

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 88/TT/2017**

**Coram:**

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

**Date of Hearing : 3.8.2017  
Date of Order : 19.12.2017**

**In the matter of:**

Petition for determination of Transmission Tariff for FY 2014-15 to FY 2018-19 of the Transmission Lines belonging to the Petitioner (MPPTCL) conveying electricity as ISTS lines, for inclusion of these Assets in computation of Point of Connection, Transmission Charges and Losses in accordance with the CERC (Terms & Conditions of Tariff) Regulations 2014 and (Sharing of Inter-State Transmission Charges and Losses), Regulations, 2010 namely;

- (i) 220 KV Malanpur – Auraiya Line.
- (ii) 220 KV Mehgaon - Auraiya Line.
- (iii) 220 KV Badod - Kota Line.
- (iv) 220 KV Badod - Modak Line.
- (v) 220 KV Kalmeshwar - Pandhurna Line.
- (vi) 220 KV Kotmikala - Amarkantak-1 Line.
- (vii) 220 KV Kotmikala - Amarkantak-2 Line.
- (viii) 400 KV Sardar Sarovar – Rajgarh-1 Line.
- (ix) 400 KV Sardar Sarovar – Rajgarh-2 Line.
- (x) 400 KV Seoni (MP) – Sarni (MP) Line.
- (xi) 400 KV Seoni (MP) – Bhilai (Chattisgarh) Line.

**And in the matter of:**

Madhya Pradesh Power Transmission Company Limited  
Block No.2, Shakti Bhawan  
Rampur, Jabalpur- 482008

.....**Petitioner**

**Vs**

Power Grid Corporation of India Limited  
Saudamini, Plot No. 2, Sector-29,



Near IFFCO Chowk,  
Gurgaon-122 001.

.....Respondent  
and others

**Parties Present** : Shri G. Umapathy, Advocate, MPPTCL  
Shri Aditya Singh, Advocate, MPPTCL  
Shri Abhinav Anand, MPPTCL  
Shri Har Mohan Gupta, MPPTCL  
Shri Pardeep Mishra, Advocate, RRVPNL  
Shri Manoj Kumar Sharma, Advocate, RRVPNL

### ORDER

Madhya Pradesh Power Transmission Company Limited ("MPPTCL") has filed the instant petition for approval of the transmission tariff of the following transmission lines namely:

- (1) 220 KV Malanpur – Auraiya Line.
- (2) 220 KV Mehgaon - Auraiya Line.
- (3) 220 KV Badod - Kota Line.
- (4) 220 KV Badod - Modak Line.
- (5) 220 KV Kalmeshwar - Pandhurna Line.
- (6) 220 KV Kotmikala - Amarkantak-1 Line.
- (7) 220 KV Kotmikala - Amarkantak-2 Line.
- (8) 400 KV Sardar Sarovar – Rajgarh-1 Line.
- (9) 400 KV Sardar Sarovar – Rajgarh-2 Line.
- (10) 400 KV Seoni (MP) – Sarni (MP) Line.
- (11) 400 KV Seoni (MP) – Bhilai (Chattisgarh) Line.

These are deemed ISTS lines and tariff has been requested for the period from 2014-15 to 2018-19, for inclusion in computation of point of connection (PoC) transmission charges in accordance with the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as "the 2014 Tariff



Regulations”). MPPTCL has submitted that the instant petition has been filed as per the Commission’s order dated 15.10.2015 in Petition No. 217/TT/2013.

The petitioner has prayed the following:

- (1) Approve the Yearly Transmission Charges (YTC) amounting to Rs. 780, 27, 51,750/- (Rs. Seven Hundred Eight Crores Twenty Seven Lacs Fifty One Thousand Seven Hundred Fifty only) for the Assets covered under this Petition;
- (2) Allow the Petitioner to recover the Yearly Transmission Charges (YTC) for the control period FY 2014-15 to FY 2018-19 as mentioned under this petition, from beneficiaries through Billing Agency M/s PGCIL, as per the procedure mentioned in the CERC (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2010;
- (3) Approve the reimbursement of expenditure by beneficiaries towards Petition fee, and other expenses in relation to filing of Petition;
- (4) Condone delay / inadvertent omission / errors / short comings if any and permit the Petitioner to add / modify / alter this filing and make further submission as may be required at a later stage;

2. MPPTCL has sought tariff for the following eleven inter-State transmission lines connecting two States for the period 2014-19 under the 2014 Tariff Regulations for inclusion in the computation of PoC charges. The Commission had approved the Annual Transmission Charges from 1.7.2011 to 31.3.2014 for the Assets (1) to (9), mentioned in the below table, vide order dated 15.10.2015 in Petition No.217/TT/2013:-

Sl. No.	Name of Line	Voltage Level	Connecting States	COD
1	220 kV Malanpur-Auraiya	220 kV	MP-UP	23.11.1993
2	220 kV Mehgaon-Auraiya	220 kV	MP-UP	23.11.1993
3	220 kV Badod-Kota	220 kV	MP-Rajasthan	12.8.1977
4	220 kV Badod-Modak	220 kV	MP-Rajasthan	27.12.1988
5	220 kV Kalmeshwar-Pandhurna	220 kV	MP- Maharashtra	1972
6	220 kV Kotmilkala-Amarkantak-Ck.I	220 kV	MP-Chhattisgarh	March,1975
7	220 kV Kotmilkala-Amarkantak-Ck.II	220 kV	MP-Chhattisgarh	July, 1979
8	400 kV Sardar Sarovar-Rajgarh-Ck-I	400 kV	MP-Gujarat	20.10.2004
9	400 kV Sardar Sarovar-Rajgarh-Ck-I	400 kV	MP-Gujarat	20.10.2004
10	400 KV Seoni (MP) – Sarni (MP)	400 kV	MP-MP	25.09.1985
11	400 KV Seoni (MP) – Bhilai (Chattisgarh)	400 kV	MP- Chattisgarh	25.09.1985



Regarding the Assets (10) and (11), i.e. 400 KV Seoni (MP) – Sarni (MP) transmission line and 400 KV Seoni (MP) – Bhilai (Chattisgarh) transmission line, petition no. 87/TT/2017 for approval of annual transmission charges for the period 1.7.2011 to 31.3.2014 was filed by MPPTCL. Commission, vide order dated 3.11.2017, has dealt with that petition. The relevant portion of the order is extracted hereunder:-

“8. ....Hence, we are not inclined to allow YTC for these lines for the period 2011-14. MPPTCL has already filed the petition claiming tariff for the inter-State transmission lines owned by it for the 2014-19 tariff period under the 2014 Tariff Regulations and accordingly tariff will be allowed as per the relevant regulations.”

3. Petitioner has enclosed the Western Regional Power Committee (WRPC) letter dated 7.6.2016 with the petition, wherein the 400 kV Seoni (MP)- Sarni (MP) transmission line has been recommended to be considered as deemed ISTS line for the purpose of POC computation. The 400 kV Seoni (MP)- Bhilai (Chattisgarh) is Natural ISTS and so approved under POC without certification of WRPC.

4. MPPTCL has submitted that the tariff is worked out based on the methodology adopted by the Commission while determining the PoC charges vide its Order dated 15.10.2015 on Petition no. 217/TT/2013, and subsequently summing up all these charges for particular years.

5. The petitioner has submitted that the YTC may be approved for the instant lines as per the procedure adopted by the Commission in order dated 15.10.2015 in Petition No.217/TT/2013 while granting tariff for the inter-State transmission lines. Petitioner has claimed the YTC as below:



(Rs.in Lakh)

Sl.No.	Name of the Line	Charges Claimed				
		2014-15	2015-16	2016-17	2017-18	2018-19
1	220 kV Malanpur-Auraiya	1178.31	1448.37	1159.33	1248.77	1325.17
2	220 kV Mehgaon-Auraiya	945.77	1162.54	930.54	1002.33	1063.66
3	220 kV Badod-Kota	668.07	797.24	706.67	761.20	807.77
4	220 kV Badod-Modak	668.07	797.24	706.67	761.20	807.77
5	220 kV Kalmeshwar-Pandhurna	113.02	138.92	111.20	119.78	127.11
6	220 kV Kotmilkala-Amarkantak-Ck.I	252.71	301.57	267.31	287.93	305.55
7	220 kV Kotmilkala-Amarkantak-Ck.II	252.71	301.57	267.31	287.93	305.55
8	400 kV Sardar Sarovar-Rajgarh-Ck-I	1647.71	2115.61	1938.96	2088.55	2216.33
9	400 kV Sardar Sarovar-Rajgarh-Ck-II	1647.71	2115.61	1938.96	2088.55	2216.33
10	400 KV Seoni (MP) – Sarni (MP) .	2761.50	3674.37	3438.57	3703.86	3930.47
11	400 KV Seoni (MP) – Bhilai (Chattisgarh)	2857.50	3802.11	3558.12	3832.63	4067.11

6. We have considered the submissions made by MPPTCL. MPPTCL has claimed transmission tariff for eleven inter-State transmission lines for the 2014-19 tariff period. 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.



Further, the owners/developers of these lines were directed to file petitions for determination of tariff for the 2014-19 tariff period.

7. 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.

8. 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:**

9. 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 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 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 <b>X</b> lakh/km
1	400 kV D/C TL	1.39 <b>X</b>
2	220 kV D/C TL	0.57 <b>X</b>
3	220 kV S/C TL	0.36 <b>X</b>
4	132 kV D/C TL	0.43 <b>X</b>
5	132 kV S/C TL	0.31 <b>X</b>

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.

10. 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.

11. 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 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.

12. 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.

13. We observe that the petitioner company has not been able to provide the audited capital cost certificates. In line with the methodology explained in foregoing paragraphs, we now proceed to determine the tariff for the below stated transmission lines:

Sl. No.	Name of Line	COD	Line length (in Ckt-km)
1	220 kV Malanpur-Auraiya	23.11.1993	147.00
2	220 kV Mehgaon-Auraiya	23.11.1993	117.99
3	220 kV Badod-Kota	12.8.1977	103.92
4	220 kV Badod-Modak	27.12.1988	103.92
5	220 kV Kalmeshwar-Pandhurna	1972	14.10
6	220 kV Kotmilkala-Amarkantak-Ck.I	March,1975	39.31
7	220 kV Kotmilkala-Amarkantak-Ck.II	July, 1979	39.31
8	400 kV Sardar Sarovar-Rajgarh-Ck-I	20.10.2004	113.65
9	400 kV Sardar Sarovar-Rajgarh-Ck-I	20.10.2004	113.65
10	400 KV Seoni (MP) – Sarni (MP)	25.9.1985	145.83
11	400 KV Seoni (MP) – Bhilai (Chattisgarh)	25.9.1985	150.90

14. It is clear from the above table that the Assets at sl no (3), (4), (5), (6), (7), (10) and (11) have already completed twenty five years. Therefore, as per Commission's methodology, only IWC and O & M shall be allowable for these assets. For other assets,



i.e. assets at sl no (1), (2), (8) and (9) in the table under para 13 above, transmission tariff has been worked out.

15. The annual transmission charges being allowed are:

**Asset (1): 220 kV Malanpur-Auraiya transmission line:**

(Rs. In Lakhs)

<b>Asset-1</b>	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	37.89	37.89	37.89	37.89	37.89
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	85.98	85.98	85.98	85.98	85.98
IWC	6.13	6.25	6.36	6.47	6.59
O & M Expenses	59.39	61.45	63.50	65.56	67.77
<b>Total</b>	<b>189.39</b>	<b>191.56</b>	<b>193.73</b>	<b>195.91</b>	<b>198.23</b>

**Asset (2): 220 kV Mehgaon-Auraiya transmission line:**

(Rs. In Lakhs)

<b>Asset-2</b>	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	30.41	30.41	30.41	30.41	30.41
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	69.01	69.01	69.01	69.01	69.01
IWC	4.92	5.01	5.10	5.20	5.29
O & M Expenses	47.67	49.32	50.97	52.62	54.39
<b>Total</b>	<b>152.01</b>	<b>153.76</b>	<b>155.50</b>	<b>157.24</b>	<b>159.11</b>

**Asset (3): 220 kV Badod-Kota transmission line:**

(Rs. In Lakhs)

<b>Asset-3</b>	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	0.00	0.00	0.00	0.00	0.00
IWC	2.32	2.40	2.48	2.56	2.65
O & M Expenses	41.98	43.44	44.89	46.35	47.91
<b>Total</b>	<b>44.30</b>	<b>45.84</b>	<b>47.37</b>	<b>48.91</b>	<b>50.55</b>

**Asset (4): 220 kV Badod-Modak transmission line:**

(Rs. In Lakhs)

<b>Asset-4</b>	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	0.00	0.00	0.00	0.00	0.00
IWC	2.32	2.40	2.48	2.56	2.65
O & M Expenses	41.98	43.44	44.89	46.35	47.91
<b>Total</b>	<b>44.30</b>	<b>45.84</b>	<b>47.37</b>	<b>48.91</b>	<b>50.55</b>

**Asset (5): 220 kV Kalmeshwar-Pandhurna transmission line:**

(Rs. In Lakhs)

<b>Asset-5</b>	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	0.00	0.00	0.00	0.00	0.00
IWC	0.31	0.33	0.34	0.35	0.36
O & M Expenses	5.70	5.89	6.09	6.29	6.50
<b>Total</b>	<b>6.01</b>	<b>6.22</b>	<b>6.43</b>	<b>6.64</b>	<b>6.86</b>

**Asset (6): 220 kV Kotmilkala-Amarkantak Ckt.I transmission line:**

(Rs. In Lakhs)

<b>Asset-6</b>	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	0.00	0.00	0.00	0.00	0.00
IWC	0.88	0.91	0.94	0.97	1.00
O & M Expenses	15.88	16.43	16.98	17.53	18.12
<b>Total</b>	<b>16.76</b>	<b>17.34</b>	<b>17.92</b>	<b>18.50</b>	<b>19.12</b>



**Asset (7): 220 kV Kotmilkala-Amarkantak Ckt.II transmission line:**

(Rs. In Lakhs)

<b>Asset-7</b>	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	0.00	0.00	0.00	0.00	0.00
IWC	0.88	0.91	0.94	0.97	1.00
O & M Expenses	15.88	16.43	16.98	17.53	18.12
<b>Total</b>	<b>16.76</b>	<b>17.34</b>	<b>17.92</b>	<b>18.50</b>	<b>19.12</b>

**Asset (8): 400 kV Sardar Sarovar-Rajgarh-Ckt-I:**

(Rs. In Lakhs)

<b>Asset-8</b>	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	163.22	163.22	163.22	63.35	63.35
Interest on Loan	32.02	20.56	8.92	0.00	0.00
Return on Equity	143.74	143.74	143.74	143.74	143.74
IWC	10.34	10.16	9.98	7.57	7.66
O & M Expenses	45.91	47.51	49.10	50.69	52.39
<b>Total</b>	<b>395.24</b>	<b>385.20</b>	<b>374.96</b>	<b>265.35</b>	<b>267.15</b>

**Asset (9): 400 kV Sardar Sarovar-Rajgarh-Ckt-II:**

(Rs. In Lakhs)

<b>Asset-9</b>	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	163.22	163.22	163.22	63.35	63.35
Interest on Loan	32.02	20.56	8.92	0.00	0.00
Return on Equity	143.74	143.74	143.74	143.74	143.74
IWC	10.34	10.16	9.98	7.57	7.66
O & M Expenses	45.91	47.51	49.10	50.69	52.39
<b>Total</b>	<b>395.24</b>	<b>385.20</b>	<b>374.96</b>	<b>265.35</b>	<b>267.15</b>



**Asset (10): 400 KV Seoni (MP) – Sarni (MP) transmission line:**

(Rs. In Lakhs)

<b>Asset-10</b>	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	0.00	0.00	0.00	0.00	0.00
IWC	3.25	3.37	3.48	3.59	3.71
O & M Expenses	58.92	60.96	63.00	65.04	67.23
<b>Total</b>	<b>62.17</b>	<b>64.32</b>	<b>66.48</b>	<b>68.63</b>	<b>70.94</b>

**Asset (11): 400 KV Seoni (MP) – Bhilai (Chattisgarh) transmission line:**

(Rs. In Lakhs)

<b>Asset-11</b>	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	0.00	0.00	0.00	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	0.00	0.00	0.00	0.00	0.00
IWC	3.37	3.48	3.60	3.72	3.84
O & M Expenses	60.96	63.08	65.19	67.30	69.56
<b>Total</b>	<b>64.33</b>	<b>66.56</b>	<b>68.79</b>	<b>71.02</b>	<b>73.41</b>

Detailed calculations for Asset (1), (2), (8) and (9) are enclosed as Annexures-(I) to (IV).

**Filing Fee and Publication Expenses**

16. The petitioner has sought reimbursement of fee paid by it for filing the petition and publication expenses, in terms of Regulation 52 of the 2014 Tariff Regulations. 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 pro-rata basis in accordance with clause (1) of Regulation 52 of the 2014 Tariff Regulations.



## **Sharing of Transmission Charges**

17. 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 MPERC.

18. Accordingly, Petition No. 88/TT/2017 is disposed of.

Sd/-	Sd/-	Sd/-	Sd/-
<b>(Dr. M. K. Iyer)</b> <b>Member</b>	<b>(A.S. Bakshi)</b> <b>Member</b>	<b>(A.K. Singhal)</b> <b>Member</b>	<b>(Gireesh B. Pradhan)</b> <b>Chairperson</b>



## Annexure I

Name of the Tr. System:		220 kV S/C Malanpur-Auraiya					
COD		23.11.1993					
<b>CALCULATION OF ANNUAL TRANSMISSION CHARGES</b>							
(Rs. In lacs)							
Rationalised cost of 400 kv line Rs lakh per ckt km	34.94				Life in years		25
Transmission Line length , in ckt km	147.00				Voltage, kV		220
Multiplication factor	0.36						
			2014-15	2015-16	2016-17	2017-18	2018-19
<b>Gross Block</b>			1849.02	1849.02	1849.02	1849.02	1849.02
Addition during 2014-19 due to Projected Additional Capitalisation			0.00	0.00	0.00	0.00	0.00
Gross Block total			1849.02	1849.02	1849.02	1849.02	1849.02
Average Gross Blcok			1849.02	1849.02	1849.02	1849.02	1849.02
<b>Depreciation</b>							
Rate of Depreciation		5.28%	5.28%	5.28%	5.28%	5.28%	5.28%
Depreciable value		90%	1664.12	1664.12	1664.12	1664.12	1664.12
Elapsed Life as on 31.03.2014		20	20.00	21.00	22.00	23.00	24.00
Balance useful life of the asset			5.00	4.00	3.00	2.00	1.00
Remaining Depreciable value			189.45	151.56	113.67	75.78	37.89
Cumulative Depreciation	1171.5421	1474.67	1512.56	1550.45	1588.34	1626.23	1664.12
	492.58	37.89					
Depreciation			37.89	37.89	37.89	37.89	37.89
<b>Interest on Loan</b>							
Gross Normative Loan		1294.32	1294.32	1294.32	1294.32	1294.32	1294.32
Cumulative Repayment upto Previous Year			1294.32	1294.32	1294.32	1294.32	1294.32
Net Loan-Opening			0.00	0.00	0.00	0.00	0.00
Addition due to Additional Capitalisation			0.00	0.00	0.00	0.00	0.00
Repayment during the year			0.00	0.00	0.00	0.00	0.00
Net Loan-Closing			0.00	0.00	0.00	0.00	0.00
Average Loan			0.00	0.00	0.00	0.00	0.00
Weighted Average Rate of Interest on Loan			7.1141%	7.1680%	7.2104%	7.2104%	7.2104%
Interest			0.00	0.00	0.00	0.00	0.00





<b>Return on Equity</b>							
Gross Notional Equity		554.71					
Opening Equity			554.71	554.71	554.71	554.71	554.71
Average Equity			554.71	554.71	554.71	554.71	554.71
Rate of Return on Equity			15.50%	15.50%	15.50%	15.50%	15.50%
Return on Equity			85.98	85.98	85.98	85.98	85.98
<b>Interest on Working Capital</b>							
Maintenance Spares			8.91	9.22	9.53	9.83	10.17
O & M expenses			4.95	5.12	5.29	5.46	5.65
Receivables		2 Months	31.57	31.93	32.29	32.65	33.04
Total			45.42	46.26	47.11	47.95	48.85
Interest		13.50%	<b>6.13</b>	<b>6.25</b>	<b>6.36</b>	<b>6.47</b>	<b>6.59</b>
<b>Annual Transmission Charges</b>							
Depreciation			37.89	37.89	37.89	37.89	37.89
Interest on Loan			0.00	0.00	0.00	0.00	0.00
Return on Equity			85.98	85.98	85.98	85.98	85.98
Interest on Working Capital			6.13	6.25	6.36	6.47	6.59
O & M Expenses			59.39	61.45	63.50	65.56	67.77
<b>Total</b>			<b>189.39</b>	<b>191.56</b>	<b>193.73</b>	<b>195.91</b>	<b>198.23</b>
O&M for S/C (Twin & triple Conductor) in Rs. Lakhs/ Km			0.404	0.418	0.432	0.446	0.461



<b>Name of the Tr. System:</b>		<b>220 kV S/C Mehgaon-Auraiya</b>
<b>COD</b>		<b>23.11.1993</b>

**CALCULATION OF ANNUAL TRANSMISSION CHARGES**

(Rs. In lacs)

Rationalised cost of 400 kv line Rs lakh per ckt km	<b>34.94</b>				Life in years	<b>25</b>	
Transmission Line length , in ckt km	<b>117.99</b>				<b>Voltage, kV</b>	<b>220</b>	
Multiplication factor	0.36						
			<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
<b>Gross Block</b>			1484.13	1484.13	1484.13	1484.13	1484.13
Addition during 2014-19 due to Projected Additional Capitalisation			0.00	0.00	0.00	0.00	0.00
Gross Block total			1484.13	1484.13	1484.13	1484.13	1484.13
Average Gross Block			1484.13	1484.13	1484.13	1484.13	1484.13
<b>Depreciation</b>							
Rate of Depreciation		5.2800%	5.2800%	5.2800%	5.2800%	5.2800%	5.2800%
Depreciable value		90%	1335.71	1335.71	1335.71	1335.71	1335.71
Elapsed Life as on 31.03.2014		<b>20</b>	20.00	21.00	22.00	23.00	24.00
Balance useful life of the asset			5.00	4.00	3.00	2.00	1.00
Remaining Depreciable value			152.07	121.65	91.24	60.83	30.41
Cumulative Depreciation	940.341864	<b>1183.65</b>	1214.06	1244.47	1274.89	1305.30	1335.71
	395.37	<b>30.41</b>					
Depreciation			30.41	30.41	30.41	30.41	30.41
<b>Interest on Loan</b>							
Gross Normative Loan		1038.89	1038.89	1038.89	1038.89	1038.89	1038.89
Cumulative Repayment upto Previous Year			1038.89	1038.89	1038.89	1038.89	1038.89
Net Loan-Opening			0.00	0.00	0.00	0.00	0.00
Addition due to Additional Capitalisation			0.00	0.00	0.00	0.00	0.00
Repayment during the year			0.00	0.00	0.00	0.00	0.00
Net Loan-Closing			0.00	0.00	0.00	0.00	0.00
Average Loan			0.00	0.00	0.00	0.00	0.00
Weighted Average Rate of Interest on Loan			7.1141%	7.1680%	7.2104%	7.2104%	7.2104%
Interest			0.00	0.00	0.00	0.00	0.00
<b>Return on Equity</b>							
Gross Notional Equity		445.24					
Opening Equity			445.24	445.24	445.24	445.24	445.24
Average Equity			445.24	445.24	445.24	445.24	445.24
Rate of Return on Equity			15.50%	15.50%	15.50%	15.50%	15.50%
Return on Equity			69.01	69.01	69.01	69.01	69.01



<b>Interest on Working Capital</b>							
Maintenance Spares			7.15	7.40	7.65	7.89	8.16
O & M expenses			3.97	4.11	4.25	4.39	4.53
Receivables		2 Months	25.34	25.63	25.92	26.21	26.52
Total			36.46	37.13	37.81	38.49	39.21
Interest		13.50%	<b>4.92</b>	<b>5.01</b>	<b>5.10</b>	<b>5.20</b>	<b>5.29</b>
<b>Annual Transmission Charges</b>							
Depreciation			30.41	30.41	30.41	30.41	30.41
Interest on Loan			0.00	0.00	0.00	0.00	0.00
Return on Equity			69.01	69.01	69.01	69.01	69.01
Interest on Working Capital			4.92	5.01	5.10	5.20	5.29
O & M Expenses			47.67	49.32	50.97	52.62	54.39
<b>Total</b>			<b>152.01</b>	<b>153.76</b>	<b>155.50</b>	<b>157.24</b>	<b>159.11</b>
O&M for S/C (Twin & triple Conductor) in Rs. Lakhs/ Km			0.404	0.418	0.432	0.446	0.461



<b>Annexure III</b>							
<b>Name of the Tr. System:</b>		<b>400 kV S/C Sardar Sarover - Rajgarh Ckt-I</b>					
<b>COD</b>		<b>20.10.2004</b>					
<b>CALCULATION OF ANNUAL TRANSMISSION CHARGES</b>							
<b>(Rs. In lacs)</b>							
Rationalised cost of 400 kv line Rs lakh per ckt km	<b>27.20</b>				Life in years		<b>25</b>
Transmission Line length , in ckt km	<b>113.65</b>				<b>Voltage, kV</b>		<b>400</b>
Multiplication factor	<b>1.00</b>						
			<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
<b>Gross Block</b>			3091.28	3091.28	3091.28	3091.28	3091.28
Addition during 2014-19 due to Projected Additional Capitalisation			0.00	0.00	0.00	0.00	0.00
Gross Block total			3091.28	3091.28	3091.28	3091.28	3091.28
Average Gross Blcok			3091.28	3091.28	3091.28	3091.28	3091.28
<b>Depreciation</b>							
Rate of Depreciation		5.2800 %	5.2800 %	5.2800 %	5.2800%	5.2800%	5.2800 %
Depreciable value		90%	2782.15	2782.15	2782.15	2782.15	2782.15
Elapsed Life as on 31.03.2014		<b>9</b>	9.00	10.00	11.00	12.00	13.00
Balance useful life of the asset			16.00	15.00	14.00	13.00	12.00
Remaining Depreciable value			1313.18	1149.96	986.74	823.52	760.17
Cumulative Depreciation	1468.9763	<b>1468.98</b>	1632.20	1795.42	1958.64	2021.98	2085.33
	1313.18						
Depreciation			163.22	163.22	163.22	63.35	63.35
<b>Interest on Loan</b>							
Gross Normative Loan		2163.90	2163.90	2163.90	2163.90	2163.90	2163.90
Cumulative Repayment upto Previous Year			1632.20	1795.42	1958.64	2163.90	2163.90
Net Loan-Opening			531.70	368.48	205.26	0.00	0.00
Addition due to Additional Capitalisation			0.00	0.00	0.00	0.00	0.00
Repayment during the year			163.22	163.22	163.22	0.00	0.00
Net Loan-Closing			368.48	205.26	42.04	0.00	0.00
Average Loan			450.09	286.87	123.65	0.00	0.00
Weighted Average Rate of Interest on Loan			7.1141 %	7.1680 %	7.2104%	7.2104%	7.2104 %
Interest			32.02	20.56	8.92	0.00	0.00



<b>Return on Equity</b>							
Gross Notional Equity		927.38					
Opening Equity			927.38	927.38	927.38	927.38	927.38
Average Equity			927.38	927.38	927.38	927.38	927.38
Rate of Return on Equity			15.50%	15.50%	15.50%	15.50%	15.50%
Return on Equity			143.74	143.74	143.74	143.74	143.74
<b>Interest on Working Capital</b>							
Maintenance Spares			6.89	7.13	7.36	7.60	7.86
O & M expenses			3.83	3.96	4.09	4.22	4.37
Receivables		2 Months	65.87	64.20	62.49	44.22	44.52
Total			76.59	75.28	73.95	56.05	56.75
Interest		13.50%	<b>10.34</b>	<b>10.16</b>	<b>9.98</b>	<b>7.57</b>	<b>7.66</b>
<b>Annual Transmission Charges</b>							
Depreciation			163.22	163.22	163.22	63.35	63.35
Interest on Loan			32.02	20.56	8.92	0.00	0.00
Return on Equity			143.74	143.74	143.74	143.74	143.74
Interest on Working Capital			10.34	10.16	9.98	7.57	7.66
O & M Expenses			45.91	47.51	49.10	50.69	52.39
<b>Total</b>			<b>395.24</b>	<b>385.20</b>	<b>374.96</b>	<b>265.35</b>	<b>267.15</b>
O&M for S/C (Twin & triple Conductor) in Rs. Lakhs/Km			0.404	0.418	0.432	0.446	0.461



<b>Annexure IV</b>							
<b>Name of the Tr. System:</b>		<b>400 kV S/C Sardar Sarover - Rajgarh Ckt-II</b>					
<b>COD</b>		<b>20.10.2004</b>					
<b>CALCULATION OF ANNUAL TRANSMISSION CHARGES</b>							
<b>(Rs. In lacs)</b>							
Rationalised cost of 400 kv line Rs lakh per ckt km	<b>27.20</b>				Life in years		<b>25</b>
Transmission Line length , in ckt km	<b>113.65</b>				<b>Voltage, kV</b>		<b>400</b>
Multiplication factor	1.00						
			<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
<b>Gross Block</b>			3091.28	3091.28	3091.28	3091.28	3091.28
Addition during 2014-19 due to Projected Additional Capitalisation			0.00	0.00	0.00	0.00	0.00
Gross Block total			3091.28	3091.28	3091.28	3091.28	3091.28
Average Gross Blcok			3091.28	3091.28	3091.28	3091.28	3091.28
<b>Depreciation</b>							
Rate of Depreciation		5.2800 %	5.2800 %	5.2800 %	5.2800 %	5.2800%	5.2800 %
Depreciable value		90%	2782.15	2782.15	2782.15	2782.15	2782.15
Elapsed Life as on 31.03.2014		<b>9</b>	9.00	10.00	11.00	12.00	13.00
Balance useful life of the asset			16.00	15.00	14.00	13.00	12.00
Remaining Depreciable value			1313.18	1149.96	986.74	823.52	760.17
Cumulative Depreciation	1468.9763	<b>1468.98</b>	1632.20	1795.42	1958.64	2021.98	2085.33
	1313.18						
Depreciation			163.22	163.22	163.22	63.35	63.35
<b>Interest on Loan</b>							
Gross Normative Loan		2163.90	2163.90	2163.90	2163.90	2163.90	2163.90
Cumulative Repayment upto Previous Year			1632.20	1795.42	1958.64	2163.90	2163.90
Net Loan-Opening			531.70	368.48	205.26	0.00	0.00
Addition due to Additional Capitalisation			0.00	0.00	0.00	0.00	0.00
Repayment during the year			163.22	163.22	163.22	0.00	0.00
Net Loan-Closing			368.48	205.26	42.04	0.00	0.00
Average Loan			450.09	286.87	123.65	0.00	0.00
Weighted Average Rate of Interest on Loan			7.1141 %	7.1680 %	7.2104 %	7.2104%	7.2104 %
Interest			32.02	20.56	8.92	0.00	0.00
<b>Return on Equity</b>							
Gross Notional Equity		927.38					



Opening Equity			927.38	927.38	927.38	927.38	927.38
Average Equity			927.38	927.38	927.38	927.38	927.38
Rate of Return on Equity			15.50%	15.50%	15.50%	15.50%	15.50%
Return on Equity			143.74	143.74	143.74	143.74	143.74
<b>Interest on Working Capital</b>							
Maintenance Spares			6.89	7.13	7.36	7.60	7.86
O & M expenses			3.83	3.96	4.09	4.22	4.37
Receivables		2 Months	65.87	64.20	62.49	44.22	44.52
Total			76.59	75.28	73.95	56.05	56.75
Interest		13.50%	<b>10.34</b>	<b>10.16</b>	<b>9.98</b>	<b>7.57</b>	<b>7.66</b>
<b>Annual Transmission Charges</b>							
Depreciation			163.22	163.22	163.22	63.35	63.35
Interest on Loan			32.02	20.56	8.92	0.00	0.00
Return on Equity			143.74	143.74	143.74	143.74	143.74
Interest on Working Capital			10.34	10.16	9.98	7.57	7.66
O & M Expenses			45.91	47.51	49.10	50.69	52.39
<b>Total</b>			<b>395.24</b>	<b>385.20</b>	<b>374.96</b>	<b>265.35</b>	<b>267.15</b>
O&M for S/C (Twin & triple Conductor) in Rs. Lakhs/Km			0.404	0.418	0.432	0.446	0.461

