Terms of Reference (ToR) for
Implementation of GIS-based Management System in NESCO Area
(Package No. S-06)

1. **Background**

Bangladesh Government has set a vision to provide uninterrupted, reliable and quality electricity to all people at an affordable price by 2021. To achieve this target, power generation will be raised to a level of 24000 MW by 2021. Success during the last 9 years has been tremendous-generation capacity has reached to about 18,753 MW and actual generation has picked up to 11387 MW. Tremendous progress has also been made in transmission and distribution system of power sector. Presently, 90% of the total population has access to electricity and per capita generation has increased to 433 kWh including captive generation, which is still small compared to other developing countries.

Northern Electricity Supply Company Ltd (NESCO) is one of the distribution companies in Bangladesh. NESCO facilitate the 1.35 million consumers of 16 Districts under Rajshahi & Rangpur Divisions of Bangladesh. NESCO operates 50 Sales & Distribution Centres to serve the consumers. Majority of the consumers are domestic largely engaged with agriculture & irrigation. NESCO has taken up a program to complete the standardization of its electricity network and distribution system in commanding area of NESCO by 2021. NESCO is planning to expedite the implementation, renovation /augmentation of the existing distribution system as well as expansion of the same within its jurisdiction, enrich the existing database, ease required access to the database information for its stakeholders and finally ensure a better customer service by introducing GIS based mapping of coverage area. The number of the consumers continuously increasing day by day & the length of distribution line is about 14,500 kilometres including 910 KM 33 KV lines, 5500 KM 11KV lines and 8090 KM 0.4 KV lines with 65 No's of Sub-stations.

NESCO intends to implement GIS-based management system for modernization of planning, operations, maintenance and customer service. It will also assist NESCO to reduce the system loss, proper monitoring and operation of the Sub-stations and distribution lines and asset management. Regarding the implementation of GIS based Management System in NESCO Area, consultancy firm will be appointed under TA for Bangladesh Power Sector Development and Capacity Building (BPSDCB) Project of Power Division to be funded from Bangladesh Power System Enhancement and Efficiency Improvement Project.

2. **Objectives**

The main objectives of the assignment are:
(a) To design and implement GIS based management system in NESCO area;
(b) To operate the distribution network more smartly and efficiently;
(c) To improve the performance of NESCO;
(d) To improve the quality of electricity supply;
(e) To increase the customer service of NESCO.

3. **Scope of Services, Tasks, Components and Expected Deliverables**

3.1 **Scope of Work**

The scope of the services of the consultant will include but not be limited to the following:

This study will be conducted in two phases. Planning, design, development, implementation and operation of a comprehensive GIS -based network management system for 5 (five) S&D's for improvement of customer services will be done under Phase-I. The prospective five S&D's are:
  i. Sales & Distribution, Division-1, Rajshahi;

ii.   Sales & Distribution, Division-1, Bogura;
iii. Sales & Distribution, Division-1, Pabna;
iv.   Sales & Distribution Division-3, Rangpur and
v.   Sales & Distribution, Division-1 Dinajpur.

The pilot study will also be combined with a training program for S&D's staff that will finally carry out the work in each of the S& D. The consultant's duties will consist of development of applications to utilize the GPS based data for all forms of utility practice. For this purpose, the consultant will need to develop a well-planned database system and a number of application software and programs. In some instances, the consultant will assist NESCO in securing commercially or open source available software and link their application to the GIS based database. After successful completion of Phase-I the consultant will implement Phase-II following the activities and standard model developed during phase-I for rest of the S&D's under NESCO areas.

3.1.1 GIS data collection procedure and standard

The consultant will review current procedures and techniques of GIS data collection storage system and recommend procedures to bring the practices up to acceptable international standards. The consultant activities will include:

➢ Develop standard Pole numbering system of HT (33 kV and 11/6.35 kV) and LT lines;
➢ Update/create GIS/GPS inventory Sheet (to be developed by the consultant);
➢ Develop/Upgrade equipment record forms for items such as voltage regulator, power transformer, distribution transformer etc.;
➢ Develop/Update transformer unique numbering system. Transformers information should be unique and linked up with pole numbering;
➢ Introducing of geo-location capturing in all kinds of survey forms and staking sheets and build a digital format for software used;
➢ Preparation of technical specification and list of materials for implementation of GIS system under each of the S&D of NESCO.
➢ Consultant will develop and supply software and material for implementation of GIS system.

3.1.2 Primary GIS data collection

This consist of gathering electric distribution system information such as grid substations, distribution substations and their feeder wise data which include network data on a pole by pole basis of both HT and LT lines. It will also include information on the electrical equipment installed such as transformers, voltage regulators, ACRs/OCRs, capacitors, meters and line conductors etc. Information on consumer characteristics and their connection to the network (location and connection of the service pole) is also needed.

The consultant will collect preliminary data for the NESCO system and will carry out an exercise in the collection of preliminary data at selected S&Ds to serve as a model exercise. During this exercise the consultant will train sufficient number of related S&Ds personnel to carry out data collection, operation and maintenance of GIS program. The activities to be carried out will include:

➢ Collection of pole by pole data for HT and LT lines and recording the locations by a Precise GPS receiver;
➢ On-site processing of GPS data and conversion to GIS data format;
➢ Verifying accuracy (to less than 1 meter) of field data of geographical locations;
➢ Keeping records appropriately and correction of defective data (at every following day);
➢ Daily uploading/Digitizing the field data collected to the database;
➢ Conductor information, equipment information and device information collection during the pole by pole survey using GIS inventory sheets by the consultant;

- ➢ Collection of data related to grid substations, switching stations, sub-stations;
- ➢ Collection of data related to important land marks using appropriate forms;
- ➢ Collection of information of transformer and other equipment/devices from 'Equipment Record Cards (ERCs)' and related documentation and integration of the data with electric distribution system's GIS Database. A computerized database management program providing a suitable data assembly software will be needed for this purpose;
- ➢ Pole and Equipment information will be collected through Precise GPS Equipment or Temporary Stations (TS) and a short questionnaire survey. A digital data input format can also be used by applying some macros with the Precise GPS Equipment and Tablet Mobile based questionnaire survey and data input. In this case the Existing Equipment record card's digital format can be used if any;
- ➢ Pole oriented consumer and transformer and other equipment data needs to be updated and uploaded to the database;
- ➢ Information to be captured in a pole by pole uploading of data includes the following:

Electric Pole	Unique pole number with feeder name/ID, Latitude, Longitude, Pole Size, Pole Materials, Pole Type, Pole Fittings, Pole Environment, Conductor Size/Type, Conductor Phase Sequence, Conductor Line Voltage (KV), Transformer Capacity (KVA), Transformer Phase Connection, Guy unit, Jumper Size, Devices etc.
Electric Lines	Capacity, type of all HT, LT, overhead and underground line from grid source to consumer end.
utility features	Station, Sub-station, Related S&Ds and complaint center, Distribution system related infrastructure.
Physical Features	Type of terrain, roads, rivers and other physical features.

3.1.3 Geo-referencing

The GIS Data must be geo-referenced in respect of Bangladesh's coordinate system. For that purpose data should maintain referencing GCP on Bench Mark.

3.1.4 Secondary data collection and Mapping

The primary data needs to be supplemented by numerous secondary data that deals with the geographic features of the land, characteristics of the population served or to be served, important institutions located in the service area etc. The consultant will be responsible for the collection of the relevant secondary data not only related to the pilot S&Ds where detailed work is being conducted but also for the whole areas of NESCO. Information to be obtained includes:

- ➢ Processed geo-referenced satellite images or Arial photography information. Accuracy level of these images could be ±0.5 meter after post processing;
- ➢ Base maps with cadastral boundaries such as local administrative districts (village, union, upazilla, district, division etc.), linear features such as roads (primary, secondary, tertiary and quaternary), rivers, lakes, canals etc.;
- ➢ Preparation of the Base Map of S&Ds with demarcation of S&D's boundary/Area/Location should be geo-referenced in Bangladesh reference system;
- ➢ Demographic and social data such as population, house hold / settlement type etc. occupation, stakeholder type can be collected from the Statistical Year Book of Bangladesh Bureau of Statistics (BBS). Such demographic and social data would be used for assessing future growth and trends such as projection of population and consumers, and service area demarcation;

3.1.5 GIS Database Establishment and Analysis

The consultant needs to develop a fully functional GIS database and a Data Base Management System (DBMS) for data processing, inquiry and analysis by various departments of NESCO. The GIS platform will be the International Standard. The DBMS should consist of a set of software programs that controls the organization, storage, management, and retrieval of data in various databases established. DBMS should support the application programs and enable the transfer of appropriate data to various users.

Initially the consultant will carry out a Business Area Analysis so as to design the GIS system requirements to the needs of all intended users and determine the appropriate functionalities to be incorporated within the GIS. Overall the database structure may include the access database, survey database, electrical network and analysis database and billing database plus any others as per the requirements of users. The specific structure of data storage and GIS system architecture should be determined after discussions with the various users to meet their various needs. A set of interactive macros for query and access between the databases will need to be developed.

The data received from the Precise GPS Equipment and equipment records need to be verified and error checked for accuracy and consistency. For example, the network data can be checked with reference to the single line diagrams and geo-referencing with geographic maps.

Basic analysis capabilities of the GIS shall include the following:

➢ Geospatial query and statically analysis: this will include items such as geographical queries like area and length calculations, details and quantification of various assets and their physical locations, equipment status, computation of area served by substations, feeders etc.;

➢ Electrical query and analysis: some of the features will be processed with internally developed software while items such as load flow analysis will be conducted using commercially available software packages that will be linked to the GIS data base. Internally generated query facility would include generation of single line diagrams (SLD), connected kVA on feeders etc.;

➢ Consumer related analysis: requirements would include features such as consumers connected to each feeder and line section, energy consumed by feeder etc.;

3.1.6 Web GIS Development, Analysis and Use

A Web GIS development is essential for quick and efficient service delivery at consumer end. Users within NESCO and under its S&Ds will also have access to various Web based services such as Google maps and can also enjoy access to the system without a WAN or LAN connection using their own device such as mobile devices. The web GIS Database has two tires of users, one for GIS development interactively at web and the other for consumer use and getting service/service delivery.

3.1.6.1 Web GIS Development at service provider end

➢ To edit, compile, add new features and related information while in the field with access to the entire data controlled by NESCO and under its S&D's authority;

➢ To query any spatial database related to the electric network database;

➢ To get physical images like satellite image or Google earth image for quick decision making;

➢ To superimpose the collected electric network information on Google maps for getting direction, interactive map, location etc.;

➢ Ability to include geo-processing features to web mapping;

➢ Electrical analysis, geographical analysis, database analysis, statistical analysis, financial analysis would be possible via Web access;

➢ To provide real time data support at consumer end after any work assignment such as up-gradation/extension/renovation of pole, equipment, line or substation;

3.1.6.2 Web GIS Development at service consumer end

➢ To find out the coverage of electric line and pole location from every household;
➢ To reach complaints line instantly at proper authority;
➢ To apply and evaluate the connection status of new line connections;
➢ To inform the situation about any pole and equipment position through web at the time of any hazard;
➢ To realize the accessibility and condition of the present electrification network;
➢ To make online queries from the geo database;
➢ To get an apps for data viewing;
➢ To support android mobile/smart phone supported for getting service;
➢ The consumer end database should be password protected only limited information will be made available;
➢ There will be no editing, deleting, or alterations possible from the consumer end;

3.2 Applicable Equipment & Technologies

The following procedures and techniques will be used in carrying out the assignment:

• Precise GPS equipment will be used for taking coordinates of Pole.
• Field data must be downloaded by the end of each working day. Back up copy of downloaded raw data along with a copy of field book must be handed over to the client for checking and preservation.
• The consultant may use geo-reference Satellite Image with Higher Accuracy not more than 0.5 meter as a supporting document for detailed engineering survey.
• Consultant shall have sufficient equipment for conducting necessary utility, physical feature and other related surveys. In case they do not have sufficient equipment, these may be hired. Evidence of documents in support of necessary equipment (own or hired survey firm) should be attached. Preference will be given to those who possess these equipment.
• Data Processing and Mapping Software for GIS Data input and processing should be user friendly and the latest available version.
• The following-accuracy levels will be maintained:
  (i) Positional accuracy of any pole/ substation/ structure/establishment should be within 0.5 meter (50 centimeters).
  (ii) GPS: accuracy 0.5 meter
  (iii) Digitizing (location accuracy) 0.5 meter

3.3 Desktop and web based software functions

3.3.1 Desktop based GIS software functions

The desktop based GIS software should have the following facilities:

• The software must be windows/Linux/ Mac supportable.
• The software should be able to draw/ digitize point, line, polygon features with a lot of information on any format.
• The software should be English and language read and write supported in case of data entry and reporting.
• The software should have built in map creating technology with different interactive layers for storing information.
• Geo-referencing, geo-processing, geo-editing must be enabled or built-in to the software.
• Geo-database, Shape file, Relational database, access based database, Xml database/oracle database, PL/SQL, CAD file must be contained as a built in feature.

- The output files must be enabled for shape file, Geo-database, pdf format, jpeg format, MS word, excel format and its own project format.
- The software should have the capacity to adapt new macros for different applications.
- The software must be licensed and renewable.
- The software must have link up capability to use with other necessary software for further analysis such as Equipment database software, Consumer database, Billing Software, Electrical analysis software etc.
- The software must have query capability both database query and spatial query as well as spatial analysis capability.
- The software must have self-report generating capability, interactive mapping capability, statistical analysis, mathematical analysis capability.
- The software must have write protected and password protected capability.
- The software must be commercial, user friendly and with a simple interface.
- The metadata should be in conformity to ISO/IEC 11179/Global Standard.

3.3.2 Database software functions

The Database software should have the following facilities:
- To update/ modify the present Equipment Record Software.
- To incorporate the Geographical location (Latitude, Longitude)
- Capability for query able and statistical analytic software
- Ability to extend the range of data input and flexible for all types of editing
- The software must have write protected and password protected capability.
- The software must have capacity to adapt new macros for different applications.
- The software must be licensed and renewable.
- The software must have linked up capability with other necessary software for further analysis such as Equipment database software, Consumer database, Billing Software, Electrical analysis software etc.
- The language of the software could be a global simple language.
- The software must be commercial and user friendly with a simple interface.
- The software must be windows/Linux/ Mac supportable.
- The metadata should be in conformity to ISO/IEC 11179/Global Standard.

3.3.3 Web based software functions

The Web based software should have the following facilities:
- The software must be light, accessible and easy to operate.
- The software should be based on a global language like oracle, Java script, C#, Xml, php, Ajax etc.
- The software should have the ability to edit and modify geo features.
- The software code should be ISO standard, and be GUI supportable.
- The software should have built in map creating technology with different interactive layers with information.
- Geo-referencing, geo-processing, geo-editing must be enabled or built-in this software.
- The output file must enable Kml, xml, pdf format, jpeg format, MS word, excel format and its own project format.
- The software must be windows/Linux/ Mac supportable.
- The software must have capacity to adapt new macros for different works.

- The software must have a renewable license.
- The software must have query capability both database query and spatial query. Moreover, the software must have spatial analysis capability.
- The software must have self-report generating capability, interactive mapping capability, statistical analysis, mathematical analysis capability.
- The software database should have copy right and password protected.
- The software must be commercial, user friendly and with a simple interface.
- The metadata should be in conformity to ISO/IEC 11179/ Global Standard.

3.3.4 Electrical network analysis through desktop and web based GIS software

The GIS system should have the capability of presenting network information for use in the planning, maintenance and operational activities of NESCO and under its S&Ds. A list of minimum requirements in this connection is given below:

- Capability to prepare auto Single Line Diagrams from the finished GIS/Geo-database.
- Ability to present the load of every feeder as allocated load, forecasted load, and generated load.
- Ability to identify the over loaded feeders and equipment depending on line ratings, transformer capacity etc. If any items attain a danger level a signal should be generated automatically.
- Spatial monitoring at the time of disaster and support to decision making.

3.3.5 Electrical Analysis through other application software

The GIS data base should be capable of usage in a number of applications some of which will be developed by the consultant and others to be secured from commercially available third party sources. Further, some of the third-party application software should be researched and selected by the consultant for acceptance and approval by NESCO. A separate allocation will be provided for the purchase of such third party commercially available software. In their offer the consultant may offer alternative provision of commercially available software or from their own development. The electrical system analysis and some utility operation software to be secured within the current assignment will consist of:

(1) Network Load Flow Software

This is one of the most important applications of GIS technology in NESCO and under its S&Ds. The use of GIS capabilities will make the application of computerized load flow studies mush more user-friendly and convenient to use. Since this software is complex and has a number of additional features such as fault level and stability studies a well proven commercially available software is needed for this application. The consultant will be responsible to ensure that data transfer between the selected software (both uploading and downloading) and the GIS database is accomplished. The software to be selected should have the following features:

- Capability to do load flow analysis, system loss and voltage level calculations, fault analysis, stability studies for distributed generation, flagging of overloaded sections and low voltage points, load balancing, computation of load centers etc.
- Capability to draw single line and geographic diagrams depicting the results of the analysis.
- Capability for input-output linkages with GIS Based software and Database software.
- The software must be windows/Linux/ Mac supportable.
- Capability for self-report generation and interactive mapping.
- The software should have write protected and password protected capability.
- The software must be in wide-scale commercial usage among utilities, user friendly and with simple interface.

- The software must have a renewable license.

(2) GIS based Customer Information System

This software can be either from internal development or purchase from a third party. The required information for this purpose shall partly be obtained automatically from linkage with the billing system. This linkage shall be developed without compromising the integrity and security of the billing system. The application shall map out the consumers according to their geographic locations and network connections. It should record consumption levels and prompt any irregularities which may signify meter tampering. It should assist planning and maintenance staff in computing the probable loading of network sections and estimating future load growth. The extracting of information from the billing software should be done from an output file without compromising the integrity of the billing system.

(3) Outage management and restoration system

This software can be either from internal development or purchase from a third party. The application shall enable call centers to trace the location of an outage by the analysis of outage calls received from consumers. It requires consumers to be mapped into the power supply network chain so that the most probable location of the fault can be identified by the common network section hierarchy related to the calls received. The application should be capable of use by the call center and also by mobile fault restoration teams. In addition, the software should be capable of recording the system outages and serving as an aid to computing SAIDI and SAIFI.

(4) Management of Work Orders

This software can be either from internal development or purchase from a third party. The issue of work descriptions using GIS mapping can greatly enhance the processing of construction activity. The work orders will contain a clear map indicating the location and route of the proposed development. The application can also process the progress of work orders and include a convenient report generation format. It will also be used for updating the network configuration when the work is completed and when as-built changes are indicated. The application can also be used for line patrol work and pole equipment inspection.

3.3.6 Software Security

It is essential that the appropriate security arrangements are made to the software and data security and the following should be taken care of:

- Data should have proper integrity and authenticity.
- Data have inherent characteristics for preventing misuse and hacking by external sources.
- Have proper data abstraction for non-breaking characteristic.
- Security system have a three tire structure: one for control or administrative functions, another for data edit, change, modify but not allow a delete the whole or partial database and third one for the users who can only browse the data system but cannot affect any change.
- Data or web site should have a distributed database system to enable assess to more developers to edit, change, and modify the data.
- The site must be accessible to more and more users at a time to receive on spot/on line service. It must include a functioning parallel database system.
- The web link need to be able to convert Apps like Facebook apps or google map apps for easy access from any smart phone.
- The software database should have written protected and password protected capability.
- The software must be visual verification system supported.
- The software must have SSL, RSL security certificate.

3.4 Downstream work

After completion of Phase I, and after an independent review of the achievements and the ability of the established GIS to serve the needs of the S&D's, EA and IA would decide whether to proceed to Phase II. Phase II may be implemented based on the experience of Phase I.

3.5 Manpower training

To conduct a comprehensive training program which shall be developed by the consultant on the GPS survey, GIS development, Database Software, Electric Analysis Software, and Web GIS Software for NESCO and project staff and hands on training during the study for NESCO Officer/staff will be required to operate the GIS system. To enrich experience of project personnel and official of Power Division and Power Cell, arrangement for a study tour of approximately 20 personnel into two groups has to be arranged to venues where such implementation of the project is underway.

4. **Team Composition & Qualification Requirements for the Key Experts**

Consulting services are solicited from GIS Development Specialist experienced in design and implementation of GIS based management system for power distribution utility. Consulting firms should have experience to perform the consultancy services, experience of similar assignments, experience in similar conditions, firm's capability and financial soundness, and availability of appropriate skills among key staff, availability of resources, relevant transactional experience. The Proposer is expected to engage the following categories of key experts for the Project and CVs shall be submitted accordingly:

- **GIS Development Specialist/Team Leader (International):** The GIS Development Specialist and Team Leader (International) must have at least a Bachelor's degree in in Geographic Information Systems/Engineering/Earth Sciences/ Information Technology or a relevant discipline with minimum of 15 years of experience in the development of geographic information systems, preferably in the utility industry, in emerging countries. He/She have postgraduate qualifications will be an added advantage.

- **IT Specialist (National):** The Information Technology (IT) Specialist (National) must have a Bachelor's degree in information technology, computer engineering, or in a related area, and at least 12 years of working experience in the utility industry.

- **GIS Information Management Specialist (National):** The GIS Information Management Specialist (National) must have a Bachelor's degree in engineering/ earth sciences/ information technology or a related area, and 10 years of experience in GIS systems and information management, preferably in the utility industry.

- **Distribution Planning Specialist (National):** The Distribution Planning Specialist (National) must have a Bachelor's degree in Electrical Engineering and minimum 10 years of experience in medium voltage network/distribution network planning. Hands-on experience in the use of one or several commercially available distribution planning models would be advantageous.

- **Distribution Maintenance Specialist (National):** The Distribution Maintenance Specialist (National) must have a Bachelor's degree in Electrical Engineering and minimum 10 years of relevant experience in distribution system management, of technical, customer and commercial aspects.

- **Institutional and Capacity Building Specialist (International):** The Institutional Capacity Building Specialist (International) must have a Bachelor's degree in Business/ Public Administration, engineering or finance, or a related field, and minimum 10 years of working experience in institutional development, specifically on capacity building, training, or academic teaching..

- **Communication and SCADA Specialist (International):** The Communication and SCADA Specialist (International) must have a degree in Electrical/Electronic or Telecommunication Engineering, or a related field, and minimum 15 years of working experience in supervisory control and data acquisition in the utility industry.
- **Survey Expert (National):** The expert (National) must have a degree in any Engineering, or any related field, and minimum 5 years of working experience in Topographic Surveying especially in Total station operating.

5. **Duration of the Assignment**

The Phase-I duration of this assignment will be 09 months from the date of contract signing and Phase-II duration will be 15 months from completion of Phase-I's assignments. Overall, this assignment will be completed within 2 years from the signing of contract.

6. **Evaluation Criteria**

The evaluation of consulting firms will be done according to the categories mentioned below:
   a. Technical Competence
   b. Geographical Experience
   c. Management Competence

The shortlisted consultants will quote price for Phase-I and Phase-II in a single envelope. Financial offer will be evaluated on total price of Phase-I and Phase-II.

7. **Reporting Requirements and Time Schedule for Deliverables**

   Phase 1:
   - Inception Report
   - Monthly Progress Report
   - Preparation of material requirement, tender document for material procurement, GIS planning & design etc.
   - Interim Report
   - Complete the work on GIS-based management system for five S&D's
   - Network planning studies established in five S&D's
   - Development of dynamic GIS Website for NESCO
   - Development of model & procedure for other S&D
   - Final Report/Project completion report for five S&D's
   - Submission of base map, key map and detail map with master plan
   - Training Report on GIS training and related software & Website

   Phase 2:
   - Development of dynamic Website of each S&D under NESCO
   - Interim Report
   - Establish a complete GIS-based management system in the remaining S&D's of NESCO.
   - Network planning studies established in the remaining S&D's
   - Preparation of material requirement, tender document for material procurement for implementation of GIS
   - Draft Final Report

   The consultant will complete and establish a fully functional GPS system and Database and the related operating software as specified in this TOR. The related operation and maintenance manuals of all equipment and software will also be provided. The relevant maps will also be provided in both digital

and hard copy need also to be supplied.10(Ten) copies of each report has to be submitted along with soft copy;

Person to receive the Report: The consulting firm will report to Project Director, BPSDCB Project of Power Division for billing and contract management. For work execution purposes, the consulting firm will report to the Managing Director, NESCO or to the authorised representative of the Managing Director. The entire consultancy service will be conducted under the supervision and monitoring of NESCO. All deliverables will be submitted to the Project Director, BPSDCB Project.

8. **Client's Input and Counterpart Personnel**
   (a) Services, facilities and property to be made available to the Consultant by the Client:

   Facilitation and Reporting
   NESCO will ensure access to the available pertinent information to this assignment. Consultant will work in close association with NESCO, BPSDCB Project of Power Division and other relevant utilities. A coordination mechanism will be set up to review progress, provide guidance and advice. The designated personnel of the entities will interact with the Consultants and provide data, arrange discussions and assistance as required. The Consultant will work under the guidance of NESCO and BPSDCB Project of Power Division. The day to day work will be monitored by a representative of NESCO.

   Logistics Support
   NESCO will provide logistic support to be mutually agreed upon. But office accommodation, site visits, secretarial service will have to be arranged by the consulting firm at their own costs.

   (b) Professional and support counterpart personnel will be assigned by NESCO to the Consultant's team

9. **This is provisional Terms of Reference (ToR) for the assignment. The consulting firms may give their comments/suggestions on the provisional ToR. After incorporation of valid comments/suggestions, the ToR will be finalized, if required. The final ToR of the study will be incorporated in the RFP document.**

10. **Client will provide the following inputs, project data and reports to facilitate preparation of the Proposals:**
    The consultant will have to collect relevant project data and reports from the respective departments as required to successfully completing the study.