CENTRAL ELECTRICITY REGULATORY COMMISSION

NEW DELHI

PETITION NO. 202/TT/2014

Coram:

Shri A.S. Bakshi, Member
Dr. M. K. Iyer, Member

Date of Hearing: 14.03.2016
Date of Order : 22.03.2016

In the matter of:

Determination of transmission tariff of Splitting of 400 kV Raipur Bus through Bus Sectionaliser into two sections at a point between existing Line Bays of Chandrapur -1 & Chandrapur -2 and shifting of Chandrapur-2 and Chandrapur-3 Line Bays from section Raipur –B to Raipur –A under "Split Bus Arrangement and Reconfiguration/Shifting of terminating Lines at Raipur 400 kV S/S" in Western Region for 2014-19 tariff block under Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 and under Regulation 86 of Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999.

And in the Matter of:

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

Versus

1. Madhya Pradesh Power Management Company Ltd.
   Shakti Bhawan, Rampur
   Jabalpur - 482 008

2. Maharashtra State Electricity Distribution Co. Ltd.
   Prakashgad, 4th Floor
   Andheri (East), Mumbai - 400 052

3. Gujarat Urja Vikas Nigam Ltd.
   Sardar Patel Vidyut Bhawan,
   Race Course Road
   Vadodara - 390 007

4. Electricity Department Govt. Of Goa

Vidyut Bhawan, Panaji,
Ner Mandvi Hotel, Goa - 403 001

5. Electricity Department
   Administration of Daman & Diu
   Daman - 396 210

6. Electricity Department
   Administration of Dadra Nagar Haveli
   U.T., Silvassa - 396 230

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

8. Madhya Pradesh Audyogik Kendra
   Vikas Nigam (Indore) Ltd.
   3/54, Press Complex, Agra-Bombay Road,
   Indore-452 008 **....Respondent(s)**

The following were present:

For Petitioner: Shri S.S. Raju, PGCIL
Shri Jasbir Singh, PGCIL
Shri Rakesh Prasad, PGCIL
Smt. Archana Kumari, PGCIL
Shri P.V Nath, PGCIL
Shri A.M Pavgi, PGCIL
Shri Aryaman Saxena, PGCIL
Shri M.M. Mondal, PGCIL

For Respondents: None

ORDER

The petition has been preferred by Power Grid Corporation of India Limited ("the petitioner") for determination of tariff under Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as "the 2014 Tariff Regulations") for the period from COD to 31.3.2019 in respect of Splitting of 400kV Raipur Bus through Bus Sectionaliser into two sections at a point between existing Line Bays of Chandrapur -1 & Chandrapur -2 and shifting of Chandrapur-2 and Chandrapur-3 Line Bays from section Raipur –B to Raipur-A under "Split Bus Arrangement and Reconfiguration/Shifting of terminating Lines at Raipur 400 kV Sub-station" in Western Region (hereinafter referred to as "the transmission asset")

2. The scope of work covered under "Split Bus Arrangement and Reconfiguration/Shifting of terminating Lines at Raipur 400kV S/S" in Western Region is as follows:-

Transmission line

a. Bypassing of Bhatapara-Raipur 400 kV S/C Line to restore the line as Bhatapara-Bhilai 400 kV S/C line- 1.5 km
b. Shifting of Chandrapur-2 and Chandrapur-3 line bays from section Raipur-B to Raipur-A - 0.4 km

Substation

a. Splitting of 400 kV Raipur Bus through Bus Sectionaliser into two sections at a point between existing Line Bays of Chandrapur -1 & Chandrapur -2 Establishment of 765/400 kV, 3x1500 MVA Raigarh Pooling Station (near Tamnar)

3. The respondents in the instant petition are distribution licensees, who are procuring transmission service from the petitioner, mainly beneficiaries of Western Region.

4. The brief facts of the case are as follows:-

a) The Investment Approval (I.A.) was accorded by Board of Directors of POWERGRID, vide Memorandum No. C/CP/Raipur SS dated 26.8.2010 at an estimated cost of ₹1535 lakh including IDC of ₹62 lakh, at 1st Quarter, 2010 price level.

b) The transmission asset was scheduled to be commissioned within 15 months from the date of IA. Thus, the scheduled date of commissioning of the transmission asset was 25.11.2011. However, there is a total time over-run of 31 months in the commissioning of the transmission asset and the actual COD is 26.6.2014.

c) The petitioner has submitted that the delay in commissioning of the transmission asset is mainly on account of reasons attributable to technical complexities which could not be envisaged at the time of IA.

d) The AFC for the instant asset was allowed under Regulation 7(7) of the 2014 Tariff Regulations for inclusion in the PoC tariff vide order dated 26.9.2014.

e) The petitioner has claimed a capital cost of ₹403.91 lakh as on COD (26.6.2014) for the transmission asset and an additional capital expenditure of ₹287.90 lakh in 2014-15 and ₹41.38 lakh in 2015-16 during 2014-19 tariff period.

5. The petitioner has served the petition to the respondents and notice of this application has been published in the newspaper in accordance with Section 64 of the Electricity Act, 2003 (“the Act’’). No comments/objections have been received from the public in response to the notice in newspaper. No submissions have been made by the respondents. The hearing in this matter was held on 14.3.2016.

6. The petitioner was directed to submit the details of IDC and IEDC, initial spares and other details pertinent to tariff computation. The petitioner in response to the Commission's direction has filed its replies vide affidavit dated 16.12.2015.

7. Having heard the representatives of the petitioner and respondents, and perused the material on record, we proceed to determine the tariff in accordance with the Tariff Regulations, 2014.

8. The transmission charges claimed by the petitioner based on the actual date of commercial operation are as below:-

(₹ in lakh)

Particulars	2014-15 (pro-rata)	2015-16	2016-17	2017-18	2018-19
Depreciation	22.06	37.36	38.35	38.35	38.35
Interest on Loan	26.88	43.27	41.12	37.59	34.02
Return on Equity	24.62	41.92	43.13	43.13	43.13
Interest on Working Capital	6.83	9.77	10.00	10.15	10.32
O & M Expenses	92.95	125.72	129.89	134.21	138.65
Total	**173.34**	**258.04**	**262.49**	**263.43**	**264.47**

9. The details submitted by the petitioner in support of its claim for interest on working capital are given hereunder:-

(₹ in lakh)

Particulars	2014-15 (pro-rata)	2015-16	2016-17	2017-18	2018-19
O&M Expenses	10.14	10.48	10.82	11.18	11.55
Maintenance Spares	18.25	18.86	19.48	20.13	20.80
Receivables	37.82	43.01	43.75	43.91	44.08
Total working capital	**66.21**	**72.35**	**74.05**	**75.22**	**76.43**
Rate of Interest	13.50	13.50	13.50	13.50	13.50
Interest on working capital	6.83	9.77	10.00	10.15	10.32

10. Annual fixed charges for 2014-19 tariff period are being determined in the succeeding paragraphs.

Date of Commercial Operation ("COD")

11. The petitioner has claimed the date of the commercial operation of the instant transmission asset as 26.6.2014. Regulation 4(3) of the 2014 Tariff Regulations provides as follows:-

> **"4. Date of Commercial Operation:** The date of commercial operation of a generating station or unit or block thereof or a transmission system or element thereof shall be determined as under:
>
> xxx
>
> (3) Date of commercial operation in relation to a transmission system shall mean the date declared by the transmission licensee from 0000 hour of which an element of the transmission system is in regular service after successful trial operation for transmitting electricity and communication signal from sending end to receiving end:
>
> xxx
> xxx"

12. The petitioner has submitted the CEA Certificate dated 5.3.2014, trial run operation certificate dated 24.6.2014 and the COD declaration letter dated 26.6.2014 in support of the claim of commercial operation in accordance with Regulation 5(2) of the 2014 Tariff Regulations indicating completion of successful trial operation. Accordingly, the commercial operation date of the transmission asset has been considered as 26.6.2014 and the tariff is worked out from 26.6.2014 to 31.3.2019.

Capital Cost

13. The petitioner has claimed a capital cost of ₹403.91 lakh as on COD for the transmission asset. The capital cost claimed by the petitioner is certified by the Auditor's Certificate dated 28.6.2014.

14. Regulation 9 (1) and (2) and 10 (1) of the 2014 Tariff Regulations specify as follows:-

> **"9. Capital Cost:** (1) The Capital cost as determined by the Commission after prudence check in accordance with this regulation shall form the basis of 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) Increase in cost in contract packages as approved by the Commission;
> d) Interest during construction and incidental expenditure during construction as computed in accordance with Regulation 11 of these regulations;
> e) capitalised Initial spares subject to the ceiling rates specified in Regulation 13 of these regulations;
> f) expenditure on account of additional capitalization and de-capitalisation determined in accordance with Regulation 14 of these regulations;
> g) adjustment of revenue due to sale of infirm power in excess of fuel cost prior to the COD as specified under Regulation 18 of these regulations; and
> h) adjustment of any revenue earned by the transmission licensee by using the assets before COD."
>
> **"10. Prudence Check of Capital Expenditure:** The following principles shall be adopted for prudence check of capital cost of the existing or new projects:
>
> (1) In case of the thermal generating station and the transmission system, prudence check of capital cost may be carried out taking into consideration the benchmark norms specified/to be specified by the Commission from time to time:
>
> Provided that in cases where benchmark norms have not been specified, prudence check may include scrutiny of the capital expenditure, financing plan, interest during construction, incidental expenditure during construction for its reasonableness, use of efficient technology, cost over-run and time over-run, competitive bidding for procurement and such other matters as may be considered appropriate by the Commission for determination of tariff:"

15. The estimated completion cost of the instant assets is within the approved apportioned cost. The capital cost claimed by the petitioner is as follows:-

(₹ in lakh)

Approved apportioned cost	Capital cost as on COD	Additional Capital Expenditure		Estimated completion cost
		2014-15	2015-16	
1024.96	403.91	287.90	41.38	733.19

16. The petitioner has further submitted, vide affidavit dated 16.12.2015, the details of IDC and IEDC discharged on cash basis and the reasons for time over-run in commissioning of the transmission asset. The petitioner has also submitted the year wise details of liability discharged corresponding to initial spares. The admissible capital cost of the transmission asset as on COD is worked out in the subsequent paragraphs after the treatment of initial spares and IEDC and IDC amount.

Time Over-run

13. As per the IA, the transmission asset was scheduled to be commissioned within 15 months of the IA i.e. on 25.11.2011. However, the transmission asset was commissioned on 26.6.2014. Thus, there is a time over-run of 31 months.

14. The petitioner has submitted that the delay in commissioning of the transmission asset is mainly on account various technicalities involved in the project which could not be envisaged at the time of investment approval. The petitioner has submitted the reasons to substantiate the claim of time over-run.

15. The petitioner has submitted that the route finalization of the line under instant transmission asset was extremely critical and it has been worked out various permutations and combinations due to the following major constraints:

Transmission line technical constraints:

16. The petitioner has submitted that there was serious congestion in the line entry corridor, behind the switchyard where lines criss-cross each other. It was extremely difficult to plan any new line corridor in this area. This line re-routing required shifting of one set of D/C line from one side of the switchyard to another side of switchyard and vice-versa, crossing over multiple and simultaneous 400 kV transmission lines terminated at the Raipur Sub-station.

17. Further, to evacuate the power of various upcoming IPPs in Chhattisgarh, a new transmission line viz. 400kV D/C Raipur-Raipur (Durg-New Sub-station) was approved during the same period. This new line terminated in Raipur Sub-station over multi circuit towers near the sub-station, which was required to be crossed by the line under petition. Such overhead crossing of the new line, which is on M/C towers, was not feasible by this line due to increase in tower height.

18. The petitioner submits that due to the above stated issues, D/C tower erection planned as per original schedule and scheme was extremely difficult. As such for erection of these towers, multiple and simultaneous outages on other important and critical transmission lines in the vicinity were required, which was very difficult to get. Even during stringing, multiple and simultaneous shutdowns of long duration were required which was again not feasible, as the Raipur Sub-station is a very critical sub-station of Eastern part of Western Grid.

19. Due to these issues, the said scheme was reviewed many times in order to find out the optimal way which minimizes the overhead crossings, long, multiple and simultaneous outage on other nearby lines. Accordingly, after three to four rounds to planning and survey and discussion between experts group from

Corporate Centre, Regional Head Quarters and site, a final scheme was evolved after a prolonged period, delaying the actual execution of the work, which could be started once the new 400 kV Raipur-Raipur line got implemented in October, 2013.

20. The petitioner has further submitted that the above exercise led to evolution of a new scheme in which the overhead crossings of existing various 400 kV lines were completely avoided and all the crossings were made underground. The above scheme/strategy and technical exploration has brought crucial benefits in terms of avoiding all the over head crossings, erecting towers without any shutdown. In place of the earlier approved D/C tower with DD+25 extensions, S/C truncated towers have been spotted, resulting in immense cost savings in the project.

<u>Sub-station related constraints</u>

21. In respect of the Bay equipment interchange, the petitioner has submitted that 400kV lines, having different lengths, were interchanged from one section to another section and vice versa. One line was approximately 213 km, whereas other line is having length of 346 km. Further, the longer length line was provided with Reactors, CB with PIR. The rating of CVT and WTI were also different. Accordingly, CVT, WT, CB (with PIR and without PIR) and PLCC panels were to be interchanged. This was a difficult task as the equipments were old and required longer duration outage, which is always an issue in case both the critical lines being interchanged. Thus, various agencies were contacted and the desired work was done in longer duration of time.

22. The petitioner has submitted that the shifting and re-erection of line shunt reactors required a huge amount of dismantling work, de-erection of reactor, cabling, LA, cable trench etc. to be commissioned at its new bay. The issues and feasibility options were discussed in many forums, including Standing Committee and WRPC forum and finally installation of one new reactor has been discussed in the 34th SCM meeting dated 9th May, 2012 and the same is being implemented at Raipur under separate package, thereby avoiding the requirement of above shifting. The commissioning of the line was to be coordinated with commissioning of new reactor, which resulted into further delay.

23. In respect of the sectionalisation of main buses, the petitioner has submitted that the splitting of bus through Bus sectionalizer required construction of new bus sectionalizing bays exactly beneath the main bus. Accordingly, continuous bus outage was required for more than three weeks to remove the subject bus portion, erection of equipment and testing and commissioning on both the main buses. Due to the criticality of the Raipur Sub-station, this bus outage got differed many times and start of erection work got delayed considerably.

24. We have considered the submission of the petitioner. As per the petitioner's submission, the overall delay in the commissioning of the transmission assets is due to the technical complexities involved in the commissioning of different elements of the project. In response to query of the Commission, the petitioner has submitted the chronology of events, justifying the delay due to modified route alignment/scheme for shifting/ termination of 400 kV Raipur-Chandrapur ckt-II & III on Bus-A and 400 kV D/C Korba-Raipur (under Korba-Ill System) on Bus B for implementing of Bus Split arrangement at Raipur, as below:

S.N.	Date of initiation	Date of approval	Description	
1	28.8.2010	-	Investment approval	
2	18.10.2010	-	LOA placed	
3	4.2.2011		A number of options were studied by the petitioner to minimize the period of outage. In order to minimize outage period during shifting of existing 400 kV D/C Raipur-Bhilai 1-Bhadrawati 1 TL, alternative Option-I evolved for modified route alignment / scheme, using two tier gantries, as detailed below :-	
			Tower Type	Qty.
			DD+18	2
			DD+0	1
			DD+9	1
			DD+9 (90 deg.)	1
			Two Tier Gantries	2
4	6.4.2011	13.4.2011	Since sufficient clearance was not available between the conductors approaching two tier gantries, OPTION-I was modified as detailed below :-	
			Tower Type	Qty.
			DD+18	2
			DD+25	1
			DD-4.5	1
			DD+9 (90 deg.)	1
			Two Tier Gantries	2
5	31.5.2011	4.6.2011	POWERGRID wanted to avoid complicacy involved in Two Tier Gantry arrangement crossing & shifting of 400 kV DX Raipur-Bhilai 1 -Bhadrawati I TL, so an alternate arrangement OPTION- II involving 06 nos. +18/25 Ext. towers (Overhead Crossing) was envisaged, as follows:-	
			DD+18	2
			DD+18 (90 Deg)	1
			DD+25	3
6	3.10.2011	30.11.2011	In consideration to avoid high rise towers near sub-station, alternate arrangement OPTION- III involving 07 nos. -towers (Underneath Crossing of lines providing truncated towers.) was evolved as follows:-	
			3 no. - DD-7.5	3
			1 no. - DD-6	1
			DD+18 DD-25 DD+25 (90 Deg)	1
			Further to implement this scheme the reactors and associated equipments were to be shifted.	

S.N.	Date of initiation	Date of approval	Description
7	9.3.2012	-	As per the Option-II, 06 nos. DD+18/25 Towers (including two no. 90 degree Deviation Towers) were required for necessary shifting in modified route alignment. In order to avoid the complications in erecting high rise towers (+18/+25M Extension Towers) for overhead crossings near S/S, POWERGRID envisaged an alternative arrangement (Option-IV) involving underneath crossings using S/C towers for shifting involving total 10 no. new towers (S/C - 7 towers, D/C - 3 towers) including two nos. DD+18/+25 M towers, certain truncated S/C and D/C towers, high deviation angle towers etc. Still POWERGRID wanted to adopt less cumbersome comprehensive solution with use of only standard sic and die towers and avoiding unconventional towers/special design, etc.
8	12.9.20 2	2.1.2012	So, a revised scheme was worked out (Option-V) incorporating certain modifications in the earlier proposed scheme, avoiding unconventional towers, special designs etc. involving installation of total 11 no. new towers (S/C D-4.5/C6.5 M truncated towers - 8 nos., D/C towers - 3 nos.) including two nos. DD+ 18/+25 M towers. This scheme was further modified to avoid any powerline crossings as well as to ensure minimum power outage during implementation of the work.
9	3.11.2012	15.8.2013	Considering the criticality of Raipur Sub-station, shutdown period during execution needed to be minimized and installation of high rise towers (+18/+25M extensions) was to be avoided in the congested area near Raipur Sub-station. In view of the above, revised alternative arrangement OPTION-VI and OPTION-VII were evolved.
10	16.8.20 13	30.8.20I3	Ultimately POWERGRID finalised (Option-VIII) involving 12 no. new towers (S/C D-4.5/ C-6.5 M truncated towers -10 nos., D/C towers-2 nos. including 1 no. 90 deg. tower).
11	3.8.2013	26.6.2014	The petitioner developed drawings/designs of special truncated/90deg. Towers and implemented the project successfully.

25. We have taken into consideration the issues faced by the petitioner and appreciates the technical exploration done to arrive at an optimal solution. It is observed that the petitioner placed/awarded the work to M/S JSL on 21.10.2010

with a scheduled completion period of 21 months i.e. up to 20.7.2012 against the SCOD of 25.11.2011 i.e. a delay of around 8 months.

26. We are of the view that all the activities were not uncontrollable. Some of the aspects of the subject transmission line and sub-station and the existing infrastructure around them leading to complexity of the network were foreseeable during the investment approval, which the petitioner should have taken into consideration at the planning stage itself. The petitioner was able to evolve a new scheme by October, 2013 and subsequently took another 8 months to commission the asset.

27. Based on the facts presented by the petitioner and subsequent observations as above, we are of the view that the delay could have been partially controlled by better planning. Taking into cognisance and the efforts made towards coming up with a more technically feasible solution, the delay attributable to such technical exploration i.e for the period from the scheduled date of commercial operation, i.e. 25.11.2011 to October, 2013 is condoned. The subsequent delay of 8 months from November, 2013 to COD i.e 26.6.2014 is not being condoned. Accordingly, IDC and IEDC for 23 months are capitalised.

Interest during construction (IDC) and Incidental Expenditure during construction (IEDC)

28. The petitioner has submitted, vide affidavit dated 16.12.2015, the following details of IDC and IEDC discharged up to COD:-

(₹ in lakh)

Details of IDC & IEDC as per Auditor Certificate dated 28.6.2014 and affidavit dated 16.12.2015		
Period	**IDC**	**IEDC**
Land – Freehold		
Land – Leasehold		
Building Civil Works & Colony	0.39	0.07
Transmission Line	3.53	0.66
Sub Station	13.87	2.61
PLCC	1.07	0.2
Total up to COD	**18.86**	**3.54**

The petitioner has submitted that complete IDC and IEDC as above were discharged up to COD, and the same have been considered in the capital cost certified by Auditor vide certificate dated 28.6.2014. Further, it is observed that these amounts have been discharged after SCOD. The details of IDC and IEDC disallowed for 8 months are given below:-

(₹ in lakh)

IDC and IEDC disallowed (from Nov. 2013 to COD, June 2014) Total days from SCOD to COD (no.) =945 IDC and IEDC disallowed for days (no.) =238			
Element	**IDC**	**IEDC**	**Total**
Transmission Line (TL)	0.89	0.17	**1.06**
Sub-station (incl. PLCC, building & civil works)	3.86	0.73	**4.59**
Total	**4.75**	**0.89**	**5.64**

Initial Spares

29. The petitioner has claimed initial spares of ₹4.20 lakh pertaining to transmission line corresponding to capital cost of ₹377.44 lakh and ₹25 lakh pertaining to the sub-station corresponding to capital cost of ₹289.38 lakh (excluding IDC, IEDC, land cost and cost of civil works) as on the cut-off date of 31.3.2017.

30. The petitioner, vide affidavit dated 16.12.2015, has submitted that the capital cost as certified in the Auditor's Certificate dated 28.6.2014 includes the liability corresponding to initial spares as discharged up to COD and the remaining as additional capital expenditure. The initial spares have been worked out in accordance with the norms prescribed under Regulation 13 of the 2014 Tariff Regulations:-

(₹ in lakh)

Particulars	P&M Cost up to 31.3.2017 (IDC, IEDC, civil works)	Proportionate initial spares claimed	Ceiling limit as per 2014 Regulation		Excess initial spares
Transmission Line	377.44	4.20	1.00%	3.77	0.43
Sub-station (Brown)	289.38	25.00	6.00%	16.88	8.12

Thus, the capital cost considered for tariff computation purpose is as below:-

(₹ in lakh)

	Capital cost on COD claimed by the petitioner	Disallowed IDC/IEDC and excess initial spares	Capital cost on COD considered for tariff purpose
Land - Freehold	-	-	-
Land - Leasehold	-	-	-
Building Civil Works & Colony	5.47	0.12	5.35
Transmission Line	187.72	1.48	186.24
Sub Station	195.58	12.38	183.20
PLCC	15.14	0.33	14.81
Total	**403.91**	**14.30**	**389.61**

Additional Capital Expenditure

31. Clause (1) of Regulation 14 of the 2014 Tariff Regulations provides as under:-

> "(1) The capital expenditure in respect of the 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:
>
> (i) Undischarged liabilities recognized to be payable at a future date;
> (ii) Works deferred for execution;

(iii) Procurement of initial capital spares within the original scope of work, in accordance with the provisions of Regulation;
(iv) Liabilities to meet award of arbitration or for compliance of the order or decree of a court of law; and
(v) Change in law or compliance of any existing law:"

32. Clause 13 of Regulation 3 of the 2014 Tariff Regulations defines as follows:-

"Cut - off Date" means 31st March of the year closing after two years of the year of commercial operation of whole or part of the project, and in case the whole or part of the project is declared under commercial operation in the last quarter of a year, the cut - off date shall be 31st March of the year closing after three years of the year of commercial operation:"

33. The petitioner has claimed an estimated additional capital expenditure of ₹287.90 lakh in 2015-16 which includes initial spares of ₹19.44 lakh discharged during 2015-16 and expenditure of ₹41.38 lakh during 2016-17 on account of balance and retention payments.

34. The additional capital expenditure claimed by the petitioner is certified by the Auditor vide certificate dated 28.6.2014 and is on account of balance and retention payments. The same is thus allowed under Regulation 14(1) of 2104 Tariff Regulations, subject to true up on actual basis. Thus, the additional capital expenditure allowed for the 2014-19 tariff period is as follows:-

(₹ in lakh)

Approved apportioned cost	Capital cost as on COD	Additional Capital Expenditure			Estimated completion cost
		2015-16	2016-17	Total	
1024.96	389.61	287.90	41.38	329.28	718.89

Debt: Equity

35. Clause (1) of Regulation 19 of the 2014 Tariff Regulations provides as under:-

"19. Debt-Equity Ratio: (1) For a project declared under commercial operation on or after 1.4.2014, the debt-equity ratio would be considered as 70:30 as on COD. 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.”

The petitioner has considered the debt: equity ratio of 70:30, which is in line with the 2014 Tariff Regulations, hence the same is considered for calculation of tariff.

36. Accordingly, the details of the debt:equity considered for the purpose of tariff for 2014-19 tariff period is as follows:-

(₹ in lakh)

Funding	As on COD	(%)	Additional capital expenditure during 2014-19	(%)	As on 31.3.2019	(%)
Debt	272.72	70.00	230.50	70.00	503.22	70.00
Equity	166.88	30.00	98.78	30.00	215.67	30.00
Total	**389.61**	**100.00**	**329.28**	**100.00**	**718.89**	**100.00**

Return on Equity (“ROE”)

37. Clause (1) and (2) of Regulations 24 and Clause (2) of Regulation 25 of the 2014 Tariff Regulations specify as under:-

“24. Return on Equity: (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 19.
(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating stations, transmission system including communication system....”

“25. Tax on Return on Equity:
..(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."

38. The petitioner has claimed ROE at the rate of 20.961% after grossing up the ROE of 15.5% with MAT rate as per the above said Regulation. The petitioner has further submitted that the grossed up ROE is subject to truing up based on the actual tax paid along with any additional tax or interest, duly adjusted for any refund of tax including the interest received from IT authorities, pertaining to the tariff period 2014-19 on actual gross income of any financial year. Any under-recovery or over-recovery of grossed up ROE after truing up shall be recovered or refunded to the beneficiaries on year to year basis.

39. The petitioner has further submitted that adjustment due to any additional tax demand including interest duly adjusted for any refund of the tax including interest received from IT authorities shall be recoverable/adjustable after completion of income tax assessment of the financial year.

40. We have considered the submissions made by the petitioner. Regulation 24 read with Regulation 25 of the 2014 Tariff Regulations provides for grossing up of return on equity with the effective tax rate for the purpose of return on equity. It further provides that in case the generating company or transmission licensee is paying Minimum Alternative Tax (MAT), the MAT rate including surcharge and cess will be considered for the grossing up of return on equity. The petitioner has submitted that MAT rate is applicable to the petitioner's company. Accordingly, the MAT rate applicable during 2013-14 has been considered for the purpose of return on equity, which shall be trued up with actual tax rate in accordance with

Regulation 25 (3) of the 2014 Tariff Regulations. The ROE allowed for the instant transmission asset is given below:-

(₹ in lakh)

Return on Equity	2014-15 (pro-rata)	2015-16	2016-17	2017-18	2018-19
Opening Equity	116.88	203.25	215.67	215.67	215.67
Additions	86.37	12.41	0.00	0.00	0.00
Closing Equity	203.25	215.67	215.67	215.67	215.67
Average Equity	160.07	209.46	215.67	215.67	215.67
Return on Equity (Base Rate) (%)	15.500	15.500	15.500	15.500	15.500
MAT Rate for respective year (%)	20.961	20.961	20.961	20.961	20.961
Rate of Return on Equity (%)	19.610	19.610	19.610	19.610	19.610
Return on Equity	23.99	41.08	42.29	42.29	42.29

<u>Interest on Loan ("IoL")</u>

41. Clause 5 and 6 of Regulation 26 of 2014 Tariff Regulations provides that:-

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

42. We have considered the weighted average rate of IOL on the basis of rate prevailing as on 1.4.2014. Further, the petitioner has prayed to allow it to bill and adjust impact on interest on loan due to change in interest rate on account of floating rate of interest applicable during 2014-19 period, if any from the respondents. The petitioner has also prayed that they will approach the Commission for suitable revision in the norms of O&M Expenses for claiming the impact of such increase. The IOL has been worked out in accordance with

Regulation 26 of the 2014 Tariff Regulations. The petitioner's prayer to bill and adjust the impact on interest on loan due to change in interest rate on account of floating rate of interest applicable during 2014-19 period from the respondents will be considered at the time of truing up. The details of weighted average rate of interest are placed at Annexure-I and the IOL has been worked out as follows:-

(₹ in lakh)

Interest on Loan	2014-15 (pro-rata)	2015-16	2016-17	2017-18	2018-19
Gross Normative Loan	272.72	474.25	503.22	503.22	503.22
Cumulative Repayment upto Previous Year	0.00	21.50	58.10	95.69	133.29
Net Loan-Opening	272.72	452.76	445.12	407.52	369.93
Additions	201.53	28.97	0.00	0.00	0.00
Repayment during the year	21.50	36.61	37.59	37.59	37.59
Net Loan-Closing	452.76	445.12	407.52	369.93	332.34
Average Loan	362.74	448.94	426.32	388.73	351.14
Weighted Average Rate of Interest on Loan (%)	9.4456	9.4470	9.4603	9.4861	9.5029
Interest on Loan	26.19	42.41	40.33	36.88	33.37

Depreciation

43. Clause (2), (5) and (6) of Regulation 27 of 2014 Tariff Regulations provide that:-

> "27. Depreciation:
> ...(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 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
> ...
> (5) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-II 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 1.4.2014 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31.3.2014 from the gross depreciable value of the assets."

44. Clause (67) of Regulation 3 of the 2014 Tariff Regulations defines useful life as follows:-

> "(67) **'Useful life'** in relation to a unit of a generating station and transmission system from the COD shall mean the following, namely:
>
> (a) Coal/Lignite based thermal generating station 25 years
> (b) Gas/Liquid fuel based thermal generating station 25 years
> (c) AC and DC sub-station 25 years
> (d) Gas Insulated Substation (GIS) 25 years
> (d) Hydro generating station including pumped Storage hydro generating stations
> 35 years
> (e) Transmission line (including HVAC & HVDC) 35 years
> (f) Communication system 15 years"

45. The petitioner has claimed depreciation considering capital expenditure of ₹403.91 lakh as on COD with additional capitalization of ₹329.28 lakh for the 2014-19 tariff period.

46. The depreciation has been worked out considering the admitted capital cost as on COD and the additional capital expenditure admitted during 2014-19 period. The weighted average useful life of the asset has been considered as 30 years in accordance with the above regulation. The detailed calculations for depreciation for the transmission asset are worked out and allowed as follows:-

(₹ in lakh)

Depreciation	2014-15 (pro-rata)	2015-16	2016-17	2017-18	2018-19
Opening Gross Block	389.61	677.51	718.89	718.89	718.89
Additional Capitalization	287.90	41.38	0.00	0.00	0.00
Closing Gross Block	677.51	718.89	718.89	718.89	718.89
Average Gross Block	533.56	698.20	718.89	718.89	718.89
Rate of Depreciation (%)	5.27	5.24	5.23	5.23	5.23
Balance Useful life of the asset	30	29	28	27	26
Elapsed life	0	1	2	3	4
Remaining Depreciable Value	129.56	256.24	238.25	200.66	163.06
Depreciation during the year	21.50	36.61	37.59	37.59	37.59
Cumulative depreciation	21.50	58.10	95.69	133.29	170.88

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

47. The petitioner has claimed O&M Expenses as specified in sub-clause (a) of clause (3) of Regulation 29 of the 2014 Tariff Regulations. The details of O&M Expenses allowed are given hereunder:-

Particulars	2014-15 (pro-rata)	2015-16	2016-17	2017-18	2018-19
400 kV Bays:					
No. of Bays	2	2	2	2	2
Norms (₹ lakh/Bay)	60.300	62.300	64.370	66.510	68.710
S/C Twin/Triple Conductor:					
Length (KM)	2.154	2.154	2.154	2.154	2.154
Norms (₹ lakh/KM))	0.404	0.418	0.432	0.446	0.461
D/C Twin/Triple Conductor:					
Length (KM)	0.296	0.296	0.296	0.296	0.296
Norms (₹ lakh/KM))	0.707	0.731	0.755	0.78	0.806
Total O&M Expenses (₹ lakh)	93.01	125.72	129.89	134.21	138.65

48. The petitioner has submitted that norms for O&M Expenses for the tariff period 2014-19 have been arrived on the basis of normalized actual O&M Expenses during the period 2008-13. The petitioner has further submitted that the wage revision of the employees of the petitioner is due during the 2014-19 tariff period and actual impact of wage hike, which will be effective at a future date, has not been factored in fixation of the normative O&M rate specified for the tariff period 2014-19. The petitioner has prayed to be allowed to approach the Commission for suitable revision in the norms of O&M Expenses for claiming the impact of such increase.

49. The O&M Expenses have been worked out as per the norms of O&M Expenses specified in the 2014 Tariff Regulations. As regards impact of wage

revision, any application filed by the petitioner in this regard will be dealt with in accordance with the appropriate provisions of the 2014 Tariff Regulations.

Interest on Working Capital

50. Clause 1 (c) of Regulation 28 and Clause 5 of Regulation 3 of the 2014 Tariff Regulations specifies as follows:

> "**28. Interest on Working Capital**
> (c).(i) Receivables equivalent to two months of fixed cost;
> (ii) Maintenance spares @ 15% of operation and maintenance expenses specified in regulation 29; and
> (iii) Operation and maintenance expenses for one month"
>
> "(5) 'Bank Rate' means the base rate of interest as specified by the State Bank of India from time to time or any replacement thereof for the time being in effect plus 350 basis points;"

51. The petitioner has considered the rate of interest on working capital to be 13.50%.

52. The interest on working capital is worked out in accordance with Regulation 28 of the 2014 Tariff Regulations. The rate of interest on working capital considered is 13.50% (SBI Base Rate of 10% plus 350 basis points). The components of the working capital and interest thereon have been worked as follows:-

(₹ in lakh)

Interest on Working Capital	2014-15 (pro-rata)	2015-16	2016-17	2017-18	2018-19
O & M expenses	10.14	10.47	10.82	11.18	11.55
Maintenance Spares	18.25	18.86	19.48	20.13	20.80
Receivables	37.39	42.59	43.34	43.51	43.70
Total	65.78	71.92	73.65	74.82	76.04
Rate of Interest (%)	13.50	13.50	13.50	13.50	13.50
Interest on Working Capital	6.79	9.71	9.94	10.10	10.27

ANNUAL FIXED CHARGES FOR THE 2014-19 TARIFF PERIOD

53. The transmission charges allowed for the instant transmission assets for the 2014-19 tariff period are summarised below:-

(₹ in lakh)

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation					
Opening Gross Block	389.61	677.51	718.89	718.89	718.89
Additional Capitalisation	287.90	41.38	0.00	0.00	0.00
Closing Gross Block	677.51	718.89	718.89	718.89	718.89
Average Gross Block	533.56	698.20	718.89	718.89	718.89
Rate of Depreciation	5.27	5.24	5.23	5.23	5.23
Depreciable Value	480.20	628.38	647.00	647.00	647.00
Balance Useful life of the asset	30	29	28	27	26
Elapsed Life	0	1	2	3	4
Remaining Depreciable Value	129.56	256.24	238.25	200.66	163.06
Depreciation	21.50	36.61	37.59	37.59	37.59
Cumulative depreciation	21.50	58.10	95.69	133.29	170.88
Interest on Loan					
Gross Normative Loan	272.72	474.25	503.22	503.22	503.22
Cumulative Repayment upto Previous Year	0.00	21.50	58.10	95.69	133.29
Net Loan-Opening	272.72	452.76	445.12	407.52	369.93
Additions	201.53	28.97	0.00	0.00	0.00
Repayment during the year	21.50	36.61	37.59	37.59	37.59
Net Loan-Closing	452.76	445.12	407.52	369.93	332.34
Average Loan	362.74	448.94	426.32	388.73	351.14
Weighted Average Rate of Interest on Loan	9.4456	9.4470	9.4603	9.4861	9.5029
Interest	26.19	42.41	40.33	36.88	33.37
Return on Equity					
Opening Equity	116.88	203.25	215.67	215.67	215.67
Additions	86.37	12.41	0.00	0.00	0.00
Closing Equity	203.25	215.67	215.67	215.67	215.67
Average Equity	160.07	209.46	215.67	215.67	215.67
Return on Equity (Base Rate)	15.500	15.500	15.500	15.500	15.500
MAT rate for the respective year	20.961	20.961	20.961	20.961	20.961
Rate of Return on Equity	19.610	19.610	19.610	19.610	19.610
Return on Equity	23.99	41.08	42.29	42.29	42.29
Interest on Working Capital					
O & M expenses	10.14	10.47	10.82	11.18	11.55

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
Maintenance Spares	18.25	18.86	19.48	20.13	20.80
Receivables	37.39	42.59	43.34	43.51	43.70
Total	65.78	71.92	73.65	74.82	76.04
Rate of Interest (%)	13.50	13.50	13.50	13.50	13.50
Interest on working capital	6.79	9.71	9.94	10.10	10.27
Annual Transmission Charges					
Depreciation	21.50	36.61	37.59	37.59	37.59
Interest on Loan	26.19	42.41	40.33	36.88	33.37
Return on Equity	23.99	41.08	42.29	42.29	42.29
Interest on Working Capital	6.79	9.71	9.94	10.10	10.27
O & M Expenses	93.01	125.72	129.89	134.21	138.65
Total	171.48	255.52	260.05	261.07	262.17

Filing Fee and the Publication Expenses

54. The petitioner has sought reimbursement of fee paid by it for filing the petition and publication expenses. The petitioner shall be entitled for reimbursement of the filing fees and publication expenses in connection with the present petition, directly from the beneficiaries on pro-rata basis in accordance with Regulation 52 (1) of the 2014 Tariff Regulations.

Licence Fee & RLDC Fees and Charges

55. The petitioner shall be entitled for reimbursement of licence fee in accordance with Regulation 52 (2) (b) of the 2014 Tariff Regulations for 2014-19 tariff period. The petitioner shall also be entitled for recovery of RLDC fee & charges in accordance with Regulations 52 (2) (a) of the 2014 Tariff Regulations for 2014-19 tariff period.

Service Tax

56. The petitioner has prayed for reimbursement of service tax if it is subjected to such tax in future. We are of the view that the petitioner's prayer is premature.

Sharing of Transmission Charges

57. The billing, collection and disbursement of the transmission charges approved shall be governed by the provisions of Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2010, as amended from time to time as provided in Regulation 43 of the 2014 Tariff Regulations.

58. This order disposes of Petition No. 202/TT/2014.

Sd/-	**Sd/-**
(Dr. M.K. Iyer)	**(A.S. Bakshi)**
Member	**Member**

Annexure-1

DETAILS OF LOAN BASED ON ACTUAL LOAN PORTFOLIO FOR 2014-19

(₹ in lakh)

Particulars	Interest Rate (%)	Loan deployed as on COD	Additions during the tariff period	Total
BOND XXXVII-loan 1	9.25	50.00	0.00	50.00
Bond XL-loan 2	9.30	35.00	0.00	35.00
Bond XLI-loan 3	8.85	103.00	0.00	103.00
Proposed loan 2014-15 (10.25%)- loan 4	10.25	94.74	0.00	94.74
Total		**282.74**	**0.00**	**282.74**

WEIGHTED AVERAGE RATE OF INTEREST ON LOAN DURING 2014-19 TARIFF PERIOD

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Opening Loan	282.74	282.74	282.74	282.74	282.74
Cumulative Repayments of Loans upto Previous Year	0.00	0.00	4.17	19.84	35.51
Net Loans Opening	**282.74**	**282.74**	**278.57**	**262.90**	**247.23**
Add: Draw(s) during the Year	0.00	0.00	0.00	0.00	0.00
Less: Repayments of Loan during the year	0.00	4.17	15.67	15.67	23.57
Net Closing Loan	**282.74**	**278.57**	**262.90**	**247.23**	**223.66**
Average Net Loan	282.74	280.66	270.74	255.07	235.45
Rate of Interest on Loan (%)	9.4456	9.4470	9.4603	9.4861	9.5029
Interest on Loan	26.71	26.51	25.61	24.20	22.37