# CENTRAL ELECTRICITY REGULATORY COMMISSION **NEW DELHI**

# Petition No.10/TT/2019

Coram:

Shri P.K. Pujari, Chairperson

Dr. M. K. Iyer, Member

Shri I. S. Jha, Member

Date of Order: 5<sup>th</sup> of February, 2020

#### In the matter of:

Determination of transmission tariff of the Inter-State transmission lines connecting two states for the APTRANSCO owned transmission lines/system as per the Central Electricity Regulatory Commission's order dated 5.9.2018 in Petition No. 07/Suo-Motu/2017 and order dated 21.6.2018 in Petition No. 237/TT/2016 for inclusion in POC Transmission charges in accordance with Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014

### And in the matter of:

Transmission Corporation of Andhra Pradesh Limited (APTRANSCO),

Vidyut Soudha, Gunadala,

Eluru Road, Vijaywada,

Andhra Pradesh-520004

... Petitioner

### **Versus**

1. Transmission Corporation of Telangana Limited (TCTL)

6-3-572, Vidyut Soudha,

Khairtabad, Hyderabad,

Telangana-500082

2. Karnataka Power Transmission Corporation Ltd. (KPTCL),

Kaveri Bhavan, Kempegowda Road,

Bangalore-560009.

3. Tamil Nadu Transmission Corporation Ltd.,

No. 144, Anna Salai,

Chennai-600002.

4. Chief Engineer Commercial APPCC,

451 A Block, 4 h Floor, Vidyut Soudha,

Khairathabad,

Hyderabad-500082.

5. Electricity Department,

Government of Pondicherry,

Pondicherry-605001

...Respondents

**Parties present:** 

For Petitioner: Shri Vallinayagam, Advocate, APTRANSCO

Ms. Swapna Seshadri, Advocate, TCTL

Shri Damodar Solanki, Advocate, TCTL

For Respondent: None

**ORDER** 

The present petition has been filed by Transmission Corporation of Andhra Pradesh Limited (APTRANSCO) seeking approval of transmission tariff for the APTRANSCO owned Inter State Transmission Lines/System of the 42 Nos. natural Inter-State Transmission lines connecting two States as per the Central Electricity Regulatory Commission order dated 14.3.2012 in petition No. 15/Suo-Motu/2012, for inclusion in PoC Transmission charges in accordance with Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014.

2. APTRANSCO is presently carrying out solely Transmission business as

the State Transmission Utility (STU) in the State of Andhra Pradesh.

# **Background**

- 3. The erstwhile State of Andhra Pradesh was bifurcated into Andhra Pradesh and Telangana on 2.6.2014 by The Andhra Pradesh Reorganisation Act, 2014 (hereinafter referred to "2014 Act"). The bifurcation resulted in number of inter-State transmission lines between Andhra Pradesh and Telangana State and some of these lines are partly/wholly owned by AP.
- 4. The Central Electricity Regulatory Commission vide order dated 14.3.2012 in Petition No. 15/SM/2012 had given 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
  - 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."
- 5. Further, the Commission vide order dated 12.5.2017 in Petition No.7/SM/2017 directed the State utilities to file tariff petitions for the ISTS lines connecting two States, along with the certificate from the concerned RPC, for the 2014-19 tariff period as per the 2014 Tariff Regulations. The relevant portion of the order dated 12.5.2017 is extracted hereunder:-
  - "7. Further, Statement of Reason (SOR) dated 26.10.2015 of Sharing Regulations (Third Amendment) provides as follows:15.21 A question arises for consideration is whether to fix a minimum percentage

figure to consider a STU line as an ISTS line or not. As per Electricity Act and Tariff Policy, all lines which are incidental to Inter-state flow of power are to be considered as ISTS. In a meshed transmission system, many intra-State transmission lines carry inter-State power and therefore become incidental to inter-State transmission system. However, as Electricity Grid is being operated in a cooperative manner, for a minor fraction of ISTS power, it is expected that STU would not insist on considering its line(s) to be inter-State as on the one hand it will receive payment for its own lines, on the other it has to pay for usage of other States" lines. If a STU puts up a proposal for considering its line as ISTS and it is found that it is being utilized to a large extent by its own drawee nodes, then it would be merely an academic exercise as major part of tariff would be allocated to home State only. So keeping in view the regulatory process involved in getting a line certified as carrying ISTS power, getting its tariff approved and then adjustment from STU"s ARR, it is expected that this claim will be raised judiciously. An interesting situation happened during 2011 when in Eastern and Northern Regions, many lines were submitted to RPCs for approval as ISTS, Southern States realizing that they all are using each other State's line, decided that they will not put up any line for certification by RPC as ISTS. While Commission wants to consider legitimate claims but this must not result in making process too complex. The RPC may therefore uniformly decide a percentage below which (say 10%) such a line would not be considered as an ISTS. Further, it is intended that for assessment of a particular line being used for carrying interstate power, technical knowhow and tools will be provided by Secretariat of RPCs and NLDC/ RLDCs shall provide all necessary support to States in this regard.

- 8. In view of the above, State utilities whose lines have been certified by respective RPCs to be considered under PoC should also file the tariff petition under the 2014 Tariff Regulations."
- 6. Accordingly, APTRANSCO had filed petition no. 237/TT/2016 before this Commission for determination of tariff for the FY 2016-17 only in respect of 42 Inter-State transmission lines connecting Telangana & Andhra Pradesh States for the APTRANSCO owned transmission lines/system. These 42 natural Inter-State Transmission lines are covered under the instant petition.
- 7. The Commission vide Order dated 21.6.2018 in petition no. 237/TT/2016 has already granted the tariff for the financial year (FY) 2016-17 in respect of all the 42 natural Inter-State Transmission lines except for two lines which was put under commercial operation with effect from 17.11.2016 and 18.11.2016. For these two lines the Petitioner was directed to file a fresh petition along with the required information specified in the Tariff Forms.

Relevant extracts of the said order dated 21.6.2018 are as under:-

"Assets VIII and IX were put into commercial operation on 17.11.2016 and 18.11.2016. APTRANSCO must be in possession of the audited capital cost of these two assets. Accordingly, in terms of the above said methodology, APTRANSCO is directed to file a fresh petition for approval of tariff for these two assets as per the provisions of the 2014 Tariff Regulations along with the required information specified in the Tariff Forms."

- 8. Accordingly, the Petitioner has now filed the instant petition for determination of tariff for the 40 number of lines for the rest of the control period viz. FY 2014-15, 2015-16, 2017-18 and 2018-19. In addition, in compliance of the direction of the Commission in Order dated 21.6.2018 in petition no. 237/TT/2016, the Petitioner has prayed for the determination of tariff for the 2 lines (Assets VIII & IX-400 kV Uravakonda-Veltoor DIC Quad moose line) for FY 2016-17, 2017-18 and 2018-19 and submitted the Tariff Forms.
- 9. The Petitioner has made the following prayer:
  - a. To determine the tariff of Inter-State transmission lines connecting two states for FY 2014-15 (Pro-rata) (For 40 Nos. Lines), FY 2015-16 (For 40 Nos. Lines), FY 2016-17 (For 2 Nos. Lines), FY 2017-18 (For 42 Nos. Lines) and FY 2018-19 (For 42 Nos. Lines).
  - b. To approve the annual fixed charges for the assets covered under this petition.
  - c. To include the assets in the PoC charges with FY 2016-17 tariff in the interim, till order on the determination of tariff for FY 2017-18 and FY 2018-19.
  - d. To Reimburse the filing fee and other expenses in accordance with the Regulation 52 of the Central Electricity Regulatory Commission (Terms and conditions of tariff) Regulations, 2014 of and;
  - To pass any other order or relief as the Commission may deem fit and proper in the facts and circumstances of the case.
- 10. In the instant Petition, the Petitioner has proposed to cover the following

# assets for tariff purpose:

S No	Asset	Connecting States	COD	Asset name
1	Asset-I:400kV VTPS- Malkaram line	AP-	2.4.2013	Asset-I and II
2	Asset-II:400kV VTPS- Suryapet line	Telangana	2.1.2010	7.0000 1 0.100 11
3	Asset-III:400kV Srisailam- Sattenapalli CKT I	AP-	12.2.2014	Asset-III and IV
4	Asset-IV:400kV Srisailam- Sattenapalli CKT II	Telangana		
5	Asset-V:400kV Srisailam- Kurnool (SC) feeder	AP- Telangana	6.3.2001	Asset-V
6	Asset-VI:400kV Kalpaka- Khammam-I feeder	AP-	10.5.2002	Asset-VI and VII
7	Asset-VII:400kV Kalpaka- Khammam-II feeder	Telangana	10.0.2002	Addet VI alia VII
8	Asset-VIII:400kV Uravakonda-Veltoor-I feeder	AP-	17.11.2016	Asset-VIII and IX
9	Asset-IX:400kV Uravakonda- Veltoor-II feeder	Telangana	18.11.2016	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
10	Asset-X:220kV Nunna- KTPSSCLine	AP- Telangana	21.1.1992	Asset-X
11	Asset-XI:220kV Tallapalli – Nagarjuna sagar-I & II feeder	AP-	5.8.1985	Asset-XI and XII
12	Asset-XII:220kV Tallapalli- Nagarjuna sagar-Ilfeeder	Telangana	0.0.1000	7,000t XI alia XII
13	Asset-XIII:220kV Tallapalli- Nagarjuna sagar-IIIfeeder	AP- Telangana	27.1.1985	Asset- XIII
14	Asset-XIV:220kV Tallapalli- Chalakurthy feeder	AP- Telangana	21.7.2007	Asset- XIV
15	Asset-XV:220kV Chillakallu- Narketpalli I feeder	AP-	10.3.2010	Asset-XV and XVI
16	Asset-XVI:220 kV Chillakullu- Narketpalli II feeder	Telangana	101012010	7.000.7.0
17	Asset-XVII:220 kV Brahmanakotkur-Wanaparthy Line(LIS)	AP- Telangana	29.10.2009	Asset- XVII
18	Asset-XVIII:220 kV Srisailam- Dindi-I feeder	AP-	12.9.1982	Asset- XVIII and XIX
19	Asset-XIX:220 kV Srisailam- Dindi-II feeder	Telangana	12.0.1002	AGOOL ATIII GIIG AIA
20	Asset-XX:220 kV Nagarjuna Sagar Receiving station- Srisailam SC line	AP- Telangana	7.2.1989	Asset-XX
21	Asset-XXI:220 kV LSR- KTPS-I feeder	AP- Telangana	31.3.1967	Asset-XXI
22	Asset-XXII:220 kV LSR- KTPS-II feeder	AP- Telangana	31.3.1979	Asset- XXII
23	Asset-XXIII:220 kV Chitoor- Tiruvalam	AP- TamilNadu	17.3.2013	Asset- XXIII
24	Asset-XXIV:220 kV Raghulapadu-Alipuraline	AP- Karnataka	17.10.2012	Asset- XXIV
25	Asset-XXV:220 kV	AP-	31.10.2012	Asset- XXV

S No	Asset	Connecting States	COD	Asset name
	Sulurupeta-Gummadipundi	TamilNadu		
26	Asset-XXVI:132kV Nagarjuna sagar-RACPH feeder	AP- Telangana	25.2.1983	Asset- XXVI
27	Asset-XXVII:132 kV Piduguralla-Wadapalli	AP- Telangana	22.2.2014	Asset- XXVII
28	Asset-XXVIII:132 kV Tangeda-Wadapalli line	AP- Telangana	26.8.2010	Asset- XXVIII
29	Asset-XXIX:132 kV Chillakullu-Kodada line	AP- Telangana	10.6.2004	Asset- XXIX
30	Asset-XXX:132 kV Chillakallu-Ramapuram line	AP- Telangana	21.10.1982	Asset- XXX
31	Asset-XXXI:132 kV Chillakallu-Sitapuram line	AP- Telangana	6.4.2004	Asset- XXXI
32	Asset-XXXII:132 kV Chillakallu-Khammam line	AP- Telangana	2.12.2001	Asset- XXXII
33	Asset-XXXIII:132 kV Chillakallu-Kusumanchi line	AP- Telangana	24.12.1985	Asset- XXXIII
34	Asset-XXXIV:132 kV Chillakallu-Madhira line	AP- Telangana	27.10.2001	Asset- XXXIV
35	Asset-XXXV:132 kV Sitapuram-KCPline	AP- Telangana	10.5.2010	Asset- XXXV
36	Asset-XXXVI:132 kV Chillakallu-Bonakallu-I feeder	AP-		
37	Asset-XXXVII:132 kV Chillakallu-Bonakallu-II feeder	Telangana	20.1.1987	Asset- XXXVI and XXXVII
38	Asset-XXXVIII:132 kV A.P.Carbiders-Alampur	AP- Telangana	20.1.1987	Asset- XXXVIII
39	Asset-XXXIX:132 kVA.P.Carbides-Gadwal	AP- Telangana	13.1.2000	Asset- XXXIX
40	Asset-XXXX:132 kV K. Kota- Aswaraopet-I feeder	AP-	9.6.1982	Asset- XXXX and XXXXI
41	Asset-XXXXI:132 kV K. Kota- Aswaraopet-II feeder	Telangana	3.0.1302	ASSEL- AAAA ahu AAAAI
42	Asset-XXXXII:132 kV Pratap Nagar-Yanam Feeder	AP- Telangana	21.11.2013	Asset- XXXXII

- 11. The Petitioner has submitted that for the Asset-I to Asset-VII and Asset-X to Asset-XXXXII, the individual audited capital cost for these 40 lines are not available with the Petitioner and the capital cost for these lines is considered in line with the Commission's methodology. In addition the Petitioner has further submitted that the methodology used to compute the tariff is in line with the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014.
- 12. The Commission vide RoP for the hearing dated 8.8.2019 directed the

petitioner to submit the following information, on affidavit by 2.9.2019 with an advance copy to the respondents:-

- a. Audited capital cost of the Asset-VIII and Asset-IX.
- b. The year wise discharge statement of IDC and IEDC.
- c. Repayment of loan statement.
- d. Form 9C (for weighted average rate of interest on loan).
- e. Actual debt equity for the funding of the Asset-VIII and Asset-IX.
- 13. The petition was last heard on 18.11.2019 and the Commission reserved the order in the petition. In view of the fact that the Petitioner has submitted the statement of capital expenditure as on 30.8.2018 in case of Assets-VIII and Asset IX certified by the Advisor and Controller of Accounts, the Petitioner was directed to submit the statement of capital expenditure as on COD of the said assets (17/18 November, 2016) duly certified by the Auditor by 20.12.2019.

### **Analysis and Decision**

- 14. In response to RoP for the hearing dated 18.11.2019, the Petitioner vide affidavit 9.12.2019, submitted the following:
  - a. The 400 kV Uravakonda-Veltoor DC line is an interstate line between APTRANSCO and TSTRANSCO. The line from Veltoor to T.B. river comes under TSTRANSCO and line from T.B.river to Uravakonda comes under APTRANSCO.
  - b. The line coming under APTRANSCO i.e T.B. river to Uravakonda is executed in two reaches namely T.B. river to Yemmiganur and Yemmiganur to Uravakonda. The capitalization and Transfer to fixed assets are also done accordingly i.e as two fixed assets namely T.B. river to Yemmiganur and Yemmiganur to Uravakonda.

- c. The two circuits are commissioned on 17.11.2016 and 18.11.2016 respectively. Even though an expenditure of Rs. 39500.58 Lakhs was incurred before COD, Capitalization or Transfer to fixed assets was done in two spells i.e. Rs. 23756.41 Lakhs in 2016-2017 and Rs.15744.18 lakhs in 2017-2018 (on 01.04.2017) due to lag in receipt of claims from vendors, accounting material accounts etc. Further, an expenditure of Rs.168.02 Lakhs.
- a. The Petitioner has submitted the Audit certified year wise CWIP, capitalization for the above assets.
- 15. After going through the statement submitted by the Petitioner as Audit certified year wise CWIP, capitalization for Asset-VIII and Asset-IX covered under the instant petition, it is noted that the actual expenditure incurred as on COD has not been not certified / indicated by the Auditor in respect of these 2 assets. In addition, following deficiencies have also been observed in the said statement:
  - a. Element wise cost is not indicated.
  - Regulation concerned under which the Additional capital expenditure claimed is not clarified.
- 16. Accordingly, the Petitioner is directed to file afresh petition for approval of tariff for Asset-VIII and Asset-IX as per the provisions of the 2014 Tariff Regulations along with the following information:
  - i. Purpose of construction of these transmission line with all supporting documents:
  - ii. Auditor's Certificate clearly indicating Hard Cost, IDC and IDEC as well as element wise (i.e. land, building, transmission line, sub-station, communication system) capital cost as on COD.

- iii. The claim of Additional capital expenditure under the Regulation concerned.
- iv. Complete set of all the applicable Tariff Forms in line with Auditor's Certificates.
- v. Statement of IDC computation containing name of loan, rate of interest drawl date and date of payment of last interest.
- vi. Documents in respect of rate of interest claimed and effective tax rate.
- 17. The respondent, TCTL vide affidavit 21.8.2019 has submitted the following:
  - (a) APTRANSCO has claimed the COD of the 400 kV Sattenapally-Srisailam I &II lines as 12.2.2014. The Sattenapally-Srisailam I & II feeders are formed by making LILO of both the circuits 400 KV Srisailam -Nunna-I & II lines which were originally commissioned on 23.10.2000. The correct manner to compute the YTC charges is as under:
    - i) For a line length of 158 KMs COD 23.10.2000
    - ii) For length of 7 KMs (i.e., LILO portion) COD 12.02.2014
  - (b) The transmission lines namely 220 KV Chillakallu Pulichintala and 220 KV Chillakallu Suryapeta lines. APTRANSCO has claimed the line lengths of both lines to be 12 KMs and the COD as 10.3.2010. It is stated that the 220 KV Chillakallu Pulichintala and 220 KV Chillakallu Suryapeta feeders are formed by making LILO to 220 KV Chillakallu Narketpally I &II lines which were originally commissioned on 29.03.1999. Out of the total length of the line, only 12 KMs falls within the State of AP. The YTC Charges of both the above lines can only be claimed from 29.03.1999, i.e. the COD of both the lines.
- 18. In response, the Petitioner vide affidavit dated 6.9.2019 has submitted the

following:

- (a) The 400 kV Srisailam-VTPS TMDC line was made LILO at 400 kV Sattenapalli Substation on 12.2.2014 to meet the loads of Guntur district. The Petitioner while calculating YTC for 400 kV Sattenapalli-Srisailam TMDC line (AP Portion), the latest date of commissioning of the emanating line from APTRASNCO SS is taken as reference for the entire line instead of individual sections.
- (b) VTPS Narketpalli feeder made LILO at Chillakallu SS on 3.10.2010. On the same day, the 220 KV Chillakallu Malkaram feeder made LILO at Narketpalli SS. Due to the above arrangement, the 220 kV VTPS Narketpalli became 220 kV VTPS Chillakallu feeder-2 and 220 kV Chillakallu Narketpalli feeder-1 and 220 kV Chillakallu-Malkaram feeder became 220 kV Chillakallu-Narketpalli feeder-2. The petitioner while calculating YTC for 220 kV Chillakallu Narketpalli feeders 1 & 2 (AP Portion), the latest date of commissioning of the emanating line from APTRANSCO SS is taken as reference for the entire line instead of individual sections.
- 19. We have considered the submissions of the petitioner and respondents. With respect to the Asset-III&IV, i.e. 400 kV Srisialam-Sattenpalli, the petitioner has claimed the COD of the Asset as 12.2.2014. It is observed that the 400 kV Srisailam Sattenapalli line are formed by making LILO of both the circuits of 400 kV Srisailam-Nunna-I&II lines and the 400 kV Srisailam-Nunna-I&II were commissioned on 23.10.2000. Accordingly the COD of the Asset-III and Asset-IV is considered as under:

Asset Name	Asset Details	COD considered
	400 kV Srisailam-Satttenapalli Tr. line (158 KM)	23.10.2010
Asset-III&IV	LILO of 400 kV VTPS- Srisailam portion at 400 kV Sattenpalli Sub-station( 7 KMs)	12.2.2014

20. With respect to the Asset-XV & XVI i.e. 220 kV Chillakallu-Pulichintala and 220 kV Chillakallu-Suryapeta, the petitioner has claimed the line length of both the lines as 12 KM's and the COD as 10.3.2010. It is observed that 220 KV Chillakallu - Pulichintala and 220 KV Chillakallu - Suryapeta feeders are formed by making LILO to 220 KV Chillakallu - Narketpally -I & II lines which were originally commissioned on 29.03.1999. Accordingly the COD of the Asset-XV and XVI and line length of Asset-XV and XVI is considered as follows:

Asset Name	Asset Details	COD
		considered
Asset- XV and	220 kV Chillakallu-NarketPalli Tr. line Ckt-1&II (10.34 KM)	29.3.1999
XVI	LILO of 220 kV Chillakallu-Narketpalli transmission line (1.66	3.10.2010
AVI	KM)	

21. The SRPC vide letter dated 31.10.2016 and 23.11.2016 has certified that total forty two (42) transmission lines are inter-State lines connecting the two States. However, certificate of SRPC cannot be considered as applicable from the retrospective period from 2014 i.e. various dates of 2014 from which the tariff is claimed in respect of assets covered in the instant petition. Accordingly, after excluding Asset-VIII and Asset-IX for the reasons as discussed in Para 15 and 16 above, following 40 assets have been considered for determination of transmission charges:

SI. No	Asset Name	Name of Line	Type of Conductor	Line length considered (in KM)	Date of Commercial Operation
1	Asset-I &	400KV VTPS – Malkaram line	D/C ACSR TWIN MOOSE	71.63	02.04.2013
2	Asset-II	400KV VTPS- Suryapet line	TWIN MOOSE		
3	Asset-III	400 KV Srisailam-Sattenapalli CKT I &II	D/C ACSR	158	23.10.2010
4	& Asset-IV	LILO of 400 kV VTPS- Srisailam portion at 400 kV Sattenpalli Substation	TWIN MOOSE	7	12.02.2014
5	Asset-V	400 KV Srisailam - Kurnool (SC) feeder	S/C ACSR TWIN MOOSE	100.5	06.03.2001
6	Asset-VI	400 kV Kalpaka-Khammam- I feeder	D/ C ACSR		
7	& Asset-VII	400 kV Kalpaka-Khammam- II feeder	TWIN MOOSE	239	10.05.2002
8	Asset-X	220KV Nunna - KTPS SC Line	S/C ACSR ZEBRA	61.15	21.01.1992

SI. No	Asset Name	Name of Line	Type of Conductor	Line length considered (in KM)	Date of Commercial Operation
9	Asset-XI &	220KV Tallapalli - Nagarjunasagar - I & II feeder 220KV Tallapalli - Nagarjunasagar -II	D/C ACSR TWIN MOOSE	10	05.08.1985
10	Asset-XII Asset-XIII	feeder  220KV Tallapalli - Nagarjunasagar -III	S/C ACSR	11	27.01.1985
12	Asset-XIV	feeder  220KV Tallapalli - Chalakurthy feeder	ZEBRA S/C ACSR	11	21.07.2007
13	Asset-XV	220KV Chillakallu - Narketpalli I and II feeder	DEER D/C ACSR	10.34	29.3.1999
14	& Asset-XVI	LILO of 220 kV Chillakallu-Narketpalli I and II feeder	MOOSE	1.66	3.10.2010
15	Asset-XVII	220 kV Brahmanakotkur- Wanaparthy Line (LIS)	S/C ACSR MOOSE	18.85	29.10.2009
16 17	Asset-XVIII & Asset-XIX	220 kV Srisailam-Dindi-I feeder 220 kV Srisailam-Dindi-II feeder	D/C SCSR ZEBRA	1.2	12.09.1982
18	Asset-XX	220 kV N'Sagar Receiving station- Srisailam SC line	S/C ACSR DEER	86	07.02.1989
19	Asset-XXI	220 KV LSR-KTPS-I feeder	S/C ACSR DEER	60.17	31.03.1967
20	Asset-XXII	220 KV LSR-KTPS-II feeder	S/C ACSR DEER	88.2	31.03.1979
21	Asset-XXIII	220 kV Chitoor-Tiruvalam	S/C ACSR DEER	28.71	17.03.2013
22	Asset-XXIV	220 kV Raghlapadu-Alipura line	S/C ACSR ZEBRA - MOOSE	71.32	17.10.2012
23	Asset-XXV	220 kV Sulurupeta-Gummadipundi	S/C ACSR ZEBRA	30.74	31.10.2012
24	Asset-XXVI	132 kV Nagarjunasagar-RACPH feeder	S/C ACSR BEAR	6	25.02.1983
25	Asset-XXVII	132 KV Piduguralla-Wadapalli	S/C ACSR PANTHER	43.22	22.02.2014
26	Asset-XXVIII	132 kV Tangeda-Wadapalli line	S/C ACSR PANTHER	27.38	26.08.2010
27	Asset-XXIX	132 kV Chillakullu-Kodada line	S/C ACSR PANTHER	11.72	10.06.2004
28	Asset-XXX	132 kV Chillakallu-Ramapuram line	D/C ACSR PANTHER	7.5	21.10.1982
29	Asset-XXXI	132 kV Chillakallu-Sitapuram line	D/C ACSR PANTHER	7.5	06.04.2004
30	Asset-XXXII	132 kV Chillakallu-Khammam line	D/C ACSR PANTHER	5.5	02.12.2001
31	Asset-XXXIII	132 kV Chillakallu-Kusumanchi line	D/C ACSR PANTHER	5.5	24.12.1985
32	Asset-XXXIV	132 kV Chillakallu-Madhira line	S/C ACSR PANTHER	21	27.10.2001
33	Asset- XXXV	132 kV Sitapuram-KCP line	S/C ACSR PANTHER	2.03	10.05.2010
34	Asset- XXXVI	132 kV Chillakallu-Bonakallu- I feeder			
35	& Asset- XXXVII	132 kV Chillakallu-Bonakallu-II feeder	D/C ACSR PANTHER	18.5	20.01.1987

SI. No	Asset Name	Name of Line	Type of Conductor	Line length considered (in KM)	Date of Commercial Operation
36	Asset- XXXVIII	132 kV A.P.Carbiders-Alampur	D/C ACSR PANTHER	7.05	20.01.1987
37	Asset- XXXIX	132 kV A.P. Carbides-Gadwal	D/C ACSR PANTHER	7.05	13.01.2000
38	Asset-	132 kV K. Kota-Aswaraopet-I feeder			
39	XXXX & Asset- XXXXI	132 kV K. Kota-Aswaraopet-II feeder	D/C ACSR PANTHER	31.05	09.06.1982
40	Asset- XXXXII	132 kV Pratap Nagar-Yanam Feeder	S/C AAAC/ACSR PANTHER	30.3	21.11.2013

- 22. Similar issue was considered by the Commission in its order dated 22.6.2018 in Petition No. 155/TT/2017 wherein the transmission charges in respect of natural ISTS lines were determined on the basis of methodology already adopted by the Commission. The relevant portion of the said order is extracted as under:
  - "9 Some of the State Utilities have filed similar petitions claiming tariff of inter-State transmission lines connecting two States for the 2014-19 tariff periods as per the directions of the Commission. The information submitted by the State Utilities is incomplete and inconsistent. Further, some of the lines were more than 25 years old and the States were not having the details of the capital cost etc. To overcome these difficulties, the Commission evolved a methodology for allowing transmission charges for such transmission lines connecting two States in orders dated 19.12.2017 in Petition Nos. 88/TT/2017, 173/TT/2016 and 168/TT/2016 filed by Madhya Pradesh Power Transmission Corporation Limited, Maharashtra State Electricity Regulatory Commission and Uttar Power Transmission Corporation Limited respectively. Commission adopted the same methodology in order dated 4.5.2018 in Petition No.112/TT/2017, while granting tariff for ISTS connecting Rajasthan with other States and owned by Rajasthan Rajya Vidyut Prasaran Limited. The Commission derived the benchmark cost on the basis of the transmission lines owned by PGCIL. The useful life of the transmission line was considered as 25 years and for lines more than or equal to 25 years, only O & M Expenses and Interest on Working Capital (IWC) is decided to be allowed as per the existing Tariff Regulations. For assets put into commercial operation on or after 1.4.2014, tariff is decided to be allowed on the basis of the audited financial capital cost. The relevant portion of the order dated 4.5.2018 is extracted hereunder:-
    - "13. It is observed that the information submitted by the Petitioner States for computation of transmission charges for the deemed ISTS lines are not uniform, thereby causing divergence in working out the tariff. In some cases, the data related to funding and depreciation was not available and in some cases the assets have already completed, or nearing, their useful life. In most of the petitions, the states have expressed their inability to furnish the audited capital cost of transmission lines as the lines are old.

As a result, tariff workings for old assets are ending in skewed results. It is further observed that the YTC figures emerging out by the existing ARR methodology are on the higher side. Considering these facts, we have conceptualized a modified methodology for determining the tariff of the inter-State transmission lines. 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 Transmission Line has been considered as 25 years. Thus, if life is more than or equal to 25 years as on 1.4.2014, only O & M Expenses 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 1.4.2014) lines.

# **Tariff Methodology**

14. 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 length of transmission lines 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 and 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 Transmission Line taken together makes it around 8.3% of the total line length owned by PGCIL. Further, 132 kV Transmission Lines were established in NER prior to 1990, and Transmission Lines of 220 kV voltage levels were last commissioned in 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 above referred spread of voltage wise percentages for earlier years too, it can be said that the year wise average Transmission Line 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	₹ 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

- 15. Therefore, for arriving at the costs of transmission lines of other voltage levels and circuit configurations, the average transmission line 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 State transmission lines.
- 16. Based on respective year end data, average transmission line length during the year has been worked out. Difference between a particular year's average transmission line 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 transmission line length to arrive at the Average Cost of transmission line (in ₹ 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 transmission line 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 transmission line 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 transmission line has been back derived considering the 1992-93 average cost. Similarly, abnormal dip/spikes in the transmission line cost for the years 1996-97, 2001-02 and 2004-05 has been corrected by considering the average values of the transmission line costs in the immediate preceding and succeeding years.
- 17. While calculating tariff, the following has been considered:-
  - (i) Useful life of the transmission line shall be deemed to be 25 years.
  - (ii) Prevailing depreciation rates as per the 2014 Tariff Regulations 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 2014 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 2014 Tariff Regulations shall be considered.
- (ix) Where the life of transmission line is more than or equal to 25 years as on 1.4.2014, only O & M Expenses and IWC shall be allowed in lieu of complete tariff.
- 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.""
- 23. The same methodology is adopted for calculating the tariff for aforesaid 40 assets owned by APTRANSCO. Asset-XI & Asset-XII, Asset-XIII, Asset-XVIII & Asset-XIX, Asset-XX, Asset-XXI, Asset-XXII, Asset-XXVI, Asset-XXX, Asset-XXXIII, Asset-XXXVI & Asset-XXXVII, Asset-XXXVIII and Asset-XXXX & Asset-XXXXI have already completed twenty five years as on 1.4.2014. Therefore, as per the above methodology, only "Interest on Working Capital" and "O&M Expenses" components of tariff shall be allowable for these 16 assets. Remaining 24 assets (Asset-I to Asset-VII, Asset-X, Asset-XIV to Asset-XVII, Asset-XXVII to Asset-XXV, Asset-XXVII to Asset-XXIX, Asset-XXXI, Asset-XXXII, Asset-XXXIV, Asset-XXXV, Asset-XXXIX and Asset-XXXXII) have not completed have not completed 25 years as on 1.4.2014. Thus, in line with the aforesaid methodology, all tariff components are being allowed. However, on completion of 25 years of life in case of Asset-X, only 2 components namely "Interest on working Capital" and "O & M Expenses" are being allowed for the year 2017-18 and 2018-19

### <u>Transmission charges</u>

24. The Petitioner has claimed transmission tariff for the year 2014-15, 2015-16, 2017-18 and 2018-19. As discussed in para 21, the certificate of SRPC have been issued vide letters dated 31.10.2016 and 23.11.2016 in respect of these lines and therefore cannot be given effect from the retrospective period. Accordingly, transmission tariff for the year(s) 2014-15 and 2015-16 are not allowed and not being considered in the instant Petition. Transmission charges allowed for the instant assets for the year 2017-18 and 2018-19 are summarized in the following tables.

(₹ in lakh)

(\tankin)				
Asset- I & II				
Particulars	2017-18	2018-19		
Depreciation	497.69	497.69		
Interest on Loan	360.64	338.08		
Return on Equity	438.30	438.30		
Interest on Working Capital	32.93	32.52		
O & M Expenses	55.87	57.73		
Total	1385.43	1364.32		

Asset-III					
Particulars	2017-18	2018-19			
Depreciation	606.02	606.02			
Interest on Loan	306.44	273.33			
Return on Equity	533.71	533.71			
Interest on Working Capital	40.10	39.56			
O & M Expenses	123.24	127.35			
Total	1609.51	1579.98			

Asset-IV					
Particulars	2017-18	2018-19			
Depreciation	48.64	48.64			
Interest on Loan	35.24	33.04			
Return on Equity	42.83	42.83			
Interest on Working Capital	3.22	3.18			
O & M Expenses	5.46	5.64			
Total	135.40	133.33			

Asset-V					
Particulars	2017-18	2018-19			
Depreciation	114.12	114.12			
Interest on Loan	0.00	0.00			
Return on Equity	255.02	255.02			
Interest on Working Capital	10.97	11.06			
O & M Expenses	44.82	46.33			
Total	424.94	426.53			

Asset-VI & VII		
Particulars	2017-18	2018-19
Depreciation	239.26	239.26
Interest on Loan	0.00	0.00
Return on Equity	525.22	525.22
Interest on Working Capital	27.90	28.24

Asset-VI & VII		
Particulars	2017-18	2018-19
O & M Expenses	186.42	192.63
Total	978.80	985.35

Asset-X		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	1.51	1.56
O & M Expenses	27.27	28.19
Total	28.78	29.75

Asset-XI & XII		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	0.43	0.45
O & M Expenses	7.80	8.06
Total	8.23	8.51

Asset- XIII		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	0.27	0.28
O & M Expenses	4.91	5.07
Total	5.18	5.35

Asset- XIV		
Particulars	2017-18	2018-19
Depreciation	9.84	9.84
Interest on Loan	2.82	2.19
Return on Equity	8.66	8.66
Interest on Working Capital	0.76	0.76
O & M Expenses	4.91	5.07
Total	26.98	26.52

Asset- XV		
Particulars	2017-18	2018-19
Depreciation	2.16	2.16
Interest on Loan	0.00	0.00
Return on Equity	4.81	4.81
Interest on Working Capital	0.61	0.62
O & M Expenses	8.07	8.33
Total	15.64	15.92

Asset- XVI		
Particulars	2017-18	2018-19
Depreciation	2.61	2.61
Interest on Loan	1.32	1.18
Return on Equity	2.30	2.30
Interest on Working Capital	0.21	0.21
O & M Expenses	1.29	1.34
Total	7.74	7.64

Asset- XVII		
Particulars	2017-18	2018-19
Depreciation	17.36	17.36
Interest on Loan	7.51	6.51
Return on Equity	15.29	15.29
Interest on Working Capital	1.39	1.38
O & M Expenses	8.41	8.69
Total	49.95	49.22

Asset- XVIII & XIX		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	0.05	0.05
O & M Expenses	0.94	0.97
Total	0.99	1.02

Asset-XX		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	2.12	2.19
O & M Expenses	38.36	39.65
Total	40.47	41.84

Asset- XXI		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	1.48	1.53
O & M Expenses	26.84	27.74
Total	28.32	29.27

Asset- XXII		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00

Asset- XXII		
Particulars	2017-18	2018-19
Return on Equity	0.00	0.00
Interest on Working Capital	2.17	2.25
O & M Expenses	39.34	40.66
Total	41.51	42.91

Asset- XXIII		
Particulars	2017-18	2018-19
Depreciation	35.84	35.84
Interest on Loan	23.35	21.62
Return on Equity	31.56	31.56
Interest on Working Capital	2.80	2.78
O & M Expenses	12.80	13.24
Total	106.35	105.03

Asset- XXIV		
Particulars	2017-18	2018-19
Depreciation	89.03	89.03
Interest on Loan	58.01	53.70
Return on Equity	78.40	78.40
Interest on Working Capital	6.95	6.91
O & M Expenses	31.81	32.88
Total	264.20	260.92

Asset- XXV		
Particulars	2017-18	2018-19
Depreciation	38.37	38.37
Interest on Loan	25.00	23.15
Return on Equity	33.79	33.79
Interest on Working Capital	2.99	2.98
O & M Expenses	13.71	14.17
Total	113.87	112.46

Asset- XXVI		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	0.15	0.15
O & M Expenses	2.68	2.77
Total	2.82	2.92

Asset- XXVII		
Particulars	2017-18	2018-19
Depreciation	66.97	66.97
Interest on Loan	48.53	45.49
Return on Equity	58.98	58.98
Interest on Working Capital	5.08	5.05

Asset- XXVII		
Particulars	2017-18	2018-19
O & M Expenses	19.28	19.92
Total	198.84	196.42

Asset- XXVIII		
Particulars	2017-18	2018-19
Depreciation	23.42	23.42
Interest on Loan	11.84	10.56
Return on Equity	20.63	20.63
Interest on Working Capital	1.96	1.95
O & M Expenses	12.21	12.62
Total	70.06	69.19

Asset- XXIX		
Particulars	2017-18	2018-19
Depreciation	2.09	2.09
Interest on Loan	0.00	0.00
Return on Equity	4.60	4.60
Interest on Working Capital	0.44	0.45
O & M Expenses	5.23	5.40
Total	12.36	12.54

Asset- XXX		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	0.32	0.33
O & M Expenses	5.85	6.05
Total	6.17	6.38

Asset- XXXI		
Particulars	2017-18	2018-19
Depreciation	1.86	1.86
Interest on Loan	0.00	0.00
Return on Equity	4.08	4.08
Interest on Working Capital	0.46	0.47
O & M Expenses	5.85	6.05
Total	12.25	12.45

Asset- XXXII		
Particulars	2017-18	2018-19
Depreciation	2.18	2.18
Interest on Loan	0.00	0.00
Return on Equity	4.87	4.87
Interest on Working Capital	0.40	0.41
O & M Expenses	4.29	4.43
Total	11.74	11.89

Asset- XXXIII		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	0.24	0.24
O & M Expenses	4.29	4.43
Total	4.53	4.68

Asset- XXXIV		
Particulars	2017-18	2018-19
Depreciation	5.99	5.99
Interest on Loan	0.00	0.00
Return on Equity	13.40	13.40
Interest on Working Capital	0.96	0.98
O & M Expenses	9.37	9.68
Total	29.72	30.06

Asset- XXXV		
Particulars	2017-18	2018-19
Depreciation	1.74	1.74
Interest on Loan	0.88	0.78
Return on Equity	1.53	1.53
Interest on Working Capital	0.15	0.14
O & M Expenses	0.91	0.94
Total	5.19	5.13

Asset- XXXVI & XXXVII		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	0.80	0.82
O & M Expenses	14.43	14.91
Total	15.23	15.73

Asset- XXXVIII		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	0.30	0.31
O & M Expenses	5.50	5.68
Total	5.80	6.00

Asset- XXXIX		
Particulars	2017-18	2018-19
Depreciation	1.31	1.31
Interest on Loan	0.00	0.00

Asset- XXXIX		
Particulars	2017-18	2018-19
Return on Equity	2.92	2.92
Interest on Working Capital	0.40	0.41
O & M Expenses	5.50	5.68
Total	10.13	10.32

Asset- XXXX & XXXXI		
Particulars	2017-18	2018-19
Depreciation	0.00	0.00
Interest on Loan	0.00	0.00
Return on Equity	0.00	0.00
Interest on Working Capital	1.34	1.38
O & M Expenses	24.22	25.03
Total	25.56	26.41

Asset- XXXXII		
Particulars	2017-18	2018-19
Depreciation	46.95	46.95
Interest on Loan	34.02	31.89
Return on Equity	41.35	41.35
Interest on Working Capital	3.56	3.54
O & M Expenses	13.51	13.97
Total	139.40	137.70

# Filing Fee and Publication Expenses

25. 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 prorata basis in accordance with clause (1) of Regulation 52 of the 2014 Tariff Regulations.

# **Sharing of Transmission Charges**

26. The transmission charges of the natural ISTS lines considered in the petition 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 accordance with 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 State Commission.

This order disposes of Petition No. 10/TT/2019. 27.

Sd/-(I.S. Jha) Member

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

Sd/-(P.K. Pujari) Chairman