

Before
UTTARAKHAND ELECTRICITY REGULATORY COMMISSION
Petition No. 49 of 2016

In the Matter of:

Investment Approval for construction of 2x25 MVA, 220/33 kV S/s Baram (Jauljivi) and construction of LILO line of one Circuit 220 kV Dhauliganga-Pithoragarh (PGCIL) line at proposed 2x25 MVA, 220/33 kV S/s Baram (Jauljivi).

And

In the Matter of:

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

.....Petitioner

Coram

Shri Subhash Kumar	Chairman
Shri K.P. Singh	Member

Date of Order: 25th October, 2016

ORDER

This order relates to the Petition filed by Power Transmission Corporation of Uttarakhand Ltd. (hereinafter referred to as "PTCUL" or "the Petitioner") seeking approval of the Commission for construction of 2x25 MVA, 220/33 kV S/s Baram (Jauljivi) and construction of LILO line of one Circuit 220 kV Dhauliganga-Pithoragarh (PGCIL) line at proposed 2x25 MVA, 220/33 kV S/s Baram (Jauljivi).

2. The Petitioner vide its letter No. 30/Dir.(Projects)/PTCUL/Investment approval dated 14.01.2015 submitted the above Petition for seeking approval of the Commission under UERC (Conduct of Business) Regulations, 2014 and Para 11 of Transmission and Bulk Supply Licence [Licence No. 1 of 2003].
3. The Petitioner in its Petition has submitted that:
- (1) Due to remote area and long 33 kV line length from Pithoragarh to Jauljivi and non-availability of 132 kV substation and line in Jauljivi and nearby area, 220/33 kV S/s Baram (Jauljivi) is proposed, which would be energized through LILO of one circuit of 220 kV Dhauliganga-Pithoragarh (PGCIL) line at 220 kV S/s Baram (Jauljivi). At later stage, it will be connected to the proposed 400 kV substation at Jauljivi, which is planned in the Central Sector scheme (PGCIL).
 - (2) Due to scarcity of land suitable for construction of 220kV AIS S/s in the nearby areas, 220kV GIS S/s has been proposed.
 - (3) Proposed 220 kV substation Baram (Jauljivi) and its associated 220 kV LILO line would improve the voltage, reliability and quality of power supply in Jauljivi and nearby areas. This substation will facilitate the evacuation of Power from indentified/proposed SHPs in the region.
 - (4) The estimated cost of work proposed by the Petitioner in the DPR submitted alongwith the Petition is as follows:

Sl. No.	Description	Transformer Capacity (MVA)/ line length(KM)	Project Cost as per DPR		Project cost considered by PFC for funding the debt (Rs. Crore)
			Excluding IDC (Rs. Crore)	Including IDC (Rs. Crore)	
1.	220 /33 kV GIS S/s Baram (Jauljivi)	2x25 MVA	109.58	120.85	102.86
2.	LILO of one circuit 220 kV Dhauliganga-Pithoragarh (PGCIL) line at proposed (2x25 MVA), 220/33 kV S/s Baram (Jauljivi)	08 KM	23.52	26.05	
Total			133.1	146.9	102.86

4. The Petitioner has submitted copy of extracts of the Minutes of BoD Meeting of PTCUL held on 29.12.2014, wherein the Petitioner's Board has approved the Corporation's aforesaid proposals with a funding plan of 70% through loan assistance by financial institutions and balance 30% as equity funding from GoU. However, the Petitioner did not submit any letter from the Government or any such documentary evidence entailing Government's commitment towards equity funding for the above proposal.

5. The Commission heard the matter on 04.02.2015 and issued an Order on 06.02.2015 wherein Petitioner was directed to:

"For Misc App. No. 2 of 2015 pertaining to Investment approval for construction of (2x25 MVA), 220/33 kV S/s Barham (Jauljivi) and construction of LILO line of one circuit 220 kV Dhauliganga -Pithoragarh (PGCIL) line at proposed (2x25 MVA), 220/33 kV S/s Barham (Jauljivi), the Commission has directed that since the Petitioner has failed to submit approval from Ministry of Environment and Forest, GoI for allotment of forest land for construction of LILO line and also the proof for allotment of land for construction of Substation , the aforesaid application may not be admitted.

The Commission further directs the Petitioner again approach the Commission for the approval of the said works once the land for the substation and line are transferred in the name of the Petitioner. While doing so, the Petitioner should also give proper justification for going for the higher cost option of GIS."

6. In compliance to the above, PTCUL submitted its compliance vide letter No. 342 dated 01.03.2016 & letter No. 451 dated 11.03.2016 stating that:

" ... a total area of 2.89 hectare (144.54 nali) has been purchased so far for the construction of 220 kV S/s Barham (Jauljivi) out of 3.01 hectare land that has been already proposed for this purpose. The balance land measuring 0.1181 hectare (5.905 nali) could not be acquired because of local dispute of local villagers. As per the present scenario, this acquired land is sufficient for construction of 220 kV S/s at this place." and requested the Commission to accord approval for the above works.

7. The Commission took note of the same and further directed the Petitioner vide its letter No. 1879 dated 21.03.2016 to ensure the compliance of the directions of the Order dated 06.02.2015 in totality by submitting the documents pertaining to transfer of land for the proposed 220 kV line and justification for opting the higher cost option of GIS Substation over AIS.

8. In response to the aforesaid directions, the Petitioner submitted a reply vide letter No. No.555/Dir.(Projects)/PTCUL/Investment Approval dated 01.04.2016. On perusal of the aforesaid reply, it has been found that the same was simply reiteration of earlier submissions. Therefore, the Commission vide its letter No. 222 dated 09.05.2016 again directed the Petitioner to comply with the direction of the Commission by submitting the desired documents.
9. In compliance to the above direction, the Petitioner vide its letter No. 845/Dir.(Projects)/PTCUL/Investment Approval dated 24.05.2016 submitted a reply, wherein it has been stated that:

“The forest case preparation for LILO line of 220 kV Dhauliganga-Pithoragarh (PGCIL) line has been done and joint inspection is in the process and the joint instruction completed the FRA (Details are already collected) will be started and completed by 30.06.2016 ...

As per international Seminar on Compact Substation and Gas Insulated Switchgear (GIS) organized by CBIP and Society of Power Engineering India, A paper was presented on “Techno-Economic Comparison between GIS Conventional High Voltage Substations” By M/s Siemens Germany...

The Evaluation of Solutions and decision of the above analysis are as under:

- 1. Primary equipment cost of GIS is 120% of AIS, however secondary equipment cost is same.*
- 2. Earth work, civil work and structure cost in GIS is 60% of AIS in plain area. In case of hilly region where the level difference is higher the cost will be 25-30% of AIS.*
- 3. Planning and Engineering cost in GIS is 80% of AIS*
- 4. Electrical Assembly and erection cost in GIS is 70% of AIS.*
- 5. Maintenance cost of GIS is 50% of AIS.*
- 6. Cost of Outage in GIS is approx 50% of AIS*
- 7. Life Cycle cost of GIS after 10 year is maximum 70% of AIS.*
- 8. This type of substation can be operated from remote and reduce the operation cost.*
- 9. Due to smaller size of substation the earth cutting is very less hence good for environmental point of view.*

However, irrespective of these factors, the main added value of GIS substations which offers the maximum benefits is the high degree of reliability offered by the enclosed disconnectors, earthing switches and circuit breakers, and availability of electric supply and course of high level of safety on account of safe-to-touch enclosures. Further, the trouble-free operating life of GIS which is 40 to 50 years, is higher than comparable AIS solutions.”

10. For justifying the cost taken in the proposed estimate, the Petitioner submitted a cost comparison of GIS to AIS for 132 kV S/s Bageshwar vide its letter No. 971/Dir(Projects)/PTCUL/Investment Approval dated 06.06.2016, which is as follows:

Particulars	AIS (Cost in Cr.)	GIS (Cost in Cr)
Supply	9.63	22.36
Erection	0.50	1.65
Civil work (control room, store shade, fencing, equipment foundation, water, supply, road and drainage)	3.51	4.64
Land Development for Switchyard	15.53	5.87
Boundary wall, Colony & approach road, land development for colony	10.86	10.86
Total	40.03	45.38

11. Further, with regard to the reporting of progress on transfer of forest land, the Petitioner through a submission made vide its letter No. 1377/Dir.(Projects)/PTCUL/Investment Approval dated 28.07.2016, apprised the Commission that “...the forest case has been prepared and submitted to Nodal Officer of Forest department and got the details of land area and number of trees to be felled ...”
12. Thereafter, on non-receipt of any submission/progress report in the matter of forest clearance during last two months, a meeting was convened by the Commission on 13.10.2016 and during the discussions held in the meeting, PTCUL was asked to submit load projections depicting the load on the 33kV substations to be connected to the proposed 220 kV S/s Baram , alongwith cost comparison of the proposed estimated cost of 220 kV/33 kV substation vis-à-vis the cost of 220 kV/33 kV GIS substations constructed by the licensee anywhere in the State or cost known through other references and status of forest clearance. The Petitioner was also asked to make a Power Point Presentation before the Commission on 17.10.2016.
13. In compliance to the direction of the Commission, a meeting was held and presentation was made before the Commission as per schedule i.e. on 17.10.2016. During the meeting, Director (Project), PTCUL submitted that the necessary formalities, with regard to forest clearance, have already been completed and all the documents as desired by the Nodal Officer, Forest Department have been

submitted to his office for further proceedings. It was also apprised by Director (Project), PTCUL that on the basis of acceptance of the complete proposal, in-principle approval in the matter would be obtained from the Nodal Officer, Forest Department shortly. Further, during the meeting, Chief Engineer (Project), PTCUL also submitted that execution of works would be started immediately after receiving the in-principle approval as notification F-No.11-306/2014-FC of Ministry of Environment & Forest and Climate Change which allows the user agencies to start the execution of works and the in-principle approval is deemed as working permission for commencement of the works on receipt of in-principle approval.

14. In a submission made during the Presentation, The Petitioner also submitted a cost comparison sheet showing the approved cost of 2x50 MVA, 220/33 kV GIS substation Harrawala, Dehradun being constructed by the Petitioner vis-à-vis estimated cost of the proposed 2x25MVA, 220kV/33kV GIS S/s and the same is tabulated as below:

Particular	2X25MVA, 220/33KV GIS Baram (Jauljivi), Estimated cost (in Rs Crore) as per DPR	2X50MVA, 220/33KV GIS IIP Harawala, cost (in Rs Crore) as per (LOA)
Supply	42.54	43.52
Erection	1.99	2.59
Civil	7.91	4.87
Total	52.45	51.00

Commission’s observations, Views and Decision

15. On examination of the proposal and subsequent submissions/clarifications, the Commission observed that:
- (1) A load of 24.5 MW of Jauljivi area being catered through 132kV S/s Pithoragarh is to be shifted to the proposed 2x25 MVA, 220 kV/33 kV S/s Baram(Jauljivi), which would be increased to 36 MW by Year 2019-20.
 - (2) Due to remote area and long 33 kV line length between Pithoragarh and Jauljivi and non-availability of 132 kV substation & line in close proximity to Jauljivi and nearby area, a 220 /33 kV S/s at Baram (Jauljivi) has been proposed, which would be energized through LILO of one circuit of 220 kV

Dhauliganga-Pithoragarh (PGCIL) line at 220 kV S/s Baram (Jauljivi). Further it has been planned to connect this proposed substation to the proposed 400 kV Substation (planned under Central Sector Scheme) at Jauljivi.

- (3) This proposed 2x25MVA, 220 kV/33kV, substation, Baram (Jauljivi) would have an important role in improving the voltage, reliability and quality of power supply in Jauljivi area. This substation would also facilitate the evacuation of Power from indentified/proposed SHPs in the region.
- (4) The Commission has taken cognizance that the Petitioner has projected the load incident on the substation based on the load growth projections made by UPCL. Accordingly, the present load condition and future load growth of Baram (Jauljivi) area are presented in the table given below:

Year	Maximum Load (MW)
2015-16	24.50
2016-17	26.95
2017-18	29.65
2018-19	32.61
2019-20	35.87

16. The Commission has also observed that the Petitioner in its Transmission System Planning for Kumaon region has shown the proposed S/s at Baram (Jauljivi) as a strategic S/s which would enable handling of increase flow of power besides facilitating interconnection to the upcoming Hydro-Electric Plants in the region for evacuation of generation.
17. With regard to opting for higher cost option of GIS over AIS, the Commission has taken cognizance of the submission made by the Petitioner at para 9 above and other documents submitted by the Petitioner for justifying the option of GIS over AIS namely facts/comments narrated in the Study Report published in an International Journal and comparison of estimated cost with the approved cost of other GIS substations being constructed by the Petitioner. However, the Commission is of the view that since it is the duty of the transmission licensee to develop an intra-State transmission system economically under the statute, therefore, higher cost option of GIS in hilly areas have to be examined thoroughly

on case to case basis and lower cost option of AIS need should be preferred except in a situation where required land is not available.

18. The Commission is of the view that in near future Kumaon region would have although better availability of 220 kV and 33 kV network, however, there would be apparent deficiency of 132 kV network in the said region of the State. Therefore, in view of the above, PTCUL should consider a provision for construction of 132 kV substation in future.
19. Earlier, while disposing of the similar cases of investment approval in the matter of 132kV/33kV Lohaghat and Bageshwar substations, the Commission had explicitly expressed its views that the Petitioner should critically examine the land availability and adequacy thereof for housing an AIS substation. If it is found to be adequate, the licensee should always go for AIS. Alternatively, if the land availability is not adequate to house an AIS substation of required capacity, then only Hybrid/GIS/ S/s should be proposed. Furthermore, after examining the Petitioner's submission and availability of suitable land specifically in Baram (Jauljivi) and also keeping in view the scope of future expansion, the Commission agrees to the proposal of the Petitioner.
20. With regard to exemption from the direction issued in the Commission's Order date 06.02.2016 for admitting the Petition, the Commission observed that the Petitioner has procured 2.89 Hectare of land for the substation from the local land owners and proof in this regard has been submitted to the Commission. While, the case for the transfer of land and necessary clearances has been submitted to the appropriate authority and reply on the final set of queries has also been submitted to the authority, therefore, taking cognizance of the submissions made by the Petitioner in this regard during the meeting held on 17.10.2016 and acknowledging the efforts of the Petitioner for obtaining the clearances, the Commission re-viewed its earlier pronouncement and decided to dispose of the matter at this point of time.
21. On the financial aspects of the proposal, it has been observed that while preparing the estimate, the Petitioner in addition to contingency, cost of establishment and audit & accounting has included quantity variation, cost escalation @ 20% and IDC

in the estimate. In the absence of any justified reasons for including the said quantity variation and cost escalation, the Commission does not agree with inclusion of the aforesaid amounts in the estimated cost under these heads/sub-heads. Besides above, from the comparison of the costs submitted by the Petitioner for the capacity of 2x25 MVA and 2x50 MVA, 220/33 kV substations at para 14 above, it has been observed that the cost of supply of equipments is almost equal for both the capacities. Based on the above, it is apparent that cost of 2x25 MVA Transformer has been taken on higher side as compared to the awarded cost of 2x50 MVA. Hence, as of now the Commission is not commenting on the cost, however, the same would be examined for prudence based on the actual executed cost.

22. Based on the submissions made by the Petitioner from time to time with regard to enhancement in the capacity of power evacuation, reliability and quality power supply to the consumers residing in the region and substantial reduction in line losses, the Commission hereby grants in-principle approval for the works proposed in the Petition under following terms and conditions:
- (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. However, the Petitioner is directed to explore the possibility of swapping this loan with cheaper debt option available in the market.
 - (iii) 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 scheme.
 - (iv) After completion of the aforesaid scheme, the Petitioner shall submit the completed cost as well as DPR and financing of the scheme.

- (v) The cost of servicing the project cost shall be allowed in the Annual Revenue Requirement of the petitioner after the assets are capitalized subject to prudence check of the cost incurred.

Ordered accordingly.

(K.P. Singh)
Member

(Subhash Kumar)
Chairman