

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 242/MP/2022

Coram:

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

Date of Order: 20.07.2023

In the matter of:

Miscellaneous petition for in-principle approval for incurring additional capital expenditures (ACE) during 2019-24 block towards replacement of Transformers /Reactors under clause 25(2)(c) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019

And

In the matter of:

Power Grid Corporation of India Limited,
"Saudamini", Plot no.2,
Sector-29, Gurgaon -122 001 (Haryana).

...Petitioner

Vs

1. Ajmer Vidyut Vitran Nigam Limited,
Vidyut Bhawan , Panchsheel Nagar, Makarwali Road
Ajmer-305 004 (Rajasthan).
2. Jaipur Vidyut Vitran Nigam Limited,
Vidyut Bhawan, Janpath, Jyoti Nagar,
Jaipur-302 005 (Rajasthan).
3. Jodhpur Vidyut Vitran Nigam Limited,
New Power House, Industrial Area,
Jodhpur – 342 003(Rajasthan).



4. Himachal Pradesh Power Corporation Limited,
Himfed Building BCS, New Shimla
Shimla-171 009.
5. Punjab State Power Corporation Limited,
The Mall, PSEB Head Office, Patiala - 147 001.
6. Haryana Power Purchase Centre,
Shakti Bhawan, Sector-6
Panchkula (Haryana) 134 109.
7. Jammu And Kashmir State Power Development Corporation Limited (JKSPDCL),
Exhibition Ground, Opposite J&K High Court, Srinagar,
Jammu And Kashmir -190 009.
8. Uttar Pradesh Power Corporation Limited,
Shakti Bhawan, 14, Ashok Marg
Lucknow - 226 001.
9. BSES Yamuna Power Limited,
B-Block, Shakti Kiran, Building (Near Karkadooma Court),
Karkadooma, 2nd Floor,
New Delhi-110 092.
10. BSES Rajdhani Power Limited,
BSES Bhawan, Nehru Place,
New Delhi.
11. Tata Power Delhi Distribution Limited,
33 kV Sub-station, Building,
Hudson Lane, Kingsway Camp
North Delhi – 110 009.
12. Chandigarh Administration,
Sector -9, Chandigarh.
13. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road,
Dehradun.
14. North Central Railway,
Allahabad.



15. New Delhi Municipal Council,
Palika Kendra, Sansad Marg,
New Delhi-110 002.
16. Bhakra Beas Management Board,
Sector 19-B, Madhya Marg,
Chandigarh – 160019.
17. Grid Corporation of Orissa Limited,
Shahid Nagar, Bhubaneswar - 751 007.
18. Bihar State Power (Holding) Company Limited,
(Formerly Bihar State Electricity Board -BSEB)
Vidyut Bhavan, Bailey Road, Patna – 800 001.
19. West Bengal State Electricity Distribution Company Limited,
Bidyut Bhawan, Bidhan Nagar,
Block DJ, Sector-II, Salt Lake City,
Calcutta - 700 091.
20. Jharkhand State Electricity Board,
In front of Main Secretariat,
Doranda, Ranchi – 834 002.
21. Damodar Valley Corporation,
DVC Tower, Maniktala,
Civic Centre, VIP road, Calcutta - 700 054.
22. Power Department,
Government of Sikkim, Gangtok - 737 101,
23. Madhya Pradesh Power Management Company Limited,
Shakti Bhawan, Rampur,
Jabalpur - 482 008.
24. Madhya Pradesh Power Transmission Company Limited,
Shakti Bhawan, Rampur, Jabalpur - 482 008.
25. Madhya Pradesh Audyogik Kendra Vikas Nigam (Indore) Limited,
3/54, Press Complex, Agra-Bombay Road, Indore-452 008,
26. Maharashtra State Electricity Distribution Company Limited,
Hongkong Bank Building, 3rd Floor,
M.G. Road, Fort, Mumbai-400 001.



27. Maharashtra State Electricity Transmission Company Limited,
Prakashganga, 6th Floor, Plot No. C-19, E-Block,
Bandra Kurla Complex, Bandra (East) Mumbai-400 051.
28. Gujarat Urja Vikas Nigam Limited,
Sardar Patel Vidyut Bhawan,
Race Course Road, Vadodara - 390 007.
29. Electricity Department,
Government of Goa, Vidyut Bhawan, Panaji,
Near Mandvi Hotel, Goa - 403 001.
30. Electricity Department
Administration of Daman & Diu,
Daman - 396 210.
31. DNH Power Distribution Corporation Limited,
Vidyut Bhawan, 66Kv Road, Near Secretariat Amla,
Silvassa - 396 230.
32. Chhattisgarh State Power Transmission Company Limited,
Office of The Executive Director (C&P)
State Load Despatch Building,
Dangania, Raipur – 492 013.
33. Chhattisgarh State Power Distribution Company Limited,
P.O. Sunder Nagar, Dangania, Raipur
Chhattisgarh-492 013.
34. Tamil Nadu Generation and Distribution Corporation Limited,
NPKRR Maaligai, 800, Anna Salai, Chennai – 600 002.
35. Transmission Corporation of Andhra Pradesh Limited (APTRANSCO),
Vidyut Soudha, APTRANSCO Near Axis Bank ATM, Eluru Road
Gunadala, Vijaywada – 520 004.
36. Kerala State Electricity Board (KSEB),
Vaidyuthi Bhavanam,
Pattom, Thiruvananthapuram – 695 004.
37. Electricity Department,
Government of Pondicherry,
Pondicherry – 605 001.



38. Eastern Power Distribution Company of Andhra Pradesh, Limited (APEPDCL),
APEPDCL, P&T Colony,
Seethmmadhara, Vishakhapatnam, Andhra Pradesh.
39. Southern Power Distribution Company of Andhra Pradesh Limited (APSPDCL),
Srinivasasa Kalyana Mandapam Backside,
Tiruchanoor Road, Kesavayana Gunta,
Tirupati-517 501, Chittoor District, Andhra Pradesh.
40. Southern Power Distribution Company of Telangana Limited (TSSPDCL),
6-1-50, Corporate Office, Mint Compound,
Hyderabad – 500 063, Telangana.
41. Northern Power Distribution Company of Telangana Limited (TSNPDCL),
H.No 2-5-3 1/2, Vidyut Bhawan, Corporate Office,
Nakkal Gutta, Hanamkonda,
Warangal – 506 001, Telangana.
42. Bangalore Electricity Supply Company Limited, (BESCOM),
Corporate Office, K.R.Circle
Bangalore – 560 001, Karanataka.
43. Gulbarga Electricity Supply Company Limited, (GESCOM),
Station Main Road, Gulbarga, Karnataka.
44. Hubli Electricity Supply Company Limited, (HESCOM),
Navanagar, Pb Road, Hubli, Karnataka.
45. MESCOM Corporate Office,
Paradigm Plaza, Ab Shetty Circle,
Mangalore – 575 001, Karnataka.
46. Chamundeswari Electricity Supply Corporation Limited, (CESC),
927, L J Avenue, Ground Floor, New Kantharaj Urs Road
Saraswatipuram, Mysore – 570 009, Karnataka.
47. Assam Electricity Grid Corporation Limited,
(Formerly Assam State Electricity Board),
Bijulee Bhawan, Paltan Bazar,
Guwahati – 781 001, Assam.
48. Meghalaya Energy Corporation Limited
(Formerly Meghalaya State Electricity Board),



Short Round Road, "LUMJINGSHAI",
Shillong – 793001, Meghalaya.

49. Government of Arunachal Pradesh
Itanagar, Arunachal Pradesh.
50. Power and Electricity Department,
Government Of Mizoram,
Aizawl, Mizoram.
51. Manipur State Power Distribution Corporation Limited,
(Formerly Electricity Department, Government of Manipur)
Keishampat, Imphal.
52. Department of Power,
Government of Nagaland,
Kohima, Nagaland.
53. Tripura State Electricity Corporation Limited,
Vidyut Bhawan, North Banamalipur,
Agartala, Tripura (W) – 799001, Tripura.

...Respondents

For Petitioner : Shri S.S. Raju, PGCIL
Shri A Naresh Kumar, PGCIL

For Respondent : None

ORDER

The present petition has been filed by Power Grid Corporation of India Limited mainly for in-principle approval to incur Additional Capital Expenditures (ACE) during the 2019-24 tariff period towards the replacement of Transformers /Reactors under Regulation 25(2)(c) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019.

2. The Petitioner has made the following prayers in the instant petition:



- a. *Grant in - principle approval for incurring Additional capital expenditures (ACE) during 2019-24 block towards replacement of transformers/Reactors mentioned at SI No.1 to 19 of above table as per RPC approvals.*
- b. *Grant liberty to replace the ICTs/Reactors (whose useful life is completed/nearing completion) based on third party inspection reports (CPRI) and RPC approvals and approach to Hon'ble Commission at the time of true up along with actual additional capital expenditures.*
- c. *Pass such other orders as Hon'ble Commission deems fit and appropriate under the circumstances of the case and in the interest of justice."*

3. The Petitioner has made the following submissions in this regard:

a. The Petitioner had filed tariff petitions for several projects for the determination of transmission tariff for the 2019-24 period, including the estimated ACE towards the replacement of problematic/defective equipment. including the Power Transformers/ Reactors, which are the most critical components in any transmission system.

b. Power Transformers/ Reactors have an expected design life of 25 to 35 years. There are more than 3500 Transformer and Reactor units in the Petitioner's sub-stations. Transformer units under operation are of varying capacity, ranging from 5 MVA to 500 MVA of voltage classes 66 kV to 765 kV. These Transformers have been installed across the length and breadth of the country.

c. The Petitioner is transmitting electric power through long HV and EHV transmission line networks. The long transmission lines of the Petitioner have large inherent shunt capacitances between individual phases and ground and between the phases. Under light load conditions, the excessive reactive (capacitive) power thus produced can increase the receiving-end voltage of the line. Reactors are the



most compact and cost-efficient means of reactive power compensation and grid sustainability during contingencies. With the expansion of the network, there is a growing demand of Shunt Reactors. Further, the Shunt Reactor units, ranging from 16.67 MVAR to 125 MVAR in the 400 kV class and up to 110 MVAR in the 765 kV class, are under operation.

d. The Petitioner has to maintain serviceability of such a large fleet of Transformers/ Reactors which is critical considering the ageing fleet, the large addition of new Transformers/ Reactors especially at 765 kV level and the significant effect on the grid due to any outage. Although every effort is made to monitor and maintain the equipment failures occur because of the sheer number of such Transformers. However, in-service failure of a Transformer/ Reactor is potentially dangerous to the stability of the grid as well as user's safety and to the environment since Power Transformers and Reactors are very critical for maintaining the availability and reliability of the grid.

e. Failure of the Transformer and Reactor may occur on account of various reasons including pollution, working conditions, etc. Despite regular maintenance, the chances of failures are always there, and the chances for failure of old equipment remain high. Procurement of new Transformer/ Reactors takes generally two to three years' time. In-service failure of Transformer/ Reactors may result in failure to meet the load demand of consumers as well as instability to the Grid as the restoration of the same may take significant time.



f. To review the condition of Transformers and Reactors that have either completed or are about to complete 25 years of operation, the AMP test results/ DGA reports have been reviewed, and based on that, Transformer/Reactors have been selected for assessment. Expert opinion was, therefore, obtained from the CPRI for the assessment of the condition of these Transformers/ Reactors. In the first phase, a total of 89 units of Transformer/ Reactor have been selected for life assessment by CPRI, out of which 39 units have been declared critical and recommended for replacement. Additionally, in the second phase, a total of 14 units of Transformer/ Reactor have been selected for life assessment by CPRI, out of which 4 units have been declared critical and recommended for replacement.

g. The Commission, vide several orders/ RoPs, directed the Petitioner to obtain the approval of RPC for the replacement of ICTs/ Reactors being critical and high value elements and to file a separate petition for consideration by the Commission.

h. As per the directions of the Commission, RPC approval for the replacement of the following “ICTs and Reactors” (which were claimed under ACE as part of the tariff petitions of the 2019-24 block) has been obtained:

Sl. No	Project	ICTs/ Reactors proposed for replacement under ADD-CAP of 2019-24 tariff petitions	Approved by RPC	Petition No. (2019-24)	Order status	RPC reference
1	400 kV Jeypore-Talcher TS in ER	Replacement of 315 MVA ICT-II at Rengali Sub-station	Replacement of 315 MVA ICT-II at Rengali Sub-	448/TT/2020	Issued on 20.12.21	45 th ERPC



			station with 500 MVA ICT			
2	400 kV Jeypore-Talcher TS in ER	Replacement of 1ph 105 MVA ICT-I at Jeypore Sub- station	Replacement of 3 X 105 MVA ICT-I at Jeypore Sub-station with 500 MVA ICT			
3	Vindhyachal Stage-I Additional TS in WR	Replacement of 63 MVAR VSTPP-4 (Rewa-2) Line Reactor at Jabalpur Sub-station	Approved as claimed	311/TT/2020	Issued on 17.1.2022	41 st WRPC
4	Vindhyachal Stage-I Additional TS in WR	Replacement of 50 MVAR Itarsi-4 Line Reactor at Jabalpur Sub-station	Approved as claimed			
5	Vindhyachal Stage-I Additional TS in WR	Replacement of 63 MVAR Bus Reactor at Jabalpur Sub-station	Approved as claimed			
6	Vindhyachal Super Thermal Power Station Stage-I TS in WR	Replacement of 315 MVA ICT-II at Jabalpur Sub-station	Approved as claimed	321/TT/2020	Issued on 22.11.21	41 st WRPC
7		Replacement of 63 MVAR VSTPP-2 Line Reactor at Jabalpur Sub-station	Approved as claimed			
8		Replacement of 50 MVAR Jabalpur-1 Line Reactor at Itarsi Sub-station	Approved as claimed			
9	Gandhar Gas Power Station (Stage-I) in WR	Replacement of 315 MVA ICT-I at Dehgam Sub-station along with replacement of Insulating Oil (90 KL) of ICT-II at Dehgam	Approved as claimed	467/TT/2020	Issued on 15.4.2022	41 st WRPC
10	Rihand Transmission System in NR	Replacement of 400 kV 150MVA single-phase ICT unit (R Phase) at Panipat	Replacement of 3 nos. of single-phase 150MVA units with 3-Ph 500MVA ICT at Panipat Sub-station	78/TT/2021	Not Received*	53 rd NRPC
11		Replacement of 400 kV 150MVA single-phase ICT unit (Y Phase) at Panipat				
12		Replacement of 400kv 16.67 MVAR 1-Ph Bhiwadi-1 Line reactor (Y) at Agra S/S				



			Ph 50MVAR reactor at Agra Sub-station			
13		Replacement of 50 MVAR Agra L/R at Kanpur	Approved as claimed			
14	Singrauli TS in NR	Replacement of 50 MVAR Lucknow L/R at Bareilly	Replacement of 50 MVAR Lucknow L/R at Bareilly with 80MVAR Reactor	209/TT/2020	Issued on 7.2.2022	53 rd NRPC
15	Korba TS in WR	Replacement of 400 kV 3- ph 50 MVAR Raipur 1 LR at Bhadravati	Approved as claimed			
16	Korba TS in WR	Replacement of 400 kV 3- ph 50 MVAR Ramagundam I LR at Bhadravati	Approved as claimed	317/TT/2020	Issued on 3.2.2022	41 st WRPC
17	Korba TS in WR	Replacement of 400 kV 3- ph 50 MVAR Ramagundam II LR at Bhadravati	Approved as claimed			
18	Vindhyachal stage II TS in WR	Replacement of 400 kV 3- ph 50 MVAR, Sipat-III (Bhadravati-II) Line Reactor at Raipur	Approved as claimed	354/TT/2020	Issued on 8.2.2022	41 st WRPC
19	Trans. system associated with Kathalguri Gas based Combined Cycle Project in NER	Replacement of 50 MVAR Bus Reactor-I at Bongaigaon	Approved as claimed	274/TT/2020	Issued on 2.6.2022)	22 nd NERPC

* The order was issued by the Commission, after filing of the petition on 27.3.2023

i. Some of the ICTs/ Reactors claimed under the ACE have already been replaced due to an increase in severe DGA violations causing problems with loading of ICTs or the failure of units. These ICTs/Reactor were replaced from the regional spares, and the same are to be recouped at the earliest. Depending upon the healthiness/deterioration of the equipment after it completes its useful life or nears the completion of the useful life, the need for replacement of old



ICTs/Reactors may arise at any time. Above ICTs/Reactors which were proposed for replacements during the 2019-24 block in various petitions are of critical nature, and their failure may affect the stability and reliability of the grid.

j. The Commission may grant in-principle approval for incurring ACE during the 2019-24 block towards the replacement of Transformers /Reactors under the Regulation 25(2)(c) of the 2019 Tariff Regulations for the ICTs/Reactors mentioned at Sl. No.1 to 19 of the above table.

k. The Commission may also grant liberty to replace defective/problematic ICTs/Reactors (whose useful lives are completed/nearing completion) based on third party inspection reports (CPRI) and RPC approvals and thereafter approach the Commission at the time of true up along with actual additional capital expenditures.

4. The Petitioner, vide affidavit dated 27.3.2023, has submitted that the RPCs have approved replacement of certain other additional “ICTs and Reactors” (besides those claimed in the petition) and has sought in-principle approval for incurring ACE towards replacement of those ICTs and Reactors during the 2019-24 tariff period. The details of those “ICTs and Reactors” are as follows:

a) Replacement of “ICTs and Reactors” that are claimed under ACE as part of the tariff petitions of 2019-24 block:



Sl. No.	Project	ICTs/ Reactors proposed for replacement under ACE in 2019-24 tariff petitions	Approved by RPC	Petition No. (2019-24)	RPC Reference
1	NLC-II transmission system	400 kV 3-Ph 315 MVA ICT-II at Trichy	The Commission vide order dated 6.5.2021 approved replacement of 315 MVA ICT. However, SRPC based on the requirement approved replacement of 315 MVA ICT-II at Trichy Sub-station with 500 MVA ICT	155/TT/2020	44 th SRPC
2		400 kV 3-Ph 50 MVAR NEY1 LR at Trichy	The Commission vide order dated 6.5.2021 approved replacement of 50 MVAR LR. However, SRPC based on the requirement approved replacement of 400kV 3-Ph 50 MVAR NEY1 LR at Trichy Sub-station with 80 MVAR reactor		
3		400 kV 3-Ph 50 MVAR UDT1 LR at Trichur	The Commission vide order dated 6.5.2021 approved replacement of 50 MVAR LR and SRPC also based on the requirement approved replacement of 400 kV 3-Ph 50 MVAR UDT1 LR at Trichur with 50 MVAR		
4	Rihand TS	400 kV 3-Ph 80MVAR Bus Reactor at Ballabgarh	Replacement of 400 kV 3-Ph 80 MVAR Bus Reactor at Ballabgarh with 125MVAR reactor	78/TT/2021 (order pending)*	62 nd NRPC

* The order was issued by the Commission, after filing of the petition on 27.3.2023

b) Additional “ICTs and Reactors” approved by RPCs recently for replacement which were not claimed under ACE as part of the tariff petitions of 2019-24 block:



Sl. No.	Project	ICTs/ Reactors proposed recently for replacement under ADD-CAP	Approved by RPC	RPC reference
1	Transmission system associated with Kathalguri Gas based Combined Cycle Project in NER	400 kV 3-Ph 50MVAR Bus Reactor-2 at Bongaigaon	Replacement of 400 kV 3-Ph 50 MVAR Bus Reactor-2 at Bongaigaon with 50 MVAR reactor	22 nd NERPC
2	Transmission system associated with Kathalguri Gas based Combined Cycle Project in NER	400kV 3-Ph 50MVAR Balipara-2 LR at Bongaigaon	Replacement of 400 kV 3-Ph 50MVAR Balipara-2 LR at Bongaigaon with 50MVAR reactor	
3	Vindhyachal Super Thermal Power Station Stage-I TS in WR	400 kV 3 ph-50 MVAR Indore-II LR at Itarsi	Replacement of 400 kV 3 ph-50MVAR Indore-II LR at Itarsi with 50MVAR reactor	42 nd WRPC
4	Vindhyachal Stage-I Additional TS in WR	400 kV 3 ph-63MVAR Jabalpur-IV (Rewa-II) at Vindhyachal (NTPC)	Replacement of 400 kV 3 ph-63MVAR Jabalpur-IV (Rewa-II) at Vindhyachal (NTPC) with 63MVAR reactor	42 nd WRPC
5	Ramagundam STPP including ICT at Khammam and Reactor at Gazuwaka under CTP Augmentation in SR	315 MVA ICT-II at Nagarjunsagar	Replacement of 315 MVA ICT-II at Nagarjunsagar with 500MVA ICT	44 th SRPC

5. The Petitioner has also submitted that the Commission, in Petition Nos. 473/TT/2020 and 154/TT/2020, based on the recommendations of RPCs, had approved ACE during the 2019-24 block towards the replacement of ICTs/Reactors.

6. No reply has been received from any of the Respondents.

7. The final hearing on the matter was held on 13.4.2023 in which the representative of the Petitioner reiterated its submissions made in the petition.

Analysis

8. We have considered the submissions of the Petitioner. The Petitioner has prayed for in-principle approval of the cost of replacement of 28 “ICTs and Reactors”, which are



critical in nature and have completed their useful lives , as ACE during the 2019-24 tariff period under Regulation 25(2)(c) of the 2019 Tariff Regulations.

9. The Regulation 25 of the 2019 Tariff Regulation stipulates as follows:

“25. Additional Capitalisation within the original scope and after the cut-off date:

(1) The additional capital expenditure incurred or projected to be incurred in respect of an existing project or a new project on the following counts within the original scope of work and after the cut-off date may be admitted by the Commission, subject to prudence check:

- (a) Liabilities to meet award of arbitration or for compliance of the directions or order of any statutory authority, or order or decree of any court of law;*
- (b) Change in law or compliance of any existing law;*
- (c) Deferred works relating to ash pond or ash handling system in the original scope of work;*
- (d) Liability for works executed prior to the cut-off date;*
- (e) Force Majeure events;*
- (f) Liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments; and*
- (g) Raising of ash dyke as a part of ash disposal system.*

(2) In case of replacement of assets deployed under the original scope of the existing project after cut-off date, the additional capitalization may be admitted by the Commission, after making necessary adjustments in the gross fixed assets and the cumulative depreciation, subject to prudence check on the following grounds:

- (a) The useful life of the assets is not commensurate with the useful life of the Project and such assets have been fully depreciated in accordance with the provisions of these regulations;*
- (b) The replacement of the asset or equipment is necessary on account of change in law or Force Majeure conditions;*
- (c) **The replacement of such asset or equipment is necessary on account of obsolescence of technology; and***
- (d) The replacement of such asset or equipment has otherwise been allowed by the Commission.”*



10. Regulation 25(2)(c) of the 2019 Tariff Regulations provides for the grant of ACE towards replacement of the assets or equipment, if such replacement is necessary on account of the obsolescence of technology.

11. It is observed that the Petitioner had filed tariff petitions seeking approval for replacement of components such as the transformers/ Bus-reactors etc. under ACE during the 2019-24 tariff period under Regulation 25(2)(c) of the 2019 Tariff Regulations. The Commission, in order dated 9.1.2023 in Petition No. 473/TT/2020, order dated 11.7.2022 in Petition No.154/TT/2020 and order dated 27.3.2023 in Petition No.78/TT/2021, based on the recommendations of RPCs, had approved ACE during the 2019-24 tariff period towards the replacement of ICTs/Reactors. In order dated 9.1.2023, the Commission had allowed ACE under Regulation 25(2) of the 2019 Tariff Regulations on the recommendation of the RPC/ third party (CPRI). The relevant portion of the order dated 9.1.2023 is as follows:

"a) Replacement of sub-station equipment

56. The Petitioner has submitted that the sub-station has already completed more than 25 years of useful life and majority of the sub-station equipment need to be replaced. The proposed ACE towards replacement of 09 number of Circuit Breakers (CBs) at Somahalli, Hyderabad, Nagarjunasagar and 1 number at Hyderabad Sub-stations, 75 number of 400 kV and 9 number of 220 kV CTs at Somahalli, Salem, Sriperumbudur, Hyderabad, Nagarjunasagar and Munirabad Sub-stations, 42 number of 400 kV and 6 number of 220 kV CVT at Somahalli, Salem, Sriperumbudur, Hyderabad, Nagarjunasagar and Munirabad Sub-stations, 21 number of number of 216 kV Surge Arrestors at Somanhalli , Salem and Sriperumbudur Sub-station, 93 sets of 400 kV and 7 sets of 220 kV isolators at Somahalli, Hyderabad, Nagarjunasagar, Kadapa and Munirabad Sub-stations, one set of Static bus bar protection relay at Somanhalli Sub-station, replacement of old/obsolete electro-mechanical relay with IEC 61850 compliant numerical relays at at Somanhalli, Salem and Sriperumbudur Sub-stations, replacement of old auxiliary LT supply system and DC distribution Board (DCDB) at Hyderabad, Nagarjunasagar, Kadapa and Munirabad Sub-stations, replacement of existing old and worn-out fire protection system at Hyderabad, Nagarjunasagar, Kadapa



and Munirabad Sub-stations with new fire fighting system, replacement of bushings at Kadapa, replacement of conventional C&R panel to SAS based C&R panel at Hyderabad Sub-station, these items are of critical nature and their failure may affect the stability and reliability of the grid. Hence, the replacement of these obsolete equipment and consequential ACE towards this is allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations. The Petitioner is directed to submit the details of abstract cost estimates and details of the actual cost of the replaced equipment sub-station wise and work wise at the time of truing up.”

12. Similarly, the Commission in order dated 11.7.2022 in Petition No. 154/TT/2020

held as follows:

“76. We have considered the submissions of the Petitioner and TANGEDCO. The details of ACE allowed/disallowed for 2019-24 tariff Period are as follows:

(a) Replacement of sub-station equipment

The Petitioner has submitted that the sub-station has already completed more than 25 years of useful life and majority of the sub-station equipment need to be replaced. The proposed ACE towards replacement of 33 number of Circuit Breakers (CBs) at Somahalli, Nagarjunasgar, Vijayawada, Khammam, Gooty and Gazuwaka Sub-stations, 93 sets of 400 kV and 7 sets of 220 kV isolators at Somahalli, Nagarjunasgar, Vijayawada, Khammam, Gooty and Gazuwaka Sub-stations, 132 number of 400 kV and 12 number of 220 kV CTs at Somahalli, Nagarjunasgar, Vijayawada, Khammam, Gooty and Gazuwaka Sub-stations, 9 number of 390 kV and 3 number of 216 kV Surge Arrestors at Somanhalli Sub-station, 18 number of 400 kV and 9 number of 220 kV CVT at Somanhalli, Vijayawada, Khammam, Gooty and Gazuwaka Sub-stations, replacement of old/obsolete electro-mechanical relay with IEC 61850 compliant numerical relays at Somahalli, Nagarjunasgar, Vijayawada, Khammam, Gooty and Gazuwaka Sub-stations, replacement of old auxiliary LT supply system and DC distribution Board (DCDB) at Vijayawada, Khammam, Gooty and Gazuwaka Sub-stations, replacement of existing old and worn-out fire protection system at Vijayawada, Khammam, Gooty and Gazuwaka Sub-stations with new firefighting system, replacement of conventional C&R panel to SAS based C&R panel at Vijayawada Sub-station, installation of new back-up impedance realy for transformers at Gooty and Gazuwaka Sub-stations and wave fault locator at Nagarjunasgar, Vijayawada, Khammam, Gooty and Gazuwaka Sub-stations. These items are of critical nature and their failure may affect the stability and reliability of the grid. Hence, the replacement of these obsolete equipment and consequential ACE towards this is allowed. The Petitioner is directed to submit the details of abstract cost estimates and details of the actual cost of the replaced equipment sub-station wise and work wise at the time of truing up.



(b) Replacement of 63 MVAR Bus Reactor at Gooty Sub-station

- i) *The Petitioner has submitted that 63 MVAR Bus Reactor installed at Gooty sub-station was completed more than 25 years of useful life. The Petitioner has proposed replacement of 63 MVAR, 400 kV Bus reactor at Gooty Sub-station. The Commission directed the Petitioner to submit RPC/SCM approval for the replacement of 63 MVAR Bus Reactor at Gooty Sub-station. The Petitioner has submitted that 39th meeting of TCC of SR held on 3.12.2021 and SRPC meeting held on 6.12.2021 has approved the upgradation of 63 MVAR Bus Reactor at Gooty with 125 MVAR Bus Reactor.*
- ii) *We have considered the submissions of the Petitioner. The relevant extracts of the Minutes of the 39th meetings of TCC & SRPC held on 3.12.2021 are as follows:*

“O.24. Up gradation of 63MVAR Bus Reactors of Gooty and Gajuwaka with 125MVAR under Additional Capitalization for the tariff block 2019- 24

24.4	SRPC	Deliberation:
a) <i>Considering the views of CTUIL & SRLDC in support of PGCIL's proposal of replacement/ up gradation of the reactors at Gazuwaka and Gooty substations by 125 MVAR reactors, the Constituents agreed the same.</i>		
b) <i>SRPC approved the Up-gradation of 63 MVAR Bus Reactors of Gooty and Gajuwaka with 125 MVAR under Additional Capitalization for the tariff block 2019-24.”</i>		

- iii) *SRPC has approved for the up-gradation of 63 MVAR Bus Reactors of Gooty with 125 MVAR Bus Reactor. Taking into consideration the approval of SRPC and the technical requirement, the up-gradation of 63 MVAR Bus Reactors of Gooty with 125 MVAR Bus Reactor is approved.”*

13. Similarly, the Commission, in an order dated 27.3.2023 in Petition No. 78/TT/2021 approved the replacement of the reactors in Agra, Ballabgarh and Panipat Sub-stations on the basis of the NRPC approval. The relevant portion of the order dated 27.3.2023 is as follows:

“80. Based on the approval of 53rd NRPC and 8th Consultation Meeting for Evolving Transmission schemes in Northern Region meeting held on 30.6.2022 as mentioned above, we approve the 16.67 MVAR single-phase line Reactor at Agra Sub-station with 50 MVAR Reactor, 80 MVAR Bus Reactor at Agra Sub-station with 125 MVAR Bus Reactor at Ballabgarh Sub-station, 150 MVA single-phase RYY Phase ICT at Panipat Sub-station with three-phase 500 MVA ICT at Panipat Sub-station.”



14. The replacement of the Bus Reactors and Transformers, etc. was approved by the Commission, taking into consideration the critical role played by the said components in the transmission system, based on the recommendation of RPCs. Accordingly, the Commission, in an order dated 20.12.2021 in Petition No. 448/TT/2020 and in order dated 17.1.2022 in Petition No. 311/TT/2020 observed that the components as critical and valuable as the transformers, which are major elements in any transmission system, should be replaced after consultation with the RPCs. Accordingly, the Commission directed the Petitioner to seek the approval of the concerned RPC. The relevant portion of the order is as follows:

“45. Further, the Petitioner has also proposed to replace 105 MVA ICT-1 at Jeypore and 315 MVA ICT-II at Rengali sub-stations and has claimed ACE of ₹460.90 lakh and ₹1147.35 lakh during 2022-23 and 2023-24 respectively. We observe that these ICTs are major elements of the transmission system which are critical and high value elements. So, we are of the view that if such items are to be replaced, it is prudent to discuss in RPC and the concerned beneficiaries. Accordingly, the projected ACE towards ICT is not allowed at this stage and the Petitioner is directed to seek approval from RPC for the said proposed replacements and file a separate petition for ACE towards “ICTs and Reactors” for consideration by the Commission.”

15. Similar observation was made by the Commission in order dated 17.1.2022 in Petition No. 311/TT/2020, which is as follows:

“The Petitioner has also proposed to replace 63 MVAR bus reactor at Jabalpur, 50 MVAR Itarsi-4 L/R at Jabalpur and 63 MVAR VSTPP-4 (Rewa-2) L/R at Jabalpur with net ACE of ₹493.63 lakh in 2021-22. We observe that these are major elements of the transmission system which are critical and high value elements. Therefore, we are of the view that if such items are to be replaced, it is prudent to discuss them with RPC and concerned beneficiaries. Accordingly, the projected ACE towards bus reactor and line reactors is not allowed at this stage and the Petitioner is directed to seek prior approval of RPC for the said proposed replacements and file a separate petition for ACE towards “ICTs and Reactors” for consideration of the Commission.”



16. Accordingly, the Petitioner has filed the instant petition for in-principle approval of the cost of replacement of 28 obsolete ICTs/Reactors as ACE during the 2019-24 tariff period, which have completed their useful lives , along with the approval of the respective RPCs. It is observed that the Petitioner has replaced the said items on the basis of the findings and recommendations of CPRI.

17. We have carefully perused the list of the ICTs/Reactors that are sought to be replaced by the Petitioner and the recommendations of the concerned RPCs for their replacement, who have based their recommendations on the test results of CPRI. It is observed that the RPCs have recommended replacement of the ICTs/Reactors, which have outlived their useful lives.

18. Taking into consideration the critical nature of the components that are sought to be replaced, the fact that these components have completed their useful lives and the recommendations of the RPCs, we hereby **accord in-principle** approval of the cost of replacement of the following 27 components as ACE during the 2019-24 tariff period under Regulation 25(2)(c) of the 2019 Tariff Regulations:

Sl. No.	Project	Asset as approved by RPC	RPC meeting	Remark
1	400 kV Jeypore-Talcher TS in ER	Replacement of 315 MVA ICT-II at Rengali Sub-station with 500 MVA ICT	45 th ERPC meeting held on 26.3.2022	
2	400 kV Jeypore-Talcher TS in ER	Replacement of 3 X 105 MVA ICT-I at Jeypore Sub-station with 500 MVA ICT		
3	Vindhyachal Stage-I Additional TS in WR	Replacement of 63 MVAR VSTPP-4 (Rewa-2) Line Reactor at Jabalpur Sub-station	41 st WRPC meeting held on 23.2.2022	
4	Vindhyachal Stage-I Additional TS in WR	Replacement of 50 MVAR Itarsi-4 Line Reactor at Jabalpur Sub-station		



5	Vindhyachal Stage-I Additional TS in WR	Replacement of 63 MVAR Bus Reactor at Jabalpur Sub-station	41 st WRPC meeting held on 23.2.2022	
6	Vindhyachal Super Thermal Power Station Stage-I TS in WR	Replacement of 315 MVA ICT-II at Jabalpur Sub-station	41 st WRPC meeting held on 23.2.2022	Already replaced due to DGA violation.
7		Replacement of 63 MVAR VSTPP-2 Line Reactor at Jabalpur Sub-station		
8		Replacement of 50 MVAR Jabalpur-1 Line Reactor at Itarsi Sub-station		
9	Gandhar Gas Power Station (Stage-I) in WR	Replacement of 315 MVA ICT-I at Dehgam Sub-station along with replacement of Insulating Oil (90KL) of ICT-II at Dehgam	41 st WRPC meeting held on 23.2.2022	
10	Rihand Transmission System in NR	Replacement of 400 kV 150 MVA Single-Phase ICT unit (R-Phase) at Panipat	53 rd NRPC meeting held on 29.4.2022	Already approved vide order dated 27.3.2023 in P. No. 78/TT/20 21
11	Rihand Transmission System in NR	Replacement of 3 nos. of single-phase 150 MVA units with 3-Ph 500MVA ICT at Panipat Sub-station	53 rd NRPC meeting held on 29.4.2022	Approved vide order dated 27.3.2023 in P. No. 78/TT/20 21
12	Rihand Transmission System in NR	Replacement of 3 nos. of 16.67 MVAR 1-Ph reactors with 3-Ph 50MVAR reactor at Agra Sub-station	53 rd NRPC meeting held on 29.4.2022	Already approved vide order dated 27.3.2023 in P. No. 78/TT/ 2021
13	Singrauli TS in NR	Replacement of 50 MVAR Agra L/R at Kanpur	53 rd NRPC meeting held on 29.4.2022	
14		Replacement of 50 MVAR Lucknow L/R at Bareilly with 80 MVAR Reactor		
15	Korba TS in WR	Replacement of 400 kV 3-ph 50 MVAR Raipur 1 LR at Bhadravati	41 st WRPC	



16	Korba TS in WR	Replacement of 400 kV 3-ph 50 MVAR Ramagundam I LR at Bhadravati	meeting held on 23.2.2022	
17	Korba TS in WR	Replacement of 400 kV 3-ph 50 MVAR Ramagundam II LR at Bhadravati		
18	Vindhyachal stage II TS in WR	Replacement of 400 kV 3-ph 50 MVAR, Sipat-III (Bhadravati-II) Line Reactor at Raipur	41 st WRPC meeting held on 23.2.2022	
19	Transmission System Associated with Kathalguri Gas based combined Cycle Project in NER	Replacement of 50 MVAR Bus-Reactor-I at Bogaigaon	22 nd NERPC meeting held on 28.3.2022	
20	NLC-II transmission system	Replacement of 315 MVA ICT-II at Trichy Sub-station with 500 MVA ICT	44th SRPC meeting held on 5.11.2022	
21		Replacement of 400 kV 3-Ph 50 MVAR NEY1 LR at Trichy Sub-station with 80MVAR reactor		
22		Replacement of 400 kV 3-Ph 50 MVAR UDT1 Line Reactor at Trichur with 50 MVAR		
23	Rihand TS	Replacement of 400 kV 3-Ph 80 MVAR Bus Reactor at Ballabgarh with 125 MVAR reactor	62 nd NRPC meeting held on 31.1.2023	Already approved vide order dated 27.3.2023 in P. No. 78/TT/20 21
24	Trans. system associated with Kathalguri Gas based Combined Cycle Project in NER	Replacement of 400 kV 3-Ph 50 MVAR Bus Reactor-2 at Bongaigaon with 50MVAR Reactor	22 nd NERPC meeting held on 28.3.2022	
25	Trans. system associated with Kathalguri Gas based Combined Cycle Project in NER	Replacement of 400 kV 3-Ph 50 MVAR Balipara-2 Line Reactor at Bongaigaon with 50 MVAR Reactor	22 nd NERPC meeting held on 28.3.2022	
26	Vindhyachal Super Thermal Power Station Stage-I TS in WR	Replacement of 400 kV 3 ph-50 MVAR Indore-II Line Reactor at Itarsi with 50 MVAR Reactor	42 nd WRPC meeting held on 4/5.4.2022	
27	Vindhyachal Stage-I Additional TS in WR	Replacement of 400 kV 3 ph-63 MVAR Jabalpur-IV (Rewa-II) at Vindhyachal (NTPC) with 63MVAR reactor	42 nd WRPC meeting held on 4/5.4.2022	



28	Ramagundam STPP including ICT at Khammam and Reactor at Gazuwaka under CTP Augmentation in SR	Replacement of 315 MVA ICT-II at Nagarjunsagar with 500 MVA ICT	44 th SRPC meeting held on 5.11.2022	
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19. It is observed that the Petitioner has not submitted the third-party inspection report in the case of the above-mentioned elements. The Petitioner is directed to submit the report of the third party in the case of all the above-mentioned elements at the time of truing up along with the actual ACE for further consideration by the Commission.

20. The Petitioner has also prayed for granting liberty to replace the defective/problematic ICTs/Reactors (whose useful lives are completed/nearing completion) on the basis of the third-party inspection reports and CPRI and RPC approvals. The replacement of ICTs/Reactors would involve expenditure, which is required to be borne by the constituents. Therefore, we are not inclined to accord such a blanket liberty. The Petitioner is directed to approach the Commission as and when such a situation arises or at the time of claiming a tariff for the transmission project/ system.

21. The Petition No. 242/MP/2022 is disposed of in terms of the above stipulations.

sd/-
(P.K. Singh)
Member

sd/-
(Arun Goyal)
Member

sd/-
(I. S. Jha)
Member

sd/-
(Jishnu Barua)
Chairperson

