

Before
UTTARAKHAND ELECTRICITY REGULATORY COMMISSION
Petition No. 62 of 2025

In the Matter of:

Investment Approval for DPR of “Ampacity enhancement of 220 kV Puhana-Roorkee Line with HTLS Conductor”.

And

In the Matter of:

Power Transmission Corporation of Uttarakhand Limited (PTCUL)
Vidyut Bhawan, Near ISBT Crossing,
Saharanpur Road, Majra,
Dehradun

.....Petitioner

Coram

Shri M.L. Prasad

Shri Anurag Sharma

Shri Prabhat Kishor Dimri

Chairman

Member (Law)

Member (Technical)

Date of Order: October 13, 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. 1791/Dir. (Operations)/PTCUL/ dated 26.10.2024 seeking Ampacity enhancement of 220 kV Puhana-Roorkee Line with HTLS Conductor under Para 11 of Transmission Licence. [Licence No. 1 of 2003].

1. Background

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

Particulars	Total Project Cost as per DPR (including IDC (in Crore)
Ampacity enhancement of 220 kV Puhana-Roorkee Line with HTLS Conductor	13.95

1.2. The Petitioner has submitted a copy of the extract of Minutes of 94th meeting of the Board of Directors (BoD) of PTCUL held on 26.09.2024, wherein the Petitioner's Board has approved the Corporation's aforesaid proposals as stated below:

"After consideration, the board passed the following resolution unanimously:

Resolved That the consent of the Board be and is here by accorded to approve the revised Detailed Project Report for Ampacity Enhancement of 220 KV Roorkee - Puhana Line with HTLS Conductor at a total scheme cost of Rs. 13.95 Cr. with IDC and Rs. 13.53 Cr. without IDC.

Resolved Further That the DPR submitted and approved in the 92 Board meeting held on 27/08/2024 vide agenda item no. 92.38 on the same project shall be treated as null & void and shall be deemed to have been withdrawn by the management.

Resolved Further That the aforesaid revised DPR be submitted to Hon'ble UERC for investment approval.

RESOLVED FURTHER THAT Managing Director, Director (Operations) or any other functional Director jointly and severally are hereby authorized to sign, seal and certifies all the documents, petitions and all other legal papers that might be required for sending the proposal for investment approval for signing all clarifications and to do all others such legal acts may be necessary to be acted upon in furtherance of the 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 of the proposed work, the Petitioner has submitted as follows:

"220 KV Substation Roorkee is an important Substation of Haridwar District and is presently having capacity of 2x160 MVA (220/132 KV) & 2x50 MVA (220/33KV)

transformers. Total transformer capacity is 420 MVA. Presently approx. 250 MVA load is fed through 220 KV Puhana-Roorkee line and approx. 120 MVA load is fed from 220 KV Nara line. In peak season 220 KV Roorkee-Puhana line is normally loaded with 600-650 Amp, while the conductor of line is zebra having current capacity of 650 Amp. In case of 220 KV Nara failure, all load is fed through 220 KV Puhana line then in this condition load increases upto 800 Amp. In order to avoid this, roastering is done for maintaining the load. In previous years due to overloading on 220 KV Roorkee-Puhana line, low sag issue has arisen. So to avoid these type of situations, one extra line is required to meet the load requirement but due to ROW issues there is no possibility for construction of new line between Roorkee and Puhana. So in order to meet the future load demand and to avoid breakdowns in line, existing zebra conductor is to be replaced with HTLS conductor. The current carrying capacity of zebra equivalent HTLS conductor is 1600 amp. It is the only solution in present scenario hence this proposal for capacity increment of 220 KV Puhana-Roorkee line by replacing existing old ACSR Zebra conductor with high capacity."

- 1.4. The Petitioner in its Petition has mentioned that the estimated cost proposed in the DPR has been prepared on the basis of the PTCUL's SoR 2024-25.
- 1.5. The Petitioner in its Petition has enclosed the Bar chart for the project with an execution period of 15 months from the date of award of the contract. Further, the Petitioner under the financial analysis has projected an IRR of 15.03% with breakeven in the 10th year of operations.
- 1.6. On examination of the proposal submitted by the Petitioner, certain queries were raised on the deficiencies/shortcomings observed in the Petition, which were communicated to the Petitioner vide the Commission's letter dated 19.09.2025. In response to the queries, the Petitioner, through its letter dated 22.09.2025, submitted the reply to the Commission. The queries and respective replies are as follows:

Query 1	In the Petition, it has been proposed that the source of financing will be 70% through a loan from REC and 30% through equity from the Government of Uttarakhand (GoU). In this regard, PTCUL is required to submit supporting
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	documents/approval letters from REC and GoU confirming their commitment to the proposed financing arrangement.
Reply 1	<i>Loan approval from REC has been sanctioned vide letter No. REC/RO/DDN/2025-26/24 Dated 28.07.2025.</i> <i>Equity will be arranged through demand under annual budget FY 2026-27 from Government of Uttarakhand (GOU)</i>
Query 2	While discussing the overloading situation of the 220 kV Roorkee-Puhana line, PTCUL has not provided details about the conductor used in the 220 kV Roorkee-Nara line. It also needs to be clarified whether the Roorkee-Nara line can share more load to relieve the Roorkee-Puhana line.
Reply 2	<i>Conductor of 220 KV Roorkee-Nara line is ACSR Zebra/Deer with current carrying capacity of 700 Amp Appox. Costruction of 220kV S/s Manglore (220/132 kV 2x160 MVA+132/33kV 2x40MVA) is under progress which is being constructed by LILO of 220 kV Roorkee-Nara Line and due to constraints 80MW to 100MW Load from 220 kV S/s Nara UPPTCL (Uttar Pardesh Power Transmission Corporation Ltd.), we can not be able draw more power from 220 kV Substation Nara for 220 kV Substation Roorkee.</i>
Query 3	Further, PTCUL has stated that replacing the conductor on the Roorkee-Puhana line with a higher capacity conductor will fulfill the N-1 contingency criterion. However, no explanation has been given regarding the potential risk if the Roorkee-Puhana line, post-augmentation, goes out of service – especially since the Roorkee-Nara line may not be capable of handling the increased load. PTCUL must clarify how N-1 reliability will be ensured under such conditions, considering the widened disparity in load sharing between the two lines.
Reply 3	<i>Presently 2x50 MVA (220/33kV) Transformers and 220kV Roorkee-Nara Line are connected on 220kV Bus-Ist and rest</i>

	220/132kV 2x160 MVA Transformers, 220kV Railway Line and 220kV Roorkee Puhana Line are connected on 220kV Bus IInd by opening the Bus coupler. This arrangement has been made to avoid the overloading of 220 kV Roorkee-Puhana Line. After replacing the conductor on 220kV Roorkee Puhana Line, N-1 contingency criteria can be fulfilled during failure of 220kV Roorkee-Nara line. As 220kV Roorkee- Puhana Line is Single circuit line and in case of Puhana-Roorkee line failure, we can achieved N-1 contingency criteria partially maintained. Received power through 220 kV Roorkee-Nara, 132 kV Roorkee-SIDCUL, 132 kV Roorkee- Jwalapur lines.
Query 4	The Petition proposes the use of Zebra-equivalent HTLS conductor with a current carrying capacity of 1600 Amps. However, this level of capacity appears to be excessive and unlikely to be utilized in the foreseeable future. PTCUL is required to justify why a lower-capacity conductor, which would be more economical and reasonable, was not considered.
Reply 4	220 kV Roorkee-Puhana line is having ACSR Zebra conductor and tower is also designed for ACSR Zebra conductor weight span, so proposed HTLS conductor equivalent to ACSR Zebra conductor having current carrying capacity 1600 Amp has been considered. Construction of 220kV S/s Manglore (220/132 kV 2x160 MVA) is under progress which is being constructed by LILO of 220 kV Roorkee-Nara Line which will also draw power from 220 KV Substation Roorkee in addition to 220 kV Substation Roorkee (220/132 KV,2x160 MVA+220/33 kV, 2x50 MVA) load through 220 kV Roorkee-Puhana line and also augmentation works of 220kV S/s Roorkee, 132 kV s/s Roorkee, 132kV s/s Laksar, 132 kV s/s Manglore are proposed (under progress).
Query 5	As the Roorkee-Puhana line is an Inter-State transmission line, PTCUL must clarify whether any clearances or approvals from Central agencies are required prior to the replacement of

	the conductor. This aspect has not been discussed in the Petition. Further, the estimated time required for obtaining such approvals must also be submitted.
Reply 5	<i>220 kV Roorkee-Puhana line is an Intra state line. It is the part of power transmission network for the state of Uttarakhand and is owned and operated by the Power Transmission Corporation of Uttarakhand Ltd. (PTCUL).</i> <i>PTCUL is only owner and beneficiary of 220 kV Roorkee-Puhana line this line considered as intra state line because other end of line connected at other transmission utility but actually this line situates only in Uttarakhand state. So, there is no requirement of any approval from any other agencies.</i>
Query 6	Moreover, PTCUL must explain the eligibility criteria that permit a State utility to work on an Inter-State asset. The Petition is also silent on whether it would be equitable for the State of Uttarakhand to bear the cost of augmentation for an Inter-State asset, which ideally should be socialized across multiple States. PTCUL is directed to submit a detailed response on these issues.
Reply 6	<i>220 kV Roorkee-Puhana line is an Intra state line passing in Uttarakhand state only and PTCUL is the only owner and beneficiary.</i>
Query 7	PTCUL is required to submit a comprehensive plan for managing power supply in Roorkee and its adjoining areas during the period of conductor replacement. It must also be specified whether this replacement work would affect industrial or public consumers. A joint plan with UPCL should be submitted in this regard.
Reply 7	<i>PTCUL has planned to replace conductor during winter season (from the month of October to March). The load demand is</i>

	<i>comparatively less in winter in daytime, which can be easily managed through solar generation, sugar mill generation, 132kV Lines etc. connected at different substations. During execution of work, shut down of said line will be taken from morning to evening on daily basis & line will be energized daily in the evening to meet out the load demands of peak hours.</i>								
Query 8	The Petition mentions that due to the restricted capacity of the Roorkee–Puhana line, overload conditions have occurred several times during the breakdown or shutdown of the Roorkee–Nara line. It is also submitted that rostering is resorted to when the load approaches 800 Amps. PTCUL is required to provide details of such instances during the past one year in the format given below, duly certified by SLDC: <table><tr><th>Sl. No.</th><th>Date & Time</th><th>Loading on 220 kV Roorkee–Puhana Line (in Amperes)</th><th>Details of Rostering Measures Taken</th></tr><tr><td></td><td></td><td></td><td></td></tr></table>	Sl. No.	Date & Time	Loading on 220 kV Roorkee–Puhana Line (in Amperes)	Details of Rostering Measures Taken				
Sl. No.	Date & Time	Loading on 220 kV Roorkee–Puhana Line (in Amperes)	Details of Rostering Measures Taken						
Reply 8	<i>Details Enclosed.</i> <i>220 KV Roorkee Nara line fed load radially to 2x50 MVA 220/33 kV Transformers separately at 220 kV substation Roorkee. 220 kV Roorkee-Puhana and 220 kV Roorkee Nara lines are inter-connected through BUS. Whenever 220 kV Roorkee-Nara line got tripped/out of Ckt, load will be mangled by transferring the load to 132kV Roorkee-Jwalapur line and 132 kV Roorkee -SIDCUL line.</i>								
Query 9	The Petition states that replacement of the line will help accommodate the exponential load growth in the system. In this regard, PTCUL is required to submit details of existing and projected load at the 220 kV Roorkee Substation for the coming years.								

Reply 9	<i>Details Enclosed.</i>
Query 10	PTCUL is required to submit the Single Line Diagram (SLD) of the 220 kV Roorkee Substation, indicating all incoming and outgoing feeders at 220 kV, 132 kV, 66 kV, and 33 kV levels, along with their names and maximum load (in Amperes).
Reply 10	<i>Details Enclosed.</i>
Query 11	Since PTCUL has proposed to replace the existing Zebra conductor with an HTLS conductor on the 220 kV Roorkee-Puhana Line, the following details must be submitted: a) Type of HTLS conductor to be used, along with technical specifications. b) Ampacity and sag profile comparison between the existing Zebra conductor and the proposed HTLS conductor.
Reply 11	<i>Details Enclosed.</i>
Query 12	PTCUL is also required to submit a Block Diagram of the Roorkee area showing all transmission substations (with voltage level and capacity) along with associated transmission lines, including line lengths and conductor types.
Reply 12	<i>Details Enclosed.</i>

2. Commission's Observations, Views and Directions:

2.1. For the submissions made in the Petition alongwith documents on record and subsequent filings by the Petitioner, the Commission observes the following:

2.1.1 REC vide its letter dated 28.07.2025, has agreed to grant Rupee Term Loan (RTL) assistance of Rs. 9.77 Crore, which constitutes 70% of the total DPR cost for the proposed project. Regarding the equity portion, PTCUL has submitted that the equity shall be arranged through a demand under the annual budget for FY 2026-27 from the Government of Uttarakhand (GoU).

- 2.1.2 The Petitioner has submitted that the load on 220 kV Roorkee-Puhana line typically remains around 250 MVA, while approximately 120 MVA is fed through the 220 kV Roorkee-Nara line. During peak seasons, the 220 kV Roorkee-Puhana line is generally loaded at 600-650 Amperes, which is close to the maximum current carrying capacity of the existing Zebra conductor. Load management measures such as rostering are undertaken during the peak season, as the line operates near its rated capacity.
- 2.1.3 Regarding the proposal to install HTLS conductor with a rated current capacity of 1600 Amperes, the Petitioner has informed that they anticipate increased load in the future due to the construction of a new 220 kV substation at Mangalore, which will also be connected to the 220 kV Roorkee substation and fed through the same 220 kV Roorkee-Puhana line. Additionally, PTCUL expects augmentation of its 132 kV substations at Roorkee, Manglore and Laksar and of the 66 kV substation at Thithki. Accordingly, the maximum feasible capacity enhancement is proposed without altering the existing tower structures.
- 2.1.4 Regarding N-1 contingency, the Petitioner has submitted that the replacement of conductor will enable the system to accommodate a breakdown in the 220 kV Roorkee-Nara line. However, they acknowledged that an outage or fault in the 220 kV Roorkee-Puhana line cannot be managed on an N-1 basis. The Petitioner further submitted that conductor replacement would mitigate the issue of reduced ground clearance during high loads in summer, as observed in previous years. The enhanced thermal capacity of the HTLS conductor, combined with improved sag characteristics and better high-temperature performance will allow the line to handle load shifts during outages or contingencies. Therefore, this upgrade serves both as a capacity enhancement and as a critical contingency support within the regional network.
- 2.1.5 Regarding load management during the conductor replacement, the Petitioner has submitted that the work will be scheduled during the winter season, when demand will be comparatively lower. During this period, the load can be managed easily through solar generation, sugar mill generation

and connected 132 kV lines while the proposed line remains under shutdown on day to day basis in non-peak hours.

The Commission, while acknowledging the complexity of the task, expresses concern and emphasizes the importance of effective planning. Nevertheless, the Commission accepts PTCUL's assurance to manage the process amicably and ensure uninterrupted power supply to all affected areas. The Petitioner is directed to submit proper information and outage-avoidance plans to the Commission on a periodic basis until the project is completed.

- 2.1.6 The Petitioner has submitted that the regional load is expected to grow significantly due to the planned augmentation of several substations and associated lines. The 220 kV Roorkee-Puhana line is already experiencing constraints and the situation is likely to deteriorate further, potentially resulting in more frequent and prolonged load shedding. This concern is deemed reasonable and supports the necessity of upgrading the existing Zebra conductor to a HTLS conductor.
- 2.2. In light of the above submissions of the Petitioner and observations, the Commission is of the view that the existing 220 kV Roorkee substation is a critical node in the Haridwar district's power infrastructure. Numerous essential 132 kV, 66 kV and 33 kV Lines emanate from this substation. The proposed upgrade will significantly increase line capacity, mitigate overloading risks, and facilitate enhanced power drawal from the Puhana substation of PGCIL, thereby ensuring reliable power supply for the region.
- 2.3. The Petitioner has considered the Price Contingencies @ 6.8%, Contingency @ 3% and Project Overheads @ 5% in the DPR. In this regard, in order to maintain uniformity with recent investment approvals, **the Commission has not considered Price Contingencies @ 6.8% and instead it has calculated the total project cost by considering the contingency @ 3% and project overheads @ 5% based on the past practice of the Commission.**

Further as the issue of SoR revisions is presently under deliberation before the Commission, the rates considered in SoR of FY 2024-25 cannot be considered as final and accordingly the estimates based on these rates are also

provisional in nature. Hence, the Commission after finalization on the issue of SoR, based upon its finding shall carry out the strict prudence check of the cost incurred and financing thereof in accordance with the conditions of Licence and MYT Regulations at the time of scrutiny of ARR.

- 2.4. The Commission hereby grants in-principle approval for Rs. 12.89 Crore (including IDC) as shown in the table given below and directs the Petitioner to go ahead with the aforesaid work subject to fulfilment of the conditions mentioned below:

Capital Cost Approved by the Commission

Name of the work	Project Cost including IDC as per DPR (Rs. Crore)	Project Cost Considered by the Commission (including IDC) (Rs. Crore)
Ampacity enhancement of 220 kV Puhana-Roorkee Line with HTLS Conductor	13.95	12.89

- (i) The Petitioner shall undertake competitive bidding for obtaining the most economical prices from bidders.
 - (ii) All loan conditions as may be laid down by the funding agency in their detailed sanction letter shall be strictly complied with.
 - (iii) 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 equity funding agreed by the State Government or any other source in respect of the proposed projects.
 - (iv) The Petitioner shall regularly update the Commission on the project status, including outage management details, until project completion.
 - (v) Upon completion of the aforesaid project, the Petitioner shall submit the completed cost and financing details of the project.
 - (vi) The cost of servicing the project shall be allowed in the Annual Revenue Requirement of the petitioner after the assets are capitalized and subject to prudence check of the cost incurred.
- 2.5. 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 approval, 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.

Prabhat Kishor Dimri
Member (Technical)

(Anurag Sharma)
Member (Law)

(M.L. Prasad)
Chairman