CENTRAL ELECTRICITY REGULATORY COMMISSION

NEW DELHI

Petition No. 172/TT/2021

Coram:

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

Date of Order : 27.01.2023

In the matter of:

Approval under Regulation 86 of Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 and determination of transmission tariff for the 2019-24 tariff period under Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 in respect of **Asset-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); **Asset-2:** ± 320 kV 1000 MW (Mono Pole-I) HVDC terminals each at Pugalur (HVDC Station) & North Trichur (HVDC Station, Kerala); **Asset-3:** LILO of North Trichur-Cochin 400 kV (Quad) D/c line at North Trichur HVDC station along with associated bays & equipment's(GIS) at North Trichur HVDC station; **Asset-4:** 2 X 315 MVA 400/220/33 kV 3 Ph Auto Transformer along with its associated bays & equipment's(GIS) at North Trichur HVDC station; and **Asset-5:** 2 Nos. additional 220 kV line bays(GIS) at North Trichur HVDC for implementation of 220 kV feeder of Kerala under "HVDC Bipole link between Western Region (Raigarh, Chattisgarh) and Southern Region (Pugalur, Tamil Nadu) – North Trichur (Kerala) – Scheme # 3: Pugalur-Trichur 2000 MW VSC based HVDC System".

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,
   NPKRR Maaligai, 800, Anna Salai,
   Chennai-600002.

2. Transmission Corporation of Andhra Pradesh Limited,
   Vidyut Soudha, Hyderabad-500082.

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

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

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

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

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

8. Southern Power Distribution Company of Andhra Pradesh Limited,
   Srinivasapuram, Corporate Office,
   Tiruchanoor Road, Tirupati-517 503.

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

10. Northern Power Distribution Company of Telangana Limited,
    Vidyut Bhawan, Corporate Office,
    Nakkal Gutta, Hanamkonda,
    Warangal – 506 001, Telangana.

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

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

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

14. MESCOM Corporate Office,
Paradigm Plaza, AB Shetty Circle,
Mangalore-575001 (Karnataka).

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

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

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

18. Tamil Nadu Transmission Corporation,
NPKRR Maaligai, 800, Anna Salai,
Chennai-600002 **...Respondent(s)**

For Petitioner: Ms. Swapna Seshadri, Advocate, PGCIL
Shri Aditya H. Dubey, Advocate, PGCIL
Shri S.S. Raju, PGCIL
Shri D.K Biswal, PGCIL
Shri V.P. Rastogi, PGCIL
Ms. Anshul Garg, 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, KSEBL
Dr. R. Kathivaran, TANGEDCO
Shri R. Ramalakshmi, TANGEDCO
Shri R. Srinivasan, TANGEDCO
Shri Anindya Khare, MPPMCL

ORDER

The instant petition has been filed by Power Grid Corporation of India Limited (hereinafter referred to as "the Petitioner"), 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") of the period from COD to 31.3.2024 in respect of **Asset-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); **Asset-2:** ± 320 kV 1000 MW (Mono Pole-I) HVDC terminals each at Pugalur (HVDC Station) & North Trichur (HVDC Station, Kerala); **Asset-3:** LILO of North Trichur-Cochin 400 kV (Quad) D/c line at North Trichur HVDC station along with associated bays & equipment's(GIS) at North Trichur HVDC station; **Asset-4:** 2 X 315 MVA 400/220/33 kV 3 Ph Auto Transformer along with its associated bays & equipment's(GIS) at North Trichur HVDC station; and **Asset-5:** 2 Nos. additional 220 kV line bays(GIS) at North Trichur HVDC for implementation of 220 kV feeder of Kerala (hereinafter referred to as the "transmission assets") under "HVDC Bipole link between Western Region (Raigarh, Chattisgarh) and Southern Region (Pugalur, Tamil Nadu) – North Trichur (Kerala) – Scheme #3: Pugalur-Trichur 2000 MW VSC based HVDC System" (hereinafter referred to as the "transmission project").

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 Initial Spares and O&M claimed for 320 kV underground cable under Regulation-76 & Regulation-77 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019*
>
> *4) Allow the Petitioner to submit the Revised Cost estimation for the asset under instant petition*
>
> *5) 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.*

6) 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.

7) 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.

8) 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.

9) 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.

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

11) 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.

12) 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 under:

a. The Investment Approval (IA) of the project was accorded by Board of Directors (BoD) of Petitioner's company in its 337th meeting held on 9.2.2017 vide the Memorandum No. C/CP/PA1617-03-0W-IA021 dated 21.3.2017 with an estimated cost of ₹507013 lakh including IDC of ₹29206 lakh, based on October, 2016 price level.

b. The Revised Cost Estimate-I (RCE-I) of the transmission project was accorded by the BoD of Petitioner's Company in its 126th meeting held on 9.11.2021 vide C/CP/PA 2122-08-0X-RCE004 dated 18.11.2021 for ₹526533 lakh including an IDC of ₹28735 lakh based on June 2021 price level.

c. The details and scope of the scheme was discussed and agreed to in various meetings of the Standing Committees and Regional Power Committees of Southern and Western Region is summarised as follows:

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

Sl. No.	Dated	Particulars
19	28.12.2015	39th meeting of Standing Committee on Power system planning in Southern Region

d. The scope of various Schemes of the transmission project is as follows:

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 Stn ±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 Stn) – Pugalur (HVDC Stn) HVDC Bipole link with 6000 MW capacity.

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

Scheme # 2: AC System strengthening at Pugalur end

1. Pugalur HVDC Station – Pugalur (Existing) 400 kV (quad) D/c line.
2. Pugalur HVDC Station – Arasur 400 kV (quad) D/c line.
3. Pugalur HVDC Station – Thiruvalam 400 kV (quad) D/c line with 2x80 MVAR line reactor at Pugalur HVDC Station end and 2x63 MVAR line reactor at Thiruvalam 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.
6. 4 nos of 400kV line bays at Edayarpalayam (TN stn) for terminating Pugalur HVDC Station – Edayarpalayam 400kV (quad) D/c line and Edayarpalayam – Udumulpet 400kV (quad) D/c lines.

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

1. ±320kV, 2000 MW VSC based HVDC terminal at Pugalur. The HVDC Station would have GIS for 400kV part and AIS for HVDC part.
2. ±320kV, 2000 MW VSC based HVDC terminal at North Trichur. The HVDC Station would have GIS for 400kV part and AIS for HVDC part.
3. Establishment of VSC based 2000 MW HVDC link between Pugalur and North Trichur* (Kerala). (*part/parts of this link, in the Kerala

portion, may be implemented as underground cable where implementation as overhead transmission line is difficult because of RoW issues).

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

e. The instant petition covers the scope of work covered under "HVDC Bipole link between Western Region (Raigarh, Chattisgarh) and Southern Region (Pugalur, Tamil Nadu) – North Trichur (Kerala) – Scheme #3: Pugalur-Trichur 2000 MW VSC based HVDC System" in Southern Region is as follows:

Transmission lines

i. 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):

a. Overhead 320 kV HVDC line - 150 km

b. 320 kV Underground cable - 32 km (4x32 km circuit km)

ii. LILO of North-Trichur – Cochin 400 kV (Quad) D/C Line at North Trichur HVDC Station - 1km

Sub-stations (HVDC)

i. ±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.)

ii. ± 320 kV, 2000 MW VSC based HVDC terminal at North Trichur.
(The HVDC Station would have GIS for 400 kV part and AIS for HVDC part.)

iii. 4 nos. of 400 kV line bays at North Trichur HVDC Station (POWERGRID) for terminating LILO of North-Trichur – Cochin 400 kV (Quad) D/c line.

iv. 2x315MVA, 400/220/33 kV, 3PH Auto Transformer along with its associated 2 nos. ICT bays at North Trichur HVDC Station

v. 2 Nos. additional 220 kV line bays (GIS) at North Trichur for implementation of 220 kV feeder of Kerala.

f. The Petitioner has submitted the status of Scheme/Projects/Assets as follows:

Sl. No	Name of Asset	Schedule Commissioning as per IA	Actual COD	Covered under Petition No.
A	**Scheme # 1: Raigarh-Pugalur 6000 MW HVDC System**			
1	±800KV 6000MW Raigarh (HVDC Station) – Pugalur (HVDC Station) HVDC Link along with ±800KV 1500 MW(Pole-I) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)	5.11.2019	6.9.2020	685/TT/2020
2	±800kV 1500 MW (Pole-II) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)	5.11.2019	9.3.2021	173/TT/2021
3	±800kV 1500 MW (Pole-III) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)	5.11.2019	13.7.2021	
4	±800kV 1500 MW (Pole-IV) HVDC terminals each at Raigarh (HVDC Station) & Pugalur (HVDC Station)	5.11.2019	25.10.2021	242/TT/2020
B	**Scheme # 2: AC System strengthening at Pugalur end**			
1	a) 400kV Pugalur (HVDC Station) - Pugalur (Existing) (Quad) D/C Transmission line along with associated bays at Pugalur (HVDC Station) & Pugalur (Existing) Sub-station and b) 400kV Pugalur (HVDC Station) – Arasur (Quad) D/C Transmission line along with associated bays at Pugalur (HVDC Station) & Arasur station	16.2.2020	6.9.2020	693/TT/2020
2	Pugalur HVDC Station – Edayarpalayam (TANTRANSCO) 400kV (quad) D/c line along with associated bays at Pugalur HVDC station and Edayarpalayam (TANTRANSCO) sub-station and 2 nos 80 MVAR line reactors at Pugalur HVDC station and Edayarpalayam (TANTRANSCO) – Udumulpet 400kV (quad) D/c line (Pugalur – Edayarpalayam line and Edayarpalayam – Udumalpet line are bypassed at Edayapalyam Sub-station to make Pugalur – Udumalpet line)	16.2.2020	13.7.2021	243/TT/2021
3	Pugalur HVDC Station – Thiruvalam 400kV (quad) D/c line along with associated bays at Pugalur HVDC	16.2.2020	25.10.2021	

	station and Thiruvalm Sub-station and 2 nos 63 MVAR line reactors at Thiruvalam Sub-station			
4	4 nos. of 400 kV line bays at Edayarpalayam (TN stn) for terminating Pugalur HVDC Station–Edayarpalayam 400kV (quad) D/c line and Edayarpalayam–Udumulpet 400kV(quad)D/c lines.	16.2.2021	**Yet to achieve COD***	
	**Bay extension works at Edayarpalayam (TANTRANSCO) Sub-station is envisaged to be implemented by TANTRASCO 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 **(Instant Petition)**
2	±320 kV 1000 MW (Mono Pole-I) HVDC terminals each at Pugalur (HVDC Station) & North Trichur (HVDC Station, Kerala)	9.04.2020	8.6.2021	
3	LILO of North Trichur-Cochin 400KV (Quad) D/c line at North Trichur HVDC station along with associated bays & equipment's(GIS) at North Trichur HVDC station	9.4.2020	9.3.2021	
4	2 X 315 MVA 400/220/33kV 3 Ph Auto Transformer along with its associated bays & equipment's(GIS) at North Trichur HVDC station	9.4.2020	9.3.2021	
5	2 No.s additional 220KV line bays(GIS) at North Trichur HVDC for implementation of 220KV feeder of Kerala	9.4.2020	9.3.2021	

g. The Date of Commercial Operation (COD) claimed in respect of the transmission assets is as follows:

Asset	Schedule COD as per IA	Anticipated COD	Actual COD
Asset-1	9.4.2020	31.1.2021	9.3.2021
Asset-2	9.4.2020	28.2.2021	8.6.2021
Asset-3	9.4.2020	31.1.2021	9.3.2021
Asset-4	9.4.2020	31.1.2021	9.3.2021
Asset-5	9.4.2020	31.1.2021	9.3.2021

4. The Respondents are distribution licensees and Power Departments, which are procuring transmission services from the Petitioner, mainly beneficiaries of the Southern Region.

5. The Petitioner has served the petition on the Respondents and notice of this petition has been published in the newspaper in accordance with Section 64 of the Electricity Act 2003. No comments/objections have been received from the general public in response to the aforesaid notice published in the newspaper by the Petitioner. Kerala State Electricity Board Limited (KSEB), Respondent No. 3 has filed a reply vide affidavit dated 27.4.2021. KSEB has raised issues such as variation of cost claimed from benchmark cost, high cost of preliminary works, Initial Spares, benefits to beneficiaries, recovery of security expenses, sharing of transmission charges and funding from PSDF/National Clean Energy Fund. Tamil Nadu Generation and Distribution Corporation Ltd. (TANGEDCO), Respondent No. 4, has filed a reply vide dated 23.11.2021 and has raised the issues of strategic importance of the project, funding from PSDF/National Energy Clean Fund, reduction of TTC/ATC of Southern Region, time over-run, claim of towards compensation, Initial Spares and Additional Capital Expenditure (ACE) and O&M expenses, and sharing of transmission charges. Telangana State Power Distribution Company Limited (TSSPDCL) and Telangana State Northern Power Distribution Company Limited (TSNPDCL), Respondent No. 9 and 10 respectively, have filed a reply vide dated 19.2.2022 and raised the issues of strategic importance of the project, funding from PSDF/National Energy Clean Fund, reduction of TTC/ATC of Southern Region, time over-run, claim towards compensation, Initial Spares and Additional Capital Expenditure(ACE), O&M expenses, and sharing of transmission charges. Bangalore Electricity Supply Company Ltd. (BESCOM),

Respondent No. 11, has filed a reply vide dated 7.3.2022 and raised the issues of strategic importance of the project, funding from PSDF/National Energy Clean Fund, time over-run, claim of towards compensation, Initial Spares and O&M expenses, and sharing of transmission charges. The issues raised by KSEBL, TANGEDCO, TSSPDCL, TSNPDCL and BESCOM and clarifications thereto given by the Petitioner have been dealt in the relevant portions of this order.

6. This order is passed considering the submissions made by the Petitioner dated 2.2.2021 and 18.11.2021, KSEB's reply vide affidavit dated 9.11.2021, TANGEDCO's reply vide affidavit dated 23.11.2021, TSSPDCL and TSNPDCL's reply vide affidavit dated 19.2.2022, BESCOM's reply vide affidavit dated 7.3.2022 and Petitioner's rejoinders vide affidavit dated 14.12.2021, 15.3.2022, and 17.3.2022.

7. The hearings in this matter were held on 10.9.2021, 25.11.2021 and 11.2.2022 through video conference and the order was reserved.

8. Having heard the learned counsels of the Petitioner and learned counsels of the Respondents present, perused the material on record, we proceed to dispose of the petition.

DETERMINATION OF ANNUAL FIXED CHARGES FOR THE 2019-24 TARIFF PERIOD

9. The Petitioner has claimed the following transmission charges for the transmission assets for the 2019-24 tariff period:

(₹ in lakh)

Asset-1

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Depreciation	964.73	16180.77	17055.98	17114.06
Interest on Loan	416.77	6783.35	6716.62	6253.07
Return on Equity	1053.43	17683.95	18651.43	18713.41
O&M Expenses	71.76	1178.77	1220.05	1262.89

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Interest on Working Capital	37.17	619.67	646.33	641.55
Total	**2543.86**	**42446.51**	**44290.41**	**43984.98**

(₹ in lakh)

Asset-2

Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
Depreciation	6794.50	8967.38	8967.95
Interest on Loan	2484.44	3087.78	2851.90
Return on Equity	7248.84	9567.15	9567.76
O&M Expenses	744.06	946.39	979.69
Interest on Working Capital	244.99	319.48	316.85
Total	**17516.83**	**22888.18**	**22684.15**

(₹ in lakh)

Asset-3

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Depreciation	22.88	380.31	397.29	397.29
Interest on Loan	9.47	152.18	149.07	138.20
Return on Equity	24.83	412.58	430.92	430.92
O&M Expenses	5.92	97.34	100.76	104.29
Interest on Working Capital	1.05	17.25	17.84	17.79
Total	**64.15**	**1059.66**	**1095.88**	**1088.49**

(₹ in lakh)

Asset-4

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Depreciation	26.97	447.10	466.14	466.14
Interest on Loan	10.45	167.39	163.29	150.89
Return on Equity	28.96	480.26	500.78	500.78
O&M Expenses	19.72	323.92	335.60	346.80
Interest on Working Capital	1.74	28.58	29.55	29.77
Total	**87.84**	**1447.25**	**1495.36**	**1494.38**

(₹ in lakh)

Asset-5

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Depreciation	8.20	137.67	145.11	145.11
Interest on Loan	3.25	52.58	51.87	47.99

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Return on Equity	8.96	149.98	157.79	157.79
O&M Expenses	2.06	33.77	34.94	36.18
Interest on Working Capital	0.37	6.16	6.41	6.39
Total	**22.84**	**380.16**	**396.12**	**393.46**

10. The Petitioner has claimed the following Interest on Working Capital (IWC) for the transmission assets for the 2019-24 tariff period:

(₹ in lakh)

Asset-1

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
O&M Expenses	94.90	98.23	101.67	105.24
Maintenance Spares	170.83	176.82	183.01	189.43
Receivables	4977.12	5233.13	5460.46	5407.99
Total Working Capital	5242.85	5508.18	5754.14	5702.66
Rate of Interest (%)	11.25	11.25	11.25	11.25
Interest on Working Capital	**37.17**	**619.67**	**646.33**	**641.55**

(₹ in lakh)

Asset-2

Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
O&M Expenses	76.20	78.87	81.64
Maintenance Spares	137.16	141.96	146.95
Receivables	2654.07	2821.83	2789.04
Total Working Capital	2867.43	3042.66	3017.63
Rate of Interest (%)	10.50	10.50	10.50
Interest on Working Capital	**244.99**	**319.48**	**316.85**

(₹ in lakh)

Asset-3

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
O&M Expenses	7.84	8.11	8.40	8.69
Maintenance Spares	14.10	14.60	15.11	15.64
Receivables	125.51	130.64	135.11	133.83
Total Working Capital	147.45	153.35	158.62	158.16
Rate of Interest (%)	11.25	11.25	11.25	11.25
Interest on Working Capital	**1.05**	**17.25**	**17.84**	**17.79**

(₹ in lakh)

Asset-4

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
O&M Expenses	26.08	26.99	27.97	28.90
Maintenance Spares	46.94	48.59	50.34	52.02
Receivables	171.85	178.43	184.36	183.74
Total Working Capital	244.87	254.01	262.67	264.66
Rate of Interest (%)	11.25	11.25	11.25	11.25
Interest on Working Capital	**1.74**	**28.58**	**29.55**	**29.77**

(₹ in lakh)

Asset-5

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
O&M Expenses	2.72	2.81	2.91	3.02
Maintenance Spares	4.89	5.07	5.24	5.43
Receivables	44.68	46.87	48.84	48.38
Total Working Capital	52.29	54.75	56.99	56.83
Rate of Interest (%)	11.25	11.25	11.25	11.25
Interest on Working Capital	**0.37**	**6.16**	**6.41**	**6.39**

Date of Commercial Operation (COD)

11. The Petitioner vide affidavit dated 18.11.2021 has claimed the actual COD of the transmission assets as under:

Particulars	Actual COD
Asset-1	9.3.2021
Asset-2	8.6.2021
Asset-3	9.3.2021
Asset-4	9.3.2021
Asset-5	9.3.2021

12. 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."

13. In support of actual COD, the Petitioner has submitted CEA Energization Certificates dated 15.10.2020, 22.10.2020, and 27.10.2020, RLDC Charging Certificates dated 23.2.2021, 9.3.2021, 15.3.2021 and 20.7.2021 certifying that trial operation for Asset-1, Asset-3, Asset-4 and Asset-5 was completed on 24.2.2021 and trial operation for Asset-2 was completed on 7.6.2021 and CMD Certificate as required under the Grid Code.

14. We have considered the submissions of the Petitioner. It is observed that the successful trial operation of Assset-1, Asset-3, Asset-4 and Asset-5 has been completed on 24.2.2021. However, the Petitioner has claimed COD of Assset-1, Asset-3, Asset-4 and Asset-5 as 9.3.2021.

15. Taking into consideration CEA Energization Certificates, RLDC Charging Certificates and CMD Certificate, COD of the transmission assets is approved as follows:

Asset	COD
Asset-1	9.3.2021
Asset-2	8.6.2021
Asset-3	9.3.2021
Asset-4	9.3.2021
Asset-5	9.3.2021

Capital Cost

16. Regulation 19 of the 2019 Tariff Regulations provides as under: -

*"**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."

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

(₹ in lakh)

Asset	FR Apportioned Approved Cost	RCE Apportioned Approved Cost	Expenditure up to COD	ACE			Capital Cost as on 31.3.2024
				2020-21	2021-22	2022-23	
Asset-1	324023.01	334122.34	297153.23	2165.69	30597.07	2200.00	332115.99
Asset-2	167508.59	172948.10	147136.61	0.00	22667.17	0.00	169803.78
Asset-3	7853.38	7650.69	7029.53	9.25	609.01	0.00	7647.79
Asset-4	5961.07	8978.84	8191.81	5.88	689.93	0.00	8887.62
Asset-5	1666.94	2833.03	2534.85	1.82	263.77	0.00	2800.44
Total	**507012.99**	**526533.00**	**462046.03**	**2182.64**	**54826.95**	**2200.00**	**521255.62**

18. It is observed that the estimate capital cost in respect of the transmission assets is beyond the FR apportioned approved cost. Hence, there is a cost over-run in some of the above assets. Analysis of Asset-wise cost variation is discussed in relevant portions of the order.

19. The Petitioner vide affidavit dated 28.2.2022 has submitted the details of estimated completion cost vis-à-vis apportioned approved cost (FR) and apportioned approved cost (RCE) for the transmission assets covered under instant petition are as follows:

(₹ in lakh)

Asset	FR Apportioned Approved Cost (a)	RCE Apportioned Approved Cost (b)	Estimated Completion Cost (c)	Cost Variation (FR) (d = c-a)	Cost Variation (RCE) (e = c -b)
Asset-1	324023.01	334122.34	332115.99	8092.98	-2006.35
Asset-2	167508.59	172948.10	169803.78	2295.20	-3144.31
Asset-3	7853.38	7650.69	7647.79	-205.59	-2.90
Asset-4	5961.07	8978.84	8887.62	2926.55	-91.22
Asset-5	1666.94	2833.03	2800.44	1133.50	-32.59
Total	**507012.99**	**526533.00**	**521255.62**	**14242.64**	**-5277.37**

20. Further, the item-wise cost variation w.r.t. FR, RCE and estimated completion cost of the transmission assets are as follows:

For Asset-1:

(₹ in lakh)

S. No.	Description	FR Apportioned Approved Cost	RCE Apportioned Approved Cost	Estimated Completion Cost	Variation as per FR (-decrease, +increase)	Variation as per RCE (-decrease, +increase)
		a	**b**	**c**	**d = c - a**	**e = c - b**
1	Preliminary works incl. compensation	7386.23	19238.92	18810.41	11424.18	-428.51
A	**Transmission Lines material**					
2	Towers Steel	8209.10	5981.90	5513.39	-2695.71	-468.51
3	Conductor	5337.40	5515.07	5403.27	65.87	-111.80
4	Erection, Stringing & Civil works including foundation	15539.36	5776.39	5516.77	-10022.60	-259.62
5	Under ground cable	68485.34	68360.85	68060.85	-424.49	-300.00
6	Taxes & Duties	3295.47	14593.18	14593.18	11297.71	0.00
7	Miscellaneous T/L	5324.24	4409.99	4473.36	-850.88	63.37
	Total Transmission Lines material	**113577.14**	**123876.30**	**122371.23**	**8794.09**	**-1505.08**
B	**Sub-stations**					
1	Land and Site preparation	3543.05	3802.99	3802.99	259.94	0.00
2	Civil Works	37690.13	13926.61	13876.61	-23813.53	-50.00

3	HVDC packages	125986.25	126115.17	125884.23	-102.02	-230.94
4	Spares		5258.12	5258.12	5258.12	0.00
5	Taxes & Duties	4719.63	24709.86	24609.75	19890.12	-100.11
6	Miscellaneous Sub-station	4627.13	4454.30	4454.30	-172.83	0.00
	Total sub station	**176566.20**	**178267.05**	**177886.00**	**1319.80**	**-381.05**
C	Over heads	15523.47	7916.37	7893.15	-7630.32	-23.22
D	Interest During Construction (IDC)	18356.20	15852.64	15819.64	-2536.56	-33.00
E	Foreign Exchange Rate Variation		8209.97	8145.97	8145.97	-64.00
	Grand Total	**324023.00**	**334122.33**	**332115.99**	**8092.98**	**-2006.35**

For Asset-2: (**₹ in lakh)**

S. No.	**Description**	FR Apportioned Approved Cost	RCE Apportioned Approved Cost	Estimated Completion Cost	**Variation as per FR (- decrease, +increase)**	**Variation as per RCE (- decrease, +increase)**
		a	**b**	**c**	**d = c - a**	**e = c - b**
B	**Sub-stations**					
1	Civil Works	26827.26	5268.41	4768.41	-22058.85	-500.00
2	HVDC Packages	121470.68	124830.28	123944.20	2473.52	-886.08
3	Spares	0.00	4891.43	4891.43	4891.43	0.00
4	Taxes & Duties	3724.09	23110.63	23110.63	19386.54	0.00
	Total sub station	**152022.03**	**158100.75**	**156714.67**	**4692.64**	**-1386.08**
C	Over heads	5743.13	3210.97	1975.63	-3767.50	-1235.34
D	Interest During Construction (IDC)	9743.43	7415.00	7355.89	-2387.54	-59.11
E	Foreign Exchange Rate Variation	0	4221.38	3757.59	3757.59	-463.79
	Grand Total	**167508.59**	**172948.10**	**169803.78**	**2295.19**	**-3144.32**

For Asset-3: (₹ in lakh)

S. No.	Description	FR Apportioned Approved Cost	RCE Apportioned Approved Cost	Estimated Completion Cost	Variation as per FR (- decrease, +increase)	Variation as per RCE (- decrease, +increase)
		a	**b**	**c**	**d = c - a**	**e = c - b**
1	Preliminary works incl. compensation	45.26	32.03	32.02	-13.24	-0.01
A	**Transmission Lines material**					
2	Towers Steel	159.50	241.08	243.23	83.73	2.15
3	Conductor	58.98	98.74	99.52	40.54	0.78
4	Erection, Stringing & Civil works including foundation	149.16	65.74	65.46	-83.70	-0.28
5	Taxes & Duties	39.06	63.87	63.31	24.25	-0.56
6	Miscellaneous T/L	76.75	96.66	95.81	19.06	-0.85
	Total Transmission Lines	**528.71**	**598.12**	**599.35**	**70.64**	**1.23**
B	**Sub-stations**					
1	Civil Works	1089.16	391.83	391.83	-697.33	0.00
2	Switchgear (CT,PT, Circuit Breaker, Isolator etc)	4090.71	4229.57	4226.59	135.88	-2.98
3	Erection, Stringing & Civil works including foundation	535.96	251.00	250.66	-285.30	-0.34
4	Taxes & Duties	208.37	966.48	965.73	757.36	-0.75
5	Miscellaneous Sub-station	625.21	482.58	482.91	-142.30	0.33
	Total sub station	**6549.41**	**6321.46**	**6317.72**	**-231.69**	**-3.74**
C	Over heads	341.88	164.97	164.58	-177.30	-0.39
D	Interest During Construction (IDC)	433.37	366.88	366.88	-66.49	0.00
E	Foreign Exchange Rate Variation		199.26	199.26	199.26	0.00
	Grand Total	**7853.37**	**7650.69**	**7647.79**	**-205.58**	**-2.90**

For Asset-4: (₹ in lakh)

S. No.	Description	FR Apportioned Approved Cost	RCE Apportioned Approved Cost	Estimated Completion Cost	Variation as per FR (- decrease, +increase)	Variation as per RCE (- decrease, +increase)
		a	**b**	**c**	**d = c - a**	**e = c - b**
B	**Sub-stations**					
1	Civil Works	830.43	192.16	192.16	-638.27	0.00
2	Switchgear (CT,PT, Circuit Breaker, Isolator etc)	1683.43	3821.14	3821.03	2137.60	-0.11
3	Transformer	1822.20	2538.85	2538.85	716.65	0.00
4	Erection, Stringing & Civil works including foundation	693.17	3.19	3.19	-689.98	0.00
5	Taxes & Duties	94.56	1239.40	1238.51	1143.95	-0.89
6	Miscellaneous Sub-station	141.94	331.24	331.24	189.30	0.00
	Total sub station	**5265.73**	**8125.98**	**8124.98**	**2859.25**	**-1.00**
C	Over heads	183.28	110.95	96.56	-86.72	-14.39
D	Interest During Construction (IDC)	512.06	433.91	428.43	-83.63	-5.48
E	Foreign Exchange Rate Variation		308	237.65	237.65	-70.35
	Grand Total	**5961.07**	**8978.84**	**8887.62**	**2926.55**	**-91.22**

For Asset-5: (₹ in lakh)

S. No.	Description	FR Apportioned Approved Cost	RCE Apportioned Approved Cost	Estimated Completion Cost	Variation as per FR (- decrease, +increase)	Variation as per RCE (- decrease, +increase)
		a	**b**	**c**	**d = c - a**	**e = c - b**
B	**Sub-stations**					
1	Civil Works	274.41	195.67	195.67	-78.74	0.00
2	Switchgear (CT,PT, Circuit Breaker, Isolator etc)	838.75	1641.11	1641.11	802.36	0.00
3	Erection, Stringing & Civil	131.06	80.23	80.23	-50.83	0.00

	works including foundation					
4	Taxes & Duties	26.16	370.87	370.87	344.71	0.00
5	Miscellaneous Sub-station	164.52	276.15	276.15	111.63	0.00
	Total sub station	**1434.90**	**2564.03**	**2564.03**	**1129.13**	**0.00**
C	Over heads	70.74	60.29	30.47	-40.27	-29.82
D	Interest During Construction (IDC)	161.30	134.62	132.62	-28.68	-2.00
E	Foreign Exchange Rate Variation		74.09	73.32	73.32	-0.77
	Grand Total	**1666.94**	**2833.03**	**2800.44**	**1133.50**	**-32.59**

21. The Petitioner has submitted that being a Government. enterprise, it has the obligation for indigenous development 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) processes have been followed to award this special mega project. Through this process, lowest possible market prices for required product/services/as per detailed designing is obtained and contracts are awarded on the basis of lowest evaluated eligible bidder. The best competitive bid prices against tenders may vary as compared to the cost estimate depending upon prevailing market conditions, design and site requirements. 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 project is on the basis of October 2016 price level, where the contract date is March 2017 price level.

22. The Petitioner has filed the detailed reasons of cost variation with respect to FR and RCE in respect of the transmission assets, which are not reproduced here for the sake of brevity. The summary of the reasons for cost variation is as follows:

Sl. No.	Variation on account of:	Variation	
		(₹ in crore)	(%)
(i)	**Price Variation**		
a	DPR to Award (on competitive bidding while tendering)	-321.10	-6.33 %
b	Provision presently kept as per contract clause. (based on applicable indices)	73.41	1.45 %
	Sub-Total (PV)	**-247.69**	**-4.89 %**
(ii)	**Variation in quantities of approved items**	**-170.73**	**-3.37 %**
(iii)	**Change in Taxes & Duties**	**474.33**	**9.36 %**
(iv)	**Land, Compensation, etc**	**142.17**	**2.80 %**
(v)	**FERV (in contractual payments + loan)**	**222.58**	**4.39 %**
(vi)	**Other Reasons (IEDC and IDC)**		
a	IEDC (incl. Contingencies)	-220.73	-4.35 %
b	IDC	-4.72	0.09 %
	Sub- Total (IEDC & IDC)	**-225.45**	**-4.45 %**
	GRAND TOTAL	**195.20**	

23. KSEB has submitted that on analysing the benchmark cost for HVDC Pole considered by the Commission vide order dated 18.3.2016 in Petition No. 184/TT/2013, it is observed that the cost claimed by the Petitioner is very high in comparison to the benchmark cost. As per order dated 18.3.2016 in Petition No. 184/TT/2013, the hard cost of HVDC line comes to ₹101 lakh per km. The cost of the entire HVDC System consisting of HVDC lines, terminal equipment including IDC, IEDC etc. of +- 500 kV Mundra-Mohindergarh HVDC bi-pole transmission line 990 km is ₹370027.00 lakh which turns out to be ₹373.76 lakh/km. KSEB further submits that the Petitioner has submitted a capital cost of ₹1809.37 lakh/km, which is much higher than the benchmark cost considered vide order dated 18.3.2016 in Petition No. 184/TT/2013.

24. In response, the Petitioner has submitted that the present petition needs to be decided in terms of the provisions of the 2019 Tariff Regulations, which do not contain any benchmark cost for the type of HVDC installed by the Petitioner in the present case. The Petitioner has further submitted that benchmarking analysis for determination of prudent costs cannot be on the basis of one order passed by this Commission and needs to be based on a substantially bigger database, which at present is not available for HVDC systems. It is also a fact that multiple variables influence capital costs and in the context of transmission assets, the capital cost primarily depends on the following variables:

a. Project specific conditions such as terrain, project location, right of way constraints, including urbanization, river/ highway/ railway line crossings, inter-section of other transmission lines, forest area, etc. Further, weather conditions are also an important factor which differentiate capital cost of similar transmission assets.
b. Market forces driven by demand-supply balance i.e. availability of competition among vendors, purchase quantum (one time order vs repeat orders), input cost variations, economic and environmental factors, etc.
c. Technology adopted for implementation of the transmission assets especially the sub-stations and the requirement of the active compensation, etc.

25. The Petitioner has further submitted that all the above factors influence price discovery and the assessment of prudent costs for HVDC assets needs to be done on a project specific basis. It is practically impossible for any benchmarking of capital cost for HVDC assets at this stage. The Petitioner has further submitted that it has evaluated

the variation in cost per km of transmission lines even if such lines fall under the same wind zones, soil conditions and topography and the result of the study shows that a cost of 765 kV line varies from ₹166.5 lakh per km to ₹210.79 lakh per km even within similar regions. The Petitioner has further submitted that any benchmarking in the case of such HVDC assets will cause severe losses to the transmission licensee if, the benchmarks have no relation to the actual cost incurred. Similarly, benchmarking on the basis of one or two cases on a higher level will affect the consumers and the distribution licensees since the actual capital cost incurred may be much lower. The Petitioner has further requested that an independent prudence check may be applied by the Commission on the capital cost incurred and claimed by the Petitioner in the present case.

26. KSEB has further submitted that the Petitioner has claimed ₹18352 lakh towards preliminary works and compensation for which the Petitioner has not provided supporting documents for the same. KSEB has further submitted that Government of Kerala has ordered a special compensation package for the affected people in the State, wherein a portion of the compensation is borne by KSEB and the Government of Kerala. KSEB further submitted that the Petitioner has not stated whether the compensation claimed in the petition excludes the contribution by KSEB and Government of Kerala.

27. In response the Petitioner has submitted that it had not been directed to pay the entire compensation and this is a special order by which the compensation for tower standing area has been fixed at 100% of five times of fair value of the land. 85% of the above amount had been directed to be paid by the Petitioner and the balance 15% by KSEBL/Government of Kerala. Further, some ex-gratia payments and displacement allowance had been directed to be paid by the Petitioner and KSEB in the proportion of 15:25. The Petitioner has further submitted that it has only claimed the compensation

actually paid (subject to audit) by it to various landowners for obtaining the RoW in terms of the orders passed by the Government of Kerala. The Petitioner has further submitted that KSEB has itself accepted that a special compensation package has been approved in the present case. The said package given by the Government of Kerala itself specifies the amounts to be borne by the Petitioner and KSEB. The Petitioner has not claimed any amounts which have not been paid by it in the present petition.

28. TANGEDCO, TSSPDCL and TSNPDCL have submitted that the Petitioner has claimed compensation of ₹10920 lakh towards constructing transmission line for crops, trees and PTCC stating that there is variation in actual assessment of crops, trees, land and household and forest areas encountered in line corridor by concerned government officials of respective states without furnishing any documentary proof / proper justification. In the absence of any documentary proof / proper justification against the claim, the claim may be restricted. TANGEDCO, TSSPDCL and TSNPDCL have further submitted that the Commission may direct the Petitioner to furnish the details of compensation package levied by the Government of Kerala and details of the compensation paid by the Petitioner for the same and if the compensation was paid by the respective government, then the same may be deducted from the capital cost. BESCOM has submitted that the Petitioner has claimed compensation of ₹10920 lakh towards constructing transmission line for crops, trees and PTCC and in the absence of any proper justification against the claim, the claim may be restricted. In response, the Petitioner has submitted that complete details of compensation are available in the petition.

Cost Over-run

29. As compared to FR cost of ₹324023.01 lakh, ₹167508.59 lakh, ₹5961.07 lakh, ₹1666.94 lakh in case of Asset-1, 2, 4, 5, the estimated completion cost has increased by ₹ 8092.98 lakh, ₹2295.19 lakh, ₹2926.55 lakh, ₹1133.50 lakh. The estimated completion cost of Asset-3 is within FR cost.

30. As per the submissions of the Petitioner, the total project cost including all the five assets has increased by about ₹14243.53 lakhs. The Petitioner has submitted that an amount of ₹24769 lakhs is reduced towards price variation, ₹17073.00 lakhs reduced towards variation in quantities of approved items, ₹47433.00 lakhs increased towards change in taxes & duties, an amount of ₹14217.00 lakhs increased due to land compensation and other payments, an amount of ₹22258 lakhs increased towards FERV. Based on the estimated completion cost, the Petitioner has submitted the RCE duly approved by the BoD in its 126th meeting held on 9.11.2021. As per RCE, the completion cost of Asset-1,2,3,4,5 is within RCE cost.

31. In view of the above, cost variation due to price variation, variation in quantities of approved items, land and compensation, FERV, IDC and IEDC is approved. As per the estimated completion cost, the Petitioner has submitted RCE duly approved by it's BoD in its 126th meeting held on 9.11.2021. Further, the estimated completion cost including ACE as mentioned above is within the apportioned approved cost as per RCE.

Time Over-run

32. As per the IA dated 9.2.2017, the transmission project was scheduled to be put to commercial operation within 38 months from the date of IA i.e. by 9.4.2020. However, the actual COD and time over-run of the transmission assets is as follows:

Asset	Schedule COD as per IA	Actual COD	Time over-run (in days)
Asset-1	9.4.2020	9.3.2021	334
Asset-2	9.4.2020	8.6.2021	425
Asset-3	9.4.2020	9.3.2021	334
Asset-4	9.4.2020	9.3.2021	334
Asset-5	9.4.2020	9.3.2021	334

33. The Petitioner has submitted the chronology of details and documentary evidence in support of delay in execution of the transmission assets. The Petitioner has submitted that the time over-run in execution of the transmission assets is due various factors viz. Right of Way (RoW) vis-à-vis law-and-order problem during construction of transmission lines, litigations, flood in Kerala during 2018 and 2019, etc. In addition, vide affidavit dated 18.11.2021, the Petitioner has submitted PERT and CPM chart i.e. Planned vs Actual (as per prescribed format Form-12). Accordingly, the Petitioner has requested to condone the delay in completion of the transmission assets on merit of the same being out of the control of the Petitioner in line with the Regulation 22(2)(c) "uncontrollable factors" of the 2019 Tariff Regulations and approve the tariff as claimed.

34. TANGEDCO, TSSPDCL, TSNPDCL and BESCOM have submitted that while commissioning of transmission lines, RoW issues, litigation, law and order problem are common, and they are covered under controllable factors as stipulated in Regulation 22(1)(a) of the 2019 Tariff Regulations. Hence, the reasons provided by the Petitioner is unjustifiable and TANGEDCO, TSSPDCL, TSNPDCL and BESCOM have requested the Commission not to condone the delay.

35. BESCOM has submitted that there is delay in commissioning of the transmission assets and the reasons provided by the Petitioner are within the "controllable parameters" provided in Regulation 22(1)(a) of the 2019 Tariff Regulations. Hence, IDC

and IEDC may be allowed only upto the original SCOD in line with the provisions of Regulation 21(5) of the 2019 Tariff Regulations.

36. In response, the Petitioner has submitted that land acquisition has been defined as an uncontrollable factor except when the delay is attributable to the transmission company. The Petitioner has given detailed justification for the time over-run including the intervention at the highest levels by the State Government of Tamil Nadu and Kerala to resolve the RoW issues. Accordingly, the IDC and IEDC claimed by the Petitioner may be allowed as claimed upto COD.

37. The Commission vide technical validation letter dated 21.10.2021 directed the Petitioner to submit detailed justification for time over-run for all the assets along with Form-12. In response, the Petitioner vide affidavit dated 18.11.2021 has submitted that:

a. The transmission scheme was scheduled to be commissioned in 38 months from the date of IA. The date of IA is 9.2.2017 and hence the SCOD comes to 9.4.2020 against which the transmission assets have been put under commercial w.e.f. 9.3.2021 and 8.6.2021. Hence there is time over-run of 11 months for Asset-1, Asset-3, Asset-4 & Asset-5 and 14 months for Asset-2 in putting assets to COD.

b. The delay in execution is mainly because of various factors viz. ROW vis-à-vis law and order problem during construction of transmission lines, litigations, flood in Kerala during 2018 & 2019 etc. as elaborated in main petition. After managing number of statutory clearances, difficult terrain conditions, court cases throughout the stretch of transmission line, ROW problems & other construction challenges in the Southern Region, COVID-19 pandemic led to the delay in completion of the project. Petitioner has finally squeezed the prolonged delay and put the assets covered under instant petition into commercial operation on 9.3.2021 and 8.6.2021. The details of Time Over-run have already been submitted at

Para-7.0 page-13-25 in main petition along with documentary evidence at page-232-806.

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

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

d. In the Joint Standing Committee meeting, it had been decided that the schemes may be implemented as separate schemes, however, it is important that the scheme # 2 and Scheme # 3 should be in place before commissioning of 6000 MW Raigarh-Pugalur link. Further, the Raigarh-Pugalur-Trichur HVDC transmission scheme was further discussed in the 39th meeting of SCPSRSR held on 28-29 December, 2015. In the meeting, it had been agreed that schedule of Scheme # 3 viz. Pugalur-Trichur 2000 MW VSC based HVDC System shall be kept with Bi-Pole-II (i.e. 3000 MW) of Scheme # 1. It had also been decided in the 39th SCPSPSR meeting that in case of any mismatch in the execution of these schemes, their usefulness shall be discussed with CEA before their commissioning.

e. Further, it is submitted that execution of Scheme # 1: Raigarh-Pugalur 6000 MW HVDC System, Scheme # 2: AC System strengthening at Pugalur end and Scheme # 3 viz. Pugalur-Trichur 2000 MW VSC based HVDC link was delayed due to severe ROW issues in the States of Tamilnadu and Kerala. Due to severe right of way issues in transmission line, it was difficult for the Petitioner to commission all the three schemes in the time frame.

f. Accordingly, on 21.8.2020 the meeting has been convened by CEA/constituents to discuss the issue of part commissioning 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 Bipole-I) along with ± 800 kV, 6000MW Raigarh-Pugalur HVDC Transmission link shall be commissioned 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) & Pugalur (HVDC Station) under commercial operation w.e.f. 6.9.2020.

g. Further, on 30.12.2020 the meeting was convened by CEA on the issue of part commissioning of Raigarh-Pugalur-Trichur HVDC Transmission System where it was agreed that the Petitioner may commission part of Raigarh-Pugalur-Trichur HVDC transmission system comprising of the following elements:

    i. 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 Sub-station. (Accordingly, the transmission asset has been put under commercial operation w.e.f. 9.3.2021)

    ii. 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. (Accordingly, the transmission asset has been put under commercial operation w.e.f. 9.3.2021)

h. Also, on 5.7.2021 the meeting was convened by CEA on the issue of part commissioning of Raigarh-Pugalur-Trichur HVDC transmission system where it was agreed that the Petitioner may commission part of Raigarh-Pugalur-Trichur HVDC Transmission System comprising of the following elements:

    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. (The transmission asset has been put under commercial operation w.e.f. 8.6.2021)

Following transmission elements may be commissioned on completion.

ii. Pole-I (1500 MW) of Bipole-II (3000 MW) of Raigarh-Pugalur HVDC system.
iii. Pugalur (HVDC) – Edayarpalayam 400 kV (quad) D/c line.
iv. Edayarpalayam – Udumalpet 400 kV (quad) D/c line.
v. 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.
vi. As Edayarpalayam Sub-station 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. (Accordingly, the transmission asset has been put under commercial operation w.e.f. 13.7.2021)

(Copy of Minutes for part Commissioning of the transmission assets under Scheme#1, Scheme#2 and Scheme#3 has been provided.)

38. Further, the Petitioner vide affidavit dated 18.11.2021 has submitted Planned vs Actual details and same is as follows:

Particulars	**Planned**		**Actual**	
	To	**From**	**To**	**From**
HVDC Bipole link between WR (Raigarh, Chhattisgarh) and SR (Pugalur, TN)-North Trichur (Kerala)-Scheme-III: Pugalur-Trichur 2000 MW VSC Based HVDC link				
Investment Approval	9.2.2017	9.2.2017	9.2.2017	9.2.2017
320 kV HVDC Pugalur-North Trichur(kerala) line including underground cable & LILO of 400 kV D/C and North Trichur-Cochin line at North Trichur HVDC station	**10.2.2017**	**9.2.2019**	**21.9.2017**	**22.10.2020**
NOA	10.2.2017	9.8.2017	21.9.2017	21.9.2017
Supplies	8.11.2017	12.9.2019	15.11.2017	15.9.2020
Foundation	8.12.2017	12.7.2019	27.11.2017	3.9.2020
Tower Erection	8.3.2018	19.9.2019	5.2.2019	19.9.2020
Stringing	9.8.2018	11.11.2019	27.11.2019	4.10.2020
Testing & Pre-Commissioning	12.11.2019	9.12.2019	5.10.2020	22.10.2020
+/- 320 kV VSC based HVDC Terminal at Pugalur (2000 MW)	**10.2.2017**	**8.4.2020**	**22.3.2017**	**9.3.2021**
NOA	10.2.2017	10.4.2017	22.3.2017	22.3.2017
Supplies	8.11.2017	8.11.2019	1.12.2017	30.9.2020
Civil works and erection	10.10.2017	9.12.2019	15.7.2017	15.10.2020
System Testing, Pre-Commissioning & Final Commissioning	**9.12.2019**	**8.4.2020**	**23.10.2020**	**9.3.2021**
Mono Pole (1000 MW) along with HVDC	9.2.2019	10.3.2020	23.10.2020	9.3.2021

Particulars	Planned		Actual	
	To	From	To	From
HVDC Bipole link between WR (Raigarh, Chhattisgarh) and SR (Pugalur, TN)-North Trichur (Kerala)-Scheme-III: Pugalur-Trichur 2000 MW VSC Based HVDC link				
+/- 320 kV VSC based HVDC Terminal (2000 MW) including 2x315 MVA 400/220/33 kV 3 ph Auto Transformer alongwith associated ICT bays and 2 nos. additional 220 kV line bays (GIS) for implementation of 220 kV feeder of Kerala	**10.2.2017**	**8.4.2020**	**22.3.2017**	**9.3.2021**
NOA	10.2.2017	10.4.2017	22.3.2017	22.3.2017
Supplies	8.11.2017	8.11.2019	1.12.2017	30.9.2020
Civil works and erection	10.10.2017	9.12.2019	15.7.2017	15.10.2020
System Testing, Pre-Commissioning & Final Commissioning	**9.12.2019**	**8.4.2020**	**2.11.2020**	**9.3.2021**
Mono Pole (1000 MW) along with HVDC	9.2.2019	10.3.2020	2.11.2020	9.3.2021

Particulars	Planned		Actual	
	To	From	To	From
HVDC Bipole link between WR (Raigarh, Chhattisgarh) and SR (Pugalur, TN)-North Trichur (Kerala)-Scheme-III: Pugalur-Trichur 2000 MW VSC Based HVDC link				
Investment Approval	9.2.2017	9.2.2017	9.2.2017	9.2.2017
+/- 320 kV VSC based HVDC Terminal at Pugalur (2000 MW)	**10.2.2017**	**8.4.2020**	**22.3.2017**	**8.6.2021**
NOA	10.2.2017	10.4.2017	22.3.2017	22.3.2017
Supplies	8.11.2017	8.11.2019	1.12.2017	30.9.2020
Civil works and erection	10.10.2017	9.12.2019	15.7.2017	15.10.2020
System Testing, Pre-Commissioning & Final Commissioning	**9.12.2019**	**8.4.2020**	**9.11.2020**	**8.6.2021**
Mono Pole (1000 MW)	10.1.2020	8.4.2020	9.11.2020	8.6.2021
+/- 320 kV VSC based HVDC Terminal (2000 MW) including 2x315 MVA 400/220/33 kV 3 ph Auto Transformer alongwith associated ICT bays and 2 nos. additional 220 kV line bays (GIS) for implementation of 220 kV feeder of Kerala	**10.2.2017**	**8.4.2020**	**22.3.2017**	**8.6.2021**
NOA	10.2.2017	10.4.2017	22.3.2017	22.3.2017
Supplies	8.11.2017	8.11.2019	1.12.2017	30.9.2020
Civil works and erection	10.10.2017	9.12.2019	10.10.2017	15.10.2020
System Testing, Pre-Commissioning & Final Commissioning	**9.12.2019**	**8.4.2020**	**17.11.2020**	**8.6.2021**
Mono Pole (1000 MW)	10.1.2020	8.4.2020	17.11.2020	8.6.2021
Project Complete	8.4.2020	8.4.2020	8.6.2021	8.6.2021

39. We have considered the submissions of the Petitioner and the Respondents, KSEBL, TANGEDCO, TSSPDCL and TNSPDCL and perused the documents available on record. We have also gone through the documentary evidence placed on record by the Petitioner regarding time over-run. The transmission asset is scheduled to be put

under commercial operation within 38 months from the date of I.A. dated 9.2.2017. Accordingly, the SCOD was 9.4.2020. However, the Asset-1, 3, 4 & 5 were put into commercial operation on 9.3.2021 whereas, Asset-2 was put into commercial operation on 8.6.2021. Therefore, there is a time over-run of 334 days in execution of Asset-1, 3, 4 & 5 and that of 425 days in execution of Asset-2.

40. The Petitioner has attributed that the time over-run mainly to RoW vis-à-vis law and order problem during construction of transmission lines, litigations, unprecedented rains and floods, hinderance due to re-alignment/ line diversion by KSEBL, underground cable laying due to delay of tunnel work by NHAI, COVID-19 pandemic etc. The Petitioner has submitted the copies of relevant documents in support of time over-run justification. The reasons of time over-run having impact in execution of transmission assets are discussed herein below.

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.

42. The Commission has already condoned the time over-run in case of the transmission assets covered under the Scheme-1 of the instant transmission project vide order dated 29.9.2022 in Petition No. 685/TT/2020 and transmission assets covered under Scheme-2 vide order dated 24.11.2022 in Petitioner No. 243/TT/2021 due to RoW issues, court cases, forest clearances, Covid-19 Pandemic, etc.

43. The other issue of delay due to re-alignment and diversion of existing 110 kV lines by KSEBL, underground cable laying due to delay by NHAI, unprecedented rains and floods in Kerala and COVID-19 pandemic etc. is subsumed in the delay due to RoW vis-a-vis law and order and court case related issues, therefore the same is not being deliberated.

44. In view of the above, the details of time over-run condoned in respect of the transmission assets are as follows:

Asset	Schedule COD as per IA	Actual COD	Time over-run (in days)	Time over-run condoned (in days)
Asset-1	9.4.2020	9.3.2021	334	334
Asset-2	9.4.2020	8.6.2021	425	425
Asset-3	9.4.2020	9.3.2021	334	334
Asset-4	9.4.2020	9.3.2021	334	334
Asset-5	9.4.2020	9.3.2021	334	334

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

45. The Petitioner has claimed IDC of the transmission assets covered in the instant petition and has submitted the statement showing IDC claim, discharge of IDC liability as on date of commercial operation and thereafter as under:

(₹ in lakh)

Asset	IDC as per Auditor Certificate	IDC Discharged upto COD	IDC discharged during 2021-22	IDC discharged during 2022-23
Asset-1	15819.64	14276.27	1543.36	0.00
Asset-2	7355.89	6644.40	689.86	21.64
Asset-3	366.88	324.65	42.24	0.00
Asset-4	428.43	390.06	38.37	0.00
Asset-5	132.62	119.31	13.30	0.00

46. As discussed above in this order, the time over-run of transmission assets has been fully condoned. Accordingly, the 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 asset. The Petitioner is directed to submit reconciliation of ADB loan applied to this project with petition-wise and asset-wise details of loans deployed along with computation of IDC at the time of truing-up. The 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 is as follows:

(₹ in lakh)

Asset	IDC as per Auditor Certificate (A)	IDC disallowed due to computational difference (B)	IDC Allowed (C=A-B)
Asset-1	15819.64	882.66	14936.98
Asset-2	7355.89	566.13	6789.76
Asset-3	366.88	19.27	347.61
Asset-4	428.43	23.80	404.63
Asset-5	132.62	7.54	125.08

(₹ in lakh)

Asset	IDC allowed in this order	IDC Discharged upto COD	IDC discharged during 2021-22
Asset-1	14936.98	14022.53	914.44
Asset-2	6789.76	6593.26	196.50
Asset-3	347.61	320.25	27.36
Asset-4	404.63	385.45	19.17
Asset-5	125.08	117.71	7.37

47. The Petitioner has claimed IEDC for the transmission assets as per the Auditor Certificate. The Petitioner has further submitted that the entire amount of IEDC for the transmission assets has been discharged up to COD. The IEDC claimed as per Auditor's Certificate, IEDC considered and discharged up to COD is as under:

(₹ in lakh)

Asset	IEDC claimed as per Auditor certificate	IEDC considered as on COD	IEDC discharged up to COD
Asset-1	7893.15	7893.15	7893.15
Asset-2	1975.63	1975.63	1975.63
Asset-3	164.58	164.58	164.58
Asset-4	96.56	96.56	96.56
Asset-5	30.47	30.47	30.47

48. Accordingly, the IEDC claimed and considered as on COD for the purpose of tariff determination is as under:

(₹ in lakh)

Asset	IEDC as per Auditor certificate (A)	IEDC disallowed (B)	IEDC allowed (C=A-B)
Asset-1	7893.15	0.00	7893.15
Asset-2	1975.63	0.00	1975.63
Asset-3	164.58	0.00	164.58
Asset-4	96.56	0.00	96.56
Asset-5	30.47	0.00	30.47

Initial Spares

49. 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%"

50. The Initial Spares as claimed by the Petitioner in respect of the transmission assets are as follows:

(₹ in lakh)

Asset	Particulars	Plan & Machinery cost (A)	Initial Spares Claimed (B)	Ceiling Limit (%) (C)	Percentage claimed (%)	Initial Spares Worked out D = [(A-B)*C /(100-C)]	Initial Spares claimed in this petition
Asset-1	HVDC Sub-station (Green Field)	159169.45	5258.12	4.0	3.28	6412.97	5258.12
Asset-2	HVDC Sub-station (Green Field)	153598.98	4891.43	4.0	3.16	6196.15	4891.43
Asset-3	GIS Sub-station (Green Field)	6008.55	211.13	5.0	3.46	305.13	211.13
Asset-4	GIS Sub-station (Green Field)	8119.78	209.32	5.0	2.51	416.34	209.32
Asset-5	GIS Sub-station (Green Field)	2343.51	87.08	5.0	3.67	118.76	87.08
TOTAL		**329240.28**	**10657.08**			**13449.35**	**10657.08**

(₹ in lakh)

Asset	Particulars	Plan & Machinery cost (A)	Initial Spares Claimed (B)	Ceiling Limit (%) (C)	Percentage claimed (%)	Initial Spares Worked out D = [(A-B)*C /(100-C)]	Initial Spares claimed in this petition
Asset-1	Transmission line (Including UG cable)	126037.52	2671.57	1.0	2.14	1246.12	2671.57
Asset-3	Transmission line	614.35	4.43	1.0	0.72	6.16	4.43
TOTAL		**126651.87**	**2676.00**			**1252.28**	**2676.00**

51. The details of Initial Spares discharged as per Form-13 are as follows:

(₹ in lakh)

Asset	Particulars	Total Initial Spares claimed	Expenditure on Initial Spares upto COD and included in Auditor Certificate upto COD	Expenditure on Initial Spares in 2021-22
Asset-1	HVDC Sub-station (Green Field)	5258.12	4697.11	561.01
Asset-2	HVDC Sub-station (Green Field)	4891.43	3987.27	904.16
Asset-3	Sub-station (Green Field)	211.13	211.13	0.00
Asset-4	Sub-station (Green Field)	209.32	209.32	0.00
Asset-5	Sub-station (Green Field)	87.08	87.08	0.00
Asset-1	Transmission line (Including UG cable)	2671.57	2494.65	176.92
Asset-3	Transmission line	4.43	3.98	0.45

52. The Petitioner has submitted that the Initial Spares for the HVDC sub-station covered under instant petition are within the specified limit under Regulation 23 of the 2019 Tariff Regulations. However, Initial Spares for transmission line (including ±320 kV underground cable portion) are marginally higher as per Regulation 23 of the 2019 Tariff Regulations. The Petitioner has further submitted that Initial Spares requirement for the underground cables in the instant case is finalized based on maximum span length between Manhole (MH) to Manhole (MH). In the subject underground cable link, two cables are running for each symmetrical monopole and one Joints are connected with two numbers of cable. Thus, the spare cable length is worked out as:

Spare quantity in meters for each symmetrical monopole

= [(Number of Cable) x (each joint connected with two nos. Cable) x (MH to MH Span in meters)]

=2*2*(MH to MH Span in meters)

53. The Petitioner has further submitted as per the Technical Specification of HVDC Cables, initially the span length between Manhole (MH) to Manhole (MH) was envisaged as 500-meters. However, after detailed engineering, the distance between MH to MH (along the RoW) has increased to reduce the number of joints and to increase the reliability of system. Thus, the maximum span between MH to MH has been increased during detailed engineering and subsequently the maximum length of HVDC Cable obtained in the route is 699 meters. Based on the maximum span between MH to MH, the spare cable 5196 meter i.e. (2x2x700 and 2x2x599) have been taken in project. Therefore, the Petitioner has considered only 5.196 km HVDC Cable against entire RoW/Route. The Petitioner has further submitted that in the instant project ±320 kV HVDC XLPE Cable have been procured from SUMITOMO Cable Corporation, Japan (Off-Shore) (OEM) which is having 90 degree cable conductor temperature, thus in case HVDC Cable is required in future then same is to be procured from SUMITIOMO Japan as other vendors may not have DC XLPE cable of conductor temperature of 90 degrees. Availability of spare cable will reduce downtime of the system and reliability will improve. This Initial Spare of 5.196 km HVDC Cable in terms of % Initial Spares limits as defined in 2019 Tariff Regulations comes to about 2.82%. Further, it may be mentioned that while deriving the unit Initial Spares rates for 2019-24 tariff period, the 320 kV Underground Cable have not been considered in Regulation 23 of the CERC 2019 Tariff Regulations. Further, the provision regarding claiming of such Initial Spares by way of petition have also not been provided in the 2019 Tariff Regulations. The Initial Spares claimed for 320 kV Underground Cable under Regulation 76 and Regulation 77 of the 2019 Tariff Regulations, viz. ‘Power to Relax’ and ‘Power to Remove Difficulty’ and has prayed to the Commission to allow the same.

54. KSEB has submitted that the Petitioner has claimed a higher percentage of Initial Spares for both the underground and overhead cables citing 'Power to Relax' and 'Power to Remove Difficulties' under Regulation 76 and Regulation 77 of the 2019 Tariff Regulations, which may not be allowed.

55. TANGEDCO, TSSPDCL, TSNPDCL and BESCOM have submitted that the Petitioner's claim for Initial Spares for Asset-1 of transmission line (Including U.G. Cable) is marginally high i.e., 2.21% compared to the ceiling limit of 1% as per Regulation 23 of the 2019 Tariff Regulations. TANGEDCO, TSSPDCL, TSNPDCL and BESCOM have further submitted that the Petitioner has stated that the Initial Spares claimed for 320 kV Underground cable under Regulation 76 and Regulation 77, viz. Power to Relax and Power to remove difficulty which is not acceptable and TANGEDCO, TSSPDCL and TSNPDCL have requested the Commission to restrict the Initial Spares and allow the ceiling limit of 1% as per the 2019 Tariff Regulations.

56. In response to the replies by KSEB, TANGEDCO, TSSPDCL, TSNPDCL and BESCOM, the Petitioner has submitted that the Initial Spares requirement for underground cables in the present case has been finalized based on maximum span length between manhole to manhole. The instant underground cable link is such that two cables are running for each symmetric monopole and one joint is connected with two number of cables. Thus, the spare cable length works out as the following:

Spare quantity in meters for each monopole
= [(Number of Cable) x (each joints connected with two nos. Cable) x (MH to MH Span in meters)]
*= 2*2* (MH to MH Span in meters)*

57. The Petitioner has further submitted that as per the technical specification of HVDC cables, initially the span length between manhole to manhole was envisaged to

be 500 metres. However, after a detailed engineering of the distance between manhole to manhole, including the RoW issues, the same increased to reduce the number of joints and to enhance the reliability of the system. The detailed engineering led to the maximum span distance between manhole to manhole to increase from 500 metres to 699 metres. It was also found that the maximum length of the HVDC cable on the route worked out to 699 metres. Thus, based on the maximum span between manhole to manhole, a spare cable of 5196 metres was considered for the project to avoid any reliability issues (2x2x700 and 2x2x599). The Petitioner considered 5196 metres (5.196 km) HVDC cable for the entire route. The +320 kV HVDC XLPE cable was procured from Sumitomo Cable Corporation, Japan (offshore OEM) which has 90 degrees cable conductor temperature which is a requirement for the present project. The Petitioner has further submitted that this is a peculiar case since if any further HVDC cable would be required in future, it would have to be procured from Sumitomo Cable Corporation, Japan as it is the only vendor having DC XLPE cable with conductor temperature of 90 degrees. The Petitioner has planned the availability of spare cable to ensure that in case of any future difficulty, the downtime of the system will be reduced, and reliability enhanced. In terms of the 2019 Tariff Regulations, the Initial Spare limits for 5.196 km HVDC cable would work out 2.82%. This is higher than the 1% provided in the 2019 Tariff Regulations. Further, while framing the 2019 Tariff Regulations, the Initial Spares for a peculiar case of +320 kV underground HVDC cable had not been considered. Therefore, the Petitioner has prayed for the exercising the provisions under Regulation 76, i.e., 'Power to Relax'.

58. We have considered the submissions of Petitioner, KSEBL, TANGEDCO, TSSPDCL, TSNPDCL and BESCOM. The Initial Spares claimed by the Petitioner

towards Sub-station in Asset-1 and Asset-2 (HVDC Station), Asset-3, Asset-4 and Asset-5 ((GIS Sub-station (Green field)) are within the ceiling limit of 5% and the same has been allowed.

59. With regards to Asset- 3 under Transmission line, it is noted that the Initial Spares claimed by the Petitioner are within the ceiling limit of 1% and the same has been allowed. In regards to Asset -1, it is noted that it includes transmission line as well as underground cable but the Petitioner has claimed combined cost of both under the head of 'Plant & Machinery' and 'Initial Spares' as 2.21 % there upon, under Regulation 76 (Power to Relax) and Regulation 77 (Power to Remove Difficulties) of the 2019 Tariff Regulations. In this context, it is observed that the Petitioner has not furnished any segregated cost details of overhead transmission line (137.957 km) and Under Ground cable (27.215 km) and also claimed initial spares (2.21 % of P&M of transmission line and UG cable) for the assets, is beyond the ceiling limit (1 %) for the transmission line and the subject claimed initial spares, includes 5.196 km of cable also. However, the 2019 Tariff Regulations don't have any provision for Under Ground Cable and initial spares thereof. In this context, it is noted that the Regulation 23 of the 2019 Tariff Regulation provides for capitalization of Initial Spares as 1% percentage of the Plant and Machinery cost of Transmission line. The Commission is of the view that the initial spares for the subject asset is to be restricted to 1 % of the total plant and machinery cost of the asset, however, the petitioner is granted the liberty to approach the Commission again at the time of true up with segregated initial spares for overhead transmission line and Under Ground Cable, under the subject asset. The Petitioner further directed to submit the information regarding the warranty period of the subject asset, provided by the OEM / contractor / supplier, along with the supporting documents

and segregated actual initial spares consumed towards Under Ground Cable within and beyond warranty period, at the time of truing up of the tariff for further consideration of the Commission.

60. The Initial Spares allowed for the transmission assets are as follows:

(₹ in lakh)

Asset	Particulars	Plant & Machinery cost (excluding IDC/IEDC, Land cost & Cost of Civil Works) (A)	Initial Spares Claimed (B)	Ceiling Limit (%) (C)	Percentage claimed (%)	Initial Spares Worked out D = [(A-B)*C /(100-C)]	Initial Spares allowed in this order
Asset-1	HVDC Sub-station ()	159169.45	5258.12	4.0	3.28	6412.97	5258.12
Asset-2	HVDC Sub-station (Green Field)	153598.98	4891.43	4.0	3.16	6196.15	4891.43
Asset-3	GIS Sub-station (Green Field)	6008.55	211.13	5.0	3.46	305.13	211.13
Asset-4	GIS Sub-station (Green Field)	8119.78	209.32	5.0	2.51	416.34	209.32
Asset-5	GIS Sub-station (Green Field)	2343.51	87.08	5.0	3.67	118.76	87.08

(₹ in lakh)

Asset	Particulars	Plant & Machinery cost (excluding IDC/IEDC, Land cost & Cost of Civil Works) (A)	Initial Spares Claimed (B)	Ceiling Limit (%) (C)	Percentage claimed (%)	Initial Spares Worked out D = [(A-B)*C /(100-C)]	Initial Spares allowed in this order
Asset-1	Transmission line	126037.52	2671.57	1.0	2.14	1246.12	1246.12
Asset-3	Transmission line	614.35	4.43	1.0	0.72	6.16	4.43

61. Excess Initial Spares of ₹1425.45 lakh in Asset-1 have been deducted from capital cost on LIFO (last-in-first-out) basis based on discharge details submitted in Form-13, the details are as follows:

Asset	Element	Total claim	Capital Cost as on COD as per Auditor Certificate (₹ in lakh)	ACE in 2021-22 as per Auditor Certificate (₹ in lakh)
Asset-1	Transmission line	Discharge of Initial Spares	2494.65	176.92
		Deduction from Capital Cost as on COD/ ACE	1248.53	176.92

62. The capital cost allowed as on COD in respect of the transmission assets is as follows:

(₹ in lakh)

Asset	Capital Cost claimed as on COD (Auditor Certificate) (A)	IDC disallowed (B)	IEDC disallowed (C)	Excess Initial Spares disallowed as on COD (D)	Undischarged IDC as on COD (E)	Capital Cost approved as on COD (F=A-B-C-D-E)
Asset-1	297153.23	882.66	0.00	1248.53	914.44	294107.59
Asset-2	147136.61	566.13	0.00	0.00	196.50	146373.98
Asset-3	7029.53	19.27	0.00	0.00	27.36	6982.90
Asset-4	8191.81	23.80	0.00	0.00	19.17	8148.83
Asset-5	2534.86	7.54	0.00	0.00	7.37	2519.95

Additional Capital Expenditure (ACE)

63. Regulation 24 and Regulation 25 of the 2019 Tariff Regulations provide as under:

> *"**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:
(g) Liabilities to meet award of arbitration or for compliance of the directions or order of any statutory authority, or order or decree of any court of law;
(h) Change in law or compliance of any existing law;
(i) Deferred works relating to ash pond or ash handling system in the original scope of work;
(j) Liability for works executed prior to the cut-off date;
(k) Force Majeure events;
(l) Liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments; and
(m) Raising of ash dyke as a part of ash disposal system.
(2) In case of replacement of assets deployed under the original scope of the existing project after cut-off date, the additional capitalization may be admitted by the Commission, after making necessary adjustments in the gross fixed assets and the cumulative depreciation, subject to prudence check on the following grounds:
(a) The useful life of the assets is not commensurate with the useful life of the project and such assets have been fully depreciated in accordance with the provisions of these regulations;
(b) The replacement of the asset or equipment is necessary on account of change in law or Force Majeure conditions;
(c) The replacement of such asset or equipment is necessary on account of obsolescence of technology; and
(d) The replacement of such asset or equipment has otherwise been allowed by the Commission."

64. The Petitioner has claimed that the ACE incurred/projected to be incurred is mainly on account of balance/retention payments and hence the same is claimed under

Regulation 24(1)(a) and Regulation 24(1)(b) of the 2019 Tariff Regulations. The Petitioner has claimed capital cost as on 31.3.2024 as under:

(₹ in lakh)

Asset	FR Apportioned Approved Cost	RCE Apportioned Approved Cost	Expenditure up to COD	ACE			Capital Cost as on 31.3.2024
				2020-21	2021-22	2022-23	
Asset-1	324023.01	334122.34	297153.23	2165.69	30597.07	2200.00	332115.99
Asset-2	167508.59	172948.10	147136.61	0.00	22667.17	0.00	169803.78
Asset-3	7853.38	7650.69	7029.53	9.25	609.01	0.00	7647.79
Asset-4	5961.07	8978.84	8191.81	5.88	689.93	0.00	8887.62
Asset-5	1666.94	2833.03	2534.85	1.82	263.77	0.00	2800.44
Total	**507012.99**	**526533.00**	**462046.03**	**2182.64**	**54826.95**	**2200.00**	**521255.62**

65. TANGEDCO, TSSPDCL and TSNPDCL have submitted that the Petitioner has stated that the ACE incurred/projected to be incurred is mainly on account of Balance/Retention Payments. TANGEDCO, TSSPDCL and TSNPDCL have requested the Commission to direct the Petitioner to submit the liability flow statement in view of ACE claimed. In response, the Petitioner has submitted that contractor-wise details (liability flow statement) of ACE have been filed by the Petitioner vide affidavit dated 18.11.2021.

66. We have considered the submissions made by the Petitioner, TANGEDCO, TSSPDCL and TSNPDCL. The ACE claimed by the Petitioner has been allowed under Regulation 24(1)(a) of the 2019 Tariff Regulations on account of balance and retention payments for works already executed and Regulation 25(1)(b) of the 2019 Tariff Regulations for works deferred for execution. Accordingly, the ACE allowed for the 2019-24 period including accrual IDC discharge is as follows:

(₹ in lakh)

Asset	Particulars	ACE		
		2020-21	2021-22	2022-23
Asset-1	ACE (A)	2165.69	30597.07	2200.00
	IDC discharge (B)	0.00	914.44	0.00
	Excess Initial Spares disallowed (C)	0.00	176.92	0.00
	Total (D=A+B-C)	**2165.69**	**31334.59**	**2200.00**
Asset-2	ACE (A)	0.00	22667.17	0.00
	IDC discharge (B)	0.00	196.50	0.00
	Total (C=A+B)	**0.00**	**22863.67**	**0.00**
Asset-3	ACE (A)	9.25	609.01	0.00
	IDC discharge (B)	0.00	27.36	0.00
	Total (C=A+B)	**9.25**	**636.37**	**0.00**
Asset-4	ACE (A)	5.88	689.93	0.00
	IDC discharge (B)	0.00	19.17	0.00
	Total (C=A+B)	**5.88**	**709.10**	**0.00**
Asset-5	ACE (A)	1.82	263.77	0.00
	IDC discharge (B)	0.00	7.37	0.00
	Total (C=A+B)	**1.82**	**271.14**	**0.00**

67. The capital cost considered for the transmission assets for the 2019-24 tariff period is as under:

(₹ in lakh)

Asset	FR Apportioned Approved Cost	RCE Apportioned Approved Cost	Capital Cost as on COD	ACE			Capital Cost as on 31.3.2024
				2020-21	2021-22	2022-23	
Asset-1	324023.01	334122.34	294107.59	2165.69	31334.59	2200.00	329807.88
Asset-2	167508.59	172948.10	146373.98	0.00	22863.67	0.00	169237.65
Asset-3	7853.38	7650.69	6982.90	9.25	636.37	0.00	7628.52
Asset-4	5961.07	8978.84	8148.83	5.88	709.10	0.00	8863.82
Asset-5	1666.94	2833.03	2519.95	1.81	271.14	0.00	2792.90

Debt-Equity ratio

68. Regulation 18 of the 2019 Tariff Regulations provides as under:

> ***"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."

69. The debt-equity considered for the purpose of computation of tariff for the 2019-24 tariff period for the transmission assets is as follows:

Asset-1

Funding	Capital Cost as on COD (₹ in lakh)	%	ACE during 2019-24 (₹ in lakh)	%	Capital Cost as on 31.3.2024 (₹ in lakh)	%
Debt	205875.32	70.00	24990.20	70.00	230865.51	70.00
Equity	88232.28	30.00	10710.09	30.00	98942.36	30.00
Total	**294107.59**	**100.00**	**35700.28**	**100.00**	**329807.88**	**100.00**

Asset-2

Funding	Capital Cost as on COD (₹ in lakh)	%	ACE during 2019-24 (₹ in lakh)	%	Capital Cost as on 31.3.2024 (₹ in lakh)	%
Debt	102461.79	70.00	16004.57	70.00	118466.36	70.00
Equity	43912.19	30.00	6859.10	30.00	50771.30	30.00
Total	**146373.98**	**100.00**	**22863.67**	**100.00**	**169237.65**	**100.00**

Asset-3

Funding	Capital Cost as on COD (₹ in lakh)	%	ACE during 2019-24 (₹ in lakh)	%	Capital Cost as on 31.3.2024 (₹ in lakh)	%
Debt	4888.03	70.00	451.93	70.00	5339.96	70.00
Equity	2094.87	30.00	193.68	30.00	2288.56	30.00
Total	**6982.90**	**100.00**	**645.62**	**100.00**	**7628.52**	**100.00**

Asset-4

Funding	Capital Cost as on COD (₹ in lakh)	%	ACE during 2019-24 (₹ in lakh)	%	Capital Cost as on 31.3.2024 (₹ in lakh)	%
Debt	5704.18	70.00	500.49	70.00	6204.67	5704.18
Equity	2444.65	30.00	214.50	30.00	2659.14	2444.65
Total	**8148.83**	**100.00**	**714.98**	**100.00**	**8863.82**	**8148.83**

Asset-5

Funding	Capital Cost as on COD (₹ in lakh)	%	ACE during 2019-24 (₹ in lakh)	%	Capital Cost as on 31.3.2024 (₹ in lakh)	%
Debt	1763.97	70.00	191.06	70.00	1955.03	70.00
Equity	755.99	30.00	81.88	30.00	837.87	30.00
Total	**2519.95**	**100.00**	**272.95**	**100.00**	**2792.90**	**100.00**

Depreciation

70. Regulation 33 of the 2019 Tariff Regulations provides as under:

*"**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."

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

Annexure has been worked as per the rates of depreciation specified in the 2019 Tariff Regulations. The depreciation allowed for the transmission assets is as follows:

(₹ in lakh)

Asset-1

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Depreciation				
A	Opening Gross Block	294107.59	296273.28	327607.88	329807.88
B	ACE	2165.69	31334.59	2200.00	0.00
C	Closing Gross Block (A+B)	296273.28	327607.88	329807.88	329807.88
D	Average Gross Block (A+C)/2	295190.44	311940.58	328707.88	329807.88
E	Freehold Land	3491.93	3491.93	3491.93	3491.93
F	Weighted average rate of Depreciation (WAROD) (%)	5.16	5.15	5.15	5.15
G	Balance useful life of the asset	29	29	28	27
H	Elapsed life at the beginning of the year	0	0	1	2
I	Aggregate Depreciable Value	262662.22	277747.25	292847.68	293837.68
J	**Combined Depreciation during the year**	**959.75**	**16080.50**	**16934.61**	**16992.69**
K	Aggregate Cumulative Depreciation	959.75	17040.25	33974.86	50967.55
L	Remaining Aggregate Depreciable Value	261702.47	260707.00	258872.82	242870.12

(₹ in lakh)

Asset-2

	Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
	Depreciation			
A	Opening Gross Block	146373.98	169237.65	169237.65
B	ACE	22863.67	0.00	0.00
C	Closing Gross Block (A+B)	169237.65	169237.65	169237.65
D	Average Gross Block (A+C)/2	157805.82	169237.65	169237.65
E	Weighted average rate of Depreciation (WAROD) (%)	5.28	5.28	5.28
F	Balance useful life of the asset	25	25	24
G	Elapsed life at the beginning of the year	0	0	1
H	Aggregate Depreciable Value	142141.66	152436.64	152436.64

	Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
I	**Combined Depreciation during the year**	**6781.69**	**8938.05**	**8938.05**
J	Aggregate Cumulative Depreciation	6781.69	15719.74	24657.79
K	Remaining Aggregate Depreciable Value	135359.97	136716.90	127778.85

(₹ in lakh)

Asset-3

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Depreciation				
A	Opening Gross Block	6982.90	6992.15	7628.52	7628.52
B	ACE	9.25	636.37	0.00	0.00
C	Closing Gross Block (A+B)	6992.15	7628.52	7628.52	7628.52
D	Average Gross Block (A+C)/2	6987.53	7310.33	7628.52	7628.52
E	Weighted average rate of Depreciation (WAROD) (%)	5.19	5.19	5.19	5.19
F	Balance useful life of the asset	26	26	25	24
G	Elapsed life at the beginning of the year	0	0	1	2
H	Aggregate Depreciable Value	6291.73	6582.51	6869.13	6869.13
I	**Combined Depreciation during the year**	**22.87**	**379.71**	**396.29**	**396.29**
J	Aggregate Cumulative Depreciation	22.87	402.57	798.87	1195.16
K	Remaining Aggregate Depreciable Value	6268.87	6179.94	6070.26	5673.97

(₹ in lakh)

Asset-4

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Depreciation				
A	Opening Gross Block	8148.83	8154.71	8863.82	8863.82
B	ACE	5.88	709.10	0.00	0.00
C	Closing Gross Block (A+B)	8154.71	8863.82	8863.82	8863.82
D	Average Gross Block (A+C)/2	8151.77	8509.26	8863.82	8863.82

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
E	Weighted average rate of Depreciation (WAROD) (%)	5.25	5.25	5.24	5.24
F	Balance useful life of the asset	25	25	24	23
G	Elapsed life at the beginning of the year	0	0	1	2
H	Aggregate Depreciable Value	7338.08	7659.95	7979.17	7979.17
I	**Combined Depreciation during the year**	**26.95**	**446.35**	**464.89**	**464.89**
J	Aggregate Cumulative Depreciation	26.95	473.30	938.19	1403.08
K	Remaining Aggregate Depreciable Value	7311.14	7186.65	7040.98	6576.09

(₹ in lakh)

Asset-5

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Depreciation				
A	Opening Gross Block	2519.95	2521.76	2792.90	2792.90
B	ACE	1.81	271.14	0.00	0.00
C	Closing Gross Block (A+B)	2521.76	2792.90	2792.90	2792.90
D	Average Gross Block (A+C)/2	2520.86	2657.33	2792.90	2792.90
E	Weighted average rate of Depreciation (WAROD) (%)	5.16	5.17	5.18	5.18
F	Balance useful life of the asset	25	25	24	23
G	Elapsed life at the beginning of the year	0	0	1	2
H	Aggregate Depreciable Value	2270.25	2393.20	2515.34	2515.34
I	**Combined Depreciation during the year**	**8.20**	**137.44**	**144.72**	**144.72**
J	Aggregate Cumulative Depreciation	8.20	145.64	290.36	435.09
K	Remaining Aggregate Depreciable Value	2262.05	2247.56	2224.98	2080.25

Interest on Loan (IoL)

72. Regulation 32 of the 2019 Tariff Regulations provides as under:

> ***"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."*

73. We have considered the submissions of the Petitioner. The Weighted Average Rate of IoL (WAROI) has been considered on the basis of rate prevailing as on 1.4.2019. The Petitioner has prayed that the change in interest rate due to floating rate

of interest applicable, if any, during the 2019-24 tariff period will be adjusted. Accordingly, the floating rate of interest, if any, will be considered at the time of true up. Therefore, the IoL has been allowed in accordance with Regulation 32 of the 2019 Tariff Regulations. The IoL has been allowed as under:

(₹ in lakh)

Asset-1

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Interest on Loan				
A	Gross Normative Loan	205875.32	207391.30	229325.51	230865.51
B	Cumulative Repayments upto Previous Year	0.00	959.75	17040.25	33974.86
C	Net Loan-Opening (A-B)	205875.32	206431.55	212285.27	196890.66
D	Additions	1515.98	21934.22	1540.00	0.00
E	Repayment during the year	959.75	16080.50	16934.61	16992.69
F	Net Loan-Closing (C+D-E)	206431.55	212285.27	196890.66	179897.96
G	Average Loan (C+F)/2	206153.43	209358.41	204587.96	188394.31
H	Weighted Average Rate of Interest on Loan (%)	3.1920	3.2204	3.2599	3.2959
I	**Interest on Loan (G*H)**	**414.65**	**6742.10**	**6669.42**	**6209.37**

(₹ in lakh)

Asset-2

	Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
	Interest on Loan			
A	Gross Normative Loan	102461.79	118466.36	118466.36
B	Cumulative Repayments upto Previous Year	0.00	6781.69	15719.74
C	Net Loan-Opening (A-B)	102461.79	111684.66	102746.61
D	Additions	16004.57	0.00	0.00
E	Repayment during the year	6781.69	8938.05	8938.05
F	Net Loan-Closing (C+D-E)	111684.66	102746.61	93808.56
G	Average Loan (C+F)/2	107073.22	107215.64	98277.59
H	Weighted Average Rate of Interest on Loan (%)	2.8462	2.8703	2.8919
I	**Interest on Loan (G*H)**	**2479.78**	**3077.38**	**2842.13**

(₹ in lakh)

Asset-3

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Interest on Loan				
A	Gross Normative Loan	4888.03	4894.51	5339.96	5339.96
B	Cumulative Repayments upto Previous Year	0.00	22.87	402.57	798.87
C	Net Loan-Opening (A-B)	4888.03	4871.64	4937.39	4541.10
D	Additions	6.48	445.46	0.00	0.00
E	Repayment during the year	22.87	379.71	396.29	396.29
F	Net Loan-Closing (C+D-E)	4871.64	4937.39	4541.10	4144.80
G	Average Loan (C+F)/2	4879.84	4904.51	4739.24	4342.95
H	Weighted Average Rate of Interest on Loan (%)	3.0764	3.0978	3.1372	3.1738
I	**Interest on Loan (G*H)**	**9.46**	**151.93**	**148.68**	**137.84**

(₹ in lakh)

Asset-4

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Interest on Loan				
A	Gross Normative Loan	5704.18	5708.30	6204.67	6204.67
B	Cumulative Repayments upto Previous Year	0.00	26.95	473.30	938.19
C	Net Loan-Opening (A-B)	5704.18	5681.35	5731.37	5266.48
D	Additions	4.12	496.37	0.00	0.00
E	Repayment during the year	26.95	446.35	464.89	464.89
F	Net Loan-Closing (C+D-E)	5681.35	5731.37	5266.48	4801.59
G	Average Loan (C+F)/2	5692.77	5706.36	5498.93	5034.03
H	Weighted Average Rate of Interest on Loan (%)	2.9101	2.9284	2.9613	2.9891
I	**Interest on Loan (G*H)**	**10.44**	**167.11**	**162.84**	**150.47**

(₹ in lakh)

Asset-5

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Interest on Loan				
A	Gross Normative Loan	1763.97	1765.23	1955.03	1955.03
B	Cumulative Repayments upto Previous Year	0.00	8.20	145.64	290.36
C	Net Loan-Opening (A-B)	1763.97	1757.04	1809.39	1664.67
D	Additions	1.27	189.80	0.00	0.00
E	Repayment during the year	8.20	137.44	144.72	144.72

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
F	Net Loan-Closing (C+D-E)	1757.04	1809.39	1664.67	1519.94
G	Average Loan (C+F)/2	1760.50	1783.21	1737.03	1592.31
H	Weighted Average Rate of Interest on Loan (%)	2.9245	2.9437	2.9777	3.0053
I	**Interest on Loan (G*H)**	**3.24**	**52.49**	**51.72**	**47.85**

Return on Equity (RoE)

74. Regulation 30 and Regulation 31 of the 2019 Tariff Regulations provide as under:

> ***"30. Return on Equity****: (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with Regulation 18 of these regulations.*
>
> *(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating station, transmission system including communication system and run-of-river hydro generating station, and at the base rate of 16.50% for the storage type hydro generating stations including pumped storage hydro generating stations and run-of-river generating station with pondage:*
>
> *Provided that return on equity in respect of additional capitalization after cutoff date beyond the original scope, excluding additional capitalization on 7 account of emission control system, shall be computed at the weighted average rate of interest on actual loan portfolio of the generating station or the transmission system or in the absence of actual loan portfolio of the generating station or the transmission system, the weighted average rate of interest of the generating company or the transmission licensee, as the case may be, as a whole shall be considered, subject to ceiling of 14%.*
>
> *Provided further that:*
> - *i. In case of a new project, the rate of return on equity shall be reduced by 1.00% for such period as may be decided by the Commission, if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of the Restricted Governor Mode Operation (RGMO) or Free Governor Mode Operation (FGMO), data telemetry, communication system up to load dispatch centre or protection system based on the report submitted by the respective RLDC;*
> - *ii. in case of existing generating station, as and when any of the requirements under (i) above of this Regulation are found lacking based on the report submitted by the concerned RLDC, rate of return on equity shall be reduced by 1.00% for the period for which the deficiency continues;*
> - *iii. in case of a thermal generating station, with effect from 1.4.2020:*
>   - *a) rate of return on equity shall be reduced by 0.25% in case of failure to achieve the ramp rate of 1% per minute;*
>   - *b) an additional rate of return on equity of 0.25% shall be allowed for every incremental ramp rate of 1% per minute achieved over and above the ramp rate of 1% per minute, subject to ceiling of*

additional rate of return on equity of 1.00%:

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

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

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

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

Rate of pre-tax return on equity = Base rate / (1-t)

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

Illustration-

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

Rate of return on equity = 15.50/(1-0.2155) = 19.758%

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

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

(3) The generating company or the transmission licensee, as the case may be, shall true up the grossed up rate of return on equity at the end of every financial year based on

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

75. The Petitioner has submitted that MAT rate is applicable to the Petitioner's company.

76. We have considered the submission of the Petitioner. MAT rate applicable in 2019-20 has been considered for the purpose of RoE, which will be trued-up with actual tax rate in accordance with Regulation 31(3) of the 2019 Tariff Regulations. The RoE allowed for the transmission asset has been worked out and allowed as follows:

(₹ in lakh)

Asset-1

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Return on Equity				
A	Opening Equity	88232.28	88881.99	98282.36	98942.36
B	Additions	649.71	9400.38	660.00	0.00
C	Closing Equity (A+B)	88881.99	98282.36	98942.36	98942.36
D	Average Equity (A+C)/2	88557.13	93582.17	98612.36	98942.36
E	Return on Equity (Base Rate) (%)	15.500	15.500	15.500	15.500
F	MAT Rate for respective year (%)	17.472	17.472	17.472	17.472
G	Rate of Return on Equity (%)	18.782	18.782	18.782	18.782
H	**Return on Equity (D*G)**	**1048.09**	**17576.60**	**18521.37**	**18583.35**

(₹ in lakh)

Asset-2

	Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
	Return on Equity			
A	Opening Equity	43912.19	50771.30	50771.30
B	Additions	6859.10	0.00	0.00
C	Closing Equity (A+B)	50771.30	50771.30	50771.30

	Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
D	Average Equity (A+C)/2	47341.75	50771.30	50771.30
E	Return on Equity (Base Rate) (%)	15.500	15.500	15.500
F	MAT Rate for respective year (%)	17.472	17.472	17.472
G	Rate of Return on Equity (%)	18.782	18.782	18.782
H	**Return on Equity (D*G)**	**7235.19**	**9535.86**	**9535.86**

(₹ in lakh)

Asset-3

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Return on Equity				
A	Opening Equity	2094.87	2097.65	2288.56	2288.56
B	Additions	2.78	190.91	0.00	0.00
C	Closing Equity (A+B)	2097.65	2288.56	2288.56	2288.56
D	Average Equity (A+C)/2	2096.26	2193.10	2288.56	2288.56
E	Return on Equity (Base Rate) (%)	15.500	15.500	15.500	15.500
F	MAT Rate for respective year (%)	17.472	17.472	17.472	17.472
G	Rate of Return on Equity (%)	18.782	18.782	18.782	18.782
H	**Return on Equity (D*G)**	**24.81**	**411.91**	**429.84**	**429.84**

(₹ in lakh)

Asset-4

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Return on Equity				
A	Opening Equity	2444.65	2446.41	2659.14	2659.14
B	Additions	1.76	212.73	0.00	0.00
C	Closing Equity (A+B)	2446.41	2659.14	2659.14	2659.14
D	Average Equity (A+C)/2	2445.53	2552.78	2659.14	2659.14
E	Return on Equity (Base Rate) (%)	15.500	15.500	15.500	15.500
F	MAT Rate for respective year (%)	17.472	17.472	17.472	17.472
G	Rate of Return on Equity (%)	18.782	18.782	18.782	18.782
H	**Return on Equity (D*G)**	**28.94**	**479.46**	**499.44**	**499.44**

(₹ in lakh)

Asset-5

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Return on Equity				
A	Opening Equity	755.99	756.53	837.87	837.87
B	Additions	0.54	81.34	0.00	0.00
C	Closing Equity (A+B)	756.53	837.87	837.87	837.87
D	Average Equity (A+C)/2	756.26	797.20	837.87	837.87
E	Return on Equity (Base Rate) (%)	15.500	15.500	15.500	15.500
F	MAT Rate for respective year (%)	17.472	17.472	17.472	17.472
G	Rate of Return on Equity (%)	18.782	18.782	18.782	18.782
H	**Return on Equity (D*G)**	**8.95**	**149.73**	**157.37**	**157.37**

Operation & Maintenance Expenses (O&M Expenses)

77. The O&M expenses claimed by the Petitioner for the transmission assets for the 2019-24 period are as under:

Asset-1

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Transmission Lines ±320 kV VSC based 2000 MW Pugalur (HVDC) - North Trichur HVDC (Kerala) HVDC Link (Overhead) D/C (137.957 km) ±320 kV VSC Based 2000 MW Pugalur (HVDC) - North Trichur HVDC(Kerala) HVDC Link (Underground) M/C (27.215 km)				
Double Circuit (Bundled conductor with four or more sub-conductors) (km)	137.957	137.957	137.957	137.957
Norms (₹ lakh/km)	1.368	1.416	1.466	1.517
Multi circuit Bundled with Four or more Conductors (km)	27.215	27.215	27.215	27.215
Norms (₹ lakh/km)	2.401	2.485	2.572	2.662
Bays: **400 kV HVDC Terminal** Pugalur:±320 kV VSC based 1000 MW (Monopole-II) HVDC Terminal				
400 kV HVDC Terminal (nos.)	0.667	0.667	0.667	0.667
Normative rate computed as per regulations (₹ lakh/bay)	1326.50	1373.00	1421.00	1471.00
Total O&M expenses	**71.76**	**1178.77**	**1220.05**	**1262.89**

Asset-2

(₹ in lakh)

Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
Bays: **400 kV HVDC Terminal** Pugalur:±320 kV VSC based 1000 MW (Monopole-I) HVDC Terminal each at Pugalur (HVDC station) and North Trichur (HVDC)			
400 kV HVDC Terminal (nos.)	0.666	0.666	0.666
Normative rate computed as per regulations (₹ lakh/bay)	1373.00	1421.00	1471.00
Total O&M expenses	**744.06**	**946.39**	**979.69**

Asset-3

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Transmission Lines LILO of North Trichur-Cochin 400 kV (Quad) D/C Line at North Trichur HVDC Station (0.618 km)				
Double Circuit (Bundled conductor with four or more sub-conductors) (km)	0.618	0.618	0.618	0.618
Norms (₹ lakh/km)	1.368	1.416	1.466	1.517
Bays: **400 kV GIS** Trichur:Bays for Cochin & North Trichur at HVDC Terminal				
400 kV GIS (nos.)	4	4	4	4
Norms (₹ lakh/bay)	0.371	0.384	0.398	0.411
Total O&M expenses	**5.92**	**97.34**	**100.76**	**104.29**

Asset-4

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Bays: **400 kV GIS** i. Trichur:ICT-1 at North Trichur HVDC Station ii. Trichur:ICT-2 at North Trichur HVDC Station **220 kV GIS** i. Trichur:ICT-1 at North Trichur HVDC Station ii. Trichur:ICT-2 at North Trichur HVDC Station				
400 kV GIS (nos.)	2	2	2	2
Norms (₹ lakh/bay)	23.296	24.115	24.962	25.837
220 kV GIS (nos.)	2	2	2	2
Norms (₹ lakh/bay)	16.310	16.884	17.472	18.088
Transformers **400 kV 315 MVA GIS**				

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
i. Trichur:ICT-1 at North Trichur HVDC Station ii. Trichur:ICT-2 at North Trichur HVDC Station				
400 kV 315 MVA GIS (nos.)	2	2	2	2
Norms (₹ lakh/bay)	0.371	0.384	0.398	0.411
Total O&M expenses	**19.72**	**323.92**	**335.60**	**346.80**

Asset-5

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Bays: **220 kV GIS** Trichur:220 kV bay for Kerala Feeder				
220 kV GIS (nos.)	2	2	2	2
Norms (₹ lakh/bay)	0.254	0.263	0.272	0.282
Total O&M expenses	**2.06**	**33.77**	**34.94**	**36.18**

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

> *"**35. Operation and Maintenance Expenses:***
> *…*
> *(3) Transmission system: (a) The following normative operation and maintenance expenses shall be admissible for the transmission system:*

Particulars	***2019-20***	***2020-21***	***2021-22***	***2022-23***	***2023-24***
Norms for sub-station Bays (₹ Lakh per bay)					
765 kV	*45.01*	*46.60*	*48.23*	*49.93*	*51.68*
400 kV	*32.15*	*33.28*	*34.45*	*35.66*	*36.91*
220 kV	*22.51*	*23.30*	*24.12*	*24.96*	*25.84*
132 kV and below	*16.08*	*16.64*	*17.23*	*17.83*	*18.46*
Norms for Transformers (₹ Lakh per MVA)					
765 kV	*0.491*	*0.508*	*0.526*	*0.545*	*0.564*
400 kV	*0.358*	*0.371*	*0.384*	*0.398*	*0.411*
220 kV	*0.245*	*0.254*	*0.263*	*0.272*	*0.282*
132 kV and below	*0.245*	*0.254*	*0.263*	*0.272*	*0.282*
Norms for AC and HVDC lines (₹ Lakh per km)					
Single Circuit (Bundled Conductor with six or more sub-conductors)	*0.881*	*0.912*	*0.944*	*0.977*	*1.011*
Single Circuit (Bundled conductor with four sub-conductors)	*0.755*	*0.781*	*0.809*	*0.837*	*0.867*
Single Circuit (Twin & Triple Conductor)	*0.503*	*0.521*	*0.539*	*0.558*	*0.578*
Single Circuit (Single Conductor)	*0.252*	*0.260*	*0.270*	*0.279*	*0.289*

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Double Circuit (Bundled conductor with four or more sub-conductors)	1.322	1.368	1.416	1.466	1.517
Double Circuit (Twin & Triple Conductor)	0.881	0.912	0.944	0.977	1.011
Double Circuit (Single Conductor)	0.377	0.391	0.404	0.419	0.433
Multi Circuit (Bundled Conductor with four or more sub-conductor)	2.319	2.401	2.485	2.572	2.662
Multi Circuit (Twin & Triple Conductor)	1.544	1.598	1.654	1.713	1.773
Norms for HVDC stations					
HVDC Back-to-Back stations (Rs Lakh per 500 MW) (Except Gazuwaka BTB)	834	864	894	925	958
Gazuwaka HVDC Back-to-Back station (₹ Lakh per 500 MW)	1,666	1,725	1,785	1,848	1,913
500 kV Rihand-Dadri HVDC bipole scheme (Rs Lakh) (1500 MW)	2,252	2,331	2,413	2,498	2,586
±500 kV Talcher- Kolar HVDC bipole scheme (Rs Lakh) (2000 MW)	2,468	2,555	2,645	2,738	2,834
±500 kV Bhiwadi-Balia HVDC bipole scheme (Rs Lakh) (2500 MW)	1,696	1,756	1,817	1,881	1,947
±800 kV, Bishwanath-Agra HVDC bipole scheme (Rs Lakh) (3000 MW)	2,563	2,653	2,746	2,842	2,942

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

Provided further that:

i. *the operation and maintenance expenses for new HVDC bi-pole schemes commissioned after 1.4.2019 for a particular year shall be allowed pro-rata on the basis of normative rate of operation and maintenance expenses of similar HVDC bi-pole scheme for the corresponding year of the tariff period;*

ii. *the O&M expenses norms for HVDC bi-pole line shall be considered as Double Circuit quad AC line;*

iii. *the O&M expenses of ±500 kV Mundra-Mohindergarh HVDC bipole scheme (2000 MW) shall be allowed as worked out by multiplying 0.80 of the normative O&M expenses for ±500 kV Talchar-Kolar HVDC bi-pole scheme (2000 MW);*

iv. the O&M expenses of ±800 kV Champa-Kurukshetra HVDC bi-pole scheme (3000 MW) shall be on the basis of the normative O&M expenses for ±800 kV, Bishwanath-Agra HVDC bi-pole scheme;

v. the O&M expenses of ±800 kV, Alipurduar-Agra HVDC bi-pole scheme (3000 MW) shall be allowed as worked out by multiplying 0.80 of the normative O&M expenses for ±800 kV, Bishwanath-Agra HVDC bi-pole scheme; and

vi. the O&M expenses of Static Synchronous Compensator and Static Var Compensator shall be worked at 1.5% of original project cost as on commercial operation which shall be escalated at the rate of 3.51% to work out the O&M expenses during the tariff period. The O&M expenses of Static Synchronous Compensator and Static Var Compensator, if required, may be reviewed after three years.

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

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

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

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

79. TANGEDCO, TSSPDCL and TSNPDCL have submitted that the Petitioner has calculated the O&M expenses for ±320 kV 1000 MW (Mono Pole-I & II) HVDC terminals pro-rata on the basis of normative rate of O&M expenses norms of ±800 kV Bishwanath-Agra HVDC bipole scheme (3000 MW). TANGEDCO, TSSPDCL and TSNPDCL have submitted that the Commission may set new norms specifically for the O&M expenses for +320 kV, 2000 MW VSC based HVDC terminal under the instant scheme. TANGEDCO, TSSPDCL and TSNPDCL have further submitted that the Petitioner's calculation of O&M expenses for 27.215 km underground cable by considering O&M expenses norms of Multi Circuit (Bundled Conductor with four or more sub-conductor)

is unfair and illegitimate. The normal operation and maintenance of UG cables requires lesser men and material due to high reliability, lesser interruption due to line fault compared to OH line. Further, there are only four HVDC cables are laid, TANGEDCO, TSSPDCL and TSNPDCL have submitted that the Commission may set new norms specifically for the O&M expenses for HVDC UG cables under the instant project.

80. BESCOM has submitted that current Regulations do not provide norms for O&M expenses for 320 kV 1000 MW (Mono Pole I&II) HVDC terminals and has highlighted that the Commission may frame the requisite Regulations.

81. In response to TANGEDCO, TSSPDCL, TSNPDCL and BESCOM, the Petitioner has submitted that since there are no norms for the claimed O&M expenses at present, the Petitioner has sought O&M expenses on pro rata basis of the normative O&M determined by this Commission for the Bishwanath-Agra HVDC scheme. The Petitioner has further submitted that since there are no O&M norms for an underground cable, the Petitioner has considered the O&M norms of multi-circuit quad AC line which is available in Regulations 35(3)(i) and Regulations 35(3)(ii) of the 2019 Tariff Regulations.

82. We have considered the submission of the Petitioner, TANGEDCO, TSSPDCL, TSNPDCL and BESCOM. It is observed that the Petitioner has claimed O&M of ±320 kV (2000 MW) Pugalur-North Trichur HVDC line as well as ±320 kV (1000 MW) HVDC terminals (Mono Pole I&II) HVDC terminals at Pugalur and North Trichur ends. The ±320 kV (2000 MW) Pugalur-North Trichur HVDC line has been claimed in two segments of 137.957 Km Overhead line and 27.215 Km of Underground cable. The overhead line has been claimed as double circuit quad AC line as per Regulation 35(3)(a)(ii) of the 2019 Tariff Regulations. However, the underground cabling has been claimed as multi circuit quad AC line as per Regulation 35(3)(a)(ii) of the 2019 Tariff

Regulations, in absence of non-provision of O&M norms for underground cable. TANGEDCO, TSSPDCL and TSNPDCL have submitted that the Petitioner's calculation of O&M expenses for 27.215 km underground cable by considering O&M expenses norms of Multi Circuit (Bundled Conductor with four or more sub-conductor) is unfair and incorrect. The normal operation and maintenance of UG cables requires lesser men and material due to high reliability, lesser interruption due to line fault compared to Over Head line. Further, only four HVDC cables have been laid in the underground portion. We observe that the Petitioner has laid 4 numbers of cable strands in the underground portion of the HVDC line and in absence of exact provisions pertaining to ± 320 kV underground cable O&M expenses, we are inclined to consider the entire length of the ±320 kV Pugalur-North Trichur HVDC line consisting of 137.957 Km overhead line and 27.215 Km of underground cabling as double circuit quad line having line length of 165.172 Km (137.957+27.215). This is subject to review at the time of truing up of 2019-24 tariff period.

83. Further, the Petitioner has submitted that there is no provision in the 2019 Tariff Regulations for treatment of O&M expenses of +320 kV (2000 MW) (Mono Pole I&II) HVDC terminals. As per Regulation 35(3)(i) of the 2019 Tariff Regulations the O&M Expenses for new HVDC bi-pole schemes put into commercial operation after 1.4.2019 for a particular year will 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. Accordingly we consider the normative O&M expenses for ±800 kV Bishwanath-Agra HVDC bi-pole scheme (₹ lakh) (3000 MW) for allowing the O&M expenses for ±320 kV HVDC Bipole Raigarh-Puglur Transmission line which is consists of ±320 kV 1000 MW (Mono Pole-I) HVDC terminals each at Pugalur (HVDC Station) &

North Trichur (HVDC Station Kerala) ±320 kV 1000 MW (Mono Pole-II) HVDC terminals each at Pugalur (HVDC Station) & North Trichur (HVDC Station, Kerala). .

84. Accordingly, the O&M Expenses for instant HVDC Asset i.e. ±320 kV HVDC Bipole Raigarh-Puglur Transmission line has been calculated considering the pro-rata of O&M norms for 1000 MW (Mono Pole-I) and 1000 MW (Mono Pole-2) HVDC terminals each at Pugalur (HVDC Station) & North Trichur (HVDC Station Kerala) . The Petitioner is directed to submit the actual O&M expenses towards ±320 kV HVDC Bipole Raigarh-Puglur Transmission line at the time of truing up of 2019-24 tariff period.

85. The O&M Expenses allowed in respect of the transmission assets for the 2019-24 tariff period are as follows:

Asset-1

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Transmission Lines ±320 kV VSC based 2000 MW Pugalur (HVDC) - North Trichur HVDC (Kerala) HVDC Link ((165.172 km) consisting of 137.957 Km overhead portion and 27.215 Km of underground Portion ±320 kV VSC Based 2000 MW Pugalur (HVDC) - North Trichur HVDC(Kerala) HVDC Link (Underground) M/C (27.215 km)				
Double Circuit (Bundled conductor with four or more sub-conductors) (km)	165.172	165.172	165.172	165.172
Norms (₹ lakh/km)	1.368	1.416	1.466	1.517
Sub-total Transmission line (₹ in lakh)	14.238	233.884	242.142	250.566
Bays: **400 kV HVDC Terminal** Pugalur:±320 kV VSC based 1000 MW (Monopole-II) HVDC Terminal				
400 kV HVDC Terminal (nos.)	0.667	0.667	0.667	0.667
Normative rate computed as per regulations (₹ lakh/bay)	884.333	915.333	947.333	980.667
Sub-Total HVDC Terminal	55.725	915.333	947.333	980.667
Total O&M expenses	**69.96**	**1149.22**	**1189.48**	**1231.23**

Asset-2

(₹ in lakh)

Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
Bays: **400 kV HVDC Terminal** Pugalur:±320 kV VSC based 1000 MW (Monopole-I) HVDC Terminal each at Pugalur (HVDC station) and North Trichur (HVDC)			
400 kV HVDC Terminal (nos.)	1	1	1
Normative rate computed as per regulations (₹ lakh/bay)	915.333	947.333	980.667
Total O&M expenses	**744.81**	**947.33**	**980.67**

Asset-3

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Transmission Lines LILO of North Trichur-Cochin 400 kV (Quad) D/C Line at North Trichur HVDC Station (0.618 km)				
Double Circuit (Bundled conductor with four or more sub-conductors) (km)	0.618	0.618	0.618	0.618
Norms (₹ lakh/km)	1.368	1.416	1.466	1.517
Sub-Total Transmission line ((₹ in lakh)	0.0533	0.875	0.906	0.938
Bays: **400 kV GIS** Trichur: Bays for Cochin & North Trichur at HVDC Terminal				
400 kV GIS (nos.)	4	4	4	4
Norms (₹ lakh/bay)	0.371	0.384	0.398	0.411
Sub-Total Sub-station bays	5.872	96.46	99.848	103.348
Total O&M expenses	**5.93**	**97.34**	**100.75**	**104.29**

Asset-4

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Bays: **400 kV GIS** iii. Trichur:ICT-1 at North Trichur HVDC Station iv. Trichur:ICT-2 at North Trichur HVDC Station **220 kV GIS** iii. Trichur:ICT-1 at North Trichur HVDC Station iv. Trichur:ICT-2 at North Trichur HVDC Station				
400 kV GIS (nos.)	2	2	2	2
Norms (₹ lakh/bay)	23.296	24.115	24.962	25.837
220 kV GIS (nos.)	2	2	2	2
Norms (₹ lakh/bay)	16.310	16.884	17.472	18.088

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Transformers **400 kV 315 MVA GIS** iii. Trichur:ICT-1 at North Trichur HVDC Station iv. Trichur:ICT-2 at North Trichur HVDC Station				
400 kV 315 MVA GIS (nos.)	2	2	2	2
Norms (₹ lakh/bay)	0.371	0.384	0.398	0.411
Total O&M expenses	**19.72**	**323.92**	**335.61**	**346.78**

Asset-5

(₹ in lakh)

Particulars	2020-21 (Pro-rata 207 days)	2021-22	2022-23	2023-24
Bays: **220 kV GIS** Trichur:220 kV bay for Kerala Feeder				
220 kV GIS (nos.)	2	2	2	2
Norms (₹ lakh/bay)	0.254	0.263	0.272	0.282
Total O&M expenses	**2.06**	**33.77**	**34.94**	**36.18**

Interest on Working Capital (IWC)

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

> ***"34. Interest on Working Capital:*** *(1) The working capital shall cover:*
>
> *…….*
>
> ***(c) For Hydro Generating Station (including Pumped Storage Hydro Generating Station) and Transmission System:***
>
> *(i) Receivables equivalent to 45 days of annual fixed cost;*
>
> *(ii) Maintenance spares @ 15% of operation and maintenance expenses including security expenses; and*
>
> *Operation and maintenance expenses, including security expenses for one month.*
>
> *(3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-24 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later:*
>
> *Provided that in case of truing-up, the rate of interest on working capital shall be considered at bank rate as on 1st April of each of the financial year during the tariff period*

2019-24.

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

***"3. Definitions. -** In these regulations, unless the context otherwise requires:-*

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

87. The Petitioner has submitted that it has computed IWC for the 2019-24 period considering the SBI Base Rate plus 350 basis points as on 1.4.2019.

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

(₹ in lakh)

Asset-1

	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 1 month)	92.52	95.77	99.12	102.60
B	Working Capital for Maintenance Spares (15% of O&M Expenses)	166.54	172.38	178.42	184.68
C	Working Capital for Receivables (Equivalent to 45 days of annual fixed cost/ annual transmission charges)	4948.78	5193.11	5413.87	5361.86
D	**Total Working Capital (A+B+C)**	**5207.84**	**5461.26**	**5691.41**	**5649.15**
E	Rate of Interest (%)	11.25	10.50	10.50	10.50
F	**Interest on working capital (D*E)**	**36.92**	**573.43**	**597.60**	**593.16**

(₹ in lakh)

Asset-2

	Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
	Interest on Working Capital			
A	Working Capital for O&M Expenses (O&M Expenses for 1 month)	76.28	78.94	81.72
B	Working Capital for Maintenance Spares (15% of O&M Expenses)	137.30	142.10	147.10
C	Working Capital for Receivables (Equivalent to 45 days of annual fixed cost/ annual transmission charges)	2649.41	2813.08	2780.25
D	**Total Working Capital (A+B+C)**	**2862.98**	**3034.12**	**3009.07**
E	Rate of Interest (%)	10.50	10.50	10.50
F	**Interest on working capital (D*E)**	**244.61**	**318.58**	**315.95**

(₹ in lakh)

Asset-3

	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 1 month)	7.84	8.11	8.40	8.69
B	Working Capital for Maintenance Spares (15% of O&M Expenses)	14.10	14.60	15.11	15.64
C	Working Capital for Receivables (Equivalent to 45 days of annual fixed cost/ annual transmission charges)	125.42	130.31	134.65	133.38
D	**Total Working Capital (A+B+C)**	**147.36**	**153.02**	**158.16**	**157.71**
E	Rate of Interest (%)	11.25	10.50	10.50	10.50
F	**Interest on working capital (D*E)**	**1.04**	**16.07**	**16.61**	**16.56**

(₹ in lakh)

Asset-4

	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 1 month)	26.08	26.99	27.97	28.90
B	Working Capital for Maintenance Spares (15% of O&M Expenses)	46.94	48.59	50.34	52.02
C	Working Capital for Receivables (Equivalent to 45 days of annual fixed cost/ annual transmission charges)	171.75	177.96	183.74	183.11
D	**Total Working Capital (A+B+C)**	**244.77**	**253.54**	**262.04**	**264.03**

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
E	Rate of Interest (%)	11.25	10.50	10.50	10.50
F	**Interest on working capital (D*E)**	**1.74**	**26.62**	**27.51**	**27.72**

(₹ in lakh)

Asset-5

	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 1 month)	2.72	2.81	2.91	3.01
B	Working Capital for Maintenance Spares (15% of O&M Expenses)	4.89	5.07	5.24	5.43
C	Working Capital for Receivables (Equivalent to 45 days of annual fixed cost/ annual transmission charges)	44.65	46.75	48.66	48.21
D	**Total Working Capital (A+B+C)**	**52.26**	**54.63**	**56.82**	**56.65**
E	Rate of Interest (%)	11.25	10.50	10.50	10.50
F	**Interest on working capital (D*E)**	**0.37**	**5.74**	**5.97**	**5.95**

Annual Fixed Charges for the 2019-24 Tariff Period

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

(₹ in lakh)

Asset-1

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Annual Transmission Charges				
A	Depreciation	959.75	16080.50	16934.61	16992.69
B	Interest on Loan	414.65	6742.10	6669.42	6209.37
C	Return on Equity	1048.09	17576.60	18521.37	18583.35
D	O & M Expenses	69.96	1149.22	1189.48	1231.23
E	Interest on Working Capital	36.92	573.43	597.60	593.16
F	**Total (A+B+C+D+E)**	**2529.37**	**42121.85**	**43912.48**	**43609.80**

(₹ in lakh)

Asset-2

	Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
	Annual Transmission Charges			
A	Depreciation	6781.69	8938.05	8938.05
B	Interest on Loan	2479.78	3077.38	2842.13
C	Return on Equity	7235.19	9535.86	9535.86
D	O & M Expenses	744.81	947.33	980.67
E	Interest on Working Capital	244.61	318.58	315.95
F	**Total (A+B+C+D+E)**	**17486.08**	**22817.20**	**22612.66**

(₹ in lakh)

Asset-3

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Annual Transmission Charges				
A	Depreciation	22.87	379.71	396.29	396.29
B	Interest on Loan	9.46	151.93	148.68	137.84
C	Return on Equity	24.81	411.91	429.84	429.84
D	O & M Expenses	5.93	97.34	100.75	104.29
E	Interest on Working Capital	1.04	16.07	16.61	16.56
F	**Total (A+B+C+D+E)**	**64.11**	**1056.96**	**1092.17**	**1084.82**

(₹ in lakh)

Asset-4

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Annual Transmission Charges				
A	Depreciation	26.95	446.35	464.89	464.89
B	Interest on Loan	10.44	167.11	162.84	150.47
C	Return on Equity	28.94	479.46	499.44	499.44
D	O & M Expenses	19.72	323.92	335.61	346.78
E	Interest on Working Capital	1.74	26.62	27.51	27.72
F	**Total (A+B+C+D+E)**	**87.79**	**1443.46**	**1490.29**	**1489.30**

(₹ in lakh)

Asset-5

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
	Annual Transmission Charges				
A	Depreciation	8.20	137.44	144.72	144.72
B	Interest on Loan	3.24	52.49	51.72	47.85
C	Return on Equity	8.95	149.73	157.37	157.37
D	O & M Expenses	2.06	33.77	34.94	36.18

	Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
E	Interest on Working Capital	0.37	5.74	5.97	5.95
F	**Total (A+B+C+D+E)**	**22.82**	**379.17**	**394.72**	**392.07**

Filing Fee and the Publication Expenses

90. The Petitioner has sought reimbursement of fee paid by it for filing the Petition and publication expenses.

91. We have considered the submission of the Petitioner. 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.

Security Expenses

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

93. KSEB has submitted that the Petitioner has claimed recovery of security expenses from the beneficiaries directly on a quarterly basis which is against the Regulation 35(3)(c) of 2019 Tariff Regulations. In response, the Petitioner has submitted that Regulation 35(3)(c) of the 2019 Tariff Regulations 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 shall be allowed separately after prudence check. The methodology proposed by the Petitioner, namely recovery on a quarterly basis is not prohibited by the above regulations. In fact, if the recovery is made on quarterly basis, regular cash flow is ensured to the Petitioner and at the same

time, the carrying cost burden on the KSEB will get reduced at the time of truing up. The Petitioner has further submitted that a separate petition (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 above submissions of Petitioner and KSEB. The Petitioner has claimed consolidated security expenses for all the transmission assets owned by it on projected basis for 2019-24 tariff period on the basis of actual security expenses incurred in 2018-19 in Petition No. 260/MP/2020. The said petition has already been disposed of by the Commission vide order dated 3.8.2021 wherein the Commission has approved the 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. Therefore, the Petitioner's prayer in the instant petition for allowing it to file a separate petition for claiming the overall security expenses and consequential IWC has become infructuous

Licence Fee & RLDC Fees and Charges

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

Goods and Services Tax

96. 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. Since GST is not levied on transmission service at present, we are of the view that the Petitioner's prayer is premature.

Grant from PSDF/NCEF

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

99. In response, the Petitioner has submitted that as on date, the entire capital cost of the transmission asset has been incurred by the Petitioner and tariff must be determined based on full capital cost incurred. In case, MoP allocates any amount from Power System Development Fund (PSDF)/ National Clean Energy Fund (NCEF), as 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. BESCOM has submitted that the Petitioner may be directed to approach the PSDF or NCEF for financial assistance so as to reduce the burden of the transmission charges on the DICs.

101. We have considered the submissions of the Petitioner, KSEB and BESCOM. The Commission is aware of the fact that capital investments of the instant transmission scheme/transmission project is huge. The Commission feels that there is a strong necessity to share the burden of capital cost of transmission scheme by way of

assistance from the PSDF by way of one time grant. Accordingly, we direct the Petitioner to take up the matter with the Monitoring Committee of the PSDF for assistance in the form of one time grant from the PSDF and with Ministry of Power for grant to reduce the burden of transmission charges on the DICs. We, in the facts and circumstances of the present case, are of the considered view that Ministry of Power, Government of India to arrange for funds from PSDF as well as Government grant, considering the benefits that would accrue to the power sector and the economy of the country.

Sharing of Transmission Charges

102. The Petitioner has prayed that the transmission charges for 2019-24 tariff period may be allowed to be recovered on monthly basis in accordance with Regulation 57 of the 2019 Tariff Regulations and may be shared by the Respondents in accordance with the Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2020 (hereinafter referred to as "the 2020 Sharing Regulations").

103. The Petitioner has further submitted tariff in respect of the transmission asset in this petition may be allowed to be shared from the beneficiaries in view of para 45.17 of the Statement of Reasons (SOR) of Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) (Third Amendment) Regulations, 2015.

104. The Respondents KSEB, TANGEDCO, TSSPDCL, TSNPDCL and BESCOM have made detailed submissions in the matter related to planning & implementation, benefits & utilisation of HVDC assets, issues of power flow, treating the subject scheme as a national and strategic transmission system of national importance, sharing of

transmission charges etc. In response, the Petitioner has submitted rejoinder to the issues raised by the Respondent(s). The issues raised by the Respondents and the response of the Petitioner is discussed hereunder.

105. KSEBL has submitted that a combined study was conducted by SRLDC, SRPC and KSEBL. The report suggests that after commissioning of ±320 kV VSC HVDC Pugalur-Trichur pole the existing TTC of 3300 MW shall be reduced to 2800 MW i.e., the effective import of Kerala will get reduced by around 500 MW in view of N-1 security violation of Kochi ICTs. Accordingly, SRLDC has suggested to install 3rd ICT at Kochi substation. Accordingly, KSEBL has contended that the transmission charges for the instant assets should not be recovered from the beneficiaries till the ICT at Kochi is augmented.

106. In response, the Petitioner has submitted that KSEBL has relied on a study report of the SRLDC, SRPC and KSEBL discussed in the meeting held on 15.09.2020 to study and assess the quantum of load shedding required under contingency of 320 kV VSC HVDC Pugalur-Trichur pole. This study was conducted as per the discussions in the 168th and 169th OCC Meetings of SRLDC. As per the study report, certain simulations and deliberations were conducted to check the SPS scheme for tripping of loads. The study was specific to find a solution to the loading on the 400/220 kV ICTs at Cochin after the commissioning of VSC HVDC- Pugular-Trichur poles. SRLDC has advised KSEBL to install an additional 500 MVA ICT at the Kochi substation. The existing import capability of KSEBL depends on various aspects including the downstream network which is planned by the Kerala, SLDC in consultation with KSEBL. The ICTs at Cochin are installed by KSEBL and if any upgradation/enhancement is required, the same have to be taken up in a progressive manner. This does not mean that the existing HVDC

system has not been planned or implemented properly. Issues such as N-1, total transfer capability and loading of sub-stations are real time grid issues which need to be resolved by discussions and deliberations. The practical grid issues being faced by KSEBL cannot be a ground to challenge the entire discussion in earlier SRPC and WRPC meetings where the instant schemes were approved and in fact, where the Petitioner has extensively consulted with the beneficiaries at each level and obtained their consent for declaration of COD for individual assets involved in all three schemes.

107. BESCOM has submitted that the subject transmission corridors were evolved based on anticipated deficit scenario at the Southern Region end of the 12th plan period. Since there were no identified generators in Raigarh to supply electricity to the beneficiaries of Southern Region, the instant scheme was evolved as a system strengthening scheme. Further, BESCOM has contend that no cost benefit analysis/ tariff impact analysis was carried out by the planning agencies. In response, the Petitioner has submitted that the subject scheme is an inter-regional scheme linking the Western and Southern Region which was evolved as a system strengthening scheme after detailed discussions and deliberations with beneficiaries including BESCOM. Further, at every stage of planning and implementation including the situation of possible mismatch of various components of the subject project due to RoW issues and phase wise utilisation etc. has been discussed in details at CEA level with the participation of beneficiaries in several meetings such as 39th SRPC meeting, CEA/beneficiaries' meetings dated 21.8.2020, 30.12.2020 and 5.7.2021.

108. KSEB, TANGEDCO and BESCOM have submitted that the transmission project is a high capacity HVDC project, therefore, the same may be treated as a project of strategic importance and funding should be from PSDF/ National Clean Energy Fund

(NCEF). Further, the sharing of the subject HVDC project should be in line with sharing methodology followed for other HVDC schemes (e.g. substantial sharing under National Component (NC)-HVDC as per the 2020 Sharing Regulations). The major portion of the submission made by the Respondents pertains 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. Further, the Raigarh-Pugalur-Trissur HVDC system 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.

109. In response, the Petitioner has submitted that the entire capital cost for the transmission assets has been incurred by the Petitioner and the tariff must be determined based on full capital cost incurred. In case, MoP allocates any amount from the PSDF/ NCEF fund as and when amount is available, the same can be considered and decided by the Commission. Thus, 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.

110. We have considered the submissions of the Petitioner, KSEB, TANGEDCO, TSSPDCL, TSNPDCL (Telangana DISCOMS) and BESCOM.

111. BESCOM has contended that no cost benefit analysis/ tariff impact analysis was carried out by the planning agencies. We are of the view that the scheme was discussed and agreed in 35th SCM of SR, 36th meeting of SCM of WR,36th meeting of SCM of

SR, 37th meeting of SCM of SR and WR, 38th meeting of SCM of SR,24th meeting of WRPC, 23rd, 24th, 25th, 26th and 27th meeting of SRPC, joint SCM of SR and WR held on 20.4.2015, 33rd and 34th Empowered committee on transmission where all the beneficiaries are agreed for the scheme. Accordingly, the Petitioner has implemented the scheme.

112. The respondent KSEBL has contended that with the execution of the ±320 kV VSC based HVDC Pugalur-Thrissur line, effective import of Kerala will get reduced to around 500 MW in view of N-1 security violation of Kochi ICTs and the transmission charges for the instant assets will not be recovered from the beneficiaries till the ICT at Kochi is augmented. It is observed that 2000 MW Pugalur-North Trichur VSC based HVDC scheme is implemented for proving power to the Kerala. Power from North Trichur HVDC station shall be disbursed through North Trichur -Cochin 400 kV D/C line and North Trichur-Madakkathara 400 kV D/C line. For further disbursal of Power from Cochin, KSEBL has planned for up-gradation of 110 kV Aluva Substation to 220 kV level with interconnection of 220 kV Cochin Substation. The Petitioner has filed Petition No. 196/TT/2022 wherein the Petitioner has commissioned the transmission assets associated with System Strengthening – XXVI in Southern Region wherein 2 Number of 220 kV line bays at 400/220 kV Cochin East (Pallikkara) Sub-station for termination of Cochin East (Pallikara) – Aluva 220 kV D/C line to be implemented by KSEBL, and 2 Number of 400 kV line bays at Kozhikode (Areakode) Substation for termination of North Trissur (Madakkathara)-Kozhikode (Areakode) 400 kV (Quad) D/C line, to be implemented by KSEBL are commissioned 6.3.2021 and 9.3.2021 respectively. Therefore, we are of the view that the Petitioner has implemented ±320 kV VSC based

HVDC Pugalur-Thrissur line which can be used for evacuation of 2000 MW power. Therefore, the contentions of the KSEBL have rejected.

113. 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.

114. We have examined the matter. We observe that KSEBL is the only beneficiary of ± 320 kV VSC based HVDC Pugalur-Thrissur line and power also flowing in unidirectional mode from HVDC Pugalur (Tamilnadu) to Thrissur (Kerala), both are in Southern Region. Therefore, we do not agree with the proposal of KSEB to consider 100% yearly transmission charges of Pugalur-Trissur HVDC system under National Component.

115. The transmission project consists of HVDC components (Scheme-1 and Scheme-3) as well as AC components (Scheme-2 and Scheme-3). 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). Further, the Petitioner has filed separate petitions pertaining to AC components under Scheme-2 (Petition No. 693/TT/2020 and Petition No. 243/TT/2021).

116. The instant petition covers both HVDC and AC components under Scheme-3 of the transmission project, which are Asset-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); Asset-2: ±320 kV 1000 MW (Mono Pole-I) HVDC terminals each at

Pugalur (HVDC Station) & North Trichur (HVDC Station, Kerala); Asset-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; Asset-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; and Asset-5: 2 numbers additional 220 kV line bays (GIS) at North Trichur HVDC for implementation of 220 kV feeder of Kerala.

117. In this connection, the Commission has already dealt with the sharing of charges of HVDC system (Scheme-1) vide order dated 29.9.2022 in Petition No. 685/TT/2020 and sharing of charges of AC system (Scheme-2) vide order dated 17.10.2022 in Petition No. 693/TT/2020 and order dated 24.11.2022 in Petition No.243/TT/2021. Therefore, the sharing of transmission charges in respect of HVDC assets i.e., Asset-1 and Asset-2 shall be in line with the order dated 29.9.2022 in Petition No. 685/TT/2020 and sharing of charges w.r.t. AC assets i.e., Asset-3, Asset-4 and Asset-5 shall be in line with the order dated 24.11.2022 in Petition No.243/TT/2021. Accordingly, the asset wise sharing of transmission charges is elaborated hereunder for the sale of clarity and in order to avoid any ambiguity at a later date.

Sharing of AFC of HVDC components: Asset-1 and Asset-2

118. With effect from 1.11.2020, the 2010 Sharing Regulations has been repealed and sharing of transmission charges is governed by the provisions of the 2020 Sharing Regulations. The COD of the Asset-1 and Asset-2 is 9.3.2021 and 8.6.2021, respectively. As per minutes of SCM/RPC, the instant HVDC system is developed as System Strengthening Scheme. Therefore, transmission charges for Asset-1 and Asset-2 shall be shared as per Regulation 5 and Regulation 6 of the 2020 Sharing Regulations.

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

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

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

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

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

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

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

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

120. 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.

Sharing of AFC of AC components: Asset-3, Asset-4 and Asset-5

121. The transmission assets covered in the instant petition pertains to Scheme-3 of the transmission project which is the AC System strengthening at North Trichur end and consists of AC line, Transformers and Associated 400 kV and 220 kV bays. With effect from 1.11.2020, sharing of transmission charges is governed by the Central Electricity Regulatory Commission (Sharing of Transmission Charges and Losses) Regulations, 2020 (in short "the 2020 Sharing Regulations"). The COD of the Asset-3, Asset-4 and Asset-5 is approved as 9.3.2021. Therefore, the transmission charges of Asset-3, Asset-4 and Asset-5 shall be governed by the 2020 Sharing Regulations. Accordingly, the liabilities of the DICs for arrears of the transmission charges determined through this order shall be computed DIC-wise in accordance with the provisions of respective Sharing Regulations and shall be recovered from the concerned DICs through bill under Regulation 15(2)(b) of the 2020 Sharing Regulations.

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

(₹ in lakh)

Asset-1

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Annual Transmission Charges	**2529.37**	**42121.85**	**43912.48**	**43609.80**

(₹ in lakh)

Asset-2

Particulars	2021-22 (Pro-rata 297 days)	2022-23	2023-24
Annual Transmission Charges	**17486.08**	**22817.20**	**22612.66**

(₹ in lakh)

Asset-3

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Annual Transmission Charges	64.11	1056.96	1092.17	1084.82

(₹ in lakh)

Asset-4

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Annual Transmission Charges	87.79	1443.46	1490.29	1489.30

(₹ in lakh)

Asset-5

Particulars	2020-21 (Pro-rata 23 days)	2021-22	2022-23	2023-24
Annual Transmission Charges	22.82	379.17	394.72	392.07

123. The Annexures to this order shall form part of the order.

124. This order disposes of Petition No. 172/TT/2021 in terms of the above findings and discussions.

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

ANNEXURE

Asset-1

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		**2019-20**	**2020-21**	**2021-22**	**2022-23**	**Total**			**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Land – Freehold	3491.93	0.00	0.00	0.00	0.00	0.00	3491.93	N/A	0.00	0.00	0.00	0.00	0.00
Land – Leasehold	18.38	0.00	0.00	0.06	0.00	0.06	18.43	3.34%	0.00	0.61	0.61	0.62	0.62
Building Civil Works & Colony	15475.51	0.00	360.92	4222.69	0.00	4583.61	20059.12	3.34%	0.00	522.91	599.46	669.97	1033.51
Transmission Line	119888.01	0.00	1543.28	11974.44	2200.00	15717.72	135605.74	5.28%	0.00	6370.83	6727.70	7101.90	6986.82
Sub Station	153581.48	0.00	260.38	14906.45	0.00	15166.83	168748.31	5.28%	0.00	8115.98	8516.38	8909.91	8694.42
PLCC	317.16	0.00	0.21	33.76	0.00	33.97	351.13	6.33%	0.00	20.08	21.16	22.23	18.09
IT Equipment (Incl. Software)	1335.13	0.00	0.90	197.19	0.00	198.09	1533.22	15.00%	0.00	200.34	215.19	229.98	229.98
Total	**294107.59**	**0.00**	**2165.69**	**31334.59**	**2200.00**	**35700.28**	**329807.88**		0.00	**15230.75**	**16080.50**	**16934.61**	**16992.69**
							Average Gross Block (₹ in lakh)		**-**	**295190.44**	**311940.58**	**328707.88**	**329807.88**
							Weighted Average Rate of Depreciation		**-**	**5.16%**	**5.15%**	**5.15%**	**5.15%**

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		**2019-20**	**2020-21**	**2021-22**	**2022-23**	**Total**			**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Land – Freehold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00
Land – Leasehold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.34%	0.00	0.00	0.00	0.00	0.00
Building Civil Works & Colony	5402.08	0.00	0.00	629.65	0.00	629.65	6031.74	3.34%	0.00	0.00	190.94	201.46	318.56
Transmission Line	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.28%	0.00	0.00	0.00	0.00	0.00
Sub Station	139870.91	0.00	0.00	22107.47	0.00	22107.47	161978.38	5.28%	0.00	0.00	7968.82	8552.46	8554.66
PLCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.33%	0.00	0.00	0.00	0.00	0.00
IT Equipment (Incl. Software)	1100.98	0.00	0.00	126.55	0.00	126.55	1227.53	15.00%	0.00	0.00	174.64	184.13	184.13
Total	**146373.98**	**0.00**	**0.00**	**22863.67**	**0.00**	**22863.67**	**169237.65**		**0.00**	**0.00**	**8334.40**	**8938.05**	**8938.05**
							Average Gross Block (₹ in lakh)		**-**	**-**	**157805.82**	**169237.65**	**169237.65**
							Weighted Average Rate of Depreciation		**-**	**-**	**5.28%**	**5.28%**	**5.28%**

Asset-3

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		**2019-20**	**2020-21**	**2021-22**	**2022-23**	**Total**			**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Land – Freehold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00
Land – Leasehold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.34%	0.00	0.00	0.00	0.00	0.00
Building Civil Works & Colony	460.72	0.00	0.33	47.02	0.00	47.35	508.08	3.34%	0.00	15.39	16.18	16.97	26.39
Transmission Line	657.08	0.00	4.68	74.74	0.00	79.42	736.51	5.28%	0.00	34.82	36.91	38.89	38.26
Sub Station	5835.51	0.00	4.22	509.58	0.00	513.80	6349.31	5.28%	0.00	308.23	321.79	335.24	329.84
PLCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.33%	0.00	0.00	0.00	0.00	0.00
IT Equipment (Incl. Software)	29.58	0.00	0.02	5.02	0.00	5.04	34.62	15.00%	0.00	4.44	4.82	5.19	5.19
Total	**6982.90**	**0.00**	**9.25**	**636.37**	**0.00**	**645.62**	**7628.52**		**0.00**	**362.88**	**379.71**	**396.29**	**396.29**
							Average Gross Block (₹ in lakh)		**-**	**6987.53**	**7310.33**	**7628.52**	**7628.52**
							Weighted Average Rate of Depreciation		**-**	**5.19%**	**5.19%**	**5.19%**	**5.19%**

Asset-4

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		**2019-20**	**2020-21**	**2021-22**	**2022-23**	**Total**			**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Land – Freehold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00
Land – Leasehold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.34%	0.00	0.00	0.00	0.00	0.00
Building Civil Works & Colony	216.76	0.00	0.16	30.86	0.00	31.02	247.78	3.34%	0.00	7.24	7.76	8.28	13.00
Transmission Line	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.28%	0.00	0.00	0.00	0.00	0.00
Sub Station	7917.18	0.00	5.71	675.76	0.00	681.47	8598.65	5.28%	0.00	418.18	436.17	454.01	450.99
PLCC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.33%	0.00	0.00	0.00	0.00	0.00
IT Equipment (Incl. Software)	14.89	0.00	0.01	2.49	0.00	2.50	17.39	15.00%	0.00	2.23	2.42	2.61	2.61
Total	**8148.83**	**0.00**	**5.88**	**709.10**	**0.00**	**714.98**	**8863.82**		**0.00**	**427.65**	**446.35**	**464.89**	**464.89**
							Average Gross Block (₹ in lakh)		**-**	**8151.77**	**8509.26**	**8863.82**	**8863.82**
							Weighted Average Rate of Depreciation		**-**	**5.25%**	**5.25%**	**5.24%**	**5.24%**

Asset-5

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		**2019-20**	**2020-21**	**2021-22**	**2022-23**	**Total**			**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Land – Freehold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00
Land – Leasehold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.34%	0.00	0.00	0.00	0.00	0.00
Building Civil Works & Colony	228.71	0.00	0.16	24.24	0.00	24.40	253.11	3.34%	0.00	7.64	8.05	8.45	13.12
Transmission Line	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.28%	0.00	0.00	0.00	0.00	0.00
Sub Station	2275.34	0.00	1.64	199.21	0.00	200.85	2476.19	5.28%	0.00	120.18	125.48	130.74	128.31
PLCC	1.10	0.00	0.00	45.19	0.00	45.19	46.30	6.33%	0.00	0.07	1.50	2.93	2.40
IT Equipment (Incl. Software)	14.80	0.00	0.01	2.49	0.00	2.50	17.31	15.00%	0.00	2.22	2.41	2.60	2.60
Total	**2519.95**	**0.00**	**1.81**	**271.14**	**0.00**	**272.95**	**2792.90**		**0.00**	**130.11**	**137.44**	**144.72**	**144.72**
							Average Gross Block (₹ in lakh)		**-**	**2520.86**	**2657.33**	**2792.90**	**2792.90**
							Weighted Average Rate of Depreciation		**-**	**5.16%**	**5.17%**	**5.18%**	**5.18%**