UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

Petition No. 36 of 2025

In the Matter of:

Petition for Investment Approval for "Replacement of old 132/33 kV 20 MVA Transformer with new 132/33 kV 20 MVA Transformer at 132 kV Substation Ranikhet under O&M Division Almora."

And

In the Matter of:

Power Transmission Corporation of Uttarakhand Limited (PTCUL)
'Vidyut Bhawan', Near ISBT, Majra,
Dehradun.

.....**Petitioner**

Coram

Shri M.L. Prasad **Chairman**
Shri Anurag Sharma **Member (Law)**

Date of Order: March 27, 2025

ORDER

This Order relates to the Petition filed by Power Transmission Corporation of Uttarakhand Ltd. (hereinafter referred to as "PTCUL" or "the Petitioner") vide letter No. 96/MD/PTCUL/UERC dated 09.01.2025 seeking Investment Approval for "Replacement of old 132/33 kV 20 MVA Transformer with new 132/33 kV 20 MVA Transformer at 132 kV Substation Ranikhet under O&M Division Almora" under Para 11 of Transmission Licence. [Licence No. 1 of 2003].

1. Background

1.1 In the aforesaid Petition, the Petitioner has submitted the following proposal for investment approval:

Particulars	Project Cost as per DPR (excluding IDC) (in Crore)	Total Project Cost as per DPR (including IDC (in Crore)
Replacement of old 132/33 kV 20 MVA Transformer with new 132/33 kV 20 MVA Transformer at 132 kV Substation Ranikhet under O&M Division Almora	7.90	8.18

1.2 The Petitioner has submitted a copy of the extract of Minutes of 97th meeting of the Board of Directors (BoD) of PTCUL held on 23.12.2024, wherein the Petitioner's Board has approved the Corporation's aforesaid proposals as stated below:

"After consideration, the Board passed following resolution unanimously.

RESOLVED THAT the consent of the Board be and is hereby accorded to approve the Detailed Project Repot for Replacement of Old 20 MVA Transformer with New 20 MVA Transformer at 132 kV S/s, Ranikhet under O&M Division, Almora at a total scheme cost of Rs. 8.18 Cr. with IDC and Rs. 7.90 Cr. without IDC.

RESOLVED FURTHER THAT the old transformer that shall be freed after replacement shall be scrapped being more than 51 years old.

RESOLVED FURTHER THAT the aforesaid DPR to be submitted to Hon'ble UERC for investment approval.

RESOLVED FURTHER THAT the Managing Director and or Director Finance and /or Company Secretary be and are hereby jointly and severally authorized to approach to REC/PFC/NABARD/HUDCO/Nationalized Banks and other financial institution as they deem fit and proper and tie-up the loan component with a debt equity ratio of 70:30."

1.3 To justify the need for the proposed work in the aforesaid Petition, the Petitioner has submitted that:

(i) 132/33 KV substation, Ranikhet (Almora) is one of the remote substations of PTCUL in Kumaon Zone of Uttarakhand which was commissioned in year 2006. This substation caters to the power need of domestic, commercial, industrial and agricultural consumers of urban as well rural areas of Almora, Ranikhet and Bageshwar. At present, the total installed capacity of 132/33 KV transformers at 132 KV substation, Ranikhet is 50 MVA as there are 01 nos. 20 MVA, 132/33 KV transformers (NGEF Make Mfg-1973), 01 no. 3×5 MVA, 132/33 KV Transformer Bank (BBL Make Mfg-1979) and 01 no. 3×5 MVA, 132/33 KV Transformer Bank (GEC Make Mfg-1985) installed at this substation.

(ii) 132 KV substation Ranikhet is being fed through 132 KV Almora-Ranikhet transmission line and feeding/evacuating power from small hydro generations via 132 KV Ranikhet-Bageshwar Line. Both of these lines have ACSR Panther conductor and the maximum current carrying capacity of each line is approximately 80 MVA. The transformers installed at the 132 KV Substation Ranikhet are over 35 years old. The 20 MVA Transformer installed at 132 KV S/s Ranikhet is more than 51 years old and needs to be replaced with new one for reliability and uninterrupted power supply to the consumers. The 132 KV Substation Ranikhet is an important substation as it is connected to various Solar Generation Plants and feeds supply to areas such as Army HQ Kumaon Regimental Centre (KRC) and also to area of Ranikhet, Bageshwar. The electricity supply to these areas is done through 33 KV feeders emanating from 132 KV Substation Ranikhet.

(iii) The total installed load connected with 132 KV Substation Ranikhet is 102 MVA against the installed capacity of 50 MVA. The details of UPCL's existing total installed load connected with 132 KV Substation, Ranikhet as submitted by the Petitioner as follows:

Sr. No.	Name of Feeder/Transformer of UPCL	Connected Load
1	33 KV Bagwalipokhar (Including 33 KV Dwarahat)	12.3 MVA
2	33 KV Khirkhet (Masi, Chaukhutiya, Salt, Substations under EDD Bhikiyasain	55 MVA
3	33 KV Ranikhet	29.5 MVA
4	33 KV Kosi	6 MVA
	Total Connected Load	**102.8 MVA**

(iv) Presently, the total maximum running load on these 01 no. 20 MVA Transformer and 02 nos. 3×5 MVA Transformer Bank is approximately 35 MVA, which is around 70% of total installed load capacity available at 132 KV substation Ranikhet. PTCUL has also provided charts showing the maximum load on transformers and average load growth over the last four years at 132 KV Substation Ranikhet. It has been further submitted that, considering the recent growth in load demand and the need to meet T-1 contingency conditions, replacing the old transformer with a new one is imperative to ensure the stability and reliability of the power transmission system at 132 KV Substation Ranikhet.

1.4 Further, to justify its proposal, the Petitioner has submitted that replacing the 51-year-old 20 MVA, 132/33 KV power transformer is justified based on several technical, economic, and operational factors. The replacement would ensure enhanced reliability, reduced operating costs, improved safety, and better alignment with modern standards and environmental requirements. The Petitioner has made the following submissions:

- **Aging and Deterioration**: Transformers have a typical service life of 30–40 years. At 51 years, this transformer is well beyond its expected life span, leading to increased risk of failure due to aging insulation, corroded components, and general wear.
- **Efficiency and Losses**: Older transformers are typically less efficient, leading to higher losses (both copper and core losses). Replacing it with a modern, energy-efficient transformer could reduce losses, leading to significant savings over time.

- **Reliability and Risk of Failure:** With age, the probability of sudden failure increases, which can lead to unplanned outages and potentially expensive emergency repairs. A newer transformer would be more reliable and reduce the risk of unexpected downtime.
- **Maintenance Costs:** As transformers age, maintenance costs increase. Aging units require more frequent inspections, parts replacement, and repairs. A new transformer would lower these maintenance demands.
- **Insulation Degradation**: Over decades, insulation deteriorates, reducing the transformer's dielectric strength. This raises the risk of insulation breakdown, which can lead to internal arcing and catastrophic failure.
- **Operational Standards**: Newer transformers are designed to meet more recent operational and safety standards, which might make them more compatible with other equipment and easier to monitor using modern condition monitoring technologies.
- **Load Growth and Capacity Requirements**: If there has been any increase in the load demand over the years, a transformer with a higher capacity or better efficiency may be required to handle the load without overloading.
- **Environmental Concerns**: Modern transformers often come with eco-friendly features, such as lower oil content, which reduces the risk of environmental contamination in case of oil leaks. They are also designed to emit fewer emissions and meet stricter environmental regulations.
- **Residual Value and Disposal**: While still operational, the old transformer might have some residual value, which could be offset against the cost of a new unit. Furthermore, replacing it before catastrophic failure might allow parts to be salvaged or recycled, lowering the total replacement cost.

1.5 With regard to the utilization of the replaced transformer, the Petitioner has submitted that the 20 MVA transformer, manufactured by NGEF in 1973, has completed its lifespan and cannot be utilized after dismantling. Furthermore, the Petitioner submitted that the transformer may be treated as scrap, and its depreciation cost will be calculated in the year of dismantling.

1.6 Regarding the estimates for the aforementioned project, the Petitioner has informed that a negotiation committee has been formed to negotiate with the lowest bidder, M/s SNS Technocorp Pvt. Ltd., for the supply, erection, testing, and commissioning of a 20 MVA (132/33 kV) Transformer at 132 kV IDPL Sub-Station under 220 kV (O&M) Division, Rishikesh. The estimates have been prepared on a tentative basis, utilizing rates from the lowest bidder's e-tender specification No. CE/GZR-17/2023-24, approved during the 91st Board of Directors meeting.

1.7 On preliminary examination of the aforesaid proposal submitted by the Petitioner, certain deficiencies/shortcomings were observed as mentioned below, which were communicated to the Petitioner vide Commission's letter No. 1630 dated 11.03.2025. In reply to the deficiencies raised by the Commission, the Petitioner has submitted its reply vide letter no. 518/Dir (Operations)/UERC dated 18.03.2025. The queries raised by the Commission and subsequent clarification submitted by the Petitioner is as follows:

Query 1:	PTCUL has not attached any tests performed on transformer that signals any assessment with regard to the life of the transformer, degradation in parameters etc. If any such test has been performed please provide the copy of the same, if not specify the reasons behind the same.
Reply 1:	*20 MVA Transformer of NGEF Make manufactured in 1973 and installed at 132/33 KV Substation, Ranikhet has already completed more than 52 years of it's service, however, it would not be safe and risk free to rely and continue it further with increasing demand of load. Expected life span of a transformer is about 35 years as per CEA Standard Specification and Technical Parameters for Transformers and Reactors (66 kV & above voltage class) and life of transformer is considered as 25 years as per CBIP Manual.*
Query 2:	While demonstrating the losses of transformer (approx. 1.3%) month-wise import and export energies are tabulated which suggested that monthly only 25% to 40 % energy of total handling

	capacity of transformer is being passed through, suggesting lighter usage of transformer and may be very less duration of peak load handling. PTCUL is required to submit the reasons that why a new transformer of same capacity will be required in such scenario.
Reply 2:	*Since, PTCUL has filed a petition for investment approval for augmentation of existing and old 2x3x5 MVA Transformers with new 2x20 MVA Transformers vide letter no. 1804/Dir. (Operations)/PTCUL/UERC dated 26.10.2024, therefore, replacement of NGEF make, 1973 Model Transformer with the same capacity in addition with 2x20 MVA shall be able to cater the increasing load in addition to proposed 2x20 MVA.*
Query 3:	It seems that transformer mostly works under light load conditions, thus, losses shown in percentage seems higher, PTCUL is required to comment on it.
Reply 3:	*Present losses in existing NGEF make, 20 MVA Transformer manufactured in 1973 is higher under the light load condition due to degradation in internal installation and partial discharges etc. developed over the span of time but losses in proposed new transformer of the same capacity shall be comparatively less.*
Query 4:	One of the reasons for replacement cited by PTCUL is reduction in maintenance costs, however, transformer being static equipment is in itself a low maintenance equipment, however, PTCUL is required to provide details of the maintenance and the expenses incurred upon concerned transformer in past three years.
Reply 4:	*Total expenditure incurred in maintenance for the last 3 years is Rs. 2,28,190/- plus other taxes etc. It is pertinent to mention that an expenditure for Rs. 9,29,602/- was incurred on the transformer after damages occurred in Y-Phase bushing of HV side on 09.06.2016.*

Query 5:	Further, load growth in capacity requirement is also mentioned as one of the reasons for replacement of transformer, while the proposed new transformer is also of same capacity as that of old transformer, please explain how the submission is justified.
Reply 5:	*Reasons of the similar capacity has been explained under sl. no. 2 above. However, we are expecting RE integration at 33 kV side under green energy corridor in near future.*
Query 6:	While mentioning the purpose of the scheme, T-1 contingency condition will be achieved is cited, however, in letter dated 55//SE (SS&NP)/PTCUL dated 08.08.2024 the same is suggested to be achieved by increasing the capacity of substation to 3x20 MVA, please explain.
Reply 6:	*Since, PTCUL has already filed a petition before Hon'ble UERC for the replacement of existing 2x3x5 MVA Transformer Banks with 2x20 MVA Transformer, therefore, T-1 contingency shall be achieved via an overall capacity of 3x20 MVA Transformers.*
Query 7:	PTCUL has informed that the old transformer is still operational, its residual value will offset against the cost of a new unit, however, no such adjustment has been shown in the DPR.
Reply 7:	*After replacement of the existing transformer, same shall be got inspected by Reserved Price Fixation Committee (RPFC) of PTCUL to be followed by approved valuer, if required to be confirmed, enabling further process of auction through MSTC (A Govt. of India Mini Ratna PSU of Category -1) shall be done to arrive at the actual cost.*
Query 8:	To replace the old transformer with new transformer, PTCUL has not informed about the source from where such expenses would be meet and hence, detailed information w.r.t. it is required to be submitted.

Reply 8:	*The resolution of 97th BoD of PTCUL in respect of agenda item no. 97.05 submitted to Hon'ble UERC alongwith petition documents states that REC/ PFC/ NABARD/ HUDCO/ Nationalised Banks and other financial institution as the deem fit and proper shall be approach for funding tie up.*

2. Commission's Observations, Views and Directions:

2.1. Based on the submissions made in the Petition and subsequent submissions of the Petitioner, the Commission observed that:

2.1.1 The replacement of existing old 132/33 kV, 20 MVA transformer with new 132/33 kV, 20 MVA transformer at 132 kV substation, Ranikhet was sought in the present Petition as the existing 132/33 kV, 20 MVA transformer is in service for more than 52 years and its age and deterioration in insulation raises the risk of its failure leading to reliability issues and with the time it is getting difficult to maintain the spares of old transformer and replacement will enhance reliability and efficiency, improve power quality and capability to handle load growth and also help with T-1 contingency conditions. In this regard, the Commission is of the view that as the Petitioner has not conducted any tests or life assessment study on the transformer and their request is based upon the "Standard Specification and Technical Parameters for Transformers and Reactors" manual issued by the Central Electricity Authority (CEA) in which it is mentioned that the accepted life span of transformer is about 35 years. Therefore, as per the CEA guidelines, the above proposal has been moved regarding the asset which has outlived its life, however, it would be prudent for the Petitioner if Residual Life Assessment (RLA) of the transformer had been conducted by them.

2.1.2 The overall losses of the old 20 MVA transformer is reported by the Petitioner as 1.30% approx. due to degradation in internal insulation and partial discharges etc. In this regard, the Commission is of the view that the losses reported by the Petitioner seem to be on the higher side. However, it would be prudent to keep the transformer losses within the permissible limit as specified by the CEA.

2.1.3 The Petitioner in its DPR has also submitted the future benefits in carrying out the concerned work but most of the reasons are very trivial and devoid of any merit, however their submission that 132 kV Ranikhet is remote substation of PTCUL and plays a vital role in supplying electricity to critical areas, including Army HQ Kumaon Regimental Centre (KRC), Ranikhet, and Bageshwar, as well as various Solar Generation Plants, seems reasonable in so far the need of replacement considering the risk of failure of existing transformer on account of its age.

2.1.4 With regard to the load growth, the existing total load at 132 kV Substation Ranikhet is 102.80 MVA and as submitted by the Petitioner, it is certain that some load will increase in the area in the near future. In this regard, the Commission is of the view that for reliable supply in the nearby areas of Ranikhet, the replacement of the transformer seems to be requisite.

2.1.5 With regard to the treatment of the replaced transformer, it was submitted by the Petitioner that Reserved Price Fixation Committee (RPFC) of PTCUL alongwith valuer will assess the value and auction will be done accordingly.

2.1.6 With regard to the estimate of the proposal, the Petitioner has submitted that the rates of the L-1 bidder was considered for the preparation of the estimate of the proposal by the Petitioner and no separate estimate was prepared, as the BoD in its 91st meeting under the agenda item No. 91.09 has approved as under:

> *"After consideration, the Board unanimously passed the following resolution:*
>
> *RESOLVED THAT the consent of the Board be and is hereby accorded to approve the L-1 rates of M/s, SNS Technocorp Pvt. Ltd, Ist floor, 115 to 118. Vikrant Tower, 4-Rajendra Place New Delhi, at after negotiation at a price of Rs.5,64,70,091.95 (Exclusive of GST) and Rs.6,66,34.708.50 (inclusive of GST) which is 28.67% higher than the estimated cost of Supply, erection, testing & commissioning*
>
> *RESOLVED FURTHER THAT the 20 MVA transformer that has been transferred from Purkul. Dehradun to 132 kV S/s Rishikesh to meet the emergent requirements of AIIMS be retained in this project.*

RESOLVED FURTHER THAT 20 MVA (132/33KV) Transformer at 132KV Substation. IDPL Rishikesh under 220KV (O&M) Division Rishikesh to supplied under this contract shall be supplied at 132KV Substation Ranikhet as per increase load requirement of Ranikhet and nearby areas of Kumoun Region.

RESOLVED FURHTER THAT the Managing Director and/or Director Finance and/or Company Secretary be and are hereby jointly and severally authorized to approach to REC/PFC/NABARD/HUDCO/Nationalized Banks and other financial institution as they deem fit and proper and tie-up the loan component with a debt equity ratio of 70:30.

RESOLVED FURHTER THAT the Managing Director and/or Director (Finance) and/or Company Secretary be and are hereby jointly and severally authorized to accept the lowest interest rates offered by the institution along with other suitable terms and conditions and execute the loan documents along with other legal papers, under the common seal of the Company wherever required. creation of charge by following the prescribed procedure of law."

In this regard the Commission is of the view that while preparing the estimate for the current proposal the Petitioner has considered the L-1 rates of the bidder intended to supply the 20 MVA transformer to 132 kV IDPL Rishikesh in place of the rates of the SoR as is normally considered for the preparation of the proposal for the investment approval. The aforesaid approval for the proposed work is already being delayed by 07 to 08 months and this delay has the cost implications as per the current market price. Hence, at this point of juncture, considering the special circumstances of the present proposal and looking into the inflated rates of the power equipment and accessories, the Commission for this one time finds it appropriate to consider the rates of estimates as proposed by the Petitioner in the present Petition.

2.2. The Petitioner has considered the Price Contingencies @ 6.8%, Contingency @ 3% and Project Overheads @ 5% as well as IDC in the present matter, in this regard the Commission is of the view that as in the 91st BoD meeting the 20 MVA transformer

intended to be supplied for usage at 132 kV IDPL Rishikesh S/s is now proposed to be used at 132 kV Ranikhet S/s, hence, the actual rates of L-1 bidder including supply and erection work of the transformer as approved by the BoD without Contingencies & IDC in the aforesaid meeting will have to be considered exactly for the present matter. Therefore, the Commission does not find it prudent to allow the Price Contingencies @ 6.8%, Contingency @ 3% and Project Overheads @5% as well as IDC for the present matter as the L-1 rates for the proposal is already obtained from the bidder and any cost overrun/price variation occurred after the capitalization of the project will be dealt in the Annual Revenue Requirement of the petitioner after the assets are capitalized and subject to prudence check of cost incurred.

2.3. The Commission hereby grants in-principle approval for the investment of Rs 6.66 Crore only as per the table given below with the direction that the Petitioner should go ahead with the aforesaid works subject to the fulfilment of the conditions mentioned below:

Particulars	**Total Project Cost as per DPR (including IDC) (in Crore)**	**Cost considered by the Commission (excluding IDC) (in Crore)**
Replacement of old 132/33 kV 20 MVA Transformer with new 132/33 kV 20 MVA Transformer at 132 kV Substation Ranikhet under O&M Division Almora.	8.18	6.66

(i) All the loan conditions as may be laid down by the funding agency in their detailed sanction letter are strictly complied with.

(ii) The Petitioner shall, within one month of the Order, submit a letter from the State Government or any such documentary evidence in support of its claim for funding agreed by the State Government or through any other relevant agency.

(iii) After completion of the aforesaid project, the Petitioner shall submit the completed cost and financing of the project.

(iv) After completion of the aforesaid project, the Petitioner shall submit the report on benefits like improvement in efficiency and

losses, reduction in maintenance cost and other operational advantages.

(v) As the present proposal has already been obtained from the bidder and any cost overrun/price variation that occurs after the capitalization of the project will be dealt in the Annual Revenue Requirement of the petitioner after the assets are capitalized and subject to a prudence check of the cost incurred together with any cost implication due to replacement of the transformer from Purkul S/s to IDPL, Rishikesh S/s.

2.4. The approval is given subject to the above conditions and on the basis of submissions and statement of facts made by the Petitioner in the Petition under affidavit, therefore, violations of the condition and in case any information provided, if at any time, later on, is found to be incorrect, incomplete or relevant information was not disclosed, and which materially affects the basis for granting the approvals, in such cases the Commission may cancel the approval or refuse to allow the expenses incurred in the ARR/True-up apart from initiating plenary action.

Ordered accordingly.

(Anurag Sharma)
Member (Law)

(M.L. Prasad)
Chairman