

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 148/TT/2018**

**Coram:**

**Shri P.K.Pujari, Chairperson  
Dr. M. K. Iyer, Member**

**Date of Hearing : 23 .10. 2018**

**Date of Order : 16 .11. 2018**

**In the matter of:**

Petition for determination of Transmission Tariff in respect of the Inter-State Transmission lines owned by TANTRANSCO up to the border of Tamil Nadu (1) Chitoor-Thiruvallam 230 KV SC line (2) Sulurpet-Gummidipoondi 230 KV SC line (3) Yeerandahalli-Hosur 230 KV SC line (4) Mooziyar-Theni 230 KV SC line (5) Iduki-Udumalpet 230 KV SC line.

**And in the matter of:**

Tamil Nadu Transmission Corporation Ltd. (TANTRANSCO)

.....**Petitioner**

**Vs**

1. Transmission Corporation of Andhra Pradesh Limited,  
Vidyut Soudha, Hyderabad-500 082

2. Karnataka Power Transmission Corporation Limited (KPTCL)  
Cauveri Bhavan, Bangalore-560 009

3. Kerala State Electricity Board (KSEB),  
Vidyuthi Bhavanam, Pattom, Thiruvananthapuram-695 00

4. Electricity Department,  
Government of Puducherry, Puducherry-605 001

.....**Respondent**

**Parties present**      Shri S. Vallinayagam, Advocate, TANTRANSCO



## ORDER

1. The Petitioner, Tamil Nadu Transmission Corporation Ltd., is a subsidiary of TNEB Ltd., within the meaning of Companies Act, 1956. The petitioner has been declared as the State Transmission Utility (STU) by the Government of Tamil Nadu and being a STU, the petitioner is deemed to be a transmission licensee under Section 14 of the Electricity Act, 2003 (hereinafter referred to as "the Act"). The instant petition has been filed by TANTRANSCO for approval of the annual transmission charges of the transmission assets covered in the petition under the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter "the 2014 Tariff Regulations") in compliance to the Commission's order dated 12.5.2017 in Petition No.07/SM/2017.

2. Earlier, the Commission vide order dated 14.3.2012 in Petition No. 15/SM/2012 had directed:

"3. Inter-State Transmission system has been defined under Section 2(36) of the Act as under:-

"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 terms of Section 79(1)(d) of the Act, the tariff of these lines are also required to be determined by the Central Commission.

"Xxxx



Xxxx

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.

Xxxx

Xxxx”

In compliance to the said order, TANTRANSCO had filed tariff petition No. 212/TT/2013 for determination of tariff in respect of six transmission lines.

<b>Sl. No</b>	<b>Name of the Transmission line</b>
1	Chittor-Thiruvalam 230 KV SC Line
2	Sulurpet-Gummidipoondi 230 KV SC line
3.	Yeerandahalli-Hosur 230 KV SC line
4.	Mooziyar-Theni 230 KV SC line
5.	Edamon- Tirunelveli 400 kV line
6.	Iduki-Udumalpet 230 KV SC line.

Of these lines, as the Edamon- Tirunelveli line is owned and operated by PGCIL, the Commission considered the other five lines, except Edamon- Tirunelveli line, owned by TANTRANSCO and connecting with other states, for tariff determination.

3. The Commission, vide order dated 28.9.2015 in petition No. 212/TT/2013 awarded Yearly Transmission Charges for the above said five lines of TANTRANSCO as under:



(Rs in lakh)

Sl. No	Name of the Transmission line	2011-12	2012-13	2013-14
1	Chittor-Thiruvalam 230 KV SC Line	5907891.61	7446047.64	7767489.66
2	Sulurpet-Gummidipoondi 230 KV SC line	16099957.53	20291680.78	21167662.14
3.	Yeerandahalli-Hosur 230 KV SC line	2668080.08	3362731.19	3507898.56
4.	Mooziyar-Theni 230 KV SC line	47263132.89	59568381.08	62139917.26
5.	Iduki-Udumalpet 230 KV SC line.	20582332.07	25941069.18	270960931.71
	<b>TOTAL</b>	92521394.18	116609909.87	121643899.32

4. The instant petition covers approval for transmission tariff for 2014-19 period in respect of the following inter-state transmission lines owned by TANTRANSCO up to the border of Tamil Nadu.

Sl. No	Name of the Transmission line	Connecting State	Length in Km
1	Chittor-Thiruvalam 230 KV SC Line	AP- Tamil Nadu	7.55
2	Sulurpet-Gummidipoondi 230 KV SC line	AP- Tamil Nadu	21.12
3.	Yeerandahalli-Hosur 230 KV SC line	Karnataka-Tamil Nadu	3.50
4.	Mooziyar-Theni 230 KV SC line	Kerala-Tamil Nadu	62.00
5.	Iduki-Udumalpet 230 KV SC line.	Kerala-Tamil Nadu	27.00

5. The petitioner has submitted that the Inter-state line as indicated above have been commissioned about 25 years ago. TANTRANSCO, a subsidiary of TNEB Ltd. has been formed with effect from 1.11.2010. Prior to the formation of TANTRANSCO these interstate lines were owned by erstwhile TNEB, hence the original cost of inter-state



lines would not be possible to ascertain now since the cost of these lines are included in the total book value of the erstwhile TNEB and the split up details for the individual lines could not be segregated or arrived at. These facts were submitted by the petitioner in the tariff petition 212/TT/2013 and were considered by the Commission.

6. We have considered the submissions made by TANTRANSCO. TANTRANSCO has claimed transmission tariff for five number of inter-State transmission lines for the tariff block 2014-19. Commission vide order dated 14.3.2012 in Petition No. 15/SM/2012 had directed 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 to file petitions under the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 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. Some of the owners/developers of these lines had filed tariff petitions and accordingly, tariff was allowed for the period from 2011-12 to 2013-14 period. Further, the owners/developers of these lines were directed to file petitions for determination of tariff for the 2014-19 tariff period.

7. The Commission vide order dated 12.5.2017 in petition no. 07/SM/2017 had directed the respondents to file the line wise capital cost etc. In the present petition, the Petitioner has submitted the capital costs of transmission lines worked out on the basis



of certain assumptions. Petitioner has not been able to furnish audited capital cost for the transmission lines under consideration in the instant petition.

8. Further, the petitioner has submitted that, the transmission lines are more than 25 years old and R & M works were carried out on these assets/lines, and hence the lines will serve for a further period of 13 years ie. up to the year 2025. Petitioner has submitted that the details regarding R & M works cannot be ascertained now because prior to formation of TANTRANSCO these inter-state lines were owned by the erstwhile TNEB and R & M activities in respect of all transmission lines were taken up as a whole.

9. Commission has, in general, observed that petitioner States have been submitting the necessary information, required for determining the annual transmission charges of their inter-state transmission lines, in contrasting manner thereby causing divergence in working out the tariff. In some cases it was observed that the data related to funding and depreciation was not available and in other cases the assets have already completed, or nearing, their useful life. In most of the petitions, the states have expressed their inability in furnishing the audited capital cost of transmission lines where the lines are older. In such a scenario, tariff workings for older assets are believed to be ending in skewed results. It has been observed that the YTC figures emerging out by the existing methodology are on the higher side. Considering these facts, Commission has conceptualized a modified methodology for determining the tariff of States' inter-state transmission lines.



10. The methodology is broadly based on the following:
- (a) PGCIL's Annual Report data has been used as the reference data; based on which, year wise benchmark cost has been derived.
  - (b) Useful life of TL shall be considered as 25 years. Thus, if life is more than or equal to 25 years as on 01.04.2014, only O & M and Interest on Working Capital (IWC) shall be allowed as per the existing Tariff Regulations, in lieu of complete tariff.
  - (c) It is expected that the States do have the audited financial data of recently commissioned (i.e. on or after 01.04.2014) lines.

**Tariff Methodology:**

11. As per the petitions filed by the states, their ISTS lines generally have the configuration of 132 kV, 220 kV or 400 kV. In the absence of an established tariff data base, in order to develop this methodology Annual Reports of PGCIL from 1989-90 to 2013-14 have been referred to. The Annual Reports depict, inter alia, the information pertaining to year wise total transmission lines' length in ckt-km and corresponding Gross Block. This pan-India data represents all the five transmission regions and is a composite mix of parameters like terrains, wind-zones, tower and conductor type etc. +/- 500 kV HVDC and 765 kV & above voltage level AC lines too have come up in between and the data also includes those lines. Voltage level-wise data as on 30<sup>th</sup> April 2017, obtained from PGCIL indicates that the percentage of 220 kV, 132 kV and 66 kV TL taken together makes it around 8.3 % of the total line length owned by PGCIL. Further, 132 kV TLs were established in NER prior to 1990, and Transmission Lines of 220 kV voltage levels were last commissioned around the year 2004 in NR. Majority of the



transmission lines consist of 400 kV which corresponds to 66% of the total transmission line lengths. Thus, the 400 kV and lesser voltage levels account for approximately 75% of the transmission lines. Assuming the same above referred spread of voltage wise percentages for earlier years too, it can be said that the year wise average TL cost figures derived from PGCIL data, when further reduced by 25%, fairly represent the average transmission line capital cost corresponding to a 400 kV S/C line. Considering 400 kV S/C transmission line cost as reference cost, Analysis of PGCIL's indicative cost data (P/L Feb 2017) suggests the following:

Reference cost of 400 kV S/C TL		Rs X lakh/km
1	400 kV D/C TL	1.39 X
2	220 kV D/C TL	0.57 X
3	220 kV S/C TL	0.36 X
4	132 kV D/C TL	0.43 X
5	132 kV S/C TL	0.31 X

Therefore, for arriving at the costs of transmission lines of other voltage levels and circuit configurations, the average TL cost data shall be multiplied by the factors illustrated in the above table. Lower voltage levels can be treated as part of 132 kV. The above table contemplates *Twin Moose* conductor which is widely used in States' transmission lines.

12. Based on respective year end data, average transmission line length during the year has been worked out. Difference between a particular year's average TL length figures and that for the immediate preceding year provides us the transmission line length





added during that year. Average gross block corresponding to transmission lines has been divided by the average TL length to arrive at the Average Cost of TL (in Rs lakh per ckt-km) during the year. Thus, considering the year of COD of a state's ISTS line and its ckt-km, its cost would be worked out by relating it to PGCIL's TL cost during that year. Although the Commission has relied on PGCIL's Annual Reports, there are certain deviations in the cost data worked out. The year 1989-90 was the year of incorporation for PGCIL, and the transmission assets of NTPC, NHPC, NEEPCO etc were taken over by PGCIL by mid 1991-92. Thus, as the base data for these years was not available, the corresponding average cost of TL could not be worked out. The average cost from 1992-93 onwards up to 2013-14 shows an increasing trend at a CAGR of 5.17%. Therefore, for the years 1989-90, 1990-91 and 1991-92, the average cost of TL has been back derived considering the 1992-93 average cost. Similarly, abnormal dip/spikes in the TL cost for the years 1996-97, 2001-02 and 2004-05 has been corrected by considering the average values of the TL costs in the immediate preceding and succeeding years.

13. While calculating tariff, the following shall be considered:

- (i) Useful life of the transmission line shall be deemed to be 25 years.
- (ii) Prevailing depreciation rates as per the CERC (Terms & Conditions of Tariff) Regulations, 2014 shall be considered uniformly for all the previous tariff periods so as to do away with the Advance Against Depreciation which was in vogue during earlier tariff periods. Notwithstanding the depreciation considered as recovered earlier, for the purpose of these tariff calculations, remaining depreciable value shall be spread over the



remaining useful life of the transmission line, where the elapsed life is more than or equal to 12 years.

- (iii) Normative Debt-Equity ratio shall be 70:30.
- (iv) Normative loan repayment during a year shall be deemed to be equal to the depreciation allowed for that year.
- (v) Rate of Interest on normative loan shall be the weighted average rate of interest as derived on the basis of PGCIL's Balance Sheet.
- (vi) In order to avoid complexity, grossing up of rate of Return on Equity with tax rate is being dispensed with.
- (vii) Bank rate [as defined in CERC (Terms & Conditions of Tariff) Regulations, 2014] as on 1.4.2014 shall be applied for calculating the rate of interest on working capital on normative basis.
- (viii) O & M expenses as per the CERC (Terms & Conditions of Tariff) Regulations, 2014 shall be considered.
- (ix) Where the life of TL is more than or equal to 25 years as on 01.04.2014, only O & M expenses and IWC shall be allowed in lieu of complete tariff.

14. Thus, in effect, this is a normative tariff working methodology which shall be applied in those cases where the audited capital cost information is not available.

15. We observe that the petitioner company has not been able to provide the audited capital cost certificates. Also, although the petitioner company has reportedly carried out R & M works, thereby increasing the life of the Assets, they have neither furnished any document in support of the R & M works nor the audited capital cost for the same. Under such circumstances, we are not inclined to consider the petitioner's contention of life enhancement. Petitioner is allowed the liberty to approach the Commission with documents in support of life extension and capital cost at the time of true-up. Therefore,



at this juncture, in line with the methodology explained in foregoing paragraphs, we proceed to determine the tariff for the below stated transmission lines:

<b>Asset</b>	<b>Name of the Transmission line</b>	<b>COD</b>	<b>Line length in Ckt-km</b>
I	Chittor- Thiruvalam 230 KV SC Line	9.4.1970	7.55
II	Sulurpet- Gummidipoondi 230 KV SC line	1.5.1982	21.12
III	Yeerandahalli- Hosur 230 KV SC line	19.9.1965	3.50
IV	Mooziyar- Theni 230 KV SC line	24.2.1968	62.00
V	Iduki- Udumalpet 230 KV SC line.	1988	27.00

16. We have considered the line length and COD of transmission lines as was considered in Commission's order dated 28.9.2015 in petition No. 212/TT/2013. While applying the aforesaid methodology, transmission lines at 230 kV voltage level have been considered equal to 220 kV voltage level. It is clear from the above table that all the Assets have already completed twenty five years. Therefore, as per Commission's methodology, only IWC and O & M shall be allowable for these assets.

17. The annual transmission charges being allowed are:

(Rs. In Lakh)

<b>Asset-I</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Interest on Working Capital	0.17	0.17	0.18	0.19	0.19
O & M Expenses	3.05	3.16	3.26	3.37	3.48
<b>Total</b>	<b>3.22</b>	<b>3.33</b>	<b>3.44</b>	<b>3.55</b>	<b>3.67</b>

(Rs. In Lakh)

<b>Asset-II</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Interest on Working Capital	0.47	0.49	0.50	0.52	0.54
O & M Expenses	8.53	8.83	9.12	9.42	9.74
<b>Total</b>	<b>9.00</b>	<b>9.32</b>	<b>9.63</b>	<b>9.94</b>	<b>10.27</b>

(Rs. In Lakh)

<b>Asset-III</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Interest on Working Capital	0.08	0.08	0.08	0.09	0.09
O & M Expenses	1.41	1.46	1.51	1.56	1.61
<b>Total</b>	<b>1.49</b>	<b>1.54</b>	<b>1.60</b>	<b>1.65</b>	<b>1.70</b>

(Rs. In Lakh)

<b>Asset-IV</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Interest on Working Capital	1.38	1.43	1.48	1.53	1.58
O & M Expenses	25.05	25.92	26.78	27.65	28.58
<b>Total</b>	<b>26.43</b>	<b>27.35</b>	<b>28.26</b>	<b>29.18</b>	<b>30.16</b>

(Rs. In Lakh)

<b>Asset-V</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Interest on Working Capital	0.60	0.62	0.64	0.67	0.69
O & M Expenses	10.91	11.29	11.66	12.04	12.45
<b>Total</b>	<b>11.51</b>	<b>11.91</b>	<b>12.31</b>	<b>12.71</b>	<b>13.13</b>

### **Filing Fee and Publication Expenses**

18. The petitioner shall be entitled for reimbursement of the filing fees and publication expenses, if any, in connection with the present petition, directly from the beneficiaries



on pro-rata basis in accordance with clause (1) of Regulation 52 of the 2014 Tariff Regulations.

**Sharing of Transmission Charges**

19. The transmission charges shall be recovered on monthly basis in accordance with Regulation 43 of Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2014 and shall be shared by the beneficiaries and long term transmission customers in Central Electricity Regulatory Commission (Sharing of Inter State Transmission Charges and Losses) Regulations, 2010 as amended from time to time. Further, the transmission charges allowed in this order shall be adjusted against the ARR approved by the TNERC.

20. Accordingly, Petition No. 148/TT/2018 is disposed of.

Sd/  
**(Dr. M. K. Iyer)**  
**Member**

Sd/  
**(P.K.Pujari)**  
**Chairperson**

