

# Terms of Reference

## 1. Background of the project:

**West Zone Power Distribution Company Limited (WZPDCL)** is a public limited company, was declared as first power distribution company for south-west distribution zone of BPDB Under Power Sector Reform Policy for unbinding of distribution network. It is the largest Power Distribution Company in terms of command area comprising 21 District's sadar upazila & other 20 upazila of the country. WZPDCL operates the distribution system in the West Zone of Bangladesh with voltage levels of 33 kV, 11 kV and 0.4/0.23 kV. WZPDCL has already successfully achieved the goal of 100% electrification within it's domain. The aim of WZPDCL is to ensure consumer satisfaction through supply of reliable and quality electricity at an affordable price as a role model among power distribution utilities in Bangladesh. Moreover, as the construction and inauguration of the much-awaited PADMA bridge has been completed, commercial as well as industrial activities in the south-western region (under WZPDCL) of the country will take a rapid pace, which will contribute to the load growth and enhancement of electricity demand in the region. Improved Grid connectivity with the distribution network of WZPDCL is a prerequisite for efficient catering of the ever-increasing load demand and at the same time for improving the quality and reliability of the service.

WZPDCL wants to implement a project named "Grid Power Evacuation System Development for WZPDCL". The main purpose of the project is to enhance connectivity of WZPDCL's distribution network with 132/33 KV Grid substations in West Zone area by constructing 33 KV switching stations along with incoming and outgoing lines.

So, WZPDCL intends to hire a consulting firm for Feasibility Study, Complete Planning, Preparation of detailed Drawing, Design, GTP, BOQ, Estimate of necessary requirements, technical assistance (hardware/software), financial analysis and environmental analysis to implement the proposed project in WZPDCL Area.

## 2. Objectives of the assignment:

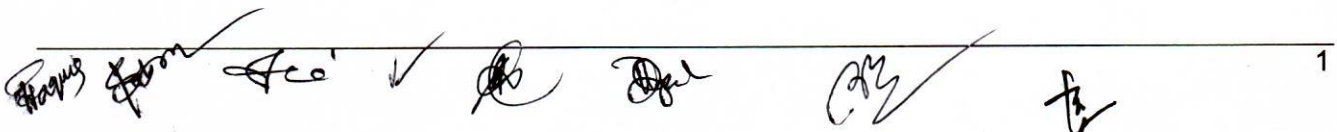
The main purpose is to conduct feasibility study for identifying WZPDCL's requirement to construct 33 KV switching station adjacent to 132/33 KV Grid substations of PGCB, 33 KV Distribution line and propose complete plan, strategies, logistic support with a view to enhance connectivity of WZPDCL's distribution network with Grid substations in West Zone area. The major objectives of the study includes the following:

- a) Feasibility study and engineering analysis of proposed project.
- b) Complete planning along with necessary support system, Design, drawing and estimate for implementation of proposed project considering future scope and environmental impact.
- c) Preparation of detailed report, project implementation methodology and schedule, technical specification for each necessary item, BOQ, financial/economic analysis, social & environmental analysis and overall project cost estimate in prescribed format to implement the project.

## 3. Scope of Services:

The scope of work for consultancy services shall generally include detailed Engineering analysis, plan and strategy for improved connectivity of WZPDCL's distribution system Grid substations. The Consultant must ensure the adequacy of completeness of information. Thereafter, the consultant shall carefully assess and survey the works to determine the actual works required. The consulting firm shall carry out the following works at appropriate stage for the implementation of the project:

- 1) Complete Survey, feasibility study and engineering analysis



- II) Planning, design, drawing and technical specification
- III) Financial and Environmental Analysis
- IV) Preparation of Detailed Final Report

Detailed scope of services includes the following:

**I. Complete Survey, feasibility study and engineering analysis:**

- i) Physical Survey of 11 nos. existing/proposed 132/33 KV grid substations of PGCB to verify the type of grid substations, the number and capacity of 132/33 KV and 230/33 KV power transformers, 33 KV switchgears in the grid substations etc.
- ii) Survey of WZPDCL's existing distribution system, scope of work from other on-going and upcoming projects to identify and select the tentative locations of the necessary switching stations as well as the incoming and outgoing of 33 KV lines around those switching stations.
- iii) Based on survey & scope of work from WZPDCL and PGCB's on-going and upcoming projects, engineering analysis to determine extent of electrical works required such as possible routes of underground/overhead distribution lines (from Grid substation to switching station), 33 KV Bay, 33 KV high current capacity lines (if any), land acquisition/purchase, civil infrastructure etc. to develop the connectivity of WZPDCL's distribution system with 132/33 KV grid substations.

**II. Planning, design, drawing and technical specification:**

- i) Complete planning with detailed design, drawing, technical specification, network diagram on geographic map (if applicable) for proposed -
  - 33 KV switching station
  - Underground or overhead line using pole/ tower
  - 33 KV Bay (considering spare Bays)Scope of work of other on-going and upcoming projects, necessary protection schemes, standard guideline, limitation and challenges should be considered.
- ii) Detailed design and drawing for switching station/substation automation with central monitoring system as well as SCADA integration.
- iii) Preparation of basic design parameters for construction of switching stations, distribution lines, bay extension and environmental circumstances etc.
- iv) Recommendation with complete design and drawing for required civil infrastructure.
- v) Preparation of project implementation schedule depicting important milestones in Gantt chart.
- vi) Preparation of plans and strategies to mitigate undesirable barriers, challenges and probable adverse conditions.
- vii) Preparation of Detailed final report with necessary drawing & design including technical specification, procurement plan, cost estimation, financial & economic analysis, BOQ & estimate of all necessary materials, priority List, project implementation schedule and methodology in prescribed format based on technical and financial aspects.
- viii) Recommendation if any other scope felt essential by the consultant for successful implementation of proposed project regarding sustainable development of WZPDCL's distribution system complying with the goals, targets, indicators of power division as well as the Government.

**III. Financial and Environmental Analysis :**

- i) Financial & economic analysis (NPV, BCR, IRR etc.), preparation of detailed BOQ (as per WZPDCL's existing rate schedule and approved rates) and cost estimation for the proposed project in prescribed format of DPP.

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- ii) Cost-benefit analysis, risk and sensitivity analysis.
- iii) Environmental Impact Assessment & mitigation plan.
- iv) Preparation of IEE report.

**4. List of reports, Schedule of deliveries, period of performance:**

During the execution of services, 02 (Two) sets hardcopy and softcopy of following reports shall be delivered to WZPDCL. Other reports may be requested if deemed necessary. Draft final report shall be submitted to WZPDCL for observation and comment. WZPDCL shall provide necessary remarks and comments from observation within 7 (seven) days of receiving Draft Final Report by the consultants. Final report integrating comments and remarks shall be submitted to WZPDCL within the completion period of the assignment. The following Delivery periods are indicative and shall be part of the time schedule.

Sl. No.	Description	Delivery
1	<b>Inception Report:</b> An inception report shall be prepared by the consultant containing (not limited to) proposed survey forms, work plan/methodology, priority list, implementation schedule for carrying out the whole assignment.	Within 7 days from commencement of consultancy services
2	<b>Draft Final Report:</b> The consultant shall submit draft final report with finalization of the requirements for whole works in prescribed format.	Within 20 days from commencement of consultancy services
3	<b>Final Report:</b> After receiving the comments and remarks from WZPDCL on the Draft Final Report, the Consultant shall prepare final report and submit 2 (Two) copies to WZPDCL. Moreover, Any suggestion felt essential by the consultant for successful completion/future scope shall be included in the report. The Contractor shall also hand over all the deliverables (e.g. database, Engineering Analysis software and other related hardware & software packages) in good running condition.	Within 30 days from commencement of consultancy services

Logistics (computer, printer, UPS, furniture etc.-if any) bought under the reimbursable expense must be returned to WZPDCL before the final bill claim.

**5. Key personnel:**

Consulting firm should have experience to perform the consultancy services, experience of similar assignments, experience in similar conditions, firm's capability and availability of appropriate skills among key staff, availability of resources, relevant transactional experience. The firm is expected to engage the following categories of key experts for the assignment:

- a) Power System Expert & Team Leader
- b) Substation Expert
- c) Civil Engineer
- d) Financial Expert
- e) Social & Environment Expert

Educational qualifications and experiences of the professional staff for the assignment should be as follows:

**a) Power System Expert & Team Leader:**

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The consultant must have minimum B.Sc. in Electrical & Electronic Engineering and at least 15 years of related experience of consultancy services in power distribution sector with 05 years' experience in design, installation, testing, commissioning of substation, electricity distribution line, road crossing, grid integration, solar mini grid/net metering system. He/she must have capability to plan, lead, organize, monitor & coordinate the team consisting of consultants of different disciplines at least in one similar project. He/she should have a clear understanding of electricity distribution system and database, power distribution system planning with analysis/studies, preparation of GTP & BOQ of material and project cost estimate, DPP Preparation etc. of electrical distribution system.

**b) Substation Expert:**

He/She must have minimum B.Sc. in Electrical & Electronic Engineering with at least 10 years of experience of consultancy services including expertise in power distribution system, solar net metering, design-installation-testing-commissioning of 132/33 KV grid substation, 33/11 KV distribution substation, construction of high voltage, 33 KV, 11 KV, 11/0.4 KV distribution line, road crossing for distribution line, DPP preparation, preparation of technical specification/GTP,BOQ for power distribution system. He/she must have capability to plan, organize, monitor & coordinate all the functions related to feasibility study and planning of electrical distribution system under this proposed project and lead the survey team.

**c) Civil Engineer:**

He/She must have minimum B.Sc. in Civil Engineering with at least 10 years of experience of consultancy services including drawing, design & BOQ of civil infrastructure like substation/control room/cyclone center, river crossing, underground road crossing, land acquisition, soil test, survey, DPP preparation in Bangladesh power sector utility. He/she must have capability to plan, organize, monitor & coordinate all the functions related to feasibility study and planning of electrical distribution system under this proposed project and lead the survey team.

**d) Financial Expert:**

He/She must have Minimum Master's in Economics/Finance/Business Administration or Chartered Accountancy with minimum 05 years of job experience in relevant field like BOQ & cost estimation, financial and economic analysis for DPP preparation and other related matter considering the environmental impact. He/she must have ability to prepare complete documents for financial analysis of DPP, procurement and familiarity with the Bangladesh Power sector.

**e) Social & Environment Expert:**

He/She must have minimum Master's in Environmental Science with 05 years of job experience in relevant field and familiarity with the Bangladesh Power sector.

**6. Evaluation Criteria:**

The evaluation of consulting firms will be done according to the criteria mentioned in the EOI and below:

- a) Age of the firm.
- b) Experience of the firm in Bangladesh Power Sector in different utilities.
- c) Experience of the firm in similar assignment.
- d) Qualification and experience of the key professional.
- e) Work methodology and plan.
- f) Financial and managerial capability of the firm.

**7. Time frame for the study:**

The time frame for the assignment is **1 (One) month i.e 30 days** from the date of contract signing. The consultant will prepare the Draft Final Report and submit to WZPDCL within 20 days from the commencement date of the study. WZPDCL will communicate their feedback to

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the consultant and the consultant will then incorporate the feedback from WZPDCL in the Final Report and will submit the Final Report within 30 days from the commencement date.

**8. Facilitation by the client:**

WZPDCL shall provide free of charge all existing information and reports as far as available and will assist the consultant in obtaining any other relevant information and material from other institutions or authorities as far as possible. The employer shall furnish previously prepared studies, network data and other base data as far as applicable. However, it is the duty of the consultant to check availability, quality and suitability of this information.

**9. Terms of Payment:**

Payments shall be made in Bangladesh Taka according to the following schedule:

• **1<sup>st</sup> Payment:**

40% of the contract amount will be paid to the consultant after acceptance of the Draft Final Report by WZPDCL.

• **Final Payment:**

The remaining 60% of the contract amount will be paid to the consultant after acceptance of the Final Report by WZPDCL.

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