



ANDHRA PRADESH ELECTRICITY REGULATORY COMMISSION

4th Floor, Singareni Bhavan, Red Hills, Hyderabad 500 004

O.P.No.40 of 2017

Dated 06.01.2018

Present

Sri Justice G. Bhavani Prasad, Chairman

Dr. P. Raghu, Member

Sri P. Rama Mohan, Member

Between:

Transmission Corporation of Andhra Pradesh Ltd. (APTRANSCO)

....Petitioner

AND

NIL

....Respondent

The petition has come up for hearing finally on 23.12.2017 in the presence of Sri P. Shiva Rao, learned Standing Counsel for the petitioner. After carefully considering the material available on record and after hearing the petitioner, Commission passed the following:

ORDER

A petition dated 14th July 2017, under section 62 of the Electricity Act, 2003 and Regulation 5 of 2005 of APERC Regulations, praying the Commission to (i) approve the annual fixed charges for the assets covered under the petition; (ii) determine the tariff of the Intra-State transmission lines of AP Transco, and (iii) pass any other order or relief as the Commission may deem fit and proper in the facts and circumstances of the case.

2. The important averments contained in the petition are as hereunder.
- (i) The erstwhile Andhra Pradesh State is reorganized into the Andhra Pradesh State and Telangana State on 2nd June, 2014. The A.P. Reorganization Act and the effect of the bifurcation of the erstwhile State of Andhra Pradesh, resulted in a number of Inter-State lines between the divided Andhra Pradesh and Telangana States. This has resulted in 38 lines that are partly/wholly owned by AP (As per section 2(36) (i) of the Act). Further, there were 4 lines connecting with Tamilnadu, Karnataka and Pondicherry. Since, the above transmission lines are inter-state in nature connecting two States, the petitioner has filed a petition before the Central Electricity Regulatory Commission (CERC) for determination of tariff of the 42 transmission lines so that, the assets can be included in the PoC Mechanism.
 - (ii) There are number of transmission lines which are intra-state, but are incidental to the power flow of Inter-state power. As per the CERC sharing of Inter-state transmission charges Regulations, these intra-state transmission lines can also be included in the PoC Mechanism subject to certification of respective Regional Power Committee (RPC) and availability of individual Yearly Transmission Charges (YTC) for such lines.
 - (iii) The petitioner has conducted power flow studies and has submitted the list of lines that carry 10% of Inter-state Transmission System (ISTS) power to Southern Regional Power Committee (SRPC) for their certification on 09.12.2016. SRPC vide meeting dated February 25th, 2017 has intimated that a cut-off of 50% utilization by other States shall be considered for deciding on the Non-ISTS lines carrying ISTS power. Accordingly, SRPC has issued certification vide letter No. SRPC/SE/II/2017, dt. 19.06.2017 for the eighteen (18) lines.
 - (iv) The list of Non-ISTS lines carrying 50% of ISTS power as per SRPC certification is as below.

Sl. No.	Line	Voltage Level	Configuration	Length in kM
1.	GAZUWAKA1-KALPAKKA1:1	400	D/C	3.39
2.	GAZUWAKA1-KALPAKKA1:2	400	D/C	3.39
3.	CHITTOOR-SDSTPS:1	400	D/C	187.7
4.	CHITTOOR-SDSTPS:2	400	D/C	187.7
5.	NUNNA2-VTS-IV:1	400	D/C	18.7
6.	KURNOOL-BKOTKUR:1	220	S/C	23.2
7.	KONAPPLY-CHILALLU:1	220	D/C	59.7
8.	KONAPPLY-CHILALLU:2	220	D/C	59.7
9.	VTPS-CHILALLU:2	220	D/C	67.8
10.	VTPS-CHILALLU:1	220	D/C	67.8
11.	SULURETA-NLR42:2	220	D/C	68.1
12.	SULURETA-NLR42:3	220	D/C	68.1
13.	GOOTY-PG-BHOGASRAM:1	220	S/C	43.4
14.	KONAPPLY-VTPS:2	220	D/C	6.5
15.	KONAPPLY-VTPS:1	220	D/C	6.5
16.	CHITTOOR4-CHITTOOR:1	220	D/C	17.1
17.	CHITTOOR4-CHITTOOR:2	220	D/C	17.1
18.	SULLURETA-NLR42:1	220	S/C	85.8

- (v) In accordance with Section 2 (1) (y) of Sharing of Inter-state Transmission Charges Regulations, 2010 and subsequent amendments, “Yearly Transmission Charge (YTC) means the Annual Transmission Charges for existing and new transmission assets of the inter-state transmission licensees, deemed ISTS licensees, owners of inter-state transmission lines connecting two states and owners of non-ISTS lines certified by Regional Power Committees for inter state transmission of Power, determined by the appropriate commission under Section 62 of the Act or adopted by the Appropriate commission under section 63 of the Act or as otherwise provided in these regulations:

Provided that in case of non-ISTS lines, the asset wise tariff determined by the respective State Commissions or approved by the central Commission based on the approved Annual Revenue Requirement of STU, shall be used:

Provided further that transmission charges received by the STU under these regulations shall be adjusted in the Annual Revenue Requirement of the concerned STU approved by the respective State Commission.”

- (vi) The individual audited capital cost, the actual repayment schedule and interest rates of the loans of the specified lines and substations are not available.
- (vii) APERC had issued multi-year Tariff Order on 9th May 2014 for the Control period FY2014-15 to FY2018-19. The DISCOMs under APTRANSCO i.e. APSPDCL and APEPDCL have a total energy share of 46.11% in-line with G.O. MS. No. 20 of Government of Andhra Pradesh dated 08.05.2014 (G.O. of Erstwhile Andhra Pradesh). The ARR of divided APTRANSCO is considered as 46.11% of the overall ARR of the State in line with the ratio of energy consumption of the two DISCOMs. The overall ARR for the State of divided AP for FY2017-18 is INR 1,403.16 Crs. (46.11% of INR 3043.07 Crs.).
- (viii) The petitioner has proposed the tariff on the basis of the Indicative cost levels available in the CERC document titled “Assumptions in Computation in PoC charges and Losses for 2017-18 (Q1) that has been considered for the latest PoC charges computations.
- (ix) The overall voltage, configuration wise details of the assets of the petitioner for FY 2017-18 are as below.

Voltage level	Conductor Type	Ckt. kMs	Route kMs
400 kV	D/C ACSR Quad Moose	1833.9	917.0
	D/C ACSR Twin Moose	2865.6	1432.8
	S/C	595.5	595.5
220 kV	D/C	6453.1	3226.5
	S/C	4994.9	4994.9
132 kV	D/C	3209.9	1605.0
	S/C	7485.8	7485.8
Total		27438.7	20257.4

- (x) Considering the indicative cost levels as per the Assumptions in Computation in PoC charges and Losses for 2017-18 (Q1), with 400 kV D/C quad as the base (a)

Type	Cost	Cost/ckt.	Coefficient	Ratio w.r.t. (a)	Ckt. kM	Weighted ckt. kM
(a)	(b)	(c)	(d)	(e)	(f)	(f) / (e)
400 kV D/C Quad Moose	181	90.5	a	1	1833.9	1833.9
400 kV D/C Twin Moose	105	52.50	b	1.72	2865.6	1662.3
400 kV S/C Twin Moose	74	74.00	c	1.22	595.5	486.9
220 kV D/C	43	21.50	d	4.21	6453.1	1533.1
220 kV S/C	26	26.00	e	3.48	4994.9	1435.0
132 kV D/C	31	15.50	f	5.84	3209.9	549.8
132 kV S/C	22	22.00	g	4.11	7485.8	1819.7
Total						9320.8

The YTC per ckt. kM for 400 kV D/C Quad Moose configuration derived from the divided Andhra Pradesh's ARR and weighted ckt. kM is INR 15.05 Lakhs/ckt. kM. ($1403.16 \times 100 / 9320.8$).

- (xi) The YTC per ckt. kM for FY 2017-18 derived for the different configurations are as under,

Configuration	YTC/Ckt. kM	Calculations
400 kV D/C Quad Moose	15.05	15.05 / a
400 kV D/C Twin Moose	8.73	15.05 / b
400 kV S/C Twin Moose	12.31	15.05 / c
220 kV D/C	3.58	15.05 / d
220 kV S/C	4.32	15.05 / e
132 kV D/C	2.58	15.05 / f
132 kV S/C	3.66	15.05 / g

(x) The YTC for the intrastate lines computed on the above basis is as below

Sl. No.	Line	Configuration	Length in kM	Lakhs /Ckt. kM	YTC in Lakhs
1.	GAZUWAKA1-KALPAKKA1:1	400 D/C TM	3.4	8.73	29.6
2.	GAZUWAKA1-KALPAKKA1:2	400 D/C TM	3.4	8.73	29.6
3.	CHITTOOR-SDSTPS:1	400 D/C QM	187.7	15.05	2825.7
4.	CHITTOOR-SDSTPS:2	400 D/C QM	187.7	15.05	2825.7
5.	NUNNA2-VTS-IV:1	400 D/C TM	18.7	8.73	163.3
6.	KURNOOL-BKOTKUR:1	220 S/C	23.2	4.32	100.3
7.	KONAPLLY-CHILALLU:1	220 D/C	59.7	3.58	213.5
8.	KONAPLLY-CHILALLU:2	220 D/C	59.7	3.58	213.5
9.	VTPS-CHILALLU:2	220 D/C	67.8	3.58	242.5
10.	VTPS-CHILALLU:1	220 D/C	67.8	3.58	242.5
11.	SULURETA-NLR42:2	220 D/C	68.1	3.58	243.6
12.	SULURETA-NLR42:3	220 D/C	68.1	3.58	243.6
13.	GOOTY-PG-BHOGASRAM:1	220 S/C	43.4	4.32	187.7
14.	KONAPLLY-VTPS:2	220 D/C	6.5	3.58	23.2
15.	KONAPLLY-VTPS:1	220 D/C	6.5	3.58	23.2
16.	CHITTOOR4-CHITTOOR:1	220 D/C	17.1	3.58	61.2
17.	CHITTOOR4-CHITTOOR:2	220 D/C	17.1	3.58	61.2
18.	SULLURETA-NLR42:1	220 S/C	85.8	4.32	371.1
Total (Rs. Crs.)					81.01

3. During the hearings dated 21.10.2017, the Commission directed the petitioner to furnish whatever records or material available for justification of the fixed charges for the assets claimed by it in the petition.

4. Accordingly the petitioner has submitted certain data as hereunder.

(i) Details of Lines:

Sl. No.	Line	Voltage Level	Configuration	Length in km	D.O.C.	Administrative approval cost (Rs. Cr.)	Repayment schedule (No. of Instalments)	Interest Rate (%)
1.	GAZUWAKA1-KALPAKKA1:1	400	D/C	3.39	10.12.2000	8.7	240	2.6
2.	GAZUWAKA1-KALPAKKA1:2	400	D/C	3.39	27.01.2002			
3.	CHITTOOR-SDSTPS:1	400	D/C	187.7	17.07.2015	387.12	120	10.4
4.	CHITTOOR-SDSTPS:2	400	D/C	187.7	22.07.2015			
5.	NUNNA2-VTS-IV:1	400	D/C	18.7	27.07.2009	14.44	120	10.03
6.	KURNOOL-BKOTKUR:1	220	S/C	23.2	29.10.2010	16.43	--	--
7.	KONAPALLY-CHILALLU:1	220	D/C	59.7	30.09.1989	29.59	--	--
8.	KONAPALLY-CHILALLU:2	220	D/C	59.7			--	--
9.	VTPS-CHILALLU:2	220	D/C	67.8	12.03.1997	34.51	--	--
10.	VTPS-CHILALLU:1	220	D/C	67.8			--	--
11.	SULLURETA-NLR42:2	220	D/C	68.1	10.11.2014	50.65	48 (Qly)	10.75
12.	SULLURETA-NLR42:3	220	D/C	68.1				
13.	GOOTY-PG-BHOGASRAM:1	220	S/C	43.4	17.07.2002	22.58	--	--
14.	KONAPALLY-VTPS:2	220	D/C	6.5	27.04.2004	9.22	Loan Closed	
15.	KONAPALLY-VTPS:1	220	D/C	6.5				
16.	CHITTOOR4-CHITTOOR:1	220	D/C	17.1	14.02.2006	13.90	--	--
17.	CHITTOOR4-CHITTOOR:2	220	D/C	17.1			--	--
18.	SULLURETA-NLR42:1	220	S/C	85.8	26.12.2006	41.33	--	--

Assumptions:

- As the audited capital costs are not available, administrative approval costs are submitted.
- 2004 Administrative approval cost was taken as base cost for arriving at the best cost estimate for the lines with sl. nos. (7 to 10) and (13 to 18) and 2008 Administrative approval cost was taken as base cost for arriving at the best cost estimate for the line with sl.no. (6).

(ii) Details of Sub-Stations

S. No.	List of Substations	Voltage Level	D.O.C.	Admn. Approval Cost (Cr.)	Repayment Schedule	Interest Rate	Depreciat ion	No. of Bays		
								400 kV	220 kV	132 kV
1.	GAJUWAKA1	400	PGCIL Sub-station							
2.	KALPAKKA1	400	27.01.2002	68.87	--	--	--	17	5	--
3.	CHITTOOR	400	17.02.2006	54.85	--	--	--	04	06	--
4.	SDSTPS	400	AP GENCO Sub-station							
5.	NUNNA2	400	PGCIL Sub-station							
6.	VTS-IV	400	APGENCO Sub-station							
7.	KURNOOL	400	06.03.2001	20.71	--	--	--	05	07	
8.	NLR42	400	18.12.2005	64.58	--	--	--	02	10	
9	BKOTKUR	220	29.10.2010	25.00	--	--	--			
10	KONAPLLY	220	30.09.1989	16.35	--	--	--			
11	CHILALLU	220	12.03.1997	17.44	--	--	--			
12	VTPS	220	27.04.2004	21.80	--	--	--			
13	SULURETA	220	01.05.1982	15.26	--	--	--			
14	GOOTY PG	220	20.05.1991	16.35	--	--	--			
15	BHOGASRAM1	220								
16	KONAPLLY	220	30.09.1989	16.35	--	--	--			
17	CHITTOOR	220	21.06.1970	14.17	--	--	--			

Assumptions:

- a. As the audited capital costs are not available, administrative approval costs are submitted.
- b. 2005 Administrative approval cost was taken as base cost for arriving at the best cost estimate for the lines with sl. nos. (10 to 14) and (16 to 17) and 2008 Administrative approval cost was taken as base cost for arriving at the best cost estimate for the line with sl.no. (9).
- c. 220 kV substation consists of 2 Nos. 220 kV Bays, 4 Nos. 132 kV bays, 2 Nos. PTR bays, 2 HV bays and 2 LV bays.

5. For determination of tariff for intra-state transmission lines on actual data, the Commission directed the petitioner to submit records or material available for justification of the fixed charges for the assets claimed by it in the petition. Subsequently, vide a memo dated 23.12.2017, the petitioner filed certain data in respect of lines and the associated substations, as extracted supra. A careful examination of the data filed by the petitioner reveals that there are so many data gaps in respect of repayment schedules, interest rates, depreciation etc. That apart the very little data they have filed is again subject to certain assumptions as can be seen from the contents of the memo extracted supra. Notwithstanding the above, the Commission attempted to arrive at the approximate total YTC of the eighteen (18) intra-state transmission lines by making reasonable assumptions with reference to Return on Equity being 14%, Cost of Debt being 12%, debt-equity ratio being 75:25, O & M Charges being Rs.0.61 lakhs per ckt. kM and Rs.17.67 lakhs per

bay, as per the Commission's order dated 04.05.2014 on Transmission tariffs for the period FY2014-15 to FY2018-19 and with reasonable assumptions in respect of other parameters. With the above assumptions, the total YTC of the eighteen (18) intra-state transmission lines approximately estimated may be about Rs.89 Cr. This is 10% more than the figure that is claimed in the petition i.e. Rs.81.01 Cr. Administrative approval costs and actual costs will not be one and the same and administrative approval costs cannot be an acceptable sole and safe guide for any dependable estimate.

6. As can be seen from the petition itself, the total YTC of Rs. 81.01 Cr. is based on the approved transmission ARR for FY2017-18 as in the order dated 04.05.2014 on Transmission tariffs for the period FY2014-15 to FY2018-19 and the indicative cost levels as per CERC document titled "Assumptions in Computation in PoC charges and Losses for 2017-18 (Q1)".

7. That being the case, it will be more appropriate, just and equitable to adopt the methodology suggested by the petitioner inline with CERC Regulation and not come to any definite conclusions based on unverifiable and inadequate data and unsubstantiated assumptions. Furthermore, upon perusal of various orders passed by the Central Electricity Regulatory Commission in respect of several States, it is found that the same methodology is followed across the board. For all the reasons mentioned above, the YTC for FY2017-18 for the eighteen (18) intra-state lines carrying ISTS power stands determined by this Commission as hereunder.

Sl. No.	Line	Configuration	Length in km	Lakhs /Ckt. km	YTC in Lakhs
1.	GAZUWAKA1-KALPAKKA1:1	400 D/C TM	3.4	8.73	29.6
2.	GAZUWAKA1-KALPAKKA1:2	400 D/C TM	3.4	8.73	29.6
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17.	CHITTOOR4-CHITTOOR:2	220 D/C	17.1	3.58	61.2
18.	SULLURETA-NLR42:1	220 S/C	85.8	4.32	371.1

8. On inclusion of the assets covered in the petition in the PoC methodology by the implementing agency, inline with the Sharing of Inter-State Transmission Charges and Losses Regulations, 2010 and the amendments thereto and upon receiving of the transmission charges, the YTC recovered shall be adjusted against the ARR of the petitioner.

9. The petition is ordered accordingly.

Sd/-
(P. Rama Mohan)
Member

Sd/-
(Dr. P. Raghu)
Member

Sd/-
(Justice G.Bhavani Prasad)
Chairman