

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 173/TT/2021

Coram:

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

Date of Order : 22.02.2023

In the matter of:

Approval under Regulation 86 of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 and determination of transmission tariff of 2019-24 tariff period under the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 in respect **Asset-1:** ± 800 kV 1500 MW (Pole-II) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station) and **Asset-2:** ± 800 kV 1500 MW (Pole-III) 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-122 001 (Haryana).

.....Petitioner

Versus

1. Tamil Nadu Generation and Distribution Corporation Limited,
(Formerly Tamil Nadu Electricity Board -TNEB),
NPKRR Maaligai, 800, Anna Salai,
Chennai-600002.
2. Transmission Corporation of Andhra Pradesh Limited (APTRANSCO),
Vidyut Soudha, Near Axis Bank, Eluru Road,
Gunadala, Vijaywada-520004.
3. Kerala State Electricity Board (KSEB),
Vaidyuthi Bhavanam,
Pattom, Thiruvananthapuram-695004.
4. Electricity Department,



Government of Goa, Vidyuti Bhawan,
Panaji, Goa-403001.

5. Electricity Department,
Government of Pondicherry,
Pondicherry-605001.
6. Eastern Power Distribution Company of Andhra Pradesh Limited (APEPDCL),
P&T Colony, Seethmmadhara,
Vishakhapatnam, Andhra Pradesh.
7. Southern Power Distribution Company of Andhra Pradesh Limited (APSPDCL),
D.No.: 19-13-65/A, Srinivasapuram, Corporate Office,
Tiruchanoor Road, Tirupati-517 503,
Chittoor District, Andhra Pradesh.
8. Southern Power Distribution Company of Telangana Limited (TSSPDCL),
6-1-50, Corporate Office, Mint Compound,
Hyderabad-500063 (Telangana).
9. Northern Power Distribution Company of Telangana Limited (TSNPDCL),
H. No. 2-5-3 1/2, Vidyut Bhawan, Corporate Office,
Nakkal Gutta, Hanamkonda,
Warangal-506 001, Telangana.
10. Bangalore Electricity Supply Company Limited (BESCOM),
Corporate Office, K.R. Circle,
Bangalore-560001, Karnataka.
11. Gulbarga Electricity Supply Company Limited (GESCOM),
Station Main Road, Gulbarga, Karnataka.
12. Hubli Electricity Supply Company Limited (HESCOM),
Navanagar, PB Road,
Hubli, Karnataka.
13. Mangalore Electricity Supply Company Limited,
MESCOM Corporate Office, Paradigm Plaza,
AB Shetty Circle, Mangalore-575001 (Karnataka).
14. Chamundeswari Electricity Supply Corporation Limited (CESC),
927, LJ Avenue, Ground Floor, New Kantharaj URS Road,
Saraswathipuram, Mysore-570009 (Karnataka).
15. Transmission Corporation of Telangana Limited,
Vidhyut Sudha, Khairatabad,
Hyderabad-500082.
16. Karnataka Power Transmission Corporation Limited (KPTCL),



Kaveri Bhawan, Bangalore-560009.

17. Tamil Nadu Transmission Corporation (TANTRANSCO),
NPKRR Maaligai, 800, Anna Salai,
Chennai-600002.

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

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

20. Gujarat Urja Vikas Nigam Limited,
Sardar Patel Vidyut Bhawan,
Race Course Road, Vadodara-390007.

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

22. Chhattisgarh State Electricity Board,
P.O. Sunder Nagar, Dangania, Raipur,
Chhatisgaarh-492013.

23. 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 D.K. Biswal, PGCIL
Shri Ved Prakash Rastogi, PGCIL

For Respondent: Shri S. Vallinyagam, Advocate, TANGEDCO
Shri Sri Harsha Peechara, Advocate, TSSPDCL & TSNPDCL
Shri Diptiman Acharyya, Advocate, TSSPDCL & TSNPDCL
Shri Prabhas Bajaj, Advocate, KSEB
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”) for the period from COD to 31.3.2024 in respect of **Asset-1**: ± 800 kV 1500 MW (Pole-II) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station) and **Asset-2**: ± 800 kV 1500 MW (Pole-III) HVDC terminals each at Raigarh (HVDC Station) & 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” (hereinafter referred to as the “transmission scheme”) in the Southern Regional grid.

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

“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, as per para –9.3 above.

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 as mentioned at para 8.9 above.

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) Southern Region was facing a huge power deficit which had arisen mainly due to (i) delay/ deferment of anticipated generation projects (for example - Krishnapattam UMPP (4000 MW), Cheyyur UMPP (4000 MW), Udangudi TPS, IPP projects in Nagapattinam/ Cuddalore area (3000 to 4000 MW), Kundankulam APP (2000 MW), Kalpakkam PFBR (500 MW), East coast project in Srikakulam (1320 MW), Gas based projects in Vemagiri (about 3000 MW) etc. and (ii) non-availability of gas for existing gas projects in Southern Region (SR). The maximum power demand of SR was about 39,000 MW around 2013-15. As per 18th EPS of CEA, the expected power demand of SR by the end of XIIth and XIIIth plan would be about 57,200 MW and 82,200 MW, respectively. Hence, power transfer requirement to SR was expected to increase. Therefore, to facilitate the import of power into SR and considering the long distance, it was proposed that power be transferred over HVDC system along with the associated A.C Transmission system at 400 kV level.

(b) Accordingly, ± 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 discussed in 37th Standing Committee on Power system planning of Southern Region (SCPSPSR) held on 31.7.2014. The scheme was again discussed and agreed in the Joint Standing Committee meeting of SR and WR constituents held on 20.4.2015, wherein it was decided that the said scheme would be implemented as three separate schemes 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

(c) In the above Joint Standing Committee meeting, it was decided that the schemes may be implemented as separate schemes. However, 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 discussed in the 39th meeting of SCPSPSR held on 28-29 December, 2015. In the meeting, it was 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 was also 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.

(d) Further, the execution of Scheme-2 (AC System strengthening at Pugalur end) and Scheme-3 (Pugalur-Trichur 2000 MW VSC Based HVDC link) was delayed due to severe RoW issues in the areas of Tamil Nadu and Kerala. Accordingly, a meeting had been convened by CEA/ Constituents on 21.8.2020 to discuss the issue of part execution of Raigarh-Pugalur-Trichur HVDC transmission system. After discussion it was agreed that the Scheme-1 (Phase I: ± 800 kV, 1500 MW HVDC terminal at Raigarh and Pugalur of Bi-pole-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 put the asset: ± 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)



being part of Scheme-1 and 400 kV D/C Pugalur (HVDC)-Pugalur (existing) transmission line and 400 kV D/C Pugalur (HVDC)-Arasur transmission line being part of Scheme-2 together under commercial operation w.e.f. 6.9.2020.

(e) Further, a meeting had been convened by CEA/ Constituents on 30.12.2020 to discuss the issue of part execution of Raigarh-Pugalur-Trichur HVDC transmission system. After discussion it was agreed that the Scheme-1 (Phase II: ± 800 kV, 1500 MW HVDC terminal at Raigarh and Pugalur of Bi-pole-I) of Raigarh-Pugalur HVDC transmission system shall be executed alongwith part of Scheme-3 (± 320 kV 2000 MW Pugalur (HVDC Station)-North Trichur (HVDC Station) HVDC Link along with Pugalur-Trichur 1000 MW VSC Based HVDC System after execution of 400 kV D/C North-Trichur-Kochi line and 220 kV lines from North Trichur Sub-station. Therefore, the Petitioner put the asset: ± 800 kV 1500 MW (Pole-II) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station) being part of Scheme-1 and ± 320 kV 2000 MW Pugalur (HVDC Station)-North Trichur (HVDC Station) HVDC Link along with ± 320 kV 1000 MW (Mono Pole-II) HVDC terminals each at Pugalur (HVDC Station) & North Trichur (HVDC Station, Kerala) and 400 kV D/C North Trichur-Kochi line and 220 kV lines of KSEB from North Trichur Sub-station being part of Scheme-3 together under commercial operation w.e.f. 9.3.2021.

(f) In another meeting convened by CEA/ Constituents on 5.7.2021, the issue of execution of remaining part of Raigarh-Pugalur-Trichur HVDC transmission system was discussed. After discussion, it was agreed that as the trial operation of Mono Pole-I (1000 MW) of Pugalur-North Trichur VSC based HVDC system has already been completed, therefore, the same may be executed. Therefore, the Petitioner put the asset: ± 320 kV 1000 MW (Mono Pole-I) HVDC terminals each at Pugalur (HVDC Station) & North Trichur (HVDC Station, Kerala) being part of Scheme-3 together under commercial operation w.e.f. 8.6.2021.

(g) It was agreed during above meeting dated 5.7.2021 of CEA/ Constituents that the part Scheme-1 (Phase I: ± 800 kV, 1500 MW HVDC terminal at Raigarh and Pugalur of Bipole-II) shall be executed alongwith part of Scheme-2 (400 kV D/C Pugalur (HVDC)-Edarpalayam transmission line and 400 kV D/C



Edarpalayam-Udumalpet transmission line). Therefore, the Petitioner put the asset: ± 800 kV 1500 MW (Pole-III) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station) being part of Scheme-1 and 400 kV D/C Pugalur (HVDC)-Edarpalayam transmission line and 400 kV D/C Edarpalayam-Udumalpet transmission line being part of Scheme-2 together under commercial operation w.e.f. 13.7.2021.

(h) It was also agreed during the meeting dated 5.7.2021 that part Scheme-1 (Phase II: ± 800 kV, 1500 MW HVDC terminal at Raigarh and Pugalur of Bipole-II) shall be executed alongwith part of Scheme-2 (400 kV D/C Pugalur (HVDC)-Thiruvalem transmission line). Therefore, the Petitioner put the asset: ± 800 kV 1500 MW (Pole-IV) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station) being part of Scheme-1 and 400 kV D/C Pugalur (HVDC)-Thiruvalem transmission line being part of Scheme-2 together under commercial operation w.e.f. 25.10.2021.

(i) The details and scope of the scheme as discussed and agreed to in various Standing Committees and Regional Power Committees of SR and WR are as follows:

Sl. No.	Dated	Particulars
1	4.1.2013	35 th meeting of Standing Committee on Power system planning in Southern Region
2	29.8.2013	36 th meeting of Standing Committee on Power system planning in Western Region
3	4.9.2013	36 th meeting of Standing Committee on Power system planning in Southern Region
4	9.10.2013	24 th meeting of Western Regional power committee
5	26.10.2013	23 rd Meeting of Southern Regional Power Committee
6	15.3.2014	24 th Meeting of Southern Regional Power Committee
7	31.7.2014	37 th meeting of Standing Committee on Power system planning in Southern Region
8	26.7.2014	25 th Meeting of Southern Regional Power Committee
9	5.9.2014	37 th meeting of Standing Committee on Power system planning in Western Region
10	30.9.2014	33 rd meeting of Empowered committee on Transmission
11	20.12.2014	26 th Meeting of Southern Regional Power Committee



Sl. No.	Dated	Particulars
12	7.3.2015	38 th meeting of Standing Committee on Power system planning in Southern Region
13	13.4.2015	34 th meeting 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	27 th 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) of EA, 2003
19	28.12.2015	39 th meeting of Standing Committee on Power system planning in Southern Region

(j) The scope of various schemes of the transmission scheme are as follows:

(i) Scheme-1: Raigarh-Pugalur 6000 MW HVDC System

1. Establishment of Raigarh HVDC Station ± 800 kV with 6000 MW HVDC terminals. This Raigarh station would be implemented with extended bus of Raigarh (Kotra) existing 400 kV Sub-station. The HVDC Station would have GIS for 400 kV part and AIS for HVDC part.
2. Establishment of Pugalur HVDC Station ± 800 kV with 6000 MW HVDC terminals. The HVDC Station would have GIS for 400 kV part and AIS for HVDC part.
3. ± 800 kV Raigarh (HVDC Station)-Pugalur (HVDC Station) HVDC Bi-pole link with 6000 MW capacity.

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

(ii) Scheme-2: AC System strengthening at Pugalur end

Transmission Line

1. Pugalur HVDC Station-Pugalur (Existing) 400 kV (quad) D/C line.
2. Pugalur HVDC Station-Arasur 400 kV (quad) D/C line.
3. Pugalur HVDC Station-Thiruvalem 400 kV (quad) D/C line with 2x80 MVAR line reactor at Pugalur HVDC Station end and 2x63 MVAR line reactor at Thiruvalem 400 kV 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 400 kV (quad) D/C line.
5. Edayarpalayam-Udumulpet 400 kV (quad) D/C line.

Sub-station

1. Extension of 400 kV Pugalur (existing) Sub-station:
 - 400 kV Line bays-2 numbers
2. Extension of 400 kV Arasur Sub-station
 - 400 kV Line bays-2 numbers
3. Extension of 400 kV Thiruvalem Sub-station
 - 400 kV Line bays-2 numbers.
 - 63 MVAR Line Reactors-2 numbers

(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. Extension of 400 kV Edayarpalayam (TANTRANSCO) Sub-station (*)
 - 400 kV Line bays-4 numbers
5. Extension of 400 kV Udumalpet Sub-station
 - 400 kV Line bays-2 numbers
6. Extension of 400 kV Pugalur GIS
 - 400 kV Line bays-8 numbers
 - 80 MVAR Line Reactors-2 numbers

()Bay extension works at Edayarpalayam (TANTRANSCO) Sub-station is envisaged to be implemented by TANTRANSCO on behalf of the Petitioner on deposit work basis.*

(iii) Scheme-3: Pugalur- Trichur 2000 MW VSC Based HVDC System

1. ± 320 kV, 2000 MW VSC based HVDC terminal at Pugalur. The HVDC Station would have GIS for 400 kV part and AIS for HVDC part.
2. ± 320 kV, 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.

(k) The Investment Approval (IA) of the transmission project (i.e. Scheme-1 of the transmission scheme) was accorded by the Board of Directors of the Petitioner's Company in its 328th meeting held on 5.5.2016 communicated *vide* Memorandum No. C/CP/IA/HVDC RP dated 9.5.2016 with an estimated cost of ₹1473337 lakh including IDC of ₹99528 lakh, based on December, 2015 price level.

(l) As per IA dated 5.5.2016, the Scheduled Commercial Operation Date (SCOD) of the transmission assets is 42 months from the date of IA i.e. by 5.11.2019. Against which the transmission assets, i.e., Asset-1 and Asset-2 had been declared under commercial operation (COD) on 19.3.2021 and 13.7.2021 respectively with time over-run of 490 days and 616 days respectively.

(m) The Petitioner vide affidavit dated 8.11.2021 has submitted the status of the transmission asset/ transmission scheme covered under various tariff petitions and the same are as follows:

Sl. No.	Name of Asset	SCOD	Actual COD	Covered under Petition No.
A	Scheme-1: Raigarh-Pugalur 6000 MW HVDC System			
1	±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)	5.11.2019	6.9.2020	685/TT/2020
2	±800 kV 1500 MW (Pole-II) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)	5.11.2019	9.3.2021	173/TT/2021 (instant Petition)
3	±800 kV 1500 MW (Pole-III) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)	5.11.2019	13.7.2021	
4	±800 kV 1500 MW (Pole-IV) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)	5.11.2019	25.10.2021	
B	Scheme-2: AC System strengthening at Pugalur end			



1	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	16.2.2020	6.9.2020	693/TT/2020
2	Pugalur HVDC Station – Edayarpalyam (TANTRANSCO) 400 kV (quad) D/C line along with associated bays at Pugalur HVDC station and Edayarpalyam (TANTRANSCO) Sub-station and 2 Numbers of 80 MVAR line reactors at Pugalur HVDC station and Edayarpalayam (TANTRANSCO) – Udumalpet 400 kV (quad) D/C line (Pugalur-Edayarpalyam line and Edayarpalyam-Udumalpet line are bypassed at Edayarpalyam Sub-station to make Pugalur-Udumalpet line)	16.2.2020	13.7.2021	243/TT/2021
3	Pugalur HVDC Station-Thiruvalem 400 kV (quad) D/C line along with associated bays at Pugalur HVDC station and Thiruvalem Sub-station and 2 Numbers of 63 MVAR line reactors at Thiruvalem Sub-station		25.10.2021	
4	4 Numbers of 400 kV line bays at Edayarpalayam (Tamil Nadu station) for terminating Pugalur HVDC Station-Edayarpalayam 400 kV (quad) D/C line and Edayarpalayam–Udumalpet 400 kV (quad) D/C lines.	16.2.2021	Yet to be put into commercial operation*	
*Bay extension works at Edayarpalayam (TANTRANSCO) Sub-station is envisaged to be implemented by TANTRASCO on behalf of POWERGRID on deposit work basis.				
C	Scheme-3: Pugalur-Trichur 2000 MW VSC Based HVDC System			
1	±320 kV VSC based 2000 MW Pugalur (HVDC)-North Trichur HVDC (Kerala) HVDC link along with ±320 kV 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	



	(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 400/220/33 kV 3 Ph Auto Transformer along with its associated bays & equipment (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	

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

5. The Petitioner has served the petition on the Respondents and notice regarding publishing 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 notice published in the newspapers by the Petitioner. Kerala State Electricity Board Limited (KSEB), Respondent No. 3 has filed a reply vide affidavit dated 18.11.2021 and has raised issues such as time over-run, O&M Expenses, security expenses, sharing of transmission charges and funding from PSDF/ National Clean Energy fund. Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO), Respondent No. 4, has filed its reply vide affidavit dated 24.11.2021, Telangana State Southern Power Distribution Company Limited (TSSPDCL), Respondent No. 9 and Telangana State Northern Power Distribution Company Limited (TSNPDCL), Respondent No. 10 have filed common reply vide affidavit dated 22.2.2022. TANGEDCO, TSSPDCL and TSNPDCL has raised the issues



of time over-run, O&M Expenses, sharing of transmission charges, declaration the asset of 'Strategic and National Importance' and funding from PSDF/National Energy Clean Fund. Madhya Pradesh Power Management Company Limited. (MPPMCL), Respondent No. 19, has filed a reply vide dated 1.12.2021 and has raised the issues of time over-run, Additional Capital Expenditure (ACE), O&M Expenses, security expenses and GST. Bangalore Electricity Supply Company Limited (BESCOM), Respondent No. 11, has filed its reply affidavit dated 7.3.2022 and has raised issues like time over-run, IDC and IEDC and O&M Expenses, sharing of transmission charges and funding from PSDF/National Energy Clean Fund.

6. We have already deliberated the issues related to sharing of transmission charges, funding from PSDF/National Energy Clean Fund including declaring the subject HVDC project as the asset of 'Strategic and National Importance' in detail in order dated 29.9.2022 in Petition No. 685/TT/2020 in respect of the subject HVDC project consisting of HVDC line and Pole-I and our views have been crystallised therein. Therefore, we are not inclined to deliberate these issues once again in the instant petition as the transmission assets covered in the instant petition i.e., Pole-II and Pole-III are integral part of the subject HVDC project and the directions contained in the order dated 29.9.2022 in Petition No. 685/TT/2020 regarding PSDF/NCEF funding & strategic transmission system of national importance etc. is applicable to Asset-1 and Asset-2 herein. The relevant portion of the order dated 29.9.2022 is as follows:

"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.”

7. The specific issues like ACE, time over-run, O&M Expenses, etc. raised by the Respondent(s) and clarifications given by the Petitioner thereto have been dealt in the relevant portions of this order.

8. The hearing in this matter were held on 11.2.2022 through video conference and the order was reserved in the matter.

9. This order is issued considering the submissions made by the Petitioner vide affidavit in the petition dated 2.2.2021 and the Petitioner's affidavits dated 8.11.2021, 14.12.2021 and 28.2.2022, KSEB's reply filed vide affidavit dated 18.11.2021, TANGEDCO's reply vide affidavit dated 24.11.2021, MPPMCL's reply affidavit dated 1.12.2021, TSSPDCL's and TSNPDCL's reply affidavit dated 22.2.2022, BESCO's reply affidavit dated 7.3.2022 and Petitioner's rejoinders vide affidavits dated 13.12.2021, 14.12.2021, 16.3.2022 and 17.3.2022 respectively in the matter.

10. Having heard the learned counsels for the Petitioner, TANGEDCO, TSSPDCL & TSNPDCL, KSEBL and MPPMCL and perused the material on record, we 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 vide affidavit dated 14.12.2021 in respect of the transmission assets for 2019-24 tariff period:



Asset-1: ±800 kV 1500 MW (Pole-II) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)

(₹ in lakh)

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Depreciation	355.41	5894.79	6134.99	6134.99
Interest on Loan	149.87	2408.59	2348.51	2180.15
Return on Equity	395.85	6566.70	6833.23	6833.23
O&M Expenses	83.59	1373.00	1421.00	1471.00
Interest on Working Capital	16.07	264.99	273.24	272.26
Total	1000.79	16508.07	17010.97	16891.63

Asset-2: ±800 kV 1500 MW (Pole-III) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)

(₹ in lakh)

Particulars	2021-22 (Pro-rata 262 days)	2022-23	2023-24
Depreciation	7178.01	10707.83	11131.49
Interest on Loan	2819.03	3991.69	3886.48
Return on Equity	8000.88	11935.35	12407.57
O&M Expenses	985.55	1421.00	1471.00
Interest on Working Capital	273.43	403.22	414.44
Total	19256.90	28459.09	29310.98

12. The Petitioner has claimed the following Interest on Working Capital (IWC) vide affidavit dated 14.12.2021 in respect of the transmission assets for 2019-24 tariff period:

Asset-1

(₹ in lakh)

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
O&M Expenses	110.54	114.42	118.42	122.58
Maintenance Spares	198.98	205.95	213.15	220.65
Receivables	1958.07	2035.12	2097.24	2076.84
Total Working Capital	2267.59	2355.49	2428.81	2420.07
Rate of Interest (in %)	11.25	10.50	10.50	10.50
Interest on Working Capital	16.07	264.99	273.24	272.26

Asset-2

(₹ in lakh)

Particulars	2021-22 (Pro-rata 262 days)	2022-23	2023-24
O&M Expenses	114.42	118.42	122.58
Maintenance Spares	205.95	213.15	220.65



Particulars	2021-22 (Pro-rata 262 days)	2022-23	2023-24
Receivables	3307.48	3508.65	3603.81
Total Working Capital	3627.85	3840.22	3947.04
Rate of Interest (in %)	10.50	10.50	10.50
Interest on Working Capital	273.43	403.22	414.44

Date of Commercial Operation (“COD”)

13. The Petitioner has initially submitted in the petition that the transmission assets were anticipated to be put into commercial operation on 31.1.2021 and 28.2.2021. However, the Petitioner vide affidavit dated 8.11.2021 has claimed the actual COD of Asset-1 and Asset-2 as 9.3.2021 and 13.7.2021 respectively.

14. 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.”

15. The Petitioner has submitted that it was decided in the Joint Standing Committee (JSC) meeting of SR and WR constituents held on 20.4.2015, that the scheme “±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) and associated AC transmission system at 400 kV level” would be implemented as three separate schemes 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

16. In the above JSC meeting, it was decided that the transmission schemes may be implemented as separate schemes, however, it is important that 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 discussed in the 39th meeting of SCPSRSR held on 28-29 December, 2015. In the meeting, it was agreed that the 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 was also decided in the above meeting that in case of any mismatch in the execution of these schemes, their usefulness shall be discussed with CEA before their execution.

17. However, the execution of Scheme-2 (AC System Strengthening at Pugalur end) and Scheme-3 (Pugalur-Trichur 2000 MW VSC Based HVDC link) was delayed due to severe RoW issues in the areas of Tamil Nadu and Kerala States. Accordingly, a meeting has been convened by CEA/ Constituents on 21.8.2020 to discuss the issue of



part execution of Raigarh-Pugalur-Trichur HVDC transmission system. Thereafter, two more meetings of CEA/ Constituents were held on 30.12.2020 and 5.7.2021 to discuss the execution of remaining part of the Raigarh-Pugalur-Trichur HVDC transmission system. The Petitioner vide affidavit dated 8.11.2021, has submitted copies of the CEA meetings dated 21.8.2020, 30.12.2020 and 5.7.2021, in response to the Commission's technical validation letter dated 21.10.2021 in the matter. Accordingly, as agreed in the above meetings dated 21.8.2020, 30.12.2020 and 5.7.2021, the Petitioner has carried out part execution of various assets covered under Scheme-1, Scheme-2 and Scheme-3 of the transmission project in the following sequence:

- (a) Part of Scheme-1 consisting of Raigarh-Pugalur HVDC transmission link along with Pole-I i.e., 1500 MW HVDC terminals each at Raigarh and Pugalur HVDC Sub-stations alongwith part of Scheme-2 consisting of 400 kV D/C Pugalur (HVDC)-Pugalur (existing) transmission line and 400 kV D/C Pugalur (HVDC)-Arasur transmission lines were put under commercial operation w.e.f. 6.9.2020 together.
- (b) Part of Scheme-1 consisting of Pole-II i.e., 1500 MW HVDC terminals each at Raigarh and Pugalur HVDC Sub-stations alongwith part of Scheme-3 consisting of ± 320 kV 2000 MW Pugalur (HVDC Station)-North Trichur (HVDC Station) HVDC Link along with ± 320 kV 1000 MW (Mono Pole-II) HVDC terminals each at Pugalur (HVDC Station) & North Trichur (HVDC Station, Kerala) and LILO of 400 kV D/C North Trichur- Kochi line and 220 kV lines of KSEB from North Trichur Sub-station were put under commercial operation w.e.f. 9.3.2021 together.
- (c) Part of Scheme-3 consisting of ± 320 kV 1000 MW (Mono Pole-I) HVDC terminals each at Pugalur (HVDC Station) & North Trichur (HVDC Station, Kerala) was put under commercial operation w.e.f. 8.6.2021.
- (d) Part of Scheme-1 consisting of Pole-III i.e., 1500 MW HVDC terminals each at Raigarh and Pugalur HVDC Sub-stations alongwith part of Scheme-2



consisting of 400 kV D/C Pugalur (HVDC)-Edarpalayam transmission line and 400 kV D/C Edarpalayam-Udumalpet transmission line were put under commercial operation w.e.f. 13.7.2021 together.

- (e) Part of Scheme-1 consisting of Pole-IV i.e., 1500 MW HVDC terminals each at Raigarh and Pugalur HVDC Sub-stations alongwith part of Scheme-2 consisting of 400 kV D/C Pugalur (HVDC)-Thiruvalam transmission lines were put under commercial operation w.e.f. 25.10.2021 together.

18. The Commission vide order dated 29.9.2022 in Petition No. 685/TT/2020 has already approved the part execution of Raigarh-Pugalur HVDC transmission system along with COD of 6.9.2020 in respect of Raigarh-Pugalur HVDC transmission link along with Pole-I i.e., 1500 MW HVDC terminals each at Raigarh and Pugalur HVDC Sub-stations (part of Scheme-1) and 400 kV D/C Pugalur (HVDC)-Pugalur (existing) transmission line and 400 kV D/C Pugalur (HVDC)-Arasur transmission line (part of Scheme-2) after taking into cognisance the discussions of meeting dated 21.8.2020 of CEA/ Constituents.

19. Therefore, considering the discussions of meetings dated 30.12.2020 and 5.7.2021 of CEA/ Constituents, we now approve the part execution of Raigarh-Pugalur HVDC transmission system in respect of Pole-II and Pole-III i.e., ± 800 kV 1500 MW HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station) covered under Scheme-1.

20. Further, the Commission vide RoP of hearing dated 11.2.2022, directed the Petitioner to submit the power flow details of Pole-I, Pole-II, Pole-III and Pole-IV of ± 800 kV 6000 MW Raigarh (HVDC Station)-Pugalur (HVDC Station). In response, the Petitioner vide affidavit dated 28.2.2022 has submitted that power flow has been achieved from the COD for Pole-I along with HVDC Raigarh-Pugalur link and Pole-II,



Pole-III and Pole-IV of ± 800 kV 6000 MW Raigarh (HVDC Station)-Pugalur (HVDC Station). In support of the same, the Petitioner has submitted the power flow chart in respect of the above transmission assets.

21. The Petitioner has submitted CEA energization certificates, the details of the same are as follows:

Sl. No	Particulars	CEA clearance date
1	HVDC Pole-2: 33 kV Auxiliary system, Converter transformer, Filters, valves at Pugalur station.	30.12.2019
2	HVDC Pole-2: AC Yard filter Zone-3 comprising 5 Numbers of Filter sub banks of HVDC station at Raigarh	6.02.2020
3	HVDC Pole-2: 33 kV Auxiliary system at Raigarh	6.02.2020
4	HVDC Pole-2: AC Yard filter Zone-2 comprising 4 Numbers of Filter sub banks of HVDC station at Raigarh	6.02.2020
5	HVDC Pole-2: Converter Transformer, Thyristor valves including PLC area and other valve equipment at Raigarh	6.02.2020
6	HVDC Pole-2: DC Yard equipment, filters including DC common area at Raigarh	6.02.2020
7	HVDC Pole-3: Converter Transformer, Thyristor valves including PLC area and other valve equipment at Raigarh	25.11.2020
8	HVDC Pole-3: Converter Transformer, AC filter bank, PLC area, Smoothing Reactor, Valve hall etc. at Pugalur	2.12.2020

22. The Petitioner has submitted the RLDC charging certificates dated 5.3.2021 and 9.8.2021 certifying that trial operation was successfully completed on 24.2.2021 and 12.7.2021 for Asset-1 and Asset-2 respectively and CMD certificate as required under the Grid Code.

23. Taking into consideration the CEA energization certificate, RLDC charging certificate and CMD certificate, COD of Asset-1 and Asset-2 is approved as 9.3.2021 and 13.7.2021 respectively.

Capital Cost

24. 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."*

25. The Petitioner vide affidavit dated 14.12.2021 has claimed the following capital cost as on COD and ACE projected to be incurred in respect of the transmission assets and has submitted the Auditor's Certificates dated 18.11.2021 in support of the same:



(₹ in lakh)

Assets	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	
Asset-1	128820.00	111929.99	573.94	8768.68	0.00	0.00	121272.61
Asset-2	230436.00	192777.38	0.00	10672.88	16753.05	0.00	220203.31

Cost Variation

26. The Petitioner has submitted that the estimated completion cost of the transmission assets is within FR apportioned approved cost. However, the reasons for item wise cost variation between approved cost and estimated completion cost is explained in Form-5 and the same is submitted in the Petition. Further, 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 that basis to the 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. Whereas, the estimates are prepared by the Petitioner 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. It is submitted that the cost estimate of the transmission scheme is on the basis of December, 2015 price level, whereas the contract date is May, 2016 price level.



27. The Petitioner vide affidavit dated 8.11.2021 has submitted major item/ head wise cost variation as follows:

Asset-1 (Pole-II)

(₹ in lakh)				
Sl. No.	Description	FR cost	Estimated capital cost	Variation (-decrease, +increase)
		a	b	c = b - a
A	Transmission Lines material	0.00	0.00	0.00
B	Sub-stations			
1	Civil Works	11415.00	10419.58	-995.42
2	HVDC Packages	100487.00	78600.51	-21886.49
3	Spares	2005.00	2341.8	336.8
C	Taxes & Duties	0.00	15783.82	15783.82
D	Over heads	6019.00	3846.96	-2172.04
E	Interest During Construction (IDC)	8894.00	7027.50	-1866.50
F	FERV		4225.19	4225.19
	Grand Total	128820.00	122245.37	-6574.63

- a) There is reduction of ₹22882 lakh w.r.t FR on account of HVDC Package, Erection, Stringing & Civil works including foundation. The cost variation is due to the actual site condition encountered during execution. In addition, the rate received through competitive biddings also effects the actual variation of the item w.r.t estimate. The Contracts for various packages under the transmission project was awarded to the lowest evaluated and responsive bidder, on the basis of Open International/ Domestic Competitive Bidding. The awarded prices represent the lowest prices available at the time of bidding of various packages, thus capturing the price level at the bidding stage.
- b) The FR costs of individual items/ materials are exclusive of taxes and duties and only EDEC, deemed export benefit is considered and CST@2% has been considered during FR, indicated under a separate head while the cost of items as per the actual expenditure is inclusive of taxes and duties. Increase of about ₹15783 lakh is mainly on accounts of actual taxes & duties, octroi, custom duty, excise duty, GST etc. paid based on the prevailing rate and charges raised by respective district, state and statutory authorities at the time of execution of the transmission project. The difference in taxes is mainly due to implementation of GST from 1.7.2017 as during the bid, the agency has considered deemed export



& Excise Duty Exemption certificate. However, after implementation of GST, IGST @ 18% is to be paid on all the import items as well as for on-shore supply/ services.

- c) As per approved cost, IEDC for the transmission asset was estimated at ₹6019 lakh, whereas, based on the actual expenditure incurred, IEDC works out to ₹3846 lakh. Thus, IEDC of the transmission asset has decreased by ₹2172 lakh w.r.t. to FR. The Petitioner has submitted that during estimation for FR, 5% of capital cost (excluding IEDC and IDC) has been considered for IEDC. The actual amount of IEDC has been considered for claiming the tariff. It is further submitted that the project timeline was 42 months from the date of IA against which the transmission asset has been executed in around 58 months due to various uncontrollable factors and thus on account of the delay of almost 16 months and 4 days in execution of the transmission asset, IEDC should be considered proportionately as against 5% as per FR considering the actual completion period of 58 months in case of transmission asset. However, the actual IEDC claimed is ₹3846 lakh which is 3.83% of the hard cost and thus within the percentages envisaged in FR.
- d) Interest during Construction (IDC) for the transmission asset as per FR cost was estimated at ₹8894 lakh, IDC for the transmission asset works out to ₹7027 lakh. Thus, there is a decrease of ₹1866 lakh w.r.t. FR in IDC in case of the transmission asset. The main reason for the reduction in IDC is due to deployment of loan of lower interest rate as compared to interest rates considered in FR.
- e) On account of deployment of foreign loan (ADB/ KFW) with respect to the transmission asset, there is an incidence of increase in FERV liability from FR cost to the tune of ₹4225 lakh w.r.t. FR cost due to revaluation of the said loans. The exchange rate at the time of preparation of FR was 1 USD = ₹67.57, EURO = ₹74.66, however, while on actual payment/ deployment the exchange rate extended to 1 USD = ₹73.07, EURO = ₹86.67 (present rate). The variation in exchange rate increases the FERV in overall cost of the transmission asset.



Asset-2 (Pole-III):

- a) There is reduction of ₹36400 lakh w.r.t. FR on account of HVDC package, erection, stringing and civil works including foundation. The cost variation is due to the actual site condition encountered during execution. In addition, the rate received through competitive biddings also effects the actual variation of the item w.r.t estimate. The contracts for various packages under the transmission 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 thus, capturing the price level at the bidding stage.
- b) The FR costs of individual items/ materials are exclusive of taxes and duties and only EDEC and deemed export benefit has been considered. Further CST@ 2% has been considered during FR and the same have been indicated under a separate head while the cost of items as per the actual expenditure is inclusive of taxes and duties. Increase of about ₹28816 lakh is mainly on account of actual taxes & duties, octroi, custom duty, excise duty, GST etc. paid based on the prevailing rate and charges raised by respective district, state and statutory authorities at the time of execution of the transmission project. The difference in taxes is mainly due to implementation of GST from 1.7.2017 as during the bid, the agency has considered deemed export & Excise Duty Exemption Certificate. However, after implementation of GST, IGST @ 18% is to be paid on all the import items as well as for on-shore supply/services.
- c) As per approved cost, IEDC for the transmission asset was estimated at ₹8169 lakh, whereas, based on the actual expenditure incurred, IEDC works out to ₹4988 lakh. Thus, IEDC under the transmission asset has decreased by ₹3180 lakh w.r.t. to FR. The Petitioner has submitted that during estimation for FR, 5% of capital cost (excluding IEDC and IDC) has been considered for IEDC while the actual amount of IEDC, has been considered for claiming the tariff. The Petitioner further submitted that the project timeline was 42 months as per FR against which the transmission asset has been put into commercial operation around 62 months due to various uncontrollable factors and thus on account of the delay of



almost 20 months and 8 days in execution of the transmission asset, IEDC should be considered proportionately as against 5% as per FR considering the actual completion period of 62 months in case of the transmission asset. However, the actual IEDC claimed is ₹4988 lakh which is 2.82% of the hard cost and thus within the percentages envisaged in FR.

- d) IDC for the transmission asset as per FR cost was estimated at ₹14000 lakh, IDC for the transmission asset works out to ₹10478 lakh. Thus, there is a decrease of ₹3521 lakh w.r.t. FR in IDC in case of the transmission asset. The main reason for the reduction in IDC is due to deployment of loan of lower interest rate as compared to interest rates considered in FR.
- e) On account of deployment of foreign loan (ADB/KFW) with respect to the transmission asset, there is an incidence of increase in FERV liability from FR cost to the tune of ₹6127 lakh w.r.t. FR due to revaluation of the said loans. The exchange rate at the time of preparation of FR was 1 USD = ₹67.57, EURO = ₹74.66, however, while on actual payment/ deployment the exchange rate extended upto 1 USD = ₹74.54, EURO = ₹88.06 (present rate). The variation in exchange rate increases the FERV in overall cost of the transmission asset.

28. 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 cost of the transmission assets is within the FR apportioned cost.

29. The Commission vide Technical Validation letter dated 21.10.2021 directed the Petitioner to furnish information about the actual cost to be compared with the benchmark cost as specified by the Commission and any variation in capital cost. In response, the Petitioner vide affidavit dated 8.11.2021 has made its submissions including a tabular comparison of various types of transmission lines such as 765 kV and 400 kV single circuit and double circuit lines under different wind zone, soil type and terrain (plain/hilly) etc. The Petitioner has submitted that no benchmark cost has



been specified by the Commission for the similar type of HVDC in the 2019 Tariff Regulations. The Petitioner has submitted that the benchmarking analysis for determination of prudent costs would require database spanning across the multiple variables such as terrain, location, RoW constraints (urban/rural/river/highway/railway crossings/ forest area etc.), weather conditions, market forces (demand-supply balance, input cost variations, economic and environmental factors etc.), technology adopted (AC/HVDC/Voltage level/reactive compensation etc.) influence the price discovery and the assessment of prudent costs for assets needs to be done on a specific project basis. It is not possible to benchmark the capital cost for the transmission assets at this stage. The Petitioner has further submitted that the table submitted in this regard illustrates that there is wide variation in cost per km of transmission lines even if such lines fall under same wind zones, soil conditions and topography. Therefore, results of any benchmarking in the case of such HVDC transmission assets may 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.

30. We have already perused the submission of the Petitioner with regard to benchmarking and expressed our views in recent orders dated 29.9.2022, 17.10.2022 and 24.11.2022 in Petition Nos. 685/TT/2020, 693/TT/2020 and 243/TT/2021, respectively related to the subject HVDC project.

31. The Petitioner has submitted the reasons of cost variation with respect to FR cost. As per Auditor's Certificate dated 18.11.2021 submitted vide affidavit dated 14.12.2021 there is an overall reduction of ₹17780.08 lakh and asset wise reduction of



₹7547.39 lakh and ₹10232.69 lakh in the estimated completion cost as compared to FR cost in respect of Asset-1 and Asset-2 respectively. It is observed that the cost variation in case of sub-station is due to the increase/ decrease in the materials and sub-station equipment cost (including taxes and duties) due to quantity variation as per actual site condition encountered during execution and price variation as per actual contract prices received in open bidding. The price variation is beyond the control of the Petitioner. The estimated completion cost of Asset-1 and Asset-2 is within FR cost and the same is allowed.

Time over-run

32. As per IA dated 5.5.2016, the transmission project was scheduled to be put under commercial operation within 42 months from the date of IA i.e. by 5.11.2019. However, there is a delay in execution of the transmission assets as follows:

Assets	SCOD	Actual COD	Time over-run
Asset-1	5.11.2019	9.3.2021	490 days
Asset-2	5.11.2019	13.7.2021	616 days

33. The Petitioner vide affidavit dated 8.11.2021 in response has submitted that the time over-run in execution of Asset-1 (Pole-II) and Asset-2 (Pole-III), herein can be bifurcated into following two parts:

- i Time over-run up to 6.9.2020, i.e. the reasons for time over-run in execution of Pole-I, related to the transmission assets covered in the instant petition, has already been submitted in detail in Petition No. 685/TT/2020 along with documentary evidence. The detailed reason along with chronology events up to 6.9.2020 in execution of Pole-I has been reproduced in the instant petition along with documentary evidence.
- ii Time over-run beyond 6.9.2020 i.e. delay in execution of Pole-II and Pole-III is attributable to severe RoW problems during execution of Scheme-2: AC System



Strengthening at Pugalur end and Scheme-3: Pugalur-Trichur 2000 MW VSC Based HVDC System.

34. The Petitioner has submitted that the time over-run up to 6.9.2020 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, RoW issues 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 WR and SR, the Petitioner has finally squeezed the prolonged delay and put the transmission asset i.e. main HVDC line and Pole-I into commercial operation on 6.9.2020.

35. With regard to time over-run beyond 6.9.2020, the Petitioner has submitted that it was decided that in case of any mismatch in the execution of these schemes, their usefulness shall be discussed with CEA before their execution. Since there was delay in execution of Scheme-2 and Scheme-3 due to severe RoW issues in the areas of Tamil Nadu and Kerala, the matter was discussed in CEA meetings dated 21.8.2020, 30.12.2020 and 5.7.2021 in order to mitigate the issue of mismatch and to ensure the usefulness of the executed assets. Accordingly, as agreed in the above meetings, the Petitioner has carried out part execution of various assets covered under Scheme-1, Scheme-2 and Scheme-3 of the transmission project in the following sequence:

- (a) Raigarh-Pugalur HVDC Transmission link along with Pole-I and 400 kV D/C Pugalur (HVDC)-Pugalur (existing) and Pugalur (HVDC)-Arasur transmission lines were put under commercial operation w.e.f. 6.9.2020 and claimed under



Petition No. 685/TT/2020 (HVDC system) and Petition No. 693/TT/2020 (AC system).

- (b) Pole-II and \pm 320 kV 2000 MW Pugalur-North Trichur HVDC link along with Mono Pole-II and AC system i.e. LILO of 400 kV D/C North Trichur line, 2x315 MVA 400/220 kV ICTs and 2 numbers 220 kV line bays at North Trichur (HVDC) were put under commercial operation w.e.f. 9.3.2021. Pole-II has been covered in the instant petition (Petition No. 173/TT/2021) and remaining assets are covered under Petition No. 172/TT/2021.
- (c) Mono Pole-I i.e., \pm 320 kV 1000 MW HVDC terminals each at Pugalur (HVDC Station) & North Trichur (HVDC Station, Kerala) was put under commercial operation w.e.f. 8.6.2021 and covered under Petition No. 172/TT/2021.
- (d) Pole-III i.e. 1500 MW HVDC terminals each at Raigarh and Pugalur HVDC Sub-stations alongwith part of AC system of Scheme-2 consisting of 400 kV D/C Pugalur (HVDC)-Edarpalayam transmission line and 400 kV D/C Edarpalayam-Udumalpet transmission line was put under commercial operation w.e.f. 13.7.2021. Pole-III has been covered in the instant petition (Petition No. 173/TT/2021) and AC system is covered in Petition No. 243/TT/2021.
- (e) Pole-IV i.e. 1500 MW HVDC terminals each at Raigarh and Pugalur HVDC Sub-stations along with part of AC system of Scheme-2 consisting of 400 kV D/C Pugalur (HVDC)-Thiruvalem transmission line was put under commercial operation w.e.f. 25.10.2021. Pole-IV has been covered in Petition No. 242/TT/2021 and AC system is covered in Petition No. 243/TT/2021.

36. The Petitioner has submitted copy of minutes of CEA/ Constituents' meetings dated 21.8.2020, 30.12.2020 and 5.7.2021 and has submitted PERT and CPM chart i.e. planned vs actual execution time in support of condonation of time over-run claim. Further, the Petitioner has requested to condone the delay in completion of the transmission assets on merit as it was beyond the control of the Petitioner.



37. MPPMCL has submitted that the Petitioner has claimed that the delay is due to various factors like court cases, forest clearance, RoW issues etc. MPPMCL has further submitted that, the Petitioner has resolved the RoW issues with the help of Central/State/District/Local Administration. While execution of the transmission lines, RoW issues, litigation, law and order problem are common, and they are not under *force majeure* condition. MPPMCL has further submitted that it is the sole responsibility of the Petitioner to obtain all the required consents/ clearances, including forest clearance for timely completion of the project. The Covid-19 pandemic started after scheduled completion period, and the Petitioner, if had resolved all the issues on time, the work would have been completed well before lockdown commenced. MPPMCL has submitted that delay in getting clearance from forest department and revenue authorities are purely attributable to the Petitioner and has requested that the delay due to these reasons may be disallowed.

38. In response, the Petitioner has reiterated its submission and relied on the facts as set out by it in the petition. The Petitioner has further submitted that the 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 8.11.2021.

39. KSEB has submitted that the Petitioner has claimed that the time over-run was due to court cases during award of HVDC terminal, RoW issues, forest clearance, wildlife clearance and livelihood rehabilitation from forest department and the delay in getting clearance from forest department and revenue authorities are purely attributable to the Petitioner and could have been avoided and controlled and has requested that the time over-run due to these reasons may be disallowed.



40. In response, the Petitioner has reiterated reasons for time over-run as submitted in the petition and 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 along with the relevant minutes of meeting with SR constituents and CEA vide affidavit dated 8.11.2021. The Petitioner has prayed to condone the delay in completion of the transmission assets on merit of the same being out of the control of Petitioner under “uncontrollable factors” in line with Regulations 22(2)(c) of the 2019 Tariff Regulations.

41. BESCO has submitted that due to time over-run, the allowable IDC and IEDC need to be considered in relation to the SCOD and not as on the date of actual COD of the transmission assets. In response, the Petitioner has reiterated and relied on the facts as set out by it in the petition.

42. TANGEDCO has submitted that in execution of transmission lines, RoW issues, court cases litigation are common, and they are not *force majeure* conditions. TANGEDCO has further submitted that except for the lockdown period imposed from 24.3.2020, other delays are attributable to the Petitioner. Hence, the reasons given by the Petitioner are unjustifiable and attributable to the Petitioner and the same may not be condoned and IDC and IEDC may be disallowed for the said delayed period. Similar submissions were submitted by TSSPDCL and TSNPDCL.

43. In response, the Petitioner has reiterated the submissions as made in the Petition and rejoinder to the reply of MPPMCL.

44. We have considered the submissions of the Petitioner and MPPMCL, KSEB, TANGEDCO and TSSPDCL and TSNPDCL and have gone through the documentary



evidences produced on record regarding the 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, SCOD works out to 5.11.2019. However, Asset-1 and Asset-2 were put into commercial operation on 9.3.2021 and 13.7.2021 respectively. Therefore, there is a time over-run of 490 days and 616 days in execution of Asset-1 and Asset-2 respectively. The Petitioner has submitted that the time over-run may be analyzed in two parts (i) delay up to 6.9.2020 of about 306 days in execution of Raigarh-Pugalur HVDC transmission link and Pole-I and (ii) delay beyond 6.9.2020 of about 184 days and 310 days in putting into commercial operation of Asset-1 and Asset-2 due to execution of Scheme-3 i.e. Pugalur-Trichur 2000 MW VSC based HVDC System and delay in execution of AC system covered in Scheme-2 respectively.

45. It is observed that the 1st element of the subject HVDC Scheme i.e. Raigarh-Pugalur HVDC transmission link and Pole-I together with matching AC system namely 400 kV D/C Pugalur (HVDC)-Pugalur (existing) and Pugalur (HVDC)-Arasur transmission lines were put under commercial operation w.e.f. 6.9.2020 and claimed under Petition No. 685/TT/2020 (Pole-1 of HVDC system) and Petition No. 693/TT/2020 (AC system). The Petitioner has submitted that the time over-run up to 6.9.2020 was mainly due to delay in grant of forest clearance in Gadchiroli-Chandrapur, Bellampalli, Ramgiri, Vellore and Dharampuri for HVDC transmission line, court cases during award of HVDC terminal, RoW issues vis-à-vis law-and-order problems during the 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 WR and SR, the Petitioner has finally squeezed the prolonged delay



and put the transmission asset i.e. main HVDC line and Pole-I into commercial operation on 6.9.2020. The Commission vide order dated 29.9.2022 in Petition No. 685/TT/2020 condoned the time over-run with respect to Pole-I of HVDC system along with HVDC line. The relevant portion of the order dated 29.9.2022 is as follows:

“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 Petitioner 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.

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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) Page 58 of 106 Order in Petition No.685/TT/2020 of the 2019 Tariff Regulations and is beyond the control of the Petitioner. Accordingly, we condone the total time over-run of 306 days in case of the instant transmission asset.”

46. The time over-run up to 6.9 2020 has already been condoned in order dated 29.9.2022 in Petition No. 685/TT/2020. The Petitioner in the instant petition has submitted the same set of justification and documents that were placed before the Commission in Petition No. 685/TT/2020 in support is its claim for condonation of time over-run in case of Asset-1 and Asset-2. The transmission assets i.e. Asset-1 (Pole-II) and Asset-2 (Pole-III) are integral part of the subject HVDC System. Hence, technically



Asset-1 and Asset-2 could not have been executed prior to 6.9.2020, i.e. before the COD of Raigarh-Pugalur HVDC line and Pole-I covered under Petition No. 685/TT/2020. Therefore, the decision in the above order dated 29.9.2022 in respect of Raigarh-Pugalur HVDC line and Pole-I covered in Petition No. 685/TT/2020 regarding condonation of time over-run up to 6.9.2020 is applicable for the instant transmission assets also. Accordingly, the time over-run of 306 days (up to 6.9.2020) in respect of Asset-1 and Asset-2 is condoned.

47. As regards the time over-run beyond 6.9.2020, the Petitioner has submitted that it was decided in the Joint Standing Committee meeting of SR and WR constituents held on 20.4.2015, that the subject HVDC transmission system shall be implemented in three schemes i.e. Scheme-1: Raigarh-Pugalur 6000 MW HVDC System, Scheme-2: AC System strengthening at Pugalur end and Scheme-3: Pugalur-Trichur 2000 MW VSC Based HVDC System. It was also decided that Scheme-2 and Scheme-3 should be in place before execution of Scheme-1. Further, the execution of Scheme-3 i.e. Pugalur-Trichur 2000 MW VSC Based HVDC link was delayed due to severe RoW problem in the stretches falling in Tamil Nadu and Kerala. Accordingly, on 30.12.2020 the meeting has been convened by CEA/ Constituents to discuss the issue of part execution of Raigarh-Pugalur-Trichur HVDC transmission system. After discussion, it was agreed that the Pole-II (Asset-1, herein) shall be executed along with Scheme-3 consisting of Pugalur-Trichur 1000 MW VSC based HVDC System together with LILO of North-Trichur–Cochin 400 kV D/C line and 220 kV lines from North Trichur Sub-station. Therefore, the Petitioner was compelled to delay the execution of Pole–II in order to match with completion of assets of Scheme-3 as above. Accordingly, Asset-1 i.e. Pole-II was put into commercial operation w.e.f. 9.3.2021 together with Pugalur-



North Trichur HVDC link along with Mono Pole-II and associated AC system i.e. LILO of 400 kV D/C North Trichur line, 2x315 MVA 400/220 kV ICTs and 2 numbers 220 kV line bays at North Trichur (HVDC). The relevant extracts of the minutes of meeting held on 30.12.2020 for part execution of Raigarh-Pugalur-Trichur HVDC transmission system is as follows:

“20. After further discussions, following was concluded:

- Part commissioning of Scheme-1 (Phase II: 1500 MW of Bipole-I) of Raigarh-Pugalur HVDC Transmission system and part commissioning of Scheme-3: Pugalur- Trichur 1000 MW VSC Based HVDC System would be possible after commissioning of North-Trichur – Kozikode 400 kV D/C line and 220 kV lines from North Trichur S/S.*
- Pugalur- Trichur 1000 MW VSC based HVDC System would be commissioned under controlled loading condition by POSOCO with North-Trichur –Kozikode 400 kV line and North Trichur- Mallaparamba 220 kV line. After commissioning of 220 kV line from North Trichur to Nallalam, Pugalur- Trichur VSC HVDC system can be loaded upto 1000 MW.*
- In case of outage of Pugalur-North Trichur VSC HVDC system, power flow on Raigarh – Pugalur HVDC system would be controlled to avoid overloading of downstream network in Tamil Nadu system.*
- After charging of Pugalur-North Trichur VSC HVDC system, KSEB should restrict the loading at Kochi/Cochin ICT’s within limits by redistributing load at other substations.*
- Bypassing of one ckt. of Neyveli TS-II- Salem 400kV D/C line of PGCIL and Neyveli TS-II –NNTPS 400 kV S/C line of PGCIL at Neyveli TS-II, to form NNTPS- Salem 400 kV S/c line (agreed in 42nd SCPSPSR) needs to be expedited.”*

48. As per the above approval of CEA, the Petitioner has executed Asset-1 i.e. Pole-II and put the same into commercial operation w.e.f. 9.3.2021 together with part Scheme-3 consisting of Pugalur-North Trichur HVDC link along with Mono Pole-II and associated AC system i.e. LILO of 400 kV D/C North Trichur line 2x315 MVA 400/220 kV ICTs and 2 numbers 220 kV line bays at North Trichur (HVDC). It is observed that all the assets of Scheme-3 having COD of 9.3.2021 are covered in order dated 27.1.2023 in Petition No. 172/TT/2021. The issue of time over-run of assets of Scheme-3 consisting of ± 320 kV 2000 MW Pugalur (HVDC)- North Trichur HVDC link along with Mono Pole-II (1000 MW) and associated AC system i.e. LILO of 400 kV D/C North Trichur line, 2x315 MVA 400/220 kV ICTs and 2 numbers 220 kV line bays at North Trichur (HVDC) have been dealt in Petition No. 172/TT/2021 and was condoned by the



Commission vide order dated 27.1.2023 in Petition No. 172/TT/2021. The relevant portion of the order dated 27.1.2023 is as follows:

“41. It is observed from the chronology of scheduled versus actual project activities, that the Petitioner has placed LOA and commenced the foundation works as per schedule. However, the Petitioner encountered RoW issues between 11.12.2017 to 25.7.2020 of about 957 days at Location No. 32/2,34/0,38/1, 49/0,73/0,74/0,75/0 of the transmission line in the State of Tamil Nadu covering about 13 districts thus affecting the execution of transmission line. This delay of 957 days was caused by RoW issues and thus was beyond the control of the Petitioner. Moreover, RoW issue was resolved on 25.7.2020 which is about 160 days beyond SCOD. This additional time of 957 days due to RoW issues had a cascading effect on the execution of line. However, the Petitioner compressed the execution time due to which the overall time over-run has been reduced to 334 days and 425 days in execution of Asset-1, 3, 4 & 5 and Asset-2, respectively. We are of the view that the time over-run of 334 days and 425 days was due to hindrance caused by RoW issues and it was beyond the control of the Petitioner and accordingly is condoned.”

49. In view of above decision of the Commission, the delay up to 9.3.2021 has already been condoned in order dated 27.1.2023 in Petition No. 172/TT/2021 due to RoW problems. The Commission has perused the time over-run up to 9.3.2021 and after detailed analysis condoned the time over-run up to 9.3.2021 in respect of ± 320 kV 2000 MW Pugalur (HVDC)- North Trichur HVDC link along with Mono Pole-II (1000 MW) and associated AC system i.e. LILO of 400 kV D/C North Trichur line, 2x315 MVA 400/220 kV ICTs and 2 numbers 220 kV line bays at North Trichur (HVDC). Therefore, the time over-run from 6.9.2020 to 9.3.2021 of about 184 days was beyond the control of Petitioner so far as Asset-1 is concerned. We have already condoned the delay of 306 days from SCOD to 6.9.2020 in execution of Asset-1 in the above paragraph of this order. Accordingly, the total time over-run of 490 days (306+184) in respect of the Asset-1 is condoned.

50. As regards to Asset-2 (Pole-III), the Petitioner has submitted that another meeting of CEA/ Constituents was held on 5.7.2021 to discuss the issue of mismatch arising due to further delay in execution of AC system covered in Scheme-2. It was



decided that Pole-I (1500 MW) of Bi-pole-II (3000 MW) i.e., Pole-III (Asset-II, herein) would be executed only after execution of Pugalur (HVDC)-Edayarpalayam-Udumalpet 400 kV D/C transmission lines. It was also informed during the above meeting dated 5.7.2021 that Pugalur (HVDC)-Edayarpalayam and Edayarpalayam-Udumalpet transmission lines were ready for execution but Edayarpalayam Sub-station was still under implementation by TANTRANSCO. Therefore, it was decided that Pugalur (HVDC)-Edayarpalayam and Edayarpalayam-Udumalpet lines would be by-passed at Edayarpalayam to form Pugalur (HVDC)-Udumalpet 400 kV (quad) D/C line as an interim arrangement. Accordingly, Asset-2 i.e. Pole-III was executed and put into commercial operation w.e.f. 13.7.2021 together with Pugalur (HVDC)-Edayarpalayam-Udumalpet 400 kV D/C transmission line as interim arrangement.

51. With regard to Asset-2 (Pole-III), it is observed from CEA charging certificate that Pole-III was ready for charging on 2.12.2020. However, as decided in the CEA meeting dated 5.7.2021, Asset-2 i.e. Pole-III was executed and put into commercial operation w.e.f. 13.7.2021 together with 400 kV D/C Pugalur (HVDC)-Edayarpalayam transmission line and 400 kV D/C Edayarpalayam-Udumalpet transmission line covered under Scheme-2. The Petitioner has submitted that 400 kV D/C Pugalur (HVDC)-Edayarpalayam transmission line and 400 kV D/C Edayarpalayam-Udumalpet transmission line was delayed due to RoW issues, forest clearance, Covid-19 pandemic situations which were beyond the control of the Petitioner. The Petitioner has further submitted that Edayarpalayam Sub-station being executed by TANTRANSCO for terminating Pugalur (HVDC)-Edayarpalayam and Edayarpalayam-Udumalpet transmission lines was getting delayed due to which it was decided in meeting dated 5.7.2021 to bypass the Edayarpalayam Sub-station and directly connect both the above



line to make it 400 kV D/C Pugalur (HVDC)-Udumalpet line under interim arrangement. The relevant extracts of the minutes of the meeting held on 5.7.2021 for part execution of Raigarh-Pugalur-Trichur HVDC Transmission System is as follows:

“18. After deliberations, following was agreed:

i. As trial operation of Monopole-I (1000 MW) of Pugalur – North Trichur VSC based HVDC system has already been completed, therefore the same may be commissioned.
ii. Following transmission elements may be commissioned on completion.

- *Pole-I (1500 MW) of Bipole-II (3000 MW) of Raigarh-Pugalur HVDC system.*
- *Pugalur (HVDC) – Edayarpalayam 400 kV (quad) D/c line*
- *Edayarpalayam – Udumalpet 400 kV (quad) D/c line*

Pole-I (1500 MW) of Bipole-II (3000 MW) would be commissioned only after commissioning of Pugalur (HVDC) – Edayarpalayam– Udumalpet 400 kV (quad) D/c line. As Edayarpalayam S/s is still under construction, the Pugalur (HVDC) – Edayarpalayam 400 kV (quad) D/c line and Edayarpalayam – Udumalpet 400 kV (quad) D/c line would be by-passed at Edayarpalayam to form Pugalur (HVDC)- Udumalpet 400 kV (quad) D/c line as an interim arrangement.

iii. POWERGRID to expedite the commissioning of Pugalur (HVDC) – Thiruvalem 400 kV D/c (quad) line.”

52. It is observed that the Petitioner has claimed tariff for 400 kV D/C Pugalur (HVDC)-Edayarpalayam and Edayarpalayam-Udumalpet transmission lines in Petition No. 243/TT/2021. The Commission vide order dated 24.11.2022 in Petition No. 243/TT/2021 has already dealt with the issue of time over-run, wherein it was held as follows:

“39. It is observed from the chronology of scheduled versus actual project activities, that the Petitioner has placed LoA for survey work in advance and carried out preparatory activities prior to the IA. However, the Petitioner encountered RoW issues between 21.2.2019 to 19.4.2021 of about 788 days in Pugalur-Edayarpalayam line and between 27.8.2019 to 16.3.2021 of about 567 days in Pugalur-Edayarpalayam line at various locations of the transmission lines in the State of Tamil Nadu covering about 13 districts, thus affecting the execution of 400 kV D/C Pugalur (HVDC)-Edayarpalayam (TANTRANSCO) and 400 kV D/C Edayarpalayam (TANTRANSCO)-Udumalpet transmission lines. This delay of 788 days and 567 days in completion of Pugalur Edayarpalayam and Pugalur-Edayarpalayam lines, respectively was caused by RoW issues and court cases and thus was beyond the control of the Petitioner. Moreover, RoW issue was resolved on 19.4.2021 and 16.3.2021 in the Pugalur-Edayarpalayam and Pugalur-Edayarpalayam lines respectively, which is about 428 days and 394 days, respectively beyond the SCOD. It is stated that Pugalur-Edayarpalayam and Pugalur-Edayarpalayam lines were required to be executed simultaneously to Edayarpalayam Sub-station, since, 4 numbers of 400 kV line bays at Edayarpalayam (Tamil Nadu Station) for terminating Pugalur HVDC Station–Edayarpalayam and Edayarpalayam–Udumalpet 400 kV (quad) D/C lines is yet to be executed. Accordingly, it was decided to



directly connect Pugalur-Edayarpalayam and Pugalur-Edayarpalayam lines by way of bypassing Edayarpalyam (Tamil Nadu Sub-station). Therefore, immediately after the RoW issues were resolved on 19.4.2021 and 16.3.2021 in both the above lines, the Petitioner completed the remaining activities and both the lines were declared under commercial operation on 13.7.2021. This additional time of 788 days and 567 days due to RoW issues and court cases had a cascading effect on the execution of Pugalur-Edayarpalayam and Pugalur-Edayarpalayam lines respectively. Due to efforts made by the Petitioner, the overall delay was reduced to 513 days. Thus, the Petitioner faced serious issues during the construction of the above transmission lines. Considering the reasons enumerated above, we are of the view that hindrance caused due to RoW issues and court cases were beyond the control of the Petitioner and accordingly the time over-run of 513 days in case of Asset-1 is condoned.”

53. The time over-run up to 13.7.2021 has already been condoned in order dated 24.11.2022 in Petition No. 243/TT/2021. Therefore, we are of the view that the time over-run from 6.9.2020 to 13.7.2021 of about 310 days was beyond the control of Petitioner as far as Asset-2 (Pole-III) is concerned. We have already condoned the time over-run of 306 days from SCOD to 6.9.2020 in execution of Asset-2 above. Accordingly, the total time over-run of 616 days (306+310) in respect of the Asset-2 is also condoned.

54. In view of the above, the time over-run of 490 days and 616 days in respect of Asset-1 and Asset-2 respectively under Scheme-1 deserves to be condoned and, hence, condoned. The details of time over-run condoned are as follows:

Assets	IA date	SCOD as per IA	Actual COD	Time over-run	Time over-run condoned
Asset-1	5.5.2016	5.11.2019	9.3.2021	490 days	490 days
Asset-2		5.11.2019	13.7.2021	616 days	616 days

Interest During Construction (IDC)

55. The Petitioner vide affidavit dated 14.12.2021 has claimed the following IDC in respect of the transmission assets covered in the instant petition and has submitted the statement showing IDC claim, discharge of IDC liability as on COD and thereafter:



(₹ in lakh)

Assets	IDC as per Auditor's Certificate dated 18.11.2021	IDC discharged up to COD	IDC discharged during 2021-22	IDC discharged during 2022-23
Asset-1	7014.59	6287.32	727.27	0.00
Asset-2	10491.63	9908.75	574.46	8.43

56. We have considered the submissions of the Petitioner. As discussed above in this order, the time over-run of the transmission assets has been fully condoned. Accordingly, IDC on cash basis up to the COD has been worked out on the basis of the loan details given in the statement showing discharge of IDC and Form-9C for the transmission assets. 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 subject to revision at the time of truing up are as follows:

(₹ in lakh)

Assets	IDC as per Auditor's Certificate dated 18.11.2021	IDC disallowed due to computational error	IDC Allowed on accrual basis	Undischarged IDC liability as on COD	IDC allowed on cash basis as on COD	Discharge of IDC liability allowed as ACE	
						2021-22	2022-23
Asset-1	7014.59	44.35	6970.24	817.42	6152.82	817.42	0.00
Asset-2	10491.63	51.26	10440.37	577.11	9863.26	574.46	2.65

Incidental Expenditure During Construction ("IEDC")

57. The Petitioner has claimed IEDC for the transmission assets vide affidavit dated 14.12.2021 as per the Auditor's Certificate dated 18.11.2021. The Petitioner has further submitted that the entire amount of IEDC for the transmission assets has been discharged up to COD. As the time over-run for the transmission assets have been completely condoned, there is no disallowance of IEDC on this account. Accordingly, details of IEDC claimed as per Auditor's Certificate, IEDC disallowed and IEDC allowed are as follows:



(₹ in lakh)

Assets	IEDC as per Auditor's Certificate dated 18.11.2021 (A)	IEDC disallowed due to time over-run not condoned (B)	IEDC allowed (A-B)
Asset-1	3846.96	0.00	3846.96
Asset-2	4988.81	0.00	4988.81

Initial Spares

58. 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%*”

59. Initial Spares as claimed by the Petitioner are as follows:

Assets	Particulars	Plant and machinery cost (₹ in lakh)	Initial Spares claimed (₹ in lakh)	Initial Spares claimed (in %)	Ceiling limit as mentioned as per Regulation (in %)
		A	B		C
Asset-1	Sub-station (HVDC)	97724.12	2341.80	2.36	4.00
Asset-2	Sub-station (HVDC)	175340.87	5459.00	3.08	4.00

60. Initial Spares discharge with respect to the transmission asset as per Form-13 submitted by the Petitioner vide affidavit dated 14.12.2021 are as follows:

(₹ in lakh)

Assets	Particulars	Initial Spares claimed	Initial Spares discharged			
			As on COD	2021-22	2022-23	Total
Asset-1	Sub-station (HVDC)	2341.80	2341.80	0.00	0.00	2341.80



Assets	Particulars	Initial Spares claimed	Initial Spares discharged			
			As on COD	2021-22	2022-23	Total
Asset-2	Sub-station (HVDC)	5459.00	3536.00	0.00	1923.00	5459.00

61. We have considered the submissions of Petitioner. Initial Spares claimed by the Petitioner is within ceiling limit of 4% as specified under Regulation 23(a)(iii) of the 2019 Tariff Regulations. Initial Spares allowed for the transmission assets are as follows:

Asset	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 dis-allowed (₹ in lakh)	Initial Spares allowed (₹ in lakh)
		A	B	C	$D=(A-B) * C / (100-C)$	E=B-D	
Asset-1	Sub-station (HVDC)	97724.12	2341.80	4.00%	3974.26	NIL	2341.80
Asset-2	Sub-station (HVDC)	175340.87	5459.00	4.00%	7078.41	NIL	5459.00

62. The capital cost allowed as on COD in respect of the transmission asset after adjusting disallowed/ undischarged IDC are as follows:

Assets	Capital cost claimed as on COD (as per Auditor's Certificate) (A)	IDC disallowed due to computational error (B)	Undischarged IDC (C)	Capital Cost as on COD (D=A-B-C)
Asset-1	111929.99	44.35	817.42	111068.22
Asset-2	192777.38	51.26	577.11	192149.01

Additional Capital Expenditure ("ACE")

63. 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



(1) *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:*

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

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

- (a) *The useful life of the assets is not commensurate with the useful life of the project and such assets have been fully depreciated in accordance with the provisions of these regulations;*
- (b) *The replacement of the asset or equipment is necessary on account of change in law or Force Majeure conditions;*
- (c) *The replacement of such asset or equipment is necessary on account of obsolescence of technology; and*
- (d) *The replacement of such asset or equipment has otherwise been allowed*



by the Commission.”

64. The Petitioner has claimed that ACE incurred/ projected to be incurred is mainly on account of balance/ retention payments and, hence, the same is claimed under Regulations 24(1)(a) and 24(1)(b) of the 2019 Tariff Regulations. The Petitioner has claimed capital cost as on 31.3.2024 as follows:

(₹ in lakh)

Assets	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	
Asset-1	128820.00	109217.53	2245.85	8768.68	0.00	0.00	120232.06
Asset-2	230436.00	179459.76	10914.44	19842.65	8859.94	0.00	219076.79

65. The Petitioner vide affidavit dated 14.12.2021 has updated the claimed capital cost as on 31.3.2024 as follows:

(₹ in lakh)

Assets	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	
Asset-1	128820.00	111929.99	573.94	8768.68	0.00	0.00	121272.61
Asset-2	230436.00	192777.38	0.00	10672.88	16753.05	0.00	220203.31

66. MPPMCL has submitted that the Petitioner has claimed ACE under Regulation 14(1) of the Tariff Regulations with the reasoning of the balance/ retention payment only, without providing proper details and justification. MPPMCL has submitted that the claims of the Petitioner may only be allowed in true-up when it comes actual. In response, the Petitioner has submitted that the ACE claimed is on account of balance and retention payments as well as balance work under Regulations 24(1)(a) and 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



has already been submitted vide affidavit dated 11.8.2021 and has requested to allow the ACE as claimed.

67. We have considered the submissions made by the Petitioner and MPPMCL. ACE claimed by the Petitioner has been allowed under Regulations 24(1)(a) and 24(1)(b) of the 2019 Tariff Regulations on account of balance and retention payments for works already executed. Accordingly, ACE allowed for 2019-24 period are as follows:

Asset-1

(₹ in lakh)				
ACE 2019-24				
Particulars	2020-21	2021-22	2022-23	2023-24
ACE claimed as per Auditor's Certificate	573.94	8768.68	-	-
Add: IDC Discharged	-	817.42	-	-
ACE allowed	573.94	9586.10	-	-

Asset-2

(₹ in lakh)				
ACE 2019-24				
Particulars	2020-21	2021-22	2022-23	2023-24
ACE claimed as per Auditor's Certificate	-	10672.88	16753.05	-
Add: IDC Discharged	-	574.46	2.65	-
ACE allowed	-	11247.34	16755.70	-

68. The capital cost considered for the transmission assets for 2019-24 tariff period are as follows:

Assets	Capital cost as on COD	ACE 2019-24				Capital cost as on 31.3.2024
		2020-21	2021-22	2022-23	2023-24	
Asset-1	111068.22	573.94	9586.10	0.00	0.00	121228.26
Asset-2	192149.01	0.00	11247.34	16755.70	0.00	220152.05

Debt-Equity ratio

69. 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.”

70. Debt-equity ratio considered for the purpose of computation of tariff for 2019-24 tariff period for the transmission assets are as follows:

Asset-1

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	77747.75	70.00	71112.03	70.00	84859.78	70.00
Equity	33320.47	30.00	3048.01	30.00	36368.48	30.00
Total	111068.22	100.00	10160.04	100.00	121228.26	100.00

Asset-2

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	134504.31	70.00	19602.13	70.00	154106.44	70.00
Equity	57644.70	30.00	8400.91	30.00	66045.62	30.00
Total	192149.01	100.00	28003.04	100.00	220152.06	100.00

Depreciation

71. 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.”

72. 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 the WAROD is placed in the Annexure. Depreciation allowed for the transmission assets are as follows:

Asset-1

(₹ in lakh)

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Depreciation				
Opening Gross Block	111068.22	111642.16	121228.26	121228.26
ACE	573.94	9586.10	0.00	0.00
Closing Gross Block	111642.16	121228.26	121228.26	121228.26
Average Gross Block	111355.19	116435.21	121228.26	121228.26
Freehold Land	0.00	0.00	0.00	0.00
Weighted average rate of Depreciation (WAROD) (in %)	5.06	5.06	5.06	5.06
Balance useful life of the asset (Year)	25	25	24	23
Lapsed life at the beginning of the year (Year)	0	0	1	2
Aggregate Depreciable Value	100221.34	104793.43	109107.25	109107.25
Combined Depreciation during the year	354.97	5890.27	6132.75	6132.75
Aggregate Cumulative Depreciation	354.97	6245.24	12377.99	18510.73
Remaining Aggregate Depreciable Value	99866.37	98548.19	96729.26	90596.52



Asset-2

(₹ in lakh)

Particulars	2021-22 (Pro-rata 262 days)	2022-23	2023-24
Depreciation			
Opening Gross Block	192149.01	203396.35	220152.05
ACE	11247.34	16755.70	0.00
Closing Gross Block	203396.35	220152.05	220152.05
Average Gross Block	197772.68	211774.20	220152.05
Freehold Land			
Weighted average rate of Depreciation (WAROD) (in %)	5.06	5.06	5.06
Balance useful life of the asset (year)	25	25	24
Lapsed life at the beginning of the year (Year)	0	0	1
Aggregate Depreciable Value	178086.21	190694.00	198237.91
Combined Depreciation during the year	7176.36	10705.39	11128.90
Aggregate Cumulative Depreciation	7176.36	17881.75	29010.65
Remaining Aggregate Depreciable Value	170909.85	172812.25	169227.26

Interest on Loan (“IoL”)

73. 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.”

74. 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 32 of the 2019 Tariff Regulations. IoL allowed for the transmission assets are as follows:

Asset-1

Particulars	(₹ in lakh)			
	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Interest on Loan				
Gross Normative Loan	77747.75	78149.51	84859.78	84859.78
Cumulative Repayments up to Previous Year	0.00	354.97	6245.24	12377.99
Net Loan-Opening	77747.75	77794.54	78614.54	72481.79
Additions	401.76	6710.27	0.00	0.00
Repayment during the year	354.97	5890.27	6132.75	6132.75
Net Loan-Closing	77794.54	78614.54	72481.79	66349.04
Average Loan	77771.15	78204.54	75548.16	69415.42
Weighted Average Rate of Interest on Loan (in %)	3.0544	3.0775	3.1076	3.1397
Interest on Loan	149.69	2406.77	2347.74	2179.44



Asset-2

Particulars	(₹ in lakh)		
	2021-22 (Pro-rata 262 days)	2022-23	2023-24
Interest on Loan			
Gross Normative Loan	134504.31	142377.45	154106.44
Cumulative Repayments upto Previous Year	0.00	7176.36	17881.75
Net Loan-Opening	134504.31	135201.09	136224.68
Additions	7873.14	11728.99	0.00
Repayment during the year	7176.36	10705.39	11128.90
Net Loan-Closing	135201.09	136224.68	125095.78
Average Loan	134852.70	135712.89	130660.23
Weighted Average Rate of Interest on Loan (in %)	2.9116	2.9406	2.9738
Interest on Loan	2818.37	3990.77	3885.52

Return on Equity (“RoE”)

75. 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 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:

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

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

Illustration-

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

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



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

- (a) Estimated Gross Income from generation or transmission business for FY 2019-20 is Rs 1,000 crore;
- (b) Estimated Advance Tax for the year on above is Rs 240 crore;
- (c) Effective Tax Rate for the year 2019-20 = Rs 240 Crore/Rs 1000 Crore = 24%;
- (d) Rate of return on equity = $15.50 / (1 - 0.24) = 20.395\%$.

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

76. The Petitioner has submitted that MAT rate is applicable to the Petitioner's Company. 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. The RoE approved for the transmission assets are as follows:

Asset-1

Particulars	(₹ in lakh)			
	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Return on Equity				
Opening Equity	33320.47	33492.65	36368.48	36368.48
Additions	172.18	2875.83	0.00	0.00
Closing Equity	33492.65	36368.48	36368.48	36368.48
Average Equity	33406.56	34930.56	36368.48	36368.48
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
Return on Equity	395.37	6560.66	6830.73	6830.73



Asset-2

(₹ in lakh)

Particulars	2021-22 (Pro-rata 262 days)	2022-23	2023-24
Return on Equity			
Opening Equity	57644.70	61018.91	66045.62
Additions	3374.20	5026.71	0.00
Closing Equity	61018.91	66045.62	66045.62
Average Equity	59331.80	63532.26	66045.62
Return on Equity (Base Rate) (in %)	15.500	15.500	15.500
MAT Rate for respective year (in %)	17.472	17.472	17.472
Rate of Return on Equity (in %)	18.782	18.782	18.782
Return on Equity	7999.04	11932.63	12404.69

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

77. The Petitioner has submitted that O&M Expenses for HVDC Pole-II and Pole-III has been calculated as per proviso (i) and (ii) of the Regulation 35(3) of the 2019 Tariff Regulations 2019. O&M Expenses claimed by the Petitioner for the transmission assets for 2019-24 period are as follows:

Asset-1

(₹ in lakh)

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
HVDC Terminal: Pugalur HVDC Pole-II 1500 MW				
Units (numbers)	1	1	1	1
Norms (₹ lakh/units)	1326.50	1373.00	1421.00	1471.00
Total O&M Expenses	83.59	1373.00	1421.00	1471.00

Asset-2

(₹ in lakh)

Particulars	2021-22 (Pro-rata 262 days)	2022-23	2023-24
HVDC Terminal: Pugalur HVDC Pole-III 1500 MW			
Units (numbers)	1	1	1
Norms (₹ lakh/units)	1373.00	1421.00	1471.00
Total O&M Expenses	985.55	1421.00	1471.00



78. The O&M norms under Regulation 35(3)(a) of the 2019 Tariff Regulations provide as follows:

“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



Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
<i>±800 kV, Bishwanath-Agra HVDC bipole scheme (Rs Lakh) (3000 MW)</i>	2,563	2,653	2,746	2,842	2,942

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

Provided further that:

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

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

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

Provided that the transmission licensee shall submit the assessment of the security requirement and estimated security expenses, the details of year-wise



actual capital spares consumed at the time of truing up with appropriate justification.”

79. MPPMCL and KSEB has submitted that the Petitioner has claimed O&M Expenses for HVDC terminal calculated considering the pro-rata of O&M Expenses allowed for ± 800 kV Bishwanath-Agra HVDC Bi-pole scheme (₹ lakh) (3000 MW) and has requested that the O&M norms may be fixed separately for this transmission scheme as per the Regulations in force. BESCO has submitted that the Petitioner has claimed exorbitant O&M Expenses for the HVDC terminal of the 800 kV Raigarh-Pugalur HVDC Di-pole scheme of 600 MW capacity which works out to be double the rate 800 kV Bishwanth-Agra HVDC pole scheme. Hence, the same cannot be allowed. TANGEDCO, TSSPDCL and TNSPDCL has made the similar submissions regarding O&M Expenses and has also submitted that the normative rate of O&M Expenses for a similar Bi-pole scheme of ± 800 kV HVDC bi-pole of 6000 MW capacity is not available in the regulation and has requested to disallow the claim of the Petitioner and to determine the O&M Expenses for the new HVDC ± 800 kV Raigarh-Pugalur HVDC Bi-pole scheme of 6000 MW capacity.

80. In response to the reply of MPPMCL, KSEB, BESCO, TANGEDCO, TSSPDCL and TNSPDCL, the Petitioner has submitted that the O&M Expenses for 800 kV HVDC terminal has been calculated as per proviso (i) and (ii) of the Regulation 35(3)(a) of the 2019 Tariff Regulations. The relevant regulation is extracted 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;”



81. The Petitioner has further submitted that accordingly, O&M Expenses for HVDC Terminal has been calculated considering the pro-rata of O&M Expenses allowed for similar HVDC i.e. ± 800 kV Bishwanath-Agra HVDC Bi-pole scheme (₹ lakh) (3000 MW) and has prayed to allow the O&M Expenses as claimed. Accordingly, O&M Expenses for HVDC Terminal has been calculated considering the pro-rata of O&M Expenses allowed for similar HVDC i.e. ± 800 kV Bishwanath-Agra HVDC Bi-pole scheme (₹ lakh) (3000 MW).

82. We have considered the submission of the Petitioner, MPPMCL, KSEB, BESCO, TANGEDCO, TSSPDCL and TNSPDCL. As per proviso (i) of the Regulation 35(3) of the 2019 Tariff Regulations, O&M Expenses for new HVDC Bi-pole schemes which was put into commercial operation after 1.4.2019 for a particular year shall be allowed on pro-rata on the basis of normative rate of O&M Expenses of similar HVDC Bi-pole scheme for the corresponding year of the tariff period. The ± 800 kV Bishwanath-Agra HVDC Bi-pole scheme (₹ lakh) (3000 MW) is similar to the transmission asset. Accordingly, O&M Expenses for the instant HVDC Asset i.e. +/- 800 kV HVDC bi-pole Raigarh-Puglur transmission line has been calculated considering the pro-rata of O&M norms of ± 800 kV Bishwanath-Agra HVDC Bi-pole scheme (₹ lakh) (3000 MW). O&M Expenses allowed for 2019-24 tariff period are as follows:

Asset-1

Particulars	(₹ in lakh)			
	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
HVDC Terminal: HVDC Raigarh: 1500 MW Terminal and associated equipment				
Units (numbers)	1	1	1	1
Norms (₹ lakh/units)	1326.50	1373.00	1421.00	1471.00
Total O&M Expenses	83.59	1373.00	1421.00	1471.00



Asset-2

(₹ in lakh)

Particulars	2021-22 (Pro-rata 262 days)	2022-23	2023-24
HVDC Terminal: HVDC Raigarh: 1500 MW Terminal and associated equipment			
Units (numbers)	1	1	1
Norms (₹ lakh/units)	1373.00	1421.00	1471.00
Total O&M Expenses	985.55	1421.00	1471.00

Interest on Working Capital (“IWC”)

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

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

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

- (i) *Receivables equivalent to 45 days of annual fixed cost;*
- (ii) *Maintenance spares @ 15% of operation and maintenance expenses including security expenses; and*
- (iii) *Operation and maintenance expenses, including security expenses for one month.*

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

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

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

“3. 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;”*

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



85. IWC is worked out in accordance with Regulation 34(3) of the 2019 Tariff Regulations, which provides for the rate of IWC considered on projection basis, for 2019-24 tariff period as 12.05% (i.e. 1 year SBI MCLR of 8.55% as on 1.4.2019 + 350 basis points). As the tariff is being determined during the year 2022-23, the SBI MCLR as on 1.4.2020 (7.75%) ,1.4.21 (7.00%) and as on 1.4.2022 (7.00%) is also available. Since, the rate of IWC is subject to revision at the time of truing-up of tariff, based on the bank rate as on 1st April of each financial year, we find it prudent to allow the Rate of Interest (RoI) as on 1.4.2020, 1.4.2021 and 1.4.2022 for the subsequent financial years. Accordingly, RoI for the year 2019-20 is 12.05%, 2020-21 is 11.25%, 2021-22 is 10.50%, 2022-23 is 10.50% and for the subsequent years RoI of 10.50% has been considered (i.e. 1 year SBI MCLR of 8.55% as on 1.4.2019 + 350 basis points, 1-year SBI MCLR of 7.75% as on 1.4.2020 + 350 basis points; 1-year SBI MCLR of 7.00% as on 1.4.2021 + 350 basis points; and 1year SBI MCLR of 7.00% as on 1.4.2022 + 350 basis points).

86. The components of the working capital and interest allowed thereon for the transmission assets are as follows:

Asset-1

		(₹ in lakh)			
	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Interest on Working Capital				
A	Working Capital for O&M Expenses (O&M Expenses for one month)	110.54	114.42	118.42	122.58
B	Working Capital for Maintenance Spares (15% of O&M Expenses)	198.98	205.95	213.15	220.65
C	Working Capital for Receivables (Equivalent to 45 days of annual fixed cost/ annual transmission charges)	1955.90	2031.49	2094.28	2073.90
D	Total Working Capital (A+B+C)	2265.42	2351.86	2425.85	2417.13



	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
E	Rate of Interest (in %)	11.25	10.50	10.50	10.50
F	Interest on working capital (D*E)	16.06	246.94	254.71	253.80

Asset-2

(₹ in lakh)				
	Particulars	2021-22 (Pro-rata 262 days)	2022-23	2023-24
	Interest on Working Capital			
A	Working Capital for O&M Expenses (O&M Expenses for one month)	114.42	118.42	122.58
B	Working Capital for Maintenance Spares (15% of O&M Expenses)	205.95	213.15	220.65
C	Working Capital for Receivables (Equivalent to 45 days of annual fixed cost/ annual transmission charges)	3306.76	3507.90	3603.01
D	Total Working Capital (A+B+C)	3627.13	3839.46	3946.24
E	Rate of Interest (in %)	10.50	10.50	10.50
F	Interest on working capital (D*E)	273.38	403.14	414.36

Annual Fixed Charges for 2019-24 Tariff Period

87. The transmission charges allowed for the transmission assets for 2019-24 tariff period are as follows:

Asset-1

(₹ in lakh)				
Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Annual Transmission Charges				
Depreciation	354.97	5890.27	6132.75	6132.75
Interest on Loan	149.69	2406.77	2347.74	2179.44
Return on Equity	395.37	6560.66	6830.73	6830.73
O&M Expenses	83.59	1373.00	1421.00	1471.00
Interest on Working Capital	16.06	246.94	254.71	253.80
Total	999.68	16477.64	16986.93	16867.71



Asset-2

Particulars	(₹ in lakh)		
	2021-22 (Pro-rata 262 days)	2022-23	2023-24
Annual Transmission Charges			
Depreciation	7176.36	10705.39	11128.90
Interest on Loan	2818.37	3990.77	3885.52
Return on Equity	7999.04	11932.63	12404.69
O&M Expenses	985.55	1421.00	1471.00
Interest on Working Capital	273.38	403.14	414.36
Total	19252.70	28452.93	29304.46

Filing Fee and the Publication Expenses

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

Licence Fee & RLDC Fees and Charges

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

Security Expenses

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



91. MPPMCL has submitted that the Petitioner has claimed recovery of security expenses from the beneficiaries directly on quarterly basis. This claim is against the provisions under Regulation 35(3)(c) of the 2019 Tariff Regulations which allows the recovery only at the time of truing up. In response, the Petitioner has submitted that a separate petition was filed before the Commission under Regulation 35(3)(c) of the 2019 Tariff Regulations 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.

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

93. In response, the Petitioner has submitted that they claim recovery of security expenses from the beneficiary directly on a quarterly basis. The Petitioner has further submitted that the said regulation only requires the transmission licensee to submit the 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 will 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 get reduced at the time of truing up. The Petitioner has submitted that Petition No. 260/MP/2020 was filed before the Commission under Regulation 35(3)(c) of the 2019 Tariff Regulations 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.

94. We have considered the submissions of the Petitioner, MPPMCL 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 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 the instant 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

95. MPPMCL has submitted that the Petitioner has claimed the implementation of GST. MPPMCL has further submitted that GST is not been applicable on electricity transmission services so the demand of GST may be disallowed.

96. In response, 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.



97. We have considered the submissions of the Petitioner and 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

98. 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 Power System Development Fund (PSDF)/ National Clean Energy Fund (NCEF)

99. The Respondent(s) have submitted that the funding from PSDF/ NCEF may be used for reducing the cost of the transmission project. 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 PSDF/ NCEF, as and 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.

100. We have already considered the submissions of the Petitioner and Respondents in the order dated 29.9.2022 in Petition No. 685/TT/2020 and held that there is a necessity to share the burden of capital cost of transmission scheme by way of assistance from the PSDF and directed the Petitioner to take up the matter with the Monitoring Committee of the PSDF/ Ministry of Power (MoP). The relevant portion of the above order dated 29.9.2022 is as follows:

"117. We have considered the submissions of the Petitioner, KSEB and BESCO. 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

101. 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 2020 Sharing Regulations as amended from time to time.

102. KSEB, TANGEDCO, TSSPDCL, TSNPDCL and BESCO have submitted that the sharing of the subject HVDC project should be in line with sharing methodology followed for other HVDC schemes (substantial portion under National Component (NC) - HVDC as per the 2020 Sharing Regulations). The major portion of the submissions made by the Respondents pertain to sharing of charges of the HVDC component of the transmission project and utilisation of Pole-I to Pole-IV of the transmission project vis-à-vis actual load and generation scenario. Thus, 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.

103. In response, the Petitioner has submitted that the entire capital cost of the transmission asset has been incurred by the Petitioner and the tariff must be determined based on full capital cost incurred. If MoP allocates any amount from the PSDF/ NCEF, the same can be considered and decided by the Commission. The Petitioner has



submitted that the Commission may take an appropriate decision on the sharing of the transmission charges of the transmission assets. The Petitioner has further submitted that it is only concerned with the recovery of the transmission charges in an expeditious and fair manner since substantial cost has been incurred by the Petitioner in implementing the transmission system.

104. The Commission vide RoP dated 11.2.2022 directed the Petitioner to submit power flow details of Pole-I, Pole-II, Pole-III and Pole-IV of +- 800 kV 6000 MW Raigarh (HVDC Station)-Pugalur (HVDC Station). In response, the Petitioner vide affidavit dated 28.2.2022 has submitted the documents showing the power flow.

105. We have considered the submissions of the Petitioner and Respondents. The transmission project consists of HVDC components (Scheme-1 and Scheme-3) and AC components (Scheme-2). The Petitioner has filed separate petitions pertaining to HVDC components under Scheme-1 (Petition No. 685/TT/2020, Petition No. 173/TT/2021 and Petition No. 242/TT/2021) and Scheme-3 (Petition No. 172/TT/2021). Accordingly, the sharing of transmission charges specific to HVDC portion is being dealt by the Commission in relevant petitions filed by the Petitioner. In this connection, the Commission vide order dated 29.9.2020 in Petition No. 685/TT/2020 has already dealt with the sharing of charges of ± 800 kV (6000 MW) Raigarh-Pugalur HVDC link and Pole-I (1500 MW) covered under Scheme-1 of the transmission project.

106. The transmission assets covered under the instant petition pertains to Scheme-1 of the transmission project, which are Asset-1: ± 800 kV 1500 MW (Pole-II) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station) and Asset-2: ± 800



kV 1500 MW (Pole-III) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station).

107. The Commission vide order dated 29.9.2022 in Petition No. 685/TT/2020 has held as follows:

“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. Therefore, we are not inclined to approve the 100% yearly transmission charges of Raigarh-Pugalur-Trissur HVDC system under National Component.

132. KSEB, TANGEDCO, BESCO, 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.”

108. In view of the above, if there is need to consider the sharing based on bi-directional flow of the instant HVDC transmission system due to change in load-generation mix, the same shall be dealt with by the Commission at the appropriate stage. At present, with effect from 01.11.2020. the sharing of transmission charges is governed by the provisions of the 2020 Sharing Regulations. The COD of Asset-1 and Asset-2 is 9.3.2021 and 13.7.2021 respectively. 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, the transmission charges for Asset-1: ± 800 kV 1500 MW (Pole-II) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station) and Asset-2: ± 800 kV 1500 MW (Pole-III) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station) shall be shared as per Regulation 5 and Regulation 6 of the 2020 Sharing Regulations.



109. 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) National Component-Renewable Energy (NC-RE); 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/ Alipurdwār 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 Long Term 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.”

110. In view of the above, as per Regulation 5(3)(d) and Regulation 6(1)(a) of the 2020 Sharing Regulations, 30% of the Yearly Transmission Charges (YTC) with effect from COD of the transmission assets shall be part of National Component and 70% of yearly



transmission charges for Raigarh-Pugular-Thrissur system is under Regional Component.

111. To summarise, AFC allowed for the transmission assets for 2019-24 tariff period in this order are as follows:

Asset-1

(₹ in lakh)

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Annual Transmission Charges	999.68	16477.64	16986.93	16867.71

Asset-2

(₹ in lakh)

Particulars	2021-22 (Pro-rata 262 days)	2022-23	2023-24
Annual Transmission Charges	19252.70	28452.93	29304.46

112. The Annexure to this order form part of the order.

113. This order disposes of Petition No. 173/TT/2021 in terms of the above findings and discussions.

**sd/-
(P. K. Singh)
Member**

**sd/-
(Arun Goyal)
Member**

**sd/-
(I. S. Jha)
Member**



Asset-1

2019-24 Capital Expenditure	Admitted Capital Cost as on 1.4.2019/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)			
		2020-21	2021-22	Total			2020-21	2021-22	2022-23	2023-24
Building Civil Works & Colony	12745.19	65.86	1100.02	1165.88	13911.07	3.34%	426.79	446.26	464.63	703.74
Sub Station	98306.34	508.08	8484.58	8992.66	107298.99	5.28%	5203.99	5441.39	5665.39	5428.09
IT Equipment (Incl. Software)	16.69	0.00	1.50	1.50	18.19	15.00%	2.50	2.62	2.73	2.73
Total	111068.22	573.94	9586.10	10160.04	121228.26		5633.28	5890.27	6132.75	6132.75
					Average Gross Block (₹ in lakh)		111355.19	116435.21	121228.26	121228.26
					Weighted Average Rate of Depreciation (WAROD) (in %)		5.06%	5.06%	5.06%	5.06%



Asset-2

2019-24	Admitted Capital Cost as on 1.4.2019/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		2021-22	2022-23	Total			2021-22	2022-23	2023-24
Building Civil Works & Colony	26695.28	1562.59	2327.87	3890.46	30585.74	3.34%	917.72	982.69	1546.14
Sub Station	164571.64	9633.11	14350.91	23984.02	188555.66	5.28%	8943.70	9576.87	9531.67
IT Equipment (Incl. Software)	882.10	51.64	76.92	128.56	1010.65	15.00%	136.19	145.83	151.60
Total	192149.01	11247.34	16755.70	28003.04	220152.05		9997.60	10705.39	11128.90
					Average Gross Block (₹ in lakh)		197772.68	211774.20	220152.05
					Weighted Average Rate of Depreciation (WAROD) (in %)		5.06%	5.06%	5.06%

