monthly Transmission Charges (MTC) of HVDC transmission system shall form part of Reliability Support Charges and the balance shall be billed as detailed below:
Transmission Charges for HVDC system created to supply power to specific regions shall be borne by DICs of such regions.
The HVDC Charge shall be payable by DICs of the Region in proportion to their Approved Withdrawal. In case of Injection DICs having Long Term Access to target region, it shall also be payable in proportion to their Approved Injection.

For Generators having LTA to target region:
[HVDC Charge for Region in Rs/month} x [Approved Injection} / [Total Approved Withdrawal of the Withdrawal DIC and Approved Injection of the Generator having LTA to target Region].

For Demand: [HVDC Charge for Region in Rs/month]x[Approved Withdrawal]/[Total Approved Withdrawal of the Withdrawal DIC and Approved injection of the Generator having LTA to target Region]"

134. As per minutes of SCM/RPC, the instant HVDC system i.e. Raigarh (HVDC Station)-Pugalur (HVDC Station) HVDC link is developed as System Strengthening Scheme. Therefore, transmission charges for ± 800 kV 6000 MW Raigarh (HVDC Station)-Pugalur (HVDC Station) HVDC link along with ± 800 kV 1500 MW (Pole-I) HVDC terminals each at Raigarh (HVDC Station) and Pugalur (HVDC station) shall be shared as per Regulation 11(4)(3)(i) of the 2010 Sharing Regulations up to 31.10.2020 and it would come into effect from the date of COD of the transmission asset.

135. 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. Regulation 5 and Regulation 6 of the 2020 Sharing Regulations provide as follows:

"5. Components and sharing of National Components (NC) (1) National Component shall be sum of the following components:
(a) ----------" and
(b) National Component-HVDC (NC-HVDC).

(2)----------.

(3) National Component-HVDC shall comprise of the following:
(a) 100% of Yearly Transmission Charges for "back-to-back HVDC" transmission system;
(b) 100% of Yearly Transmission Charges for Biswanath-Chariali/ Alipurdwar to Agra HVDC transmission system;
(c) Yearly Transmission Charges of Mundra–Mohindergarh 2500 MW HVDC transmission system corresponding to 1005 MW capacity Provided that Yearly Transmission Charges corresponding to 1495 MW for the said transmission system shall be borne by M/s Adani Power (Mundra) Limited or its successor company; and
(d) 30% of Yearly Transmission Charges for all other HVDC transmission systems except those covered under sub-clauses (a), (b) and (c) of this clause of this Regulation.

(4) The Yearly Transmission Charges for the National Component shall be shared by all drawee DICs and injecting DICs with untied LTA in proportion to their quantum of LongTerm Access plus Medium-Term Open Access and untied LTA respectively."

"6. Components and sharing of Regional Component (RC) (1) Regional Component shall be sum of the following components:

(a) Regional Component of HVDC (RC-HVDC) comprising of 70% of Yearly Transmission Charges of HVDC transmission systems planned to supply power to the concerned region, except HVDC transmission systems covered under sub clauses (a),(b) and (c) of Clause (3) of Regulation 5; and ----------

(3) Yearly Transmission Charges covered under sub-clause (b) of Clause (1) of this Regulation shall be shared by drawee DICs of the region and injecting DICs (with untied LTA) of the same region, in proportion to their quantum of Long-Term Access plus Medium Term Open Access and untied LTA, respectively."

136. In view of the above, as per Regulation 5(3)(d) of the 2020 Sharing Regulations, 30% of the Yearly Transmission Charges (YTC) with effect from 1.11.2020 shall be part of National Component and 70% of Yealy transmission charges for Raigarh-Pugular-Thrissur system is under Regional Component.

137. To summarise, Annual Fixed Charges (AFC) allowed in respect of the transmission asset for 2019-24 tariff period in this order are as follows:

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
AFC	72038.58	130011.90	131353.55	129716.75

138. The Annexure to this order forms part of the order.

139. This order disposes of Petition No. 685/TT/2020 in terms of the above findings and discussions.

sd/-	**sd/-**	**sd/-**
(P.K. Singh)	**(Arun Goyal)**	**(I.S. Jha)**
Member	**Member**	**Member**

ANNEXURE

2019-24	Admitted Capital Cost as on COD (₹ in lakh)	Projected ACE(₹ in lakh)					Admitted Capital Cost as on 31.3.2024 (₹ in lakh)	Rate of Depreciation as per Regulations	Annual Depreciation as per Regulations(₹ in lakh)				
Capital Expenditure		**2020-21**	**2021-22**	**2022-23**	**2023-24**	**Total**			**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Land – Freehold	1926.52	0.00	0.00	0.00	0.00	0.00	1926.52	N/A	0.00	0.00	0.00	0.00	0.00
Building Civil Works & Colony	39211.83	267.72	5917.41	327.31	0.00	6512.44	45724.27	3.34%	0.00	1314.15	1417.44	1521.72	2408.11
Transmission Line	608734.81	14678.98	16028.57	3814.10	71.03	34592.68	643327.49	5.28%	0.00	32528.72	33339.40	33863.25	33881.39
Sub-station	206303.02	8004.13	18456.06	0.00	0.00	26460.19	232763.21	5.28%	0.00	11104.11	11802.66	12289.90	12258.67
PLCC	7941.20	48.46	466.89	0.00	0.00	515.35	8456.55	6.33%	0.00	504.21	520.52	535.30	445.37
IT Equipment (Incl. Software)	7367.07	21.66	592.00	0.00	0.00	613.67	7980.74	15.00%	0.00	1106.69	1152.71	1197.11	1197.11
Total	**871484.45**	**23020.95**	**41460.94**	**4141.41**	**71.03**	**68694.33**	**940178.78**			**46557.87**	**48232.73**	**49407.28**	**49515.32**
							Average Gross Block (₹ in lakh)			**882994.93**	**915235.87**	**938037.05**	**940143.27**
							Weighted Average Rate of Depreciation			**5.27%**	**5.27%**	**5.27%**	**5.27%**