

Before
UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

Petition No.: 30 of 2024

In the Matter of:

Investment Approval for Augmentation of 220 kV substation Jhajra (2x160 MVA to 3x160 MVA T/F at 220/132 kV voltage level and 2x80 MVA to 3x80 MVA at 132/33 kV voltage level).

And

In the Matter of:

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

...Petitioner

Coram

Shri M.L. Prasad

Member (Technical)/Chairman(I/c)

Shri Anurag Sharma

Member (Law)

Date of Order: September 17, 2024

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. 945/MD/PTCUL/UERC dated 16.03.2023 seeking Investment Approval for "Augmentation of 220 kV substation Jhajra (2x160 MVA to 3x160 MVA T/F at 220/132 kV voltage level and 2x80 MVA to 3x80 MVA at 132/33 kV voltage level)" 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:

S. No.	Name of the work	Augmentation proposed (MVA)	Project Cost including IDC as per DPR (in Crore)
1	Augmentation of 220 kV Substation Jhajra	From 2x160 MVA to 3x160 MVA at 220/132 kV level From 2x80 MVA to 3x80 MVA at 132/33 kV level	52.54

1.2 The Petitioner has submitted an extract of the Minutes issued on 14.03.2024 of 89th Meeting of the Board of Directors, wherein the Petitioner's Board has approved Corporation's proposal for above-mentioned works with a debt-equity ratio of 70:30.

1.3 The augmentation work includes Supply, Installation, Testing & Commissioning (SITC) alongwith associated Civil works for:

- a) 01 No. 220/132 kV 160 MVA Transformer, 132 kV Bay and 132 kV Bay extension work with cabling.
- b) 01 No. 132/33 kV 80MVA Transformer, 132 kV Bay and 33 kV Bay.

1.4 To justify the need of the aforesaid works, the Petitioner has submitted that 220 kV Substation, Jhajra is an important Substations of PTCUL in Garhwal Zone of Uttarakhand which was commissioned in January 2014. It gets power from 400 kV PGCIL Substation, Sherpur, Dehradun and some Uttarakhand HEP's. Besides this, Jhajra Substation also feeds power to various primary Substations of Capital Dehradun under Garhwal Zone. This substation is connected to 04 No. 220 KV and 04 No. 132 KV sub-stations. At present, there are 02 nos. 160 MVA, 220/132KV transformers of IMP make and maximum running load on 2x160 MVA, 220/132 KV transformers is approximately 89% of the total capacity of these transformers. Besides 220/132 kV Substation, Jhajra, Dehradun feeds power to various S/s of UPCL through 132/33 kV S/s. At present, there are 02 nos. 80MVA, 132/33KV transformers which are feeding load to 08 nos. UPCL feeders cater to domestic, commercial, as well as Industrial consumers. Due to load growth, distribution licensee namely UPCL is further demanding load at the substation. At present, maximum load on 2x80 MVA, 132/33 kV Transformers are approximately 75% of the total capacity of both 80 MVA transformers. Because of high fault current on 33 kV feeders, transformers are not in parallel operation as of now.

According to the Petitioner, the load growth in the area has increased approximately by 7-10% in respect to the previous year. Also, during the outage (Tripping/Shutdown) of any of the 160 MVA transformers at the substation, the other available 160 MVA transformer cannot cater the load independently. Keeping in view the above load growth, present overloading of 160 MVA Transformers and for making the substation T-1 compliant (as per NRLDC guidelines), it is essential to augment the transformation capacity of the substation from 2x160 MVA to 3x160 MVA by installing one no. additional 160 MVA.

Similarly, 80 MVA transformers are also overloaded and to supply quality and uninterrupted power to the industrial consumers and to make 132/33 kV system T-1 compliant, it is essential to increase 132/33 kV transformation capacity of the substation by adding one no. additional 80 MVA (132/33 kV) Transformer. In view of the growing load demand, Director (Operation) of the Discom vide his office letter No-5163 dated. 28.12.2023 has also requested to expedite the augmentation of Substation. The same has also been deliberated in a meeting chaired by MD, PTCUL on 11/12/2023. The same has also been recommended by the technical report of the System Study wing.

- 1.5 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 2023-24 dated 29.12.2023.
- 1.6 The Petitioner in its Petition has enclosed the Bar chart for the project with an execution period of 17 months from the date of award of the contract. Further, the Petitioner under the financial analysis has projected an IRR of 15.49% with breakeven in the 10th year of operations.
- 1.7 On examination of the proposal submitted by the Petitioner, certain deficiencies/shortcomings were observed, which were communicated to the Petitioner vide Commission's letter No. 509 dated 10.07.2024 with the direction to the Petitioner to submit its reply latest by 30.07.2024.

Query 1: PTCUL in its petition has submitted that it has 2x160 MVA T/F at 220 kV and 2x80 MVA T/F at 132 kV in the 220 kV Jhajra S/S. In this regard, PTCUL is required to submit datasheet of each existing 2x160 MVA T/F and 2x80 MVA T/F with the date of commissioning of each Transformers.

Reply 1: Datasheet for the existing 2x160 MVA and 2x80 MVA T/Fs is enclosed.

Query2: PTCUL has proposed the procurement, installation, testing & commissioning of 160 MVA, T/F (220/132 KV) and 80 MVA T/F (132/33 kV) at 220 kV Jhajra S/s. In this regard, PTCUL is required to submit the technical specifications of the proposed Transformers.

Reply 2: Standard specification for the 160 MVA, T/F (220/132 KV) and 80 MVA T/F (132/33 kV) is enclosed.

Query 3: PTCUL has proposed the construction of bay and bay extension for the respective 220 kV, 132 kV and 33 kV for the proposed transformers in this regard, PTCUL is required to submit the information regarding the availability of space with the plot plan of 220 kV S/s Jhajra.

Reply 3: The availability of space with the plot plan is enclosed.

Query 4: PTCUL in its petition has proposed to augment the capacity of T/F from 2x80 MVA to 3x80 MVA in the 132/33 kV S/s whereas, PTCUL in the submitted Single Line Diagram (SLD) has shown the 2x40 MVA T/F. In this regard, PTCUL is required to provide the reason for the variation.

Reply 4: Initially there were 2x40 MVA Transformers and later on 2x80 MVA Transformers were augmented. By mistake old SLD was enclosed. Now new SLD of 2x80 MVA has been enclosed.

Query 5: PTCUL in its petition has submitted that presently maximum running load on 2x160 MVA T/F and 2x80 MVA T/F is approximately 86% and 75% of the total transformer capacity. PTCUL is required to submit the loading details sheet of transformers showing the month-wise maximum load (in ampere) for the last 03 years and justify the loading percentage of the transformers as claimed in the Petition.

Reply 5: In this summer maximum load of 160 MVA has increased upto 99% and 80 MVA Transformers upto 86% of the total transformer capacity. The maximum loading details is enclosed.

Query 6: PTCUL submitted that the proposed 160 MVA and 80 MV T/F will be used to meet the T-1 contingency for the 220/132/33 kV Jhajra S/S. In this regard, PTCUL is required to submit the details of instances with proof of records where due not having T-1 contingency, the S/s were in the condition of overload or shutdown and also, PTCUL is required to

provide the reasons for not making substations T-1 compliant during the planning of any S/s in the state.

Reply 6: Due to overloading of 160MVA Transformers and to save local grid, SLDC restricted the load vide letter no-228/SLDC/SE/SO-1/2024-25 on dated 11.07.2024(Annexure-6). As per System Study report (Annexure-7) T-1 compliant does not meet out. In this summer season the recorded load on 160 MVA T/F was 99-100%. To avoid overloading of 160 MVA Transformers at Jhajra, 132 KV Jhajra-Kulhal and Jhajra-Dhalipur lines were opened by SLDC. Load details are enclosed.

During planning of Substation, it was T-1 compliant. Initially 40 MVA load was at Substation and the capacity of Substation was 2x40 MVA.

In Jhajra, initially 2x40 MVA Transformers were planned, but after load growth, the capacity was increased to 2x80 MVA. If we had done the same before, it could have caused financial loss. Now 2x160 MVA Transformers are fully loaded while 2x80 MVA have 86% loading. By next year 2x80 MVA Transformers will be fully loaded. Director operation UPCL vide letter dated 28/02/2023 has also demanded to augment 220/132/33 kV Jhajra S/s regarding increased power demand of industries. UPCL has also demanded 3 Nos new 33 kV bays at Jhajra Substation.

Query 7: PTCUL in its petition has submitted names of the 33 KV feeders emanating from 220 KV S/s Jhajra. In this regard, PTCUL is also required to mention the load (in MVA) of these feeders.

Reply 7: The total maximum load on 08 nos. of Feeders were 141 MVA. Details of the individual feeder are enclosed.

Query 8: PTCUL in its petition submitted that after the augmentation of the S/s, the exponential load growth of the system can be met. In this regard, PTCUL is required to submit the details of load growth for the Jhajra S/S in the next 3 years substantiating the projected load growth.

Reply 8: . Details of load growth of Jhajhira S/s in the next 3 years substantiating the projected load growth is submitted.

Query 9: PTCUL in its petition has submitted the Single Line Diagram (SLD) of 220/132/33 kV S/s Jhajra. In this regard, PTCUL is required to furnish

pre & post Project scenarios in the revised sub-station layout/Single Line Diagram (SLD) for the 220/132/33 kV S/s Jhajra along with details of existing and upcoming individual maximum load (in ampere) in the feeders emanating from the S/s.

Reply 9: Details of existing and upcoming individual maximum load (in ampere) of feeders emanating from the S/s are enclosed.

Query 10: PTCUL in its petition has submitted the Annual Financial Charges Sheet for the proposed works. In this regard, PTCUL is required to provide the reason for consideration of IoWC @13.70%, whereas, in the recent Tariff Order for FY 2024-25 the Commission has approved the IoWC @11.30%. Subsequently, in case of any changes, PTCUL is required to submit the revised sheet of Annual Financial Charges, Financial analysis and Breakeven Point analysis (in soft copy/excel format).

Reply 10: The Commission has approved the recent Tariff Order for FY 2024-25 dated 28th March 2024, meanwhile the DPR was submitted on the basis of the previous Tariff order of the Commission for FY 2023-24 before BOD dated 4th March 2024, and at that time Interest on Working Capital (IoWC) has been calculated @13.70% on the basis of Prime Lending Rate (PLR) of SBI and same was approved before recent Tariff Order for FY 2024-25. Now IoWC is being revised to 11.30% as per the direction of Hon'ble UERC. The revised Annual Financial Charges sheet (AFC) is submitted.

Query 11: PTCUL in its petition has not submitted the cost-benefit Analysis of the project. In this regard, PTCUL is required to submit the cost-benefit Analysis for the Project.

Reply 11: The FIRR of the said project is 15.92% and the WACC of the said project is 11.83%. which is lower than FIRR. So, the project is cost beneficial for PTCUL.

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 With regards to the availability of land for the proposed augmentation, the Petitioner has submitted the plot plan/layout diagram of the S/s representing

the proposed augmentation, which shows the adequate space for the proposed 160 MVA and 80 MVA in the existing 220/132/33 kV S/s Jhajhra, Dehradun

- 2.1.2 With regards to the loading on the S/s, the existing 02 nos. of 160 MVA T/F at 220/132 kV were loaded upto 85% and 74% in the FY 2022-23 and 2023-24. Similarly, the existing 02 nos. of 80 MVA T/F at 132/33 kV loaded upto 75% during the same time. Moreover, during the summer of the current year, one of the 160 MVA transformers and 80 MVA transformers were loaded to around 99% and 86% respectively in May 2024.
- 2.1.3 With regards to compliance with the T-1 contingency of the 220 kV S/s Jhajra, the Petitioner submitted that during the outage of any one of the 160 MVA T/F, the other available 160 MVA T/F get dangerously overloaded. Similar is the case with 80 MVA T/Fs. In either condition, the Petitioner has to either resort to rostering at 33 kV level or has to shift the load to other substations i.e. at present, T-1 contingency criteria are not being met either at 220 kV level or 132 kV level.

The Commission took note of the System study report made by the SE (System Study & Network Planning), PTCUL based on details provided by O&M wing Jhajra, Dehradun for the augmentation/increasing capacity of 220 kV S/s Jhajra, which exhibits the compelling factor for augmentation of the capacities at 220 kV level and 132 kV level at S/s Jhajhra.

- 2.1.4 Presently, 08 nos. 33 kV feeders were emanating from the 220 kV S/s Jhajhra with a total maximum load of 141 MVA which is expected to reach 164 MVA till 2026-27. The Discom namely UPCL vide its letter dated 28.12.2023 has requested the Petitioner to make available 03 nos. of additional 33 kV bays at 220 kV S/s Jhajhra looking into the increasing demand due to rapid industrialisation and power evacuation from the Solar PV Plants.
- 2.1.5 As per extract of Minutes of 89th meeting of the Board of Directors (BoD) of PTCUL, the BoD has approved the Corporation's aforesaid proposals with a debt-equity ratio of 70:30. With regard to the loan component, the BoD has authorised to approach the financial institutions viz. REC/PFC/NABARD/HUDCO/Banks etc. and authorised the Petitioner's MD, Director (Finance) and Company Secretary to approach to the aforesaid Financial Institutions and for the financing of the equity, nothing has been

cited in the Petition. However, during the discussion, it has been submitted by the Petitioner that the equity part will be borne by the GoU.

2.1.6 With regards to the consideration of contingencies in the estimate, the Petitioner has considered the provisions of contingencies as the same was done during the preparation of the DPR for ADB Financing. In this regard, the Commission opines that as the aforesaid project is a non-ADB project and therefore, the provisions applicable for the ADB financing do not apply to this project, therefore, the Commission does not find it prudent to allow the price contingency @ 6.8% in the absence of any other suitable justification by the Petitioner.

2.2. Based on the above Observation, the Commission is of the view that to cater the load growth due to rapid industrialisation and for evacuating the power from the developing Solar PV power plants in the nearby areas as well as to make the Jhajhra S/s compliant with the T-1 contingency the need of the aforesaid proposal is justified. Hence, the Commission accepts the aforesaid proposal for the augmentation of the Jhajhra S/s.

2.3. The Commission hereby grants in-principle approval for Rs. 47.99 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)
Augmentation of 220 kV substation Jhajhra (2 x 160 MVA to 3 x 160 MVA T/F at 220/132 kV Voltage level and (2 x 80 MVA to 3 x 80 MVA T/F at 132/33 kV voltage level).	52.54	47.99

- (i) The Petitioner should go for the competitive bidding for obtaining most economical prices from the bidders.
- (ii) All the loan conditions as may be laid down by the funding agency in their detailed sanction letter are 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 funding agreed by the State Government or any other source in respect of the proposed projects.

- (iv) After completion of the aforesaid projects, the Petitioner shall submit the completed cost and financing of the projects.
- (v) The cost of servicing the project cost shall be allowed in the Annual Revenue Requirement of the petitioner after the assets are capitalized and subject to prudence check of cost incurred.

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)
Member (Technical)/Chairman(I/c)