

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 201/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 : 05.02.2016

In the matter of:

Approval of transmission tariff for approval of transmission tariff for 132 kV Dharmanagar(Tripura)-Durlavcherra (Assam) up to Churaibari (Tripura portion) line in North Eastern Region.

And in the matter of:

Tripura State Electricity Corporation Limited (TSECL)
Bidyut Bhavan, North Banamalipur
Agartala

.....**Petitioner**

For Petitioner : Shri R. Debbarman, TSECL

For Respondent : None

ORDER

The petitioner, Tripura State Electricity Corporation Limited (TSECL) is a successor company incorporated in 2005 after reorganization of Department of Power, Government of Tripura in compliance with mandate of Reform & Restructuring by MOP, GOI as per provision of the Electricity Act, 2003. The TSECL is entrusted with the construction, maintenance and operation of generation, transmission and distribution within the state of Tripura as a single entity. The assets



created/built by Power Department prior to corporatization has been transferred to TSECL by Government of Tripura. The instant petition has been filed by TSECL 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:-

"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"

4. Under the above provision, the conveyance of electricity from territory of one state to another State is also considered to be a part of inter-State transmission system. In Page 3 of 16 Order in Petition No. 212/TT/2013 terms of Section 79(1)(d) of the Act, the tariff of these lines are also required to be determined by the Central Commission.

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 Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009, by 20.4.2012."

3. One (1) transmission line of TSECL was identified by the Commission in its order dated 14.3.2012 in Petition No. 15/SM/2012 for inclusion in the PoC transmission charges computation

Name of Transmission Line	Connecting States
132 kV Dharmanagar-Durlavcherra	Tripura-Assam

4. The petitioner has submitted line length in ckt. km and of the instant transmission line are as follows:-

Name of the Transmission line	Distance in Km in State
132 kV Dharmanagar-Durlavcherra	13

5. We have considered the submission of the petitioner. 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 hereinafter:-

"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.”

6. The certificate of NERPC is available in terms of the above said provision in respect of above said transmission line which were included in the Commission's order dated 14.3.2012 in Petition No. 15/SM/2012. Accordingly, the instant transmission line are being considered in this petition for grant of annual



transmission charges. Further, since the Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010 came into force with effect from 1st July, 2011, Yearly Transmission Charges (YTC) for this transmission lines have been calculated for the year 2011-12 (1.7.2011 to 31.3.2012), 2012-13 and 2013-14.

Capital Cost

7. The petitioner in the petition has submitted that the transmission line of 132 kV covered in the annexure of the Suo-Moto petition was constructed in early 1970 by erstwhile Power Department in Tripura. All assets of Department of Power (DOP) and Government of Tripura (GOT) was maintained in consolidated form. Therefore no separate details of asset are available with TSECL at present. The assets covered in the instant petition are very old and surpasses the accounting useful life, the capital cost is considered as fully depreciated for this purpose. Considering the above only the operation and maintenance (O&M) and interest on working capital (IWC) has been considered for evaluation of annual fixed cost of these Non ISTS lines.

8. The petitioner vide affidavit dated 18.4.2012, has submitted the annual fixed charge (AFC)/yearly transmission cost (YTC) for asset covered in the impugned order. The AFC/YTC as shown below is only for line considered in the instant petition for determination of tariff.

(₹ in lakh)	
Name of the Transmission line	Total AFC
132 kV Dharmanagar-Durlavcherra	43.56



9. The Commission vide letter dated 17.6.2014 directed the petitioner to submit the capital cost of the 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.

10. The matter was heard on 4.6.2015 and the petitioner was directed to submit the ARR and network configurations in the prescribed pro-forma and details of ARR approved by the NERPC for FY 2009-14 separately for the respective years containing total amount approved for the respective years. In response, the petitioner vide affidavit dated 3.11.2015, has submitted the ARR and the O&M norms for the FY 2012-13 to 2014-15 tariff periods. The details furnished by the petitioner are given hereunder:-

Line* Type	2010-11	2011-12	2012-13	2013-14	2014-15
+500kV HVDC	-	-	-	-	-
+800kV HVDC	-	-	-	-	-
765kV D/C	-	-	-	-	-
765kV S/C	-	-	-	-	-
400kV D/C	-	-	-	-	-
400 Kv DC Quad Moose	-	-	-	-	-
400 kV S/C	-	-	-	-	-
220 kV D/C	-	-	-	-	-
220 kV S/C	-	-	-	-	-
132 kV D/C	40	40	40	79	79
132 kV S/C	344.35	380.35	380.35	380.35	380.35
66 kV S/C	380.20	384.10	384.10	384.10	408.00
ARR approved **	Not given	Not given	35493.00	31716.00	40288.00

*Line length in ckt.Km.

** ARR in lakh

11. TSECL is unbundled and hence generation, transmission and distribution within the State of Tripura is under a single entity. In view of the above, TSECL has



submitted sartorial ARR for transmission assets of TSECL as submitted to TERC for ARR FY 2012-13(True up), FY 2013-14(Revised) and 2014-15. The same is considered for calculation of Tariff in this order. For the year 2011-12, the petitioner has not submitted details of transmission ARR. So the tariff for the year 2011-12 is not granted in this order.

Procedure for calculating YTC for the transmission lines

12. The petitioner has 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). For example – the indicative cost of 400 kV D/C Quad Moose is ₹202 lakh/km (cost/ckt km=₹101 lakh) and of 765 kV S/C is ₹159.25 lakh/km. Accordingly, the ratio of indicative cost of ckt. km of 400 kV D/C Quad Moose and indicative cost of ckt. km of 765 kV S/C is 0.63 (i.e. $101/159.25$) and so on for other configurations.
- b) Further, the petitioner also owns lines of 66 kV level but the indicative cost data provided by the CTU is for voltage level up to 132 kV level. Therefore, we have added line length of 66 kV level to 132 kV level and



considered the indicative cost of 132 kV level as indicative cost for all the transmission lines having voltage level 132 kV and below.

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

For FY 2014-15

Type	Cost (₹ in lakh)	Cost (₹ in lakh/circuit)	Co-efficient	
765 kV D/C	450	225 (A)	a=D/A	0.53
765 kV S/C	180	180 (B)	b= D/B	0.67
400 kV D/C Twin Moose	135	67.5 (C)	c= D/C	1.78
400 kV D/C Quad Moose	240	120 (D)	d= D/D	1.00
400 kV S/C Twin Moose	88	88 (E)	e= D/E	1.36
220 kV D/C	56	28 (F)	f= D/F	4.29
220 kV S/C	35	35 (G)	g= D/G	3.43
132 kV D/C	44	22 (H)	h= D/H	5.45
132 kV S/C	28	28 (I)	i= D/I	4.29

For FY 2013-14

Type	Cost (₹ in lakh)	Cost (₹ in lakh/circuit)	Co-efficient	
765 kV D/C	412.00	206 (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	65.2 (C)	c= D/C	1.78
400 kV D/C Quad Moose	232.60	116.3 (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	30.7 (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	24.2 (H)	h= D/H	4.81
132 kV S/C	30.00	30.00 (I)	i= D/I	3.88



For FY 2012-13

Type	Cost (₹ in lakh)	Cost (₹ in lakh/circuit)	Co-efficient	Ratio w.r.t.(d)
765 KV D/C	357.00	178.5 (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	61.3 (C)	c= D/C	1.83
400 KV D/C Quad. Moose	224.80	112.4 (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	33.9 (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	26.5 (H)	h= D/H	4.24
132 KV S/C	32.40	32.40 (I)	i= D/I	3.47

For FY 2011-12

Type	Cost (₹ in lakh)	Cost (₹ in lakh/circuit)	Co-efficient	Ratio w.r.t.(d)
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 (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

14. 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:-



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

*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 14 of this order.

DC-Double Circuit, SC-Single Circuit, QM-Quad Moose, TM-Twin Moose

15. 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 12, 13 and 14 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.

16. As per the information submitted by the petitioner i.e. line length in ckt. km and ARR submitted by the petitioner for the years 2012-13, 2013-14 and 2014-15 PoC cost data for the respective years, YTC for the assets for the years 2012-13, 2013-14 and 2014-15 have been calculated are given overleaf:-



For FY 2012 -13:

Total ARR approved by the TERC= ₹35, 49, 30,000

(in ₹)

S. No	Asset	For entire system (Tripura)		
		Line Length (Ckt. km)	YTC (Per ckt. km)	YTC
1	132 kV D/C	40.000	364,162.13	14,566,485.13
2	132 kV S/C	764.450	445,239.73	340,363,514.87
Total				35,49,30000.00

For FY 2013-14:

Total ARR approved by the TERC= ₹31,71,60,000

(in ₹)

S. No	Asset	For entire system (Tripura)		
		Line Length (Ckt. km)	YTC (Per ckt. km)	YTC
1	132 kV D/C	79.000	308,922.49	24,404,876.90
2	132 kV S/C	764.450	382,961.77	292,755,123.10
Total				31,71,60,000 .00

For FY 2014-15:

Total ARR approved by the TERC= ₹40, 28, 80, 000

(in ₹)

S. No	Asset	For entire system (Tripura)		
		Line Length (Ckt. km)	YTC (Per ckt. km)	YTC
1	132 kV D/C	79.00	382,988.95	30,256,126.80
2	132 kV S/C	764.45	487,440.48	372,623,873.20
				40,28,80,000.00



YTC of the transmission line

17. YTC per ckt. km for 132 kV D/C line considered for TSECL line is as follows:-

Voltage Level	(in ₹)		
	2012-13	2013-14	2014-15
132 kV S/C	445,239.73	382,961.77	487,440.48

18. YTC of the transmission line calculated on the methodology discussed above is given as follows:-

Name of transmission line	Line length in Ckt km	(in ₹)		
		2012-13	2013-14	2014-15
132 kV S/C Dharmanagar- Durlavcherra	13	5788116.546	4978502.976	6336726.211

19. 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.

20. 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.

21. This order disposes of Petition No. 201/TT/2013.

-sd-
(A.S. Bakshi)
Member

-sd
(A.K. Singhal)
Member

-sd-
(Gireesh B. Pradhan)
Chairperson

