

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 159/TT/2021

Coram:

**Shri I. S. Jha, Member
Shri Arun Goyal, Member
Shri P.K Singh, Member**

Date of Order: 25.06.2022

In the matter of:

Petition under Section 79(1)(c) and (d) of the Electricity Act, 2003 read with the provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 for seeking determination of tariff for the Inter-State transmission lines of the Petitioner for 2019-24 tariff period.

And in the matter of:

Haryana Vidyut Prasaran Nigam Limited (HVPNL),
Shakti Bhawan, Sector-6,
Panchkula, Haryana-134109.

.....**Petitioner**

Vs

1. Power Grid Corporation of India Limited,
"Saudamani", Plot No.2, Sector-29,
Gurgaon -122001 (Haryana).
2. Himachal Pradesh Power Transmission Corporation Limited (HPPTCL),
HIMFED Bhawan, Panjari,
Shimla-171004 (HP).
3. Rajasthan Rajya Vidyut Prasaran Nigam Limited (RRVPN),
Vidyut Bhawan, Janpath,
Jaipur-302005, Rajasthan.
4. Punjab State Transmission Corporation Limited (PSTCL),
PSEB Head Office, The Mall,
Patiala-147001.

...**Respondents**



For Petitioner: Shri Samir Malik, Advocate, HVPNL
Ms. Nikita Choukse, Advocate, HVPNL
Shri Sahil Sood, Advocate, HVPNL

For Respondent: None

ORDER

The Petitioner, Haryana Vidyut Prasaran Nigam Limited (HVPNL), has filed the instant petition for determination of tariff for 2019-24 tariff period in accordance with the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 (hereinafter referred to as “the 2019 Tariff Regulations”) and the Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2010 (hereinafter referred to as “the 2010 Sharing Regulations”) in respect of seven transmission lines/ system connecting with other States and intervening transmission lines incidental to inter-State transmission of electricity owned by it.

2. The Petitioner has made the following prayers:

- “a) Approve the payments made by PGCIL for the Asset I, V, VI for FY 2015-19 to the extent mentioned in the instant Petition;*
- b) Determine the capital cost of the Asset I to VII of the Petitioner covered under the instant petition for the period of FY 2019-20 to 2023-24;*
- c) Determine the transmission tariff for the Asset I to VII of the Petitioner covered under the instant petition for the period of FY 2019-20 to 2023-24;*
- d) Approve the reimbursement of expenditure towards filing fees, publishing of notice and any other expenditure incurred by the Petitioner in relation to filing the present petition before the Hon'ble Commission in terms of the Tariff regulation 2019; and*
- e) Pass any such further order(s) as deemed fit and proper in the circumstances of the case.”*

Background

3. The brief facts of the case are as follows:



(a) The Petitioner is a Government company within the meaning of Companies Act, 1956. In exercise of power under Section 38(1) of the Electricity Act, 2003(2003 Act), the Government of Haryana declared HVPNL as the STU and it being a STU is deemed to be a transmission licensee under Section 14 of the 2003 Act. HVPNL being a STU and deemed transmission licensee, is required to build, maintain and operate a co-ordinated and economical intra-State transmission system (ISTS) as per Section 39 and Section 40 of the 2003 Act.

(b) The Commission *vide* order dated 14.3.2012 in Petition No. 15/SM/2012 had directed the developers/owners of the transmission lines or the STU's to file tariff petition for determination of tariff for the transmission lines owned by them for inclusion in PoC charges in accordance with the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter referred to as "2009 Tariff Regulations").

(c) 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 2014-19 tariff period as per the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as "2014 Tariff Regulations").

(d) In compliance to the Commission's order dated 14.3.2012 in Petition No.15/SM/2012, four transmission lines of HVPNL were identified as inter-State transmission lines on the basis of the inputs provided by Northern Regional Power



Committee (NRPC) and HVPNL was directed to file tariff petition for the following four transmission lines for the purpose of inclusion in the PoC charges:

S. No.	From	To	Voltage Level (kV)	Connecting States
1	Baddi	Panchkula	220	Himachal Pradesh-Haryana
2	Kunihar	Panchkula	220	Himachal Pradesh-Haryana
3	Bhiwadi	Rewari	220	Rajasthan-Haryana
4	Bhiwadi	Badshahpur	220	Rajasthan-Haryana

(e) The Petitioner in Petition No. 246/TT/2013 submitted that the following lines are presently being used as ISTS lines:

S. No.	Name of the line	Connecting States	Length in Kms	COD
1	220 kV D/C Kunihar-Baddi-Panchkula	Himachal Pradesh-Haryana	81.00	3.5.1990
2	220 kV S/C Bhiwadi-Rewari	Himachal Pradesh-Haryana	23.761	7.2.2009
3	220 kV S/C Bhiwadi-Mau	Rajasthan-Haryana	14.067	18.6.2011

(f) The Commission *vide* order dated 17.9.2015 in Petition No.246/TT/2013 approved the tariff for the two of the above transmission lines and the same is as follows:

(₹ in lakh)						
S. No.	Name of Line	Length (Ckt km)	2011-12 (*)	2012-13	2013-14	2014-15
1	220 kV S/C Bhiwadi-Rewari line (Rajasthan-Haryana) (Asset-I)	23.761	151.46	144.77	127.80	217.17
2	220 kV D/C Madanpur (Panchkula)- Kunihar (HP) line with LILO of one Ckt. at 220 kV Baddi (HP) sub-station (Haryana-HP) (Now Asset-V and VI)	81.0	415.14	404.10	353.84	592.25
Total			566.59	548.86	481.64	809.41

*YTC for 9 months has been taken as per Sharing Regulations, 2010 which came into force from 1.7.2011.



(g) The Petitioner has filed the instant petition for determination of transmission tariff for the following seven number of transmission line assets under the 2019 Tariff Regulations for 2019-24 tariff period. The details of the transmission assets are as follows:

Asset	Asset Name	COD	Length in km	Connecting States
Asset-I	220 kV S/C Bhiwadi-Rewari (Ckt.-1)	7.2.2009	23.761	Rajasthan-Haryana
Asset- II	220 kV S/C Bhiwadi-Mau	18.6.2011	14.067	Rajasthan-Haryana
Asset- III	220 kV S/C Bhiwadi-Rewari (Ckt.-2)	18.1.2016	23.761	Rajasthan-Haryana
Asset- IV	220 kV S/C HSIIDC-Bawal-Bhiwadi	16.9.2016	25.69	Rajasthan-Haryana
Asset- V	220 kV S/C Pinjore-Kunihar (Ckt.-1)	16.11.2017	49.5 (Haryana Portion 24.5 Km)	HP-Haryana
Asset- VI	220 kV S/C Pinjore-Kunihar (Ckt.-2)	13.7.2018	49.5 (Haryana Portion 24.5 Km)	HP-Haryana
Asset- VII	132 kV D/C Pinjore-Ropar	22.11.1971	55	Punjab-Haryana

(h) The Petitioner has submitted that Asset-V and Asset-VI were earlier 220 kV Madanpur-Kunihar double circuit lines (Ckt-1 LILO at Baddi) of 67 km which included Haryana portion of 40.5 km. The double circuit line was put into commercial operation on 3.5.1990. After LILO, the Madanpur-Kunihar double circuit line has been changed to two single circuit Pinjore-Kunihar lines with line length being 49.5 km (Haryana portion being 24.5 km).

(i) The tariff of Asset-I, Asset-V and Asset-VI from 2011-12 to 2014-15 was allowed *vide* order dated 17.9.2015 in Petition No. 246/TT/2013. The PoC charges of the aforesaid two number lines i.e. Asset I, V and VI for 2015-19 period has been credited to HVPNL by PGCIL based on the tariff approved by the Commission *vide*



order dated 17.9.2015 in the Petition No. 246/TT/2013 for the year 2014-15. These payments have been adjusted in ARR of HVPNL.

(j) The tariff (with respect to State Network) of Asset-II, Asset-III, Asset-IV and Asset-VII for 2015-19 period was allowed by the State Commission. As such, the Petitioner has already recovered tariff for Asset-II, Asset-III, Asset-IV and Asset-VII for 2015-19 period from State Commission. It is a settled principle in law that there cannot be any vacuum in tariff, therefore, in deference to this principle and orders passed by this Commission from time to time, PGCIL has made the payments to HVPNL for 2015-19 period in respect of instant Asset-I, V and VI. Thus, in the facts and circumstances of the instant case, the Petitioner has requested the Commission that the payment so made by PGCIL for the Asset-I, V and VI for 2015-19 period may be approved.

4. The hearing in this matter was held on 25.11.2021 through video conference and the order was reserved. However, the order could not be issued before Shri P.K. Pujari, former Chairperson, demitted the office. Therefore, the matter was heard again on 23.6.2022 and order was reserved.

Number of Assets to be covered

5. The Petition has been filed in response to the Commission's directions for determination of tariff of transmission lines owned or controlled by the STU which carry Inter-State power. Section 2(36) of the 2003 Act defines the ISTS as follows:

"2(36) inter-State transmission system includes-

(i) Any system for the conveyance of electricity by means of main transmission line from the territory of one State to another state;



(ii) *The conveyance of electricity across the territory of any intervening State as well as conveyance within the State which is incidental to such inter-State transmission of electricity;*

(iii) *The transmission of electricity within the territory of a State on a system built, owned, operated, maintained or controlled by a Central Transmission Utility”*

6. The Petitioner has submitted that a total of seven transmission lines owned by the Petitioner satisfy the conditions of ISTS. The STU lines used for carrying inter-State power can be considered for inclusion in the PoC charges only if it is certified by RPC in terms of para 2.1.3 of Annexure-I to Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010 (hereinafter referred to as “2010 Sharing Regulations”) which is extracted hereunder:-

“xxx

xxx

Overall charges to be allocated among nodes shall be computed by adopting the YTC of transmission assets of the ISTS licensees, deemed ISTS licensees and owners of the non-ISTS lines which have been certified by the respective Regional Power Committees (RPC) for carrying inter-State power. The Yearly Transmission Charge, computed for assets at each voltage level and conductor configuration in accordance with the provisions of these regulations shall be calculated for each ISTS transmission licensee based on indicative cost level provided by the Central Transmission Utility for different voltage levels and conductor configuration. The YTC for the RPC certified non-ISTS lines which carry inter-State power shall be approved by the Appropriate Commission.”

7. We have considered the submissions of the Petitioner and have perused the material record. Out of the seven numbers of transmission assets, the asset wise tariff allowed/ not allowed for the above mentioned seven transmission assets is discussed in the subsequent paragraphs.

Asset-I

8. Asset-I is a natural ISTS line between Haryana and Rajasthan having COD as 7.2.2009. The certificate of NRPC is available in terms of the 2010 Regulation in respect of Asset-I which was included in the Commission’s order dated 14.3.2012 in Petition No.



15/SM/2012. The Commission vide order dated 17.9.2015 in Petition No. 246/TT/2013 has allowed tariff of Asset-I for the 2011-15 period in line with the Commission's Indicative Cost Methodology in respect of old natural ISTS lines owned by STU's. Accordingly, tariff is approved for Asset-I under the 2019 tariff Regulations for 2019-24 tariff period.

Asset-II, Asset-III, Asset-IV and Asset-VII

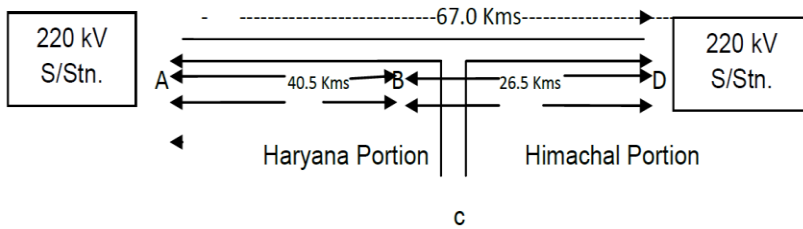
9. The Commission did not grant any tariff for Asset-II, Asset-III, Asset-IV and Asset-VII. The Petitioner had not filed any Petition of tariff determination of these assets during 2014-19 tariff period and submitted that the State Commission has already granted tariff in respect of these assets in the ARR for the State network for 2015-19 period. Therefore, we are not inclined to allow tariff for the Asset-II, Asset-III, Asset-IV and Asset-VII. The Petitioner is directed to continue its claim of tariff with respect to the transmission line under the ARR methodology of Haryana Electricity Regulatory Commission (“HERC”) as was done by for the 2015-19 period.

Asset-V and Asset-VI

10. The Commission vide order dated 17.9.2015 in Petition No. 246/TT/2013 has considered the following:

Sl. No	Name of the Line	Total length of line (km)			Remark
		Haryana Himachal	Portion portion	Total	
1	220 kV D/C Madanpur (Panchkula)-Kunihar (HP) line with LILO of one Ckt.at 220 kV Baddi (HP) Sub-station	40.5	26.5	67.0	The lines are being maintained by HVPNL and HPSEB in their territory
2	LILO portion upto 220 kV Baddi Sub-station	---	2.0	2.0	





Length of lines owned by Haryana and Himachal Pradesh are as follows:

Sl. No	Section	Length (in km)
1	A to B (up to TL No. 151)	40.5 (Haryana portion)
2	B to C	02.0 (Himachal Portion)
3	B to D	26.5 (Himachal Portion)

The 220 kV D/C Kunihar-Baddi-Panchkula line is now changed to 220 kV D/C Panchkula-Kunhihar with LILO at Baddi i.e. two lines mentioned in Petition No.15/SM/2012 (220 kV Baddi-Panchkula and 220 kV Kunhihar-Panchkula) is now one D/C line.

11. The description of lines associated with Madanpur (Panchkula) and Kunihar Sub-stations is as follows:

Sl. No	Description of Lines	Length
1	220 kV Madanpur-Pinjore line	21.5+5.5=27 km
2	220 kV Pinjore-Baddi line	19+5.5 =24.5 km (Till 151 T.L Haryana Portion)
3	220 kV Pinjore to Kunihar line	49.5 km

12. It is observed that the Petitioner initially made the LILO of the existing 220 kV Madanpur (Panchkula)- Kunihar (Himachal pradesh) at Baddi Sub-station (in Himachal Pradesh). The Petitioner further made the LILO of 220 kV Madanpur (Panchkula)-Baddi line (Himachal Pradesh) and 220 kV Madanpur (Panchkula)-Kunihar line (Himachal



Pradesh) at Pinjore Sub-station (Haryana). As such, multiple LILO of the existing transmission line has been done by the Petitioner, first at Baddi Sub-station (Himachal Pradesh) and later on at Pinjore Sub-station (Haryana). Therefore, basic nature of natural ISTS line (in terms of line length, both terminal end, power flow, etc.) which was earlier approved has changed. Further, the Petitioner has not submitted any RPC/SCM approval where the LILO of the existing transmission line is approved and the reasons for creating the LILO of the existing line and any agreement made between the two states regarding power exchange over this line and maintenance of the line to be carried out by the two states in respective portion.. Therefore, we are not inclined to approve the tariff in respect of Asset-V and Asset-VI.

13. Therefore, tariff is being determined for only Asset-I i.e. 220 kV S/C Bhiwadi-Rewari (Ckt-1) under the 2019 Tariff Regulations.

14. The tariff of Asset-I, Asset-V and Asset-VI from 2011-12 to 2014-15 was allowed *vide* order dated 17.9.2015 in Petition No. 246/TT/2013 and no tariff was approved by the Commission for these assets for the 2015-19 period. The Petitioner has submitted that the payments for Asset-I, Asset-V and Asset-VI were made by PGCIL for the 2015-19 tariff period based on the order dated 17.9.2015 in Petition No. 246/TT/2013. The Petitioner has further requested to approve the payments already made by PGCIL for Asset-I, Asset-V and Asset-VI for 2015-19 period.

15. We have considered the submissions of the Petitioner. The Petitioner was granted tariff for Asset-I, Asset-V and Asset-VI for 2011-12 to 2014-15 period *vide* order dated 17.9.2015 in Petition No. 246/TT/2013. It appears that PGCIL had recovered the tariff of



Asset-I, Asset-V and Asset-VI for the period 2015-19 and paid the same to Haryana on the basis of the tariff granted for the said assets for the period 2011-12 to 2014-15 vide order dated 17.9.2015. It is not clear how the tariff was recovered for the assets for the 2015-19 period without the Commission's order. In this regard, it is observed that the Commission vide order dated 5. 9.2018 in Petition No.07/SM/2017 directed the State Utilities to file tariff petitions for the 2014-19 tariff period for the inter-State transmission lines owned by them within two months of issue of the order and if not filed it would be presumed that they are not interested to claim the tariff for the transmission lines. The relevant portions of the order dated 5.9.2018 is extracted hereunder.

“.....Pursuant to the said order of the Commission, some of the owners/developers of these lines have filed tariff petitions. However, the following entities have not filed the tariff petitions despite a lapse of more than a year:-

- (a) Punjab State Transmission Corporation Limited (PSTCL)
- (b) Power Development Department of Jammu & Kashmir (PDD)
- (c) Gujarat Energy Transmission Corporation Limited (GETCO)
- (d) Jharkhand State Electricity Board (JSEB)
- (e) West Bengal State Electricity Distribution Company Limited (WBSEDCL)
- (f) Haryana Vidyut Prasaran Nigam Limited (HVPNL)
- (g) Assam Electricity Grid Corporation Limited (AEGCL)
- (h) Meghalaya Energy Corporation Limited (MECL)
- (i) Tripura State Electricity Corporation Limited (TSECL).”

“5. If the tariff petitions are not filed by the concerned State Utilities, within two months from the date of issue of this order it will be presumed that these utilities are not interested to claim the tariff for the inter-State transmission lines within their control and the tariff wherever earlier granted for these lines would be taken off from the computation of PoC charges on expiry of two months from the date of issue of this order.”

16. The Commission directed the state utilities to file tariff Petition within two months, despite the direction of the Commission, the Petitioner has not filed any tariff Petition for 2015-19 period. As the Petitioner has not filed any petition as directed, we are of the view that the Petitioner cannot claim any tariff period now for the past period. Therefore, we are not inclined to regularise the tariff recovered without any valid order of the



Commission. Accordingly, the Petitioner is granted liberty to file fresh petition for determination of tariff for Asset-I, Asset-V and Asset-VI for the period of 2015-19 within a period of one month from the date of issue of this order.

17. The Respondents are distribution licensees, power departments and transmission licensees, who are procuring transmission services from the Petitioner, mainly beneficiaries of the Northern Region.

18. The Petitioner has served a copy of the petition upon the Respondents and notice of this application has been published in newspapers in accordance with Section 64 of the 2003 Act. No comments or suggestions have been received from the public in response to the notice in newspaper. No reply to the petition has been filed by any Respondent in the matter.

19. The hearing in this matter was held on 25.11.2021 through video conference and the order was reserved.

20. This order is issued considering the submissions made in petition dated 12.1.2021 and the Petitioner's submissions made in affidavit dated 16.8.2021.

21. Having heard the representatives of the Petitioner present at the hearing and having careful perusal of the materials on record, we proceed to dispose of the petition.

22. The details of instant Asset-I for determination of tariff for 2019-24 tariff period is as follows:

Asset	Asset Name	Connecting States	Line length (in km)	COD
Asset-I	220 kV S/C Bhiwadi-Rewari line (Ckt-1)	Rajasthan-Haryana	23.761	7.2.2009

23. The Petitioner has submitted that the individual Audited capital cost of Asset-I is not available. Hence, the capital cost of Asset-I was been calculated on the basis of 'indicative cost methodology' as per order dated 21.6.2018 in Petition No. 237/TT/2016. Accordingly, the Commission *vide* order dated 17.9.2015 in Petition No. 246/TT/2013 allowed/ admitted the capital cost of Asset-I considered in the instant order, as under:

Rationalised cost of 400 kV S/C line (₹ lakh per km)	Transmission Line length (in km)	Multiplication factor (Rationalised cost of 400 kV S/C line converted to 220 kV S/C line)	Gross Block (₹ in lakh)
47.54	23.761	0.36	406.66

24. The Petitioner has not projected Additional Capital Expenditure (ACE) during the 2019-24 tariff period. The Petitioner has not claimed any initial spares for period 2019-24 tariff period. Accordingly, the capital cost as admitted *vide* order dated 17.9.2015 in Petition No. 246/TT/2013 is considered as opening capital cost as on 1.4.2019 for determination of tariff for 2019-24 tariff period in accordance with Regulation 19 of the 2019 Tariff Regulations is as follows:

(₹ in lakh)				
2019-20	2020-21	2021-22	2022-23	2023-24
406.66	406.66	406.66	406.66	406.66

25. Regulation 13(13) of the Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2020 (hereinafter referred to as "the 2020 Sharing Regulations) provides for inclusion of the tariff approved for the intra-State transmission system in the PoC computation. Regulation 13(13) provides as



follows:

“ 13 (13) An intra-State transmission system for which tariff is approved by the Commission shall be included for sharing of transmission charges of DICs in accordance with Regulations 5 to 8 of these regulations, only for the period for which such tariff has been approved.”

26. The Commission in its order dated 22.6.2018 in Petition No. 155/TT/2017 has adopted a methodology for the transmission charges in respect of natural/ deemed ISTS lines. The relevant portion of the said order is extracted as follows:

“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 Pradesh Power Transmission Corporation Limited respectively. The 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 30th 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.*

18. 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."

27. The above methodology of Petition No. 155/TT/2017 was adopted by the Commission while determining tariff of instant assets for 2014-19 tariff period vide order dated 5.2.2020 in Petition no. 10/TT/2019. Accordingly, the same methodology subject to the provisions of the 2019 Tariff Regulations has been extended for the purpose of



determination of tariff in respect of the transmission assets for 2019-24 tariff period. Thus, while calculating tariff in respect of the transmission assets, 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 2019 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 2019 Tariff Regulations shall be applied for calculating the rate of interest on working capital on normative basis.
- (viii) O&M Expenses as per the 2019 Tariff Regulations shall be considered.



(ix) Where the life of transmission line is more than or equal to 25 years as on 1.4.2019, only O&M Expenses and IWC shall be allowed in lieu of complete tariff.

28. Asset-I was put into commercial operation on 7.2.2009 and has completed about 10 years as on 31.3.2019. Thus, in line with the aforesaid methodology, all tariff components are being allowed under the provisions of the 2019 Tariff Regulations.

29. We have considered the submission of the Petitioner. The actual weighted average rate of interest (WAROI) on loans as per PGCIL's balance sheet as a whole for 2019-20 and 2020-21 period has been arrived and considered for 2019-20 and 2020-21, respectively. WAROI for 2020-21 is projected as rate of interest from 2021-22 to 2023-24.

Operation & Maintenance Expenses ("O&M Expenses")

30. The norms specified under Regulation 35(3)(a) of the 2019 Tariff Regulations provides as follows:

“35. Operation and Maintenance Expenses:

...

(3) Transmission system:

(a) The following normative operation and maintenance expenses shall be admissible for the transmission system:

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
<i>Norms for sub-station Bays (₹ Lakh per bay)</i>					
765 kV	45.01	46.60	48.23	49.93	51.68
400 kV	32.15	33.28	34.45	35.66	36.91
220 kV	22.51	23.30	24.12	24.96	25.84
132 kV and below	16.08	16.64	17.23	17.83	18.46
<i>Norms for Transformers (₹ Lakh per MVA)</i>					
765 kV	0.491	0.508	0.526	0.545	0.564
400 kV	0.358	0.371	0.384	0.398	0.411
220 kV	0.245	0.254	0.263	0.272	0.282
132 kV and below	0.245	0.254	0.263	0.272	0.282



Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
<i>Norms for AC and HVDC lines (₹ Lakh per km)</i>					
<i>Single Circuit (Bundled Conductor with six or more sub-conductors)</i>	0.881	0.912	0.944	0.977	1.011
<i>Single Circuit (Bundled conductor with four sub-conductors)</i>	0.755	0.781	0.809	0.837	0.867
<i>Single Circuit (Twin & Triple Conductor)</i>	0.503	0.521	0.539	0.558	0.578
<i>Single Circuit (Single Conductor)</i>	0.252	0.260	0.270	0.279	0.289
<i>Double Circuit (Bundled conductor with four or more sub-conductors)</i>	1.322	1.368	1.416	1.466	1.517
<i>Double Circuit (Twin & Triple Conductor)</i>	0.881	0.912	0.944	0.977	1.011
<i>Double Circuit (Single Conductor)</i>	0.377	0.391	0.404	0.419	0.433
<i>Multi Circuit (Bundled Conductor with four or more sub-conductor)</i>	2.319	2.401	2.485	2.572	2.662
<i>Multi Circuit (Twin & Triple Conductor)</i>	1.544	1.598	1.654	1.713	1.773
<i>Norms for HVDC stations</i>					
<i>HVDC Back-to-Back stations (Rs Lakh per 500 MW) (Except Gazuwaka BTB)</i>	834	864	894	925	958
<i>Gazuwaka HVDC Back-to-Back station (₹ Lakh per 500 MW)</i>	1,666	1,725	1,785	1,848	1,913
<i>500 kV Rihand-Dadri HVDC bipole scheme (Rs Lakh) (1500 MW)</i>	2,252	2,331	2,413	2,498	2,586
<i>±500 kV Talcher- Kolar HVDC bipole scheme (Rs Lakh) (2000 MW)</i>	2,468	2,555	2,645	2,738	2,834
<i>±500 kV Bhiwadi-Balia HVDC bipole scheme (Rs Lakh) (2500 MW)</i>	1,696	1,756	1,817	1,881	1,947
<i>±800 kV, Bishwanath-Agra HVDC bipole scheme (Rs Lakh) (3000 MW)</i>	2,563	2,653	2,746	2,842	2,942

Provided that the O&M expenses for the GIS bays shall be allowed as worked out by multiplying 0.70 of the O&M expenses of the normative O&M expenses for bays;

Provided further that:

- i. the operation and maintenance expenses for new HVDC bi-pole schemes commissioned after 1.4.2019 for a particular year shall be allowed pro-rata on the basis of normative rate of operation and maintenance expenses of similar HVDC bi-pole scheme for the corresponding year of the tariff period;*
- ii. the O&M expenses norms for HVDC bi-pole line shall be considered as Double Circuit quad AC line;*
- iii. the O&M expenses of ±500 kV Mundra-Mohindergarh HVDC bipole scheme (2000 MW) shall be allowed as worked out by multiplying 0.80 of the normative O&M expenses for ±500 kV Talchar-Kolar HVDC bi-pole scheme (2000 MW);*
- iv. the O&M expenses of ±800 kV Champa-Kurukshetra HVDC bi-pole scheme (3000*



MW) shall be on the basis of the normative O&M expenses for ±800 kV, Bishwanath-Agra HVDC bi-pole scheme;

- v. the O&M expenses of ±800 kV, Alipurduar-Agra HVDC bi-pole scheme (3000 MW) shall be allowed as worked out by multiplying 0.80 of the normative O&M expenses for ±800 kV, Bishwanath-Agra HVDC bi-pole scheme; and*
- vi. the O&M expenses of Static Synchronous Compensator and Static Var Compensator shall be worked at 1.5% of original project cost as on commercial operation which shall be escalated at the rate of 3.51% to work out the O&M expenses during the tariff period. The O&M expenses of Static Synchronous Compensator and Static Var Compensator, if required, may be reviewed after three years.*

(b) The total allowable operation and maintenance expenses for the transmission system shall be calculated by multiplying the number of sub-station bays, transformer capacity of the transformer (in MVA) and km of line length with the applicable norms for the operation and maintenance expenses per bay, per MVA and per km respectively.

(c) The Security Expenses and Capital Spares for transmission system shall be allowed separately after prudence check:

Provided that the transmission licensee shall submit the assessment of the security requirement and estimated security expenses, the details of year-wise actual capital spares consumed at the time of truing up with appropriate justification.

(4) Communication system: The operation and maintenance expenses for the communication system shall be worked out at 2.0% of the original project cost related to such communication system. The transmission licensee shall submit the actual operation and maintenance expenses for truing up.”

31. The normative O&M Expenses for 2019-24 tariff period is specified in Regulation 35(3) of 2019 Tariff Regulation. The O&M expenses has been calculated by multiplying the km of line length with the applicable norms for the O&M expenses per km of respective line.

32. The Petitioner has submitted the technical parameters of Asset-I, considered for the purpose of working out O&M expenses as under:

Voltage	Line Type (S/C or D/C)	Number of conductor/ sub-conductors	COD	Line Length (km)
220 kV	S/C	1	7.2.2009	23.761



33. We have considered the technical parameters submitted by the Petitioner. Accordingly, the details of the O&M Expenses worked out for Asset-I as per the provisions of Regulation 35(3)(a) of the 2019 Tariff Regulations are as under:

(₹ in lakh)				
2019-20	2020-21	2021-22	2022-23	2023-24
5.988	6.178	6.415	6.629	6.867

Transmission Charges

34. The transmission charges allowed for Asset-I for 2019-24 tariff period under the 2019 Tariff Regulations is as follows:

(₹ in lakh)					
Asset-I Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	21.47	21.47	8.33	8.33	8.33
Interest on Loan	2.88	1.18	0.00	0.00	0.00
Return on Equity	18.91	18.91	18.91	18.91	18.91
Interest on Working Capital	0.91	0.84	0.60	0.61	0.62
O & M Expenses	5.99	6.18	6.42	6.63	6.87
Total	50.16	48.58	34.26	34.49	34.73

Filing Fee and the Publication Expenses

35. The Petitioner has sought reimbursement of fee paid by it for filing the petition and publication expenses. 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 Regulation 70(1) of the 2019 Tariff Regulations.

Sharing of Transmission Charges

36. With effect from 1.7.2011, sharing of transmission charges for inter-State transmission systems was governed by the provisions of the 2010 Sharing Regulations. However, with effect from 1.11.2020, the 2010 Sharing Regulations has been repealed



and sharing is governed by the provisions of the 2020 Sharing Regulations. Accordingly, the liabilities of DICs for arrears of transmission charges determined through this order shall be computed DIC-wise in accordance with the provisions of respective Tariff Regulations and shall be recovered from the concerned DICs through Bills under Regulation 15(2)(b) of the 2020 Sharing Regulations.

37. The billing, collection and disbursement of transmission charges for subsequent period shall be recovered in terms of provisions of the 2020 Sharing Regulations as provided in Regulation 57 of the 2019 Tariff Regulations. Further, the transmission charges allowed in this order shall be adjusted against the ARR of the Petitioner approved by the HERC.

38. This order disposes of Petition No. 159/TT/2021 in terms of the above discussion and findings.

sd/-
(P.K Singh)
Member

sd/-
(Arun Goyal)
Member

sd/-
(I.S. Jha)
Member

