

Before
UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

Petition No. 18 of 2020

In the Matter of:

Petition for seeking investment approval on the project for covering the construction of 02 nos. 33/11 kV Substations & their associated 24.30 Kms. 33 kV Line.

And

In the Matter of:

Uttarakhand Power Corporation Limited. (UPCL),
V.C.V.G.S. Urja Bhawan, Kanwali Road,
Dehradun.

...Petitioner.

Coram

Shri D.P. Gairola Member (Law)

Shri M.K.Jain Member (Technical)

Date of Order: 15th September, 2020

ORDER

This Order relates to the Petition filed by Uttarakhand Power Corporation Limited (hereinafter referred to as "UPCL" or "the Petitioner" or "the licensee") seeking approval of the Commission for the investment on the project covering the construction of 02 nos. 33/11 kV Substations & their associated 24.30 Kms. 33 kV Line.

Background

2. The Petitioner vide its letter No. 06/UPCL/Com/RMC-6/D(F) dated 01.01.2020 submitted its Petition for investment approval under the provisions of the Clause 11 of Distribution and Retail Supply Licence and Clause 40 of UERC (Conduct of Business) Regulations, 2014.

3. The Petitioner in its Petition has submitted that:

“

- i. With a view to ensure reliable power supply, improved voltage profile and to meet future load growth, the applicant company has proposed the construction 02 No. 33/11 KV Substations & their associated 24.30 Km 33 KV Line. 33 KV lines in different regions of the state of Uttarakhand. The estimated cost of the project is Rs. 13.49 Cr., which will be met through loan (70%) from REC and Equity (30%) from State Government. The land for Construction of Substations will be made available by the respective Electricity Distribution Division of UPCL. The project is proposed to be implemented partially on turnkey basis. The duration of the project is 02 years (F.Y. 2019-20 to F.Y. 2020-21). The details of substations and lines are as follows:-

Abstract of details of 33/11 kV Substations alongwith their 33 kV associated lines
(Rs. in Crores)

Sl. No.	Name of Substation	District	Substation Capacity (MVA)	Estimated cost of Substation	Length of Line (Km.)	Estimated cost of Line	Total Cost
1	Ranipokhri	Dehradun	2X5	3.75	6.80	2.79	6.54
2	Chakisain	Pauri Garhwal	2X3	3.43	17.50	3.52	6.95
Total			16.00	7.18	24.30	6.31	13.49

- ii. The detailed project report showing examination of an economic technical system together with the outline of the work to be undertaken, the salient features and particulars demonstrating the need for investment alongwith relevant cost benefit analysis is enclosed herewith at **Annexure-A**. The work to be undertaken does not have any adverse environmental effect. The proposed investment will be financed through 70% loan from REC for which proposal has been submitted and the remaining 30% will be met through Internal Resources. The approval from BOD is enclosed herewith at **Annexure-B** for your kind perusal.”

4. On examination of the Petition certain deficiencies/infirmities were identified, the Commission vide its letter No. 1690 dated 05.03.2020 directed the Petitioner to submit/furnish the desired information/clarification on the following latest by **23.03.2020**:-

“

(A) General

1. UPCL is required to furnish the soft copy in excel format for the payback period calculations for proposed 33/11 kV S/s at Ranipokhri and 33/11 kV S/s Chakisain.
2. UPCL is required to furnish the status of proposal sent to M/s REC pertaining to financing of the proposed 33/11 kV S/s at Ranipokhri and 33/11 kV S/s Chakisain.
3. UPCL is required to furnish copy of rate schedules for material, erection and civil works which have been considered while preparing the estimates for the proposed works.

4. UPCL is required to furnish the details of forest clearances of the lines associated with the proposed 33/11 kV S/s at Ranipokhri and 33/11 kV S/s Chakisain.
5. UPCL in its petition under status of land has mentioned 'Land Available'. In this regard, UPCL is required to furnish the details of land acquisition for the proposed 33/11 kV S/s at Ranipokhri and 33/11 kV S/s Chakisain.

(B) 33/11 kV S/s Ranipokhari (2 X 5 MVA)

1. Regulation 3.6 of UERC (Distribution Code) Regulations, 2018 provides that: -

“

(1) The Distribution Licensee while planning Distribution System shall take into consideration the adequacy and redundancy of system capacity and capability to allow for long term load growth based on perspective plan and maintaining supply to consumers in the event of forced or planned outage of lines and transformers. The system shall have built in redundancy so that consumers face no interruption in power supply through alternative circuit arrangements.

...

(4) In every Sub-Station of capacity 10 MVA and above there shall be a provision for obtaining alternate 33 kV supply to the Sub-Station in case of a failure in the incoming supply.”

However, it is observed that 'N-1' line contingency provision has not been kept in the proposal for 10 MVA, 33/11 kV S/s at Ranipokhri, wherein, a composite 33 kV & 11 kV line is being proposed which would neither provide redundancy at 33 kV level nor will provide redundancy at 11 kV level, as maintenance in composite lines require shutdown of both lines on the same structure due to safety reasons.

UPCL is required to clarify/justify the same.

2. On examination of the line chart of the proposed 33 kV S/s Ranipokhari, following has been observed: -
 - a) The load at 33 kV feeder is mentioned as 528 amps on 'Dog' conductor between 132/33 kV S/s Laltapper to 33/11 kV S/s Bhaniyawala. This appears to be incorrect as the same is exceeding the current carrying limit of Dog conductor. The current loading at 33 kV feeder should be indicated in terms of 33 kV and not in terms of 11 kV.
 - b) The pre & post scenario loadings at 132/33 kV S/s Laltapper has been indicated in terms of 11 kV, the same should be indicated in terms of 33 kV.
 - c) UPCL has indicated a composite 33 kV and 11 kV line for the proposed S/s at Ranipokhari. UPCL may explore other options as it appears that the proposed arrangement is not providing redundancy in case of line outage.

UPCL is required to clarify the above points and resubmit the line chart accordingly.

(C) 33/11 kV S/s Chakisain (2 X 3 MVA)

1. *On examination of abstract of estimated cost for 33/11 kV S/s Chakisain, it is observed that at s.no. 16 the cost against making of composite main has been mentioned. UPCL is required to confirm the same as no composite main line has been mentioned in line chart of proposed 33/11 kV S/s Chakisain.*
 2. *On examination of the line chart of the proposed 33/11 kV S/s Chakisain, it is observed that the conductor type, current loading in Amps and line length in Kms. for 33 kV line emanating from 132/33 kV S/s Satpuli to 33/11 kV S/s Simarkhal has not been mentioned. Moreover, it is observed that the current loading at 132/33 kV S/s Satpuli has been mentioned in terms of 11 kV, the same should be indicated in terms of 33 kV. UPCL is required to provide the revised line chart accordingly.*
 3. *In line chart of the proposed 33/11 kV S/s Chakisain, 'Racon' conductor has been mentioned in 33 kV feeder (length-45 kms) emanating from 33/11 kV S/s Simarkhal to 33/11 kV S/s Chipalghat, a 33 kV feeder of 45 kms on, 'Racon' conductor would be having a considerable voltage drop in the said line. Moreover, it is observed that the proposed S/s at Chakisain is further 17.5 km away from 33/11 kV S/s Chipalghat this means that proposed S/s at Chakisain is approximately 62.5 kms from 33/11 kV S/s Simarkhal. UPCL is required to furnish the voltage drop/regulation calculation for the proposed 33/11 kV S/s Chakisain, 33/11 kV S/s Chipalghat and 33/11 kV S/s Simarkhal starting from the primary source i.e. 132/33 kV S/s Satpuli in a pre & post construction scenario."*
5. UPCL vide its letter dated 18.06.2020 submitted that due to Covid-19 pandemic from March, 2020 to May, 2020 it could not furnish the infirmities/clarification within the stipulated time and requested the Commission for allowing time extension upto 15.07.2020 for submission of the same. The said request was accepted by the Commission and UPCL was directed to ensure its submission by **15.07.2020**. In compliance to this, UPCL vide its letter dated **14.07.2020** submitted its point-wise compliance as follows:-

“

(A) General

1. *Calculation of payback period of investment on proposed 33/11 kV Substation at Ranipokhari and Chakisain is being presented herewith as well as in soft copy in excel format in compact disc.*
2. *Financing for the 33/11 kV Substation at Ranipokhari and Chakisain has already been sanctioned by M/s REC, New Delhi vide sanctioned letter no. REC/RO/DDN/T&D/Sanctioned/2019-20/173, dated 31.01.2020 (copy enclosed as Annexure-A).*

3. *The rate schedule for civil work is being presented herewith as well as in soft copy in compact disc whereas rate schedules for supply of electrical equipment is being enclosed (at Annexure-B).*
4. *UPCL has proposed the line along the road. Therefore, at present forest clearance may not be required for the 33 kV lines associated with the both 33/11 kV Substation at Ranipokhari and Chakisain.*
5. *UPCL has purchased the land to be used in construction of proposed 33/11 kV Substation, Ranipokhari amounting Rs. 28,36,200.00 and 33/11 kV Substation, Chakisain amounting Rs. 75,800.00 (including stamp duty). Copies of registry of the lands are being enclosed herewith (at Annexure-C).*

(B) 33/11 kV S/s Ranipokhari (2 X 5 MVA)

1. *To meet N-1 contingency requirement, UPCL has proposed alternate 33 kV underground line from Bhuian Dewata to proposed 33/11 kV Substation Ranipokhari. Bhaniyawala Substation is already meeting the N-1 contingency requirement having 33 kV supply from 132/33 kV Substation Laltappar as well as from 132/33 kV Substation IIP, Mohkampur.*
2. (a) *In the line chart the current loading has been shown in term of 11 kV. Revised line chart having the current loading in term of 33 kV is attached herewith (at Annexure-D)*
 (b) *A revised line chart indicating the pre and post scenario of loadings at 132/33 kV Substation, Laltappar in term of 33 kV is attached herewith (at Annexure-D).*
 (c) *Proposed 33 kV line will be originating from 33/11 kV Substation Bhaniawala. As there are power lines on both side of the congested road, hence there is no space available for new 33 kV line and due to space constraint approx. 2.5 Km. of existing 11 kV Athurwala feeder shall be converted into 33~11 kV composite mains considering all the prevalent safety precautions as per rules.*

Temporary arrangement for power redundancy at 11 kV shall be made by constructing the temporary link line from existing 11 kV NTRO feeder passing nearby, while the composite line is being constructed. Remaining approx. 5.5 Km. line has been proposed along the National Highway to the proposed Substation site.

(C) 33/11 kV S/s Chakisain (2 X 3 MVA)

1. *Existing 11 kV feeder supplying electricity to the area is passing through forest. To cross the new 33 kV line over existing 11 kV feeder, conventional crossing has been proposed. But due to hilly area, at 1~2 places/location space for erection of additional poles to cross the line is not available. Therefore, at these locations 33 kV line has been proposed to cross at same pole by replacing the existing pole to elongated pole and 33~11 kV composite main.*

2. *A revised line chart is **being enclosed as Annexure-D** mentioned with the type of conductor, current loading in amp w.r.t. respective voltage level and line length in km. for 33 kV line emanating from 132/33 kV Substation at Satpuli to 33/11 kV Substation Simarkhal and current loading at all 33 kV feeder is now indicated in terms of 33 kV.*

In the line chart of proposed 33/11 kV Substation Chakisain, 'Raccon' conductor was mentioned in 33 kV feeder which is a typographical mistake, the conductor used in 33 kV line is ACSR Dog conductor.

*The voltage drop/regulation calculation for the proposed 33/11 kV Substation Chakisain, 33/11 kV Substation Chipalghat and 33/11 kV Substation Simarkhal starting from the primary source i.e., 132/33 kV Substation Satpuli in a pre & post construction scenario is **being enclosed as Annexure-E**.*

It is also to submit that at present the existing 11 kV feeder from Chipalghat to Chakisain area is about 160 km. including all the spur lines, leading to difficulties in maintaining supply and further ensuring quality of supply. After constructing this sub-station the effective line length of 11 kV feeders shall be reduced to 110 km. Voltage profile of this area including SAIFI, SAIDI and MAIFI shall improve considerably and restoration of supply shall be more prompt in case of breakdown. After constructing this sub-station approx. 4,200 consumers will be benefited in the first year and subsequently it will cater 5% load growth/annum in coming years and UPCL shall have saving of approx. Rs. 26.68 lac/annum. This sub-station will facilitate revenue, billing/collection center which will improve billing and collection efficiencies of UPCL."

6. On further examination certain additional deficiencies were identified in the matter and the Commission vide its letter No. 507 dated 21.08.2020 directed the Petitioner to furnish the desired information on the following latest by **28.08.2020**:-

"

(A) General

1. *While calculating the impact of depreciation, the 10% salvage value reduction has not been considered. UPCL is required to furnish revised calculation of payback period for the 02 no. S/s in hard as well as soft copy.*
2. *UPCL is required to furnish the detailed backup calculation for I^2R losses considered for calculating the pay backup period calculation in hard and soft copy.*
3. *UPCL is required to furnish tentative land requirement required for construction of an air insulated 33/11 kV Substation of various capacities i.e. 2X3 MVA, 2X5 MVA, 2X8 MVA & 2X10 MVA.*

(B) 33/11 kV S/s Ranipokhri

1. With regard to 'N-1' contingency, UPCL in its submission dated 14.07.2020 has mentioned that "to meet 'N-1' contingency requirements UPCL has proposed alternate 33 kV underground line from Bhuian Dewata to proposed 33/11 kV S/s Ranipokhari". In this regard, UPCL is required to furnish the details of the proposed alternate 33 kV underground line alongwith details of expenditures.
2. With regard to land acquired for 33/11 kV S/s Ranipokhri, it has been observed that the land for the proposed Substation has been acquired on lease deed basis for 30 years. In this regard, it is observed that the electrical infrastructure such as Substations are generally for perennial usage. Therefore, UPCL is required to clarify regarding its decision for land acquisition on lease deed basis.

(C) 33/11 kV S/s Chakisain

1. UPCL has shown 02 nos. 33/11 kV S/s Ransi in its revised line chart for proposed 33/11 kV S/s Chakisain. UPCL is required to submit the corrected line chart for the same.
2. UPCL has submitted that a land of size 190 sq.mtr. has been acquired for construction of 2X3 MVA 33/11 kV S/s Chakisain. UPCL is required to confirm the adequacy of the land for the proposed Substation."

7. In compliance to the Commission's aforesaid letter dated 21.08.2020, UPCL vide its letter dated **01.09.2020** submitted its compliance as follows:-

"

(A) General:-

1. The calculation for payback period of the substation has been prepared as per earlier practices in accordance with the verbal discussions with Hon'ble UERC. However, revised calculation of payback period of investment on proposed 33/11 kV Substation at Ranipokhari and Chakisain considering 10% salvage value reduction is being presented herewith in hard as well as in soft copy. **(copy enclosed as Annexure-A)**
2. The calculation for I²R losses considered for calculation of payback period have already been submitted as per earlier practices. However, the detailed calculation for calculating I²R losses is being attached herewith alongwith the revised calculation of payback period. **(copy enclosed as Annexure-A)**
3. Order no. 2010 V-2011-55(अग) 2006- *दीर्घा* dated 17.11.2011 issued from Govt. of Uttarakhand for provision for requirement of land for 33/11 kV Substations is attached herewith.

It is also to mention here that size for standard layout plan for 33/11 kV Substation with three outgoing feeders in same direction (at right angle to

bus bar) land required is around 20X30 sq. mtrs. Plus 10X15 sq. meter for Control room building. The position of control room is fixed according to the line plan of the substation in respect of approach road. Apart from switch yard and control room the rest of the land is to be used for 9 no. Quarters for Junior Engineer and other staff, store and space for emanating 11 kV outgoing feeder on double pole structure etc. **(copy enclosed as Annexure-B).**

(B) 33/11 kV S/s Ranipokhari (2X5 MVA):-

1. To meet 'N-1' contingency requirement, UPCL has proposed alternate 33 kV underground line from Bhuian Dewata to proposed 33/11 kV substation Ranipokhari. Bhaniyawala Substation is already meeting the 'N-1' contingency requirement having 33 kV supply from 132/33 kV Substation Laltappar as well as from 132/33 kV Substation IIP, Mohkampur. However, the estimate for proposed underground line from Bhuian Devta to Ranipokhari is attached herewith. **(copy enclosed as Annexure-C).**
2. UPCL had requested District Magistrate, Dehradun to provide the land for proposed substation. On the basis of different Govt. Orders District Magistrate had approved to provide the land on the basis of lease deed for 30 years. However, at page no. 3 of lease deed it is clearly mentioned that lease can be extended for two times for 30-30 years according to Goot Grant Act-1895.

(C) 33/11 kV S/s Chakisain (2X3 MVA):-

1. It is a typographical mistake, the revised chart is attached herewith **(copy enclosed as Annexure-D).**
2. UPCL has arranged 0.140 Ha land from District authority, Pauri (G) and 0.159 Ha from the owners of land. The document of mutation is being presented herewith. **(copy enclosed as Annexure-E)."**

Commission's Observations, Views & Directions:-

8. On examination of the Petition and subsequent submissions of the Petitioner, following has been observed:-

33/11 kV S/s Ranipokhari (2 X 5 MVA):-

- (1) UPCL in its Petition has submitted that there are approx. 5000 consumers in the Ranipokhari, Bhogpur, Itharna, Dandi Rainapur, Sunargaon, Ghamandpur & Nagehar area and presently the electricity to these area is being supplied through 11 kV Ranipokhari feeder which is approximately 174 Kms. long (including branches) emanating from 33 kV S/s Bhaniawala.

The Petitioner has submitted that due to the long feeder, low voltage profile and frequent break-downs are common in the area which adversely affects the quality & reliability of power supply. Further, the Petitioner has submitted that Ranipokhari is an emerging institutional hub with an expected load growth of 10% per annum.

- (2) UPCL has also submitted that after construction of proposed 2X5 MVA, 33/11 kV S/s at Ranipokhari, Doiwala the reliability & voltage profile of power supply of consumers residing in Ranipokhari and nearby 50 villages would improve.

33/11 kV S/s Chakisain (2 X 3 MVA):-

- (1) UPCL in its Petition has submitted that there are 74 Villages having approx. 4200 consumers in Thailisain and Pabo area of Pauri District. The power supply of these areas is being catered through 160 Kms. long (including branches) 11 kV Paithani feeder emanating from 33/11 S/s Chipalghat. The aforesaid 11 kV feeder also caters to the load of areas bordering Rudraprayag and Chamoli District namely Syoli, Khand, Tripalisain, Salon, Dungri, Jakh, Teela, Bamorth etc.
 - (2) The existing 11 kV feeder is too long and passes through dense forest making it difficult to restore the supply during adverse weather conditions and hence the consumers face frequent long break-downs which in turn adversely affects the quality & reliability of power supply.
 - (3) The Petitioner in its Petition has submitted that a 5% load growth per annum is expected in the aforesaid region and post construction of the proposed 2X3 MVA, 33/11 kV S/s at Chakisain, the reliability & voltage profile of power supply in the aforesaid area would improve and the consumers of these areas would avail 24X7 quality power supply.
9. In the instant Petition, the Petitioner has not proposed any 'N-1' contingency provision for 33 kV incoming supply at the proposed 33 kV S/s Ranipokhari whereas, Regulation 3.6 (4) of UERC (Distribution Code) Regulations, 2018 provides that: -

“

(4) In every Sub-Station of capacity 10 MVA and above there shall be a provision for obtaining alternate 33 kV supply to the Sub-Station in case of a failure in the incoming supply.”

In this regard, the Commission is of the view that the responsibility of long term planning of distribution system lies with the distribution licensee who should appropriately make consideration for adequacy and redundancy in distribution system capacity so that maintenance of the distribution assets do not create hindrance in power supply of the consumers and the power availability is ensured through the alternative circuit arrangement. Further, with regard to distribution system planning, the Commission is of the view that the Petitioner should ensure to analyze the system capacity and adequacy of the lines/Substations feeding the proposed Substations, as such analysis would help in early identification of bottlenecks in existing sub-transmission and distribution network of the Petitioner. Thus, the same would help in effective distribution system network planning.

10. Considering the expected improvement in the quality & reliability of electricity in the Ranipokhari & Chakisain area, the Commission hereby grants in-principle approval for the proposed construction works of 33/11 kV S/s Ranipokhari & 33/11 kV S/s Chakisain and their associated lines subject to the fulfillment of the conditions mentioned below:

- (1) The Petitioner is directed to obtain the prices through competitive bidding for the works allowed by the Commission under the prevailing Rules & Regulations.
- (2) All the loan conditions as may be laid down by the funding agency in their detailed sanction letter are strictly complied with. However, the Petitioner is directed to explore the possibility of swapping this loan with cheaper debt option available in the market.
- (3) The Petitioner shall, within one month of the Order, submit 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 schemes.

- (4) After completion of the aforesaid schemes, the Petitioner shall submit the completed cost and financing of the schemes.
- (5) 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.
11. Besides above, the Petitioner is cautioned for ensuring compliance of the provisions of Regulation 3.6 (4) of UERC (Distribution Code) Regulations, 2018 w.r.t. 'N-1' contingency in its future investment proposals and in the instant case, Petitioner is directed to evaluate the provision of 'N-1' line contingency provision for 2X5 MVA 33/11 kV S/s at Ranipokhari duly considering the techno-economic aspects and investment proposal in this regard may filed before the Commission.

Ordered accordingly.

(M.K. Jain)
Member (Technical)

(D.P. Gairola)
Member (Law)