

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 203/TT/2013

Coram:

**Shri Gireesh B. Pradhan, Chairperson
Shri A.K. Singhal, Member
Shri A.S. Bakshi, Member**

Date of Hearing : 04.06.2015

Date of Order : 23.12.2015

In the matter of:

Approval of tariff for inclusion of transmission assets in computation of Point of Connection Charges and Losses as per the Central Electricity Regulatory Commission's order dated 14.3.2012 in Petition No.15/Suo-Moto/2012, for inclusion in POC charges in accordance with Central Electricity Regulatory Commission (Sharing of Inter-state Transmission Charges and Losses) Regulations, 2010.

And in the matter of:

Orissa Power Transmission Corporation Limited (OPTCL)
Janpath,
Bhubaneswar -751 002

.....**Petitioner**

Vs

1. Jharkhand State Electricity Board
HEC Engineering Building Dhurva,
Ranchi-834 009
2. Damodar Valley Corporation
DVC Tower VIP Road ,
Kolkata-600 002
3. West Bengal State Electricity Transmission Company Ltd
Vidyut Bhavan, Bidhannagar Block DJ, Sector-II
Kolkata-700091

.....**Respondents**

For Petitioner : Shri Raj Kumar Mehta, Advocate, OPTCL

For Respondents : None



ORDER

The petitioner, Orissa Power Transmission Corporation Limited (OPTCL) is a statutory body constituted under Section 5 of the Electricity Supply (Act), 1948 for coordinated development of electricity in the State of Orissa. It has been declared as the State Transmission Utility (STU) and transmission licensee by the Government of Orissa. The instant petition has been filed by OPTCL in compliance of the Commission's order dated 14.3.2012 in Petition No.15/SM/2012 for approval of the annual transmission charges of the transmission assets for inclusion in the Point of Connection charges the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter "2009 Tariff Regulations")

2. The Commission vide order dated 14.3.2012 in Petition No. 15/SM/2012 gave the following directions:-

"5. It has come to the notice of the Central Commission that the some of the owners/developers of the inter-State transmission lines of 132 kV and above in North Eastern Region and 220 kV and above in Northern, Eastern, Western and Southern regions as mentioned in the Annexure to this order have approached the Implementing Agency for including their transmission assets in computation of Point of Connection transmission charges and losses under the Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010 (hereinafter "Sharing Regulations").

6. As a first step towards inclusion of non-ISTS lines in the POC transmission charges, the Commission proposes to include the transmission lines connecting two States, for computation of POC transmission charges and losses. However, for the disbursement of transmission charges, tariff for such assets needs to be approved by the Commission in accordance with the provisions of Sharing Regulations. Accordingly, we direct the owners of these inter-State lines to file appropriate application before the Commission for determination of tariff for facilitating disbursement.

7. We direct the respondents to ensure that the tariff petition for determination of tariff is filed by the developers/owners of the transmission line or by State Transmission Utilities where the transmission lines are owned by them in accordance with the



3. Five transmission lines of OPTCL were identified as inter-State transmission lines in order dated 14.3.2012 in Petition No. 15/SM/2012 and OPTCL was directed to file tariff petition for the following five transmission lines for the purpose of inclusion in the POC charges:-

Srl. No.	From	To	Voltage Level (kV)	Connecting States
1	Budhipadar	Raigarh	220	Orissa-Chhattisgarh
2	Budhipadar	Korba 2	220	Orissa-Chhattisgarh
3	Budhipadar	Korba 3	220	Orissa-Chhattisgarh
4	Joda	Ramachandrapur	220	OPTCL-JSEB
5	Jindal	Jamshedpur	220	OPTCL-DVC

4. However, the petitioner has claimed transmission tariff for 22 inter-State transmission lines, which include 5 STU lines between two States, 7 STU lines connecting to CTU bay, 4 CTU lines connecting to STU bay and 6 STU lines incidental to inter-State power flow. In the instant petition, only inter-State transmission lines included in order dated 14.3.2012 in Petition No. 15/SM/2012 are considered.

5. We have perused the material on record. We proceed to determine the annual fixed charges in respect of the assets covered in the petition.

No. of assets to be covered

6. The petition has been filed in response to the Commission's directions for determination of tariff of transmission lines owned or controlled by the STU which carry inter-State power. Section 2(36) of the Act defines the ISTS as hereinafter:-



"2(36) inter-State transmission system includes-

- (i) Any system for the conveyance of electricity by means of main transmission line from the territory of one State to another state;
- (ii) The conveyance of electricity across the territory of any intervening State as well as conveyance within the State which is incidental to such inter-State transmission of electricity;
- (iii) The transmission of electricity within the territory of a State on a system built, owned, operated, maintained or controlled by a Central Transmission Utility"

7. The petitioner has submitted that OPTCL has claimed AFC for 220 kV Budhipadar-Korba (Chhattisgarh) D/C line (both for Odisha portion lines and bays owned by OPTCL). As regards the 220 kV Budhipadar-Korba PGCIL S/C line (i.e. 220 kV Budhipadar-Raigarh line), owned by PGCIL, OPTCL has claimed AFC only for OPTCL owned bay at Budhipadar end. The transmission tariff for 220 kV Budhipadar-Korba (i.e 220 kV Budhipadar-Raigarh line) was granted vide commission order dated 29.5.2015 in Petition No. 185/TT/2013 and in respect of 400 kV Kolaghat-Baripada transmission line the tariff was granted vide order dated 8.6.2015 in Petition No.259/TT/2013. Accordingly, the 220 kV Rourkela-Tarkera-Budhipadar-Korba line and 220 kV Budhipadar-Raigarh line of PGCIL are not considered for grant of tariff in this order. The 220 kV Joda-Ramachandrapur line and the 220 kV Jindal-Jamshedpur line are allowed tariff in the instant order. The line length in ckt km and date of commercial operation of the two transmission lines which are as follows:-

Srl. No.	Name of Line	Connecting States	Length (ckt. km)	COD
1	220 kV Joda-Ramachandrapur	OPTCL-JSEB	15.50	1985
2	220 kV Jindal-Jamshedpur	OPTCL-DVC	32.00	1985



8. The STU lines used for carrying inter-State power can be considered for inclusion in the PoC charges only if it is certified by RPC in terms of para 2.1.3 of the Annexure-I to Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010, which is extracted hereunder:-

“The line-wise YTC of the entire network shall be provided by the Transmission Licensees. In case a line is likely to be commissioned during the Application Period, the data in respect of the same, along with the anticipated COD will be provided by the CTU/ Transmission Licensee to the Implementing Agency.

For the determination of the transmission charges based on Hybrid Methodology applicable in the next Application Period, all the above data shall be provided to the Implementing Agency as per the timelines specified by the Implementing Agency.

Overall charges to be allocated among nodes shall be computed by adopting the YTC of transmission assets of the ISTS licensees, deemed ISTS licensees and owners of the non-ISTS lines which have been certified by the respective Regional Power Committee (RPC) for carrying inter-State power. The Yearly Transmission Charge, computed for assets at each voltage level and conductor configuration in accordance with the provisions of these regulations shall be calculated for each ISTS transmission licensee based on indicative cost provided by the Central Transmission Utility for different voltage levels and conductor configuration. The YTC for the RPC certified non-ISTS lines which carry inter-State power shall be approved by the Appropriate Commission.

In case line-wise tariff for the RPC certified non-ISTS lines has not been specified by the Appropriate Commission, the tariff as computed for the relevant voltage level and conductor configuration shall be used. The methodology for computation of tariff of individual asset shall be similar to the methodology adopted for the ISTS transmission licensees and shall be based on ARR of the STU as approved by the respective State Commission.

Certification of non-ISTS lines carrying inter-State power, which were not approved by the RPCs on the date of notification of the Central Electricity Regulatory Commission (Sharing of Transmission Charges and Losses) Regulations, 2009, shall be done on the basis of load flow studies. For this purpose, STU shall put up proposal to the respective RPC Secretariat for approval. RPC Secretariat, in consultation with RLDC, using Web Net Software would examine the proposal. The results of the load flow studies and participation factor indicating flow of Inter State power on these lines shall be used to compute the percentage of usage of these lines as inter State transmission. The software in the considered scenario will give percentage of usage of these lines by home State and other than home State. For testing the usage, tariff



of similar ISTS line may be used. The tariff of the line will also be allocated by software to the home State and other than home State. Based on percentage usage of ISTS in base case, RPC will approve whether the particular State line is being used as ISTS or not. Concerned STU will submit asset-wise tariff. If asset wise tariff is not available, STU will file petition before the Commission for approval of tariff of such lines. The tariff in respect of these lines shall be computed based on Approved ARR and it shall be allocated to lines of different voltage levels and configurations on the basis of methodology which is being done for ISTS lines.”

9. As regards the remaining 17 lines, the petitioner may approach ERPC for necessary certification as provided in the above mentioned Regulations. After getting approval from RPC, the petitioner may approach the Commission with a fresh petition for inclusion of these lines in PoC methodology for sharing of transmission charges and losses.

10. The Commission vide letter dated 17.6.2014 directed the petitioner to submit the capital cost of the instant assets certified by an Auditor, the funding pattern of the assets, repayment schedule and the interest rate of loans, cumulative depreciation against the assets as on 31.3.2012, details of the ARR approved by the State Commission for the 2009-14 period and details of the O&M Expenses.

11. The petitioner vide affidavit dated 2.9.2014 has submitted that the most of the assets covered in the instant petition are very old and original capital cost data and additional capital cost of these transmission lines are not available. The submissions made by the petitioner are as follows:-

- (i) The assets covered in the petition are very old and were commissioned in the regime of erstwhile Orissa State Electricity Board (OSEB). The cost of the assets have been ascertained based on indicative cost as per Sharing Regulations, 2010 in absence of any valid/concrete data with OPTCL;



- (ii) All the assets mentioned are very old, the funding pattern of the assets are not available;
- (iii) The loan repayment and interest schedule against assets mentioned in the petition may be taken as NIL;
- (iv) OPTCL files the consolidated line length figures for each voltage category. Accordingly, those figures appear in the ARR order of OERC issued after 4 months of the application i.e. during march next year. However, it is further submitted that voltage wise line length has no bearing in determination of ARR in Odisha as the O&M Expenses are allowed on future estimation based on past trend; and
- (v) The assets shown have not been limited to inter-State lines only. The other assets may be considered for inclusion in the subsequent stages as may be decided by the Commission.

Capital Cost

12. The petitioner vide affidavit dated 2.9.2014, submitted that the Annual Fixed Charge (AFC)/Yearly transmission Cost (YTC) for all the 22 lines. The AFC/YTC of the two lines considered for determination of tariff is as follows:-

(₹ in lakh)		
SI.No	Name of the transmission line	Total AFC
1	220 kV Joda-Ramchandrapur (JSEB) S/C line	139.22
2	220 kV Joda-JSPL-Jamshedpur(DVC) S/C line	215.28



13. The petitioner further submitted that the ARR and the O&M norms for the 2009-14 tariff periods have been approved by the State Commission. The details of the approved ARR submitted by the petitioner are as follows:-

Line* Type	2009-10	2010-11	2011-12	2012-13	2013-14
+500kV HVDC	-	-	-	-	-
+800kV HVDC	-	-	-	-	-
765kV D/C	-	-	-	-	-
765kV S/C	-	-	-	-	-
400kV D/C	197.502	200.902	276.734	276.734	276.734
400 kV DC Quad Moose	-	-	-	-	-
400 kV S/C	241.500	241.500	241.500	241.500	241.500
220 kV D/C	4470.996	4470.996	4819.114	5072.544	5113.558
220 kV S/C	491.636	491.636	530.224	412.377	472.430
132 kV D/C	1570.740	1713.032	1759.970	1768.970	1789.270
132 kV S/C	3291.082	3376.872	3462.458	3481.978	3492.586
ARR approved **	39415.00	48093.00	57250.00	58702.00	58587.00

*Line length in Ckt. Km. **ARR of Transmission business as per letter dated 18.9.2015 (in ₹ lakh)

Procedure for calculating YTC for the transmission lines

14. The petitioner submitted that the capital costs of the instant transmission lines are not available. Hence, the indicative cost of lines of various configurations owned and operated by Power Grid Corporation of India Limited (PGCIL) has been considered for the computation of capital cost as per assumptions as below:-

a) Indicative cost of 400 kV D/C Quad Moose transmission line has been taken as base and indicative cost of lines with configurations other than 400 kV D/C Quad Moose have been made equivalent to the indicative cost of 400 kV D/C Quad Moose (i.e. by dividing indicative cost of the 400 kV D/C Quad Moose line by the indicative cost of line of other configurations).

b) The indicative cost data provided by PGCIL is for voltage level higher than 132 kV, but the petitioner also owns lines of 110 kV, 100 kV and 66 kV level. Hence,



the line length of 110 kV, 100 kV and 66 kV level have been added to 132 kV level and considered such derived indicative cost of 132 kV level as indicative cost for all transmission lines having voltage level of 132 kV and below.

15. The yearly break-up of indicative cost of various configurations owned and operated by PGCIL is as hereunder:-

For F/Y 2013-14

Line Type	Cost (₹ in lakh)	Cost (₹ in lakh/Ckt.)	Co-efficient	
765 kV D/C	412.00	206.00 (A)	a=D/A	0.56
765 kV S/C	179.80	179.80 (B)	b=D/B	0.65
400 kV D/C Twin Moose	130.40	65.20 (C)	c=D/C	1.78
400 kV D/C Quad Moose	232.60	116.30 (D)	d=D/D	1.00
400 kV S/C Twin Moose	87.00	87.00 (E)	e=D/E	1.34
220 kV D/C	61.40	30.70 (F)	f=D/F	3.79
220 kV S/C	37.80	37.80 (G)	g=D/G	3.08
132 kV D/C	48.40	24.20 (H)	h=D/H	4.81
132 kV S/C	30.00	30.00 (I)	i=D/I	3.88

For F/Y 2012-13

Line Type	Cost (₹ in lakh)	Cost (₹ in lakh/Ckt.)	Co-efficient	
765 kV D/C	357.00	178.50 (A)	a=D/A	0.63
765 kV S/C	179.20	179.20 (B)	b=D/B	0.63
400 kV D/C	122.60	61.30 (C)	c=D/C	1.83
400 kV D/C Quad Moose	224.80	112.40 (D)	d=D/D	1.00
400 kV S/C	84.20	84.20 (E)	e=D/E	1.33
220 kV D/C	67.80	33.90 (F)	f=D/F	3.32
220 kV S/C	41.40	41.40 (G)	G=D/G	2.71
132 kV D/C	53.00	26.50 (H)	h=D/H	4.24
132 kV S/C	32.40	32.40 (I)	i=D/I	3.47

For F/Y 2011-12

Line Type	Cost (₹ in lakh)	Cost (₹ in lakh/ckt.)	Co-efficient	
765 kV D/C	315.25	157.625 (A)	a=D/A	0.64
765 kV S/C	159.25	159.25 (B)	b=D/B	0.63
400 kV D/C	109.50	54.75 (C)	c=D/C	1.84
400 kV D/C Quad Moose	202.00	101.00 (D)	d=D/D	1.00
400 kV S/C	74.25	74.25 (E)	e=D/E	1.36
220 kV D/C	59.50	29.75 (F)	f=D/F	3.39
220 kV S/C	37.00	37.00 (G)	G=D/G	2.73
132 kV D/C	46.75	23.375 (H)	h=D/H	4.32
132 kV S/C	28.50	28.50 (I)	i=D/I	3.54



16. After getting ratio with respect to 400 kV D/C Quad Moose, YTC per ckt. Km of 400 kV D/C Quad Moose transmission line has been calculated as follows:-

$$\left. \begin{array}{l} \text{YTC per ckt km} \\ \text{400 kV D/C} \end{array} \right\} \text{-----} \left. \begin{array}{l} \text{Quad Moose (Length of 765 kV DC/a)+(Length of 765 kV} \\ \text{SC/b)+(Length of 400 kV DC TM/c)+(Length of 400} \\ \text{kV DC QM/d)+(Length of 400 kV SC TM/e)+(Length} \\ \text{of 220 kV DC/f)+(Length of 220 kV SC/g)+(Length of} \\ \text{132 kV DC/h)+(Length of 132 kV SC/i)} \end{array} \right\}$$

*value of a, b, c, d, e, f, g, h & i are as given in para 13 and length in ckt km as given in para 11 of this order.
DC-Double Circuit, SC-Single Circuit, QM-Quad Moose, TM-Twin Moose

17. We have not carried out any due diligence of the tariff of these lines (for consideration of PoC calculations) as the tariff of the lines owned by STU has already been determined by the State Electricity Regulatory Commission. We have considered the ARR of the STU as approved by the State Electricity Regulatory Commission and have adopted the methodology as discussed in para 13 and 15 of this order for the purpose of calculation of PoC charges and apportionment of transmission lines and charges to the transmission system of different configurations of the STU. This methodology has been adopted uniformly for the lines owned by other STUs used for inter-State transmission of power duly certified by respective RPCs for the purpose of inclusion in the PoC mechanism.

18. We have considered the submission of the petitioner. The petitioner has submitted the line length in ckt. km and ARR for 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14.



19. As per the information submitted by the petitioner i.e. line length in ckt. km and ARR approved by SERC for 2009-10, 2010-11, 2011-12, 2012-13, and 2013-14 and PoC cost data for the respective years, YTC for the assets for 2011-12, 2012-13 and 2013-14 has been calculated as follows:-

2013-14

Total ARR approved by the SERC= ₹5858700000.00

(in ₹)

Srl. No	Asset	For entire system (Orissa)		
		Line Length (Ckt. km)	YTC (Per ckt. km)	YTC
1	400 kV D/C	276.734	1055284.63	292033136.76
2	400 kV S/C	241.500	1408125.20	340062234.90
3	220 kV D/C	5113.558	496890.16	2540876629.64
4	220 kV S/C	472.430	611806.12	289035565.16
5	132 kV D/C	1789.270	391685.40	700830934.63
6	132 kV S/C	3492.586	485560.41	1695861498.90
Total				5858700000.00

2012-13

Total ARR approved by the SERC= ₹5870200000.00

(in ₹)

Srl. No	Asset	For entire system (Orissa)		
		Line Length (Ckt. km)	YTC (Per ckt. km)	YTC
1	400 kV D/C	276.734	932,179.59	257,965,785.70
2	400 kV S/C	241.500	1,280,416.33	309,220,544.32
3	220 kV D/C	5,072.544	515,512.04	2,614,957,499.80
4	220 kV S/C	412.377	629,563.37	259,617,455.86
5	132 kV D/C	1,768.970	402,981.39	712,861,984.75
6	132 kV S/C	3,481.978	492,701.77	1,715,576,729.56
Total				5870200000.00



2011-12

Total ARR approved by the SERC= ₹57, 250,00,000

(in ₹)

Srl. No	Asset	For entire system (Orissa)		
		Line Length (Ckt. km)	YTC (Per ckt. km)	YTC
1	400 kV D/C	276.734	933177.02	258241810.01
2	400 kV S/C	241.500	1265541.44	305628257.95
3	220 kV D/C	4819.114	507068.79	2443622318.23
4	220 kV S/C	530.224	630640.18	334380558.40
5	132 kV D/C	1759.970	398411.19	701191749.67
6	132 kV S/C	3462.458	485763.38	1681935305.74
Total				572500000.00

YTC of the two transmission lines

20. YTC per ckt. km for 220 kV S/C line is as follows:-

(in ₹)

Voltage level	2011-12	2012-13	2013-14
220 kV S/C	630640.18	629563.37	611806.12

21. YTC of the two transmission lines calculated on the methodology discussed above is as follows:-

(in ₹)

Srl. No.	Line Name	Length (ckt. km)	2011-12	2012-13	2013-14
1	220 kV S/C Joda-Ramachandrapur	15.5	7331192	9758232	9482995
2	220 kV S/C Jindal-Jamshedpur	32	15135364	20146028	19577796
Total			22466556	29904260	29060791

22. The Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010 came into force from 1st July, 2011. Therefore, YTC for the lines have been calculated from 1.7.2011 to 31.3.2012, 2012-13 and 2013-14.



23. The annual transmission charges allowed for the assets covered in the instant petition shall be considered in the YTC as per the Sharing of Inter-State Transmission Charges and Losses Regulations, 2010 and shall be adjusted against the ARR of the petitioner approved by the State Commission.

24. This order disposes of Petition No. 203/TT/2013.

sd/-
(A.S. Bakshi)
Member

sd/-
(A.K. Singhal)
Member

sd/-
(Gireesh B. Pradhan)
Chairperson

