THE UTTAR PRADESH ELECTRICITY REGULATORY COMMISSION

LUCKNOW

Petition No. 2089 of 2024

QUORUM

Hon'ble Shri Arvind Kumar, Chairman

Hon'ble Shri Sanjay Kumar Singh, Member

IN THE MATTER OF

Petition under Regulation 18, 44.2 and 45 of the UPERC (Multi Year Tariff for Distribution and Transmission) Regulations, 2019 read with Regulation 15 of the UPERC (Conduct of Business) Regulations, 2019 seeking prior approval for Estimated Capital Expenditure (CAPEX) of Rs 62.31 Cr. and O&M Expenses for "Construction of 5 nos. of New 33/11 KV Substation to meet the Additional Load Growth in Greater Noida" to cater the future load growth & demand in the Greater Noida area.

AND

IN THE MATTER OF

Noida Power Company Limited.,

Electric Sub-station, Knowledge Park - IV, Greater Noida, Gautam Buddha Nagar, Uttar Pradesh – 201310

..... Petitioner

THE FOLLOWING WERE PRESENT

1. Shri Sarnath Ganguly, Senior Vice President, NPCL

ORDER

1. The Petitioner has filed the present Petition under Regulation 18, 44.2 and 45 of the UPERC (Multi Year Tariff for Distribution and Transmission) Regulations, 2019 read with Regulation 15 of the UPERC (Conduct of Business) Regulations, 2019 seeking prior approval for Estimated Capital Expenditure (CAPEX) of Rs 62.31 Cr. and O&M Expenses for "Construction of 5 nos. of New 33/11 KV Substation to meet the Additional Load Growth in Greater Noida" to cater the future load growth & demand in the Greater Noida area. The following prayers have been made by the Petitioner:

a. Approve the Estimated Capital Expenditure of **Rs. 62.31 Cr. (Rupees Sixty Two Crores and Thirty-one Lakhs Only**) for Construction of 5 nos. of New 33/11 KV Substations.

b. Approve the O&M Expenses i.e. Employee Cost, A&G and R&M expenditure on the proposed CAPEX at the rate of of 2.71%, 1.39% & 2.73% respectively for FY 2024-25 and onwards along with escalation prescribed in MYT Regulations, 2019

2. In its Order dated 24.07.2024, the Commission had given the following directions:

a. The licensee to submit the details of Civil Works proposed to be undertaken at each 33/11 kV substation along with the cost analysis.

b. The Licensee to submit the cost benefit analysis demonstrating how the cost of its power transformer, over the entire useful life, compares with the power transformers being procured by other State Discoms.

c. The licensee to submit the comparison with the cost incurred by other licensees, which are procuring power transformers having similar specifications as those submitted by the licensee.

d. The licensee to submit the list of companies who participated in the tenders invited for the procurement of power transformers, H.T cables, 33 kV Indoor GIS & AIS in last 5 years along with the name of the successful bidders.

e. The licensee to submit the list of existing 33 kV Switching cum 33/11 kV Substation and 33/11 kV Substations, where provision for second Power Transformer has been made but is yet to be installed.

3. A written submission dated 05.08.2024 was made by the Petitioner in compliance to the directions of the Commission. The Commission, in its Order dated 22.08.2024, had observed that the submitted common 'Cost estimate for civil works' for each substation contained certain exorbitant quantities and amounts such as 'Demolishing cement concrete...' for an estimated amount of 39.93 lac and proposed quantity of 'TMT steel reinforcement...' as 36.70 metric tons.

4. The Commission, in the same Order, had further observed that it would be appropriate to seek opinion of an expert body on the technical specifications and the estimated costs of proposed civil works as well as major electrical equipment being procured such as power transformer, H.T. cables, Indoor GIS and AIS etc.

5. For the purpose, inputs from Central Electricity Authority (CEA) were sought by the Commission. CEA vide their letter no. CEA/DP&T/UPERC/2024/21 Dated 27.01.2025 provided their inputs along with recommendations, which was duly shared with the Petitioner.

6. The Commission, in its Order dated 28.03.2025, directed the Petitioner to make a written submission on the observations and recommendations made by CEA in their report, along with the estimate for the proposed work updated accordingly. The recommendations made by CEA, submission made by the Petitioner and the directions of the Commission have been detailed below:

Estimation of quantities and cost of various components of BoQ for Civil Works

7. *Recommendation by CEA:* According to CEA, the cost submitted in the DPR for the civil construction was Rs. 3.47 Crore per substation, which cumulatively amounts to Rs. 17.35 Crore inclusive of Taxes and 1% Cess. Subsequent to the submission of DPR, the Petitioner is stated to have conducted the soil investigation and prepared a structural design based on the soil profile report wherein total cost of civil construction came down to Rs. 13.08 Crores inclusive of Taxes and 1% Cess. This cost has been further reviewed by the Civil Design team of CEA as per which the total cost of civil works for 5 Nos. sub-stations is assessed as Rs. 11.98 Crore (inclusive of Rs. 30.02 Lakh for the electrical works) for 5 Nos. proposed 33/11KV Substations. In view of this, the observation of the CEA is that the revised estimated Cost of Rs. 13.08 Crore, proposed by the Project Entity (the Petitioner) for the civil works of 5 Nos. substations, is evidently reasonable on comparison with the costing of relevant items of work as per DSR 2023.

8. *Petitioner Comments:* The Petitioner has submitted that at the time of submission of the Detailed Project Report (DPR), the Petitioner did not possess essential reports such as the basic soil investigation report and structural design report for the five (5) proposed 33/11kV substations. The cost estimations done initially for the DPR purpose were based on the typical scope of work and BOQ for both the civil & electrical work and unit prices discovered through past open tenders for civil works. Consequently, the BOQ included in the DPR was prepared based on general industry benchmarks. Prior to the hearing scheduled before the Commission, the Petitioner initiated the soil investigation process, which was followed by the structural design phase. After CEA was engaged by the Commission for recommendation on proposed capital expenditure, CEA engaged with the Petitioner to discuss the civil BOQ and its cost assessment. During this period, the Petitioner also received the structural design report from the Structural Consultant, which enabled the preparation of fresh BOQs for each of the five (5) proposed 33/11kV substations. Keeping the unit costs unchanged from the DPR submission, the Petitioner submitted a revised estimated civil cost for each of the five substations. The cumulative revised estimate amounted to ₹13.08 Crore, as compared to the initially submitted ₹17.35 Crore.

9. The revised cost submitted to CEA was estimated with 10% contingency in quantities. Subsequently, after reviewing the revised BOQ and unit prices as per DSR, CEA has recommended the civil work cost considering only 3% contingency. The cost estimation considering 3% contingency, submitted by the Petitioner is Rs. 12.25 Crore and cost vetted by CEA's technical team i.e. Rs. 11.98 Crore, which implies overall variation of **less than 2.25%.** Moreover, the Unit Rates for various items of Civil Works has been taken by CEA as per DSR Rates 2023, whereas, the unit rates submitted by the Petitioner are based on past executed contracts through open tendering process. In addition, the above estimated cost submitted by the Petitioner also includes the civil cost for 2nd 33/11kV Power Transformer plinth, firewall, associated cable trenches and oil pit.

10. *Commission's View:* The Commission is of the view that the recommendation made by CEA needs to be taken into consideration while finalizing the tender for civil works. As submitted by the Petitioner, it initiated the soil investigation process subsequent

to filing the Petition for capex approval however, such investigations need to be carried out before submitting the Petition as absence of such information has a potential of debauching the proper assessment of the project cost.

11. As the Petitioner has stated that unit rates that have been submitted for the major items of cost are as per past executed contracts through open tendering process the Commission directs the Petitioner to maintain a "Standard Cost Sheet" for all capital items procured by them based on latest rates discovered through competitive bidding and submit such "Standard Cost Sheet" along with the Petitions for capex approval in future.

Relevance/Need for keeping the proposed technical specifications for power transformer and its cost incidence

12. *Recommendation by CEA:* CEA has submitted a comparison of Technical Specification of 33/11KV 12.5 MVA Power Transformer of the Petitioner with other Utilities/Discoms namely KESCo, PVVNL, TPCODL (Orissa), Andhra Pradesh Discoms and Haryana Discoms. In the report it is mentioned that the Petitioner has taken some stringent technical specifications for Power Transformer, mainly the low temperature rise of Oil and Windings, low flux/current density and lower losses and also certain additional features such as On load tap changer, Anti fog HV & LV Bushing for heavy polluted areas, additional valve for Nitrogen Injection Fire Protection System (NIFPS), digital Oil & Winding Temperature indicators with Modbus protocol, which have direct impact on the design of power transformer and the consequent cost. CEA has recommended some parameters to be considered by the Petitioner for 33 kV, 12.5 MVA Power Transformer which would still be better than the other utilities but with overall lower cost of Transformer.

13. *Petitioner's Comments:* The Petitioner has submitted that it procures and installs 33/11kV 12.5 MVA ONAN Type Power Transformers in its 33/11kV Substations with improved technical parameters associated to No Load & Load Losses, Max. Flux Density, Current Density, Temperature rise of oil and winding etc., along with some supplementary accessories as compared to other state utilities which are using similar

rating Power Transformers. In addition to this, the cost impact and benefits of the additional features/items for the safety and better functionality of their 12.5 MVA Power Transformers have also been submitted. However, as per the recommendation of CEA, the Petitioner has revised its technical specification and parameters related to the procurement of 33/11kV 12.5 MVA Power Transformer, so that the overall cost of procurement can be brought down to the level close to the cost indicated by CEA in its Report, subject to final discovery of cost in the open tendering.

14. *Commission's View:* The Commission finds that appropriate changes have been made by the Petitioner to the technical specifications and parameters as recommended by CEA, which will optimize the cost. It is also recommended to gradually follow the standard capacities and technical parameters of the equipments for the purposes of future procurement in line with other State Discoms. However, in view of improved safety and better functionality, the Commission allows for the installation of the additional features/accessories costing about 8.52 lacs.

Estimated cost of major electrical equipment like HT cables, indoor GIS and AIS and Benchmarking with other similar implementations

15. *Recommendation by CEA:* For AIS/GIS, it is submitted that the estimated cost of KESCO/PUVVNL for 1x10/12.5 MVA capacity AIS sub-station was around Rs 3.78 Cr. as against Rs 4.40 Cr. of the Petitioner. However, the Petitioner has proposed some additional features/equipment in the sub-station, which will have additional cost implications for improving the operational efficiency, reliability and safety.

16. The estimated cost of the Petitioner for 1x12.5 MVA AIS/GIS Sub-station is considered to be almost comparable with that of KESCO/PVVNL approved under RDSS. However, the actual cost would be as per the tender rates received by the Petitioner.

17. *Petitioner's Comments:* The Petitioner has submitted that it has proposed the use of 33kV AIS and GIS panels, depending on the type of substation required and its suitability for meeting both current and future load demand. AIS HT panels are planned for substations that primarily serve to transform voltage from 33kV to 11kV

using 33/11kV power transformers whereas, the 33kV Double Bus GIS panels are proposed for substations that require both 33kV switching and voltage transformation to effectively serve end consumers at both 33kV and 11kV voltage levels.

18. In addition, the proposed Substations also comprise of some additional or different rating equipment as compared to other state electricity utilities of U.P., which also complement to the total electrical cost of Substations. These include Double Bus GIS of Rating 1600Amps, Nitrogen Injection Fire Prevention & Extinguishing System (NIFPES), 100kVA Servo Stabilizer and 11kV Ring Main Unit.

19. *Commission's View:* The Commission observes that CEA in its recommendations has submitted that the proposed costs of 1x12.5 MVA AIS Sub-station and GIS sub-station (excluding the cost of power transformer) are almost comparable with that of KESCO/PVVNL approved under RDSS. However, the Commission directs the Petitioner to follow, to the extent possible, the standard capacities and technical parameters for the equipments being used.

Other issues for consideration of Commission

20. *Recommendation by CEA:* CEA has suggested that as per Planning Criteria issued by it, the Petitioner should plan its system in all future new sub-stations with N-1 contingency and accordingly should install two (2) Nos. of Power Transformer in place of one (1) power Transformer. It is also suggested that the Petitioner should upgrade to 33/11 kV, 20 MVA Power Transformers instead of current 12.5 MVA Power Transformers for future proposals of new 33/11 kV Substations and also for capacity enhancement projects.

21. *Petitioner Comments:* It is submitted that there are other state utilities like Tata Power Odisha, DHVBN, UHVBN, AP Transco which uses and operates 12.5 MVA power transformers, however, as a matter of practice, this rating is not used by other utilities in U.P. The Petitioner has also submitted reasons for using 12.5 MVA ONAN Type Power Transformers instead of 10 MVA Power Transformers, which include accommodating more number of 11kV outgoing feeders in comparison to 10 MVA

thus, avoiding requirement for upgradation/augmentation in the short term along with lower losses, optimization of the inventory cost of spares and efficient management of the load distribution of the 33kV incoming feeders.

22. The petitioner has also submitted that different utilities have varying specifications and accessory preferences to meet their operational and functional needs, which indirectly depends on various technical parameters viz. the load density, type of consumers, network geography, primary & back-up protection systems etc. As a result, the cost of electrical equipment in a 33/11kV substation may differ across utilities, making a direct comparison impractical.

23. *Commission's View:* The Petitioner has submitted the justification for the ratings and specifications of the equipments proposed to be installed. However, the Commission is of the view that there is a need for standardization, particularly for major equipments.

Other prayers

24. The Petitioner has also prayed for approval of the O&M Expenses i.e. Employee Cost, A&G and R&M expenditure on the proposed CAPEX at the rate of of 2.71%, 1.39% & 2.73% respectively. The Commission is of the view that controllable factors such as O&M expenses have to be maintained by the Petitioner itself. The capex that is sought by the Petitioner is part of the requirement of the distribution licensee to meet the increase in demand in its area. Therefore, O&M expenses will be approved as per applicable regulations only.

25. While parting with the order, it is worthwhile to summarize the decision of the Commission in nutshell:

    a. The Commission approves the proposed Construction of 5 nos. of New 33/11 KV Substation to meet the additional load growth in Greater Noida.

b. The Petitioner should carry out all such exercises, such as soil investigation, which may have financial impact on the project cost prior to filing the Petition for capex approval in future.

c. Maintain the "Standard Cost Sheet" for major capital items being procured based on latest rates discovered through competitive bidding and submit such "Standard Cost Sheet" along with the petitions for capex approval in future.

d. Procure equipments, to the extent possible, having standard capacities and technical parameters.

e. The prayer for approval of the O&M Expenses i.e. Employee Cost, A&G and R&M expenditure on the proposed CAPEX at the rate of of 2.71%, 1.39% & 2.73% is not allowed.

26. The petition is hereby disposed of.

(Sanjay Kumar Singh)
Member

(Arvind Kumar)
Chairman

Place: Lucknow
Dated: 25.04.2025