

TERMS OF REFERENCE (TORs)

SHORT-TERM CONSULTING FIRM (PPRA RULE 46(A))

“HIRING OF SHORT-TERM MONITORING AND EVALUATION (M&E) CONSULTANCY SERVICES FOR THE PROJECT TITLED “INSTALLATION OF SOLAR SYSTEM AT MULTIPLE SITES UNDER DIFFERENT PROJECTS IN PUNJAB FOR THE SCHEME TITLED “SOLARIZATION OF TUBEWELLS TO OPERATIONALIZE WATER SUPPLY SCHEME IN OKARA CITY (PHASE-I)””

In view of the prevailing energy crisis in the country resulting into excessive load shedding and low voltage, there is a need to look into the possibilities of using alternative energy sources, in particular carbon free energy like solar energy, wind energy and geothermal energy. Currently institutes in Punjab are relying electric energy from national grid, which is not only unreliable but is also extremely costly.

The Energy Department is cognizant of the energy crisis in the country and intends to utilize alternate power sources in particular, solar energy. The geographical location of Pakistan and its weather condition favors maximum sun light during the day and is ideal for solar energy production and use.

1. RESPONSIBILITIES OF THE M & E CONSULTANT

The Consultant’s responsibilities shall include the following but are not limited to:

1. Assist the Client in the administration of the contract for the Design, Supply, Installation and Commissioning (DSI&C) of “Solarization of Punjab Assembly and Allied Buildings.”
2. Critically examine and validate the project design and its implementation.
3. Verify and validate the supply, installation and other technical aspects in accordance with the Scope of Work.
4. Certify all payments to the contractor.
5. Control cost, quality and schedule of the contractor’s work and deliverables.
6. Recommend appropriate mitigation actions (as defined in DSI&C contract) in the event the quality of deliverables fails to meet the specifications.
7. Define and ensure that all local technical, legal, regulatory and financial requirements are met in all aspects of the project.
8. Ensure that implementation by the contractor of an installation safety process manual follows local regulations, standards and best practices as per internationally acceptable standards (IEEE, IEC).
9. Monitor and review the quantity and quality of the equipment at the site.

10. Certify that all contractual obligations and procedural formalities have been completed in all respects for the implementation of the project as per the Scope of Work.
11. Ensure the proper implementation by the contractor of the O&M manual.
12. Arrange for the testing sample comprising of 1% of equipment specified by the Client.

2. SCOPE OF WORK OF THE M & E CONSULTANT

STEP-I

Site Inspection

The M & E Consultant will visit and take an overview of the site to get familiar with the Client's requirement. It shall collect all the relevant data for client, beneficiary office and DISCOs essential to carry out project activities.

STEP-II

Review of Design / Drawings, Quality Assurance/Post-Shipment Inspection

The M & E Consultant will exercise due diligence in performing its services aimed at achieving economical, quality assurance and sound implementation of the Project. After the award of Contract, a team shall be organized, to ensure the availability of the highest level of expertise for project management, supervision of design and site supervision during installation of the Project.

For day-to-day contact and effective liaison with the Client and proper project handling, the Consulting Firm will designate a Project Manager. The Project Manager will be having extensive related experience; he will be the contact point for any senior level interface with the Client and will also coordinate with the team of the Consulting Firm and Contractor for proper and timely completion of the project.

a) Review of Design / Drawings

The Consulting Firm will examine and approve Contractor's drawings, documents and other information prepared for the execution of the Project to ensure:

- Compliance with the Contract and Specifications
- Adherence to the applicable Codes and Standards
- Review all documents defining and describing the major equipment and works for the entire Project with regard to:
 - Technical acceptability and completeness
 - Functional, operational and safety requirements
 - Reliability and ease of maintenance

b) Post-Shipment Inspection

- Visual Inspection of components
- Submission of consolidated report

STEP-III

Supply & Installation Supervision

- Site supervision services will cover:
- Supervision during supply and installation of Equipment and execution of civil structure
- Supervision of commissioning

STEP-IV

Post Installation Supervision

After the System Installation, performance and operation of the system will be inspected by the consultant firm in an organized manner. Detailed steps are discussed below:

Field Inspection

After the preliminary inspection a detailed inspection of all the system components will be carried out including PV panels, inverter, combiner boxes and cabling. Also system data logging will be properly checked.

The field inspection will include the following steps:

Field Inspection of System

- The consulting firm will check that PV modules are physically installed as per plans (number and layout) and also get support of modern computer tools and simulations for azimuth and panel structure design/directions.
- String fuses or circuit breakers are DC-rated and not larger than module fuse rating
- The consultants will check that the modules are in good condition i.e. not broken glass or cells, no discoloration, frames are not damaged.
- Module connectors should be tight and secure
- Wire and conduit sizes installed per order
- Wiring is installed with shortest distance from PV panels to inverter
- Wiring is neat and secure
- Wiring is not readily accessible
- Conduit/channels supported properly
- No potential damage to wire through equipment or other is permissible
- PV module frame are properly grounded with dedicated grounding conductor
- Proper grounding of all other metallic surfaces that might possibly become energized (conduit, combiner boxes, disconnect enclosures, etc.)
- Dissimilar metals are electrically isolated to avoid galvanic corrosion
- Aluminum is not placed in direct contact with iron or other metal.
- All mounting structures/frames and metallic components, nuts and bolts are as per the design document
- In addition, wiring, piping, conduit, fixtures, junction boxes, distribution boxes and related accessories should be IEC standards compliant
- u) Proper installation for Net metering equipment should be made and approved by concerned DISCO

Field Inspection for System Labelling

- a) All equipment and parts are labelled as required as per engineering diagram provided by the vendor
- b) Breakers are properly labelled
- c) Wires are properly labelled
- d) Outdoor labels are designed to withstand as per external environment
- e) Wiring diagram may be furnished on the distribution board

KEY PERSONNEL

The tentative key personnel required but not limited to for the services are:

Sr. #	Key Position	Area of Specific Expertise desired	Number of Personnel	Minimum Qualification and Professional Experience
1	Project Manager	Overall Management of Assignment	01	At least Graduate Mechatronics/Electrical Engineer, with minimum 10 years experience in relevant field. Must have worked at executive position in public or private sector organizations and fully conversant with the power sector procedures and laws in Pakistan /Punjab. Experience for Optimizing execution and operational costs during implementation phase of the project.
2	Solar Expert	Technical expertise	01	At least Graduate Mechatronics/ Electrical Engineer with minimum 10 years experience of solar power plants, preferably PV plants. Experience in development of BOQ for execution of solar projects, Preparation/review of design/drawings, Conducting post installation testing & commissioning of the solar systems, Post-shipment inspection of the solar equipment, Application of quality assurance/ control protocols.
3	Electrical Engineer	Design/ operation of solar panels, charge controller, inverters, transformers etc.	01	At least Graduate Electrical Engineer with minimum 5 year experience in the relevant fields with experience in design, installation, inspection and commissioning of Solar PV plants
4	Civil Engineer (Civil Structure)	Mounting structure for PV panels etc	01	At least Graduate Civil Engineer with minimum 5 years experience in the relevant fields with experience in design, installation, inspection and commissioning

3. PAYMENT TERMS

Payments shall be made based on the deliverables and finalized at the time of signing of Contract with the mutual consent of both the Client and the selected M & E Consultant.

4. ROLE OF THE CLIENT

PEECA will oversee all the activities related to the deliverables to be submitted by the M & E Consultant. The Client shall provide no lodging, boarding, or logistics.

5. DURATION OF THE ASSIGNMENT

The duration of the Consultancy Services for Monitoring and Evaluation (M&E) is linked with the duration of the Contractor's Agreement for "Solarization of Punjab Assembly and Allied Buildings."

6. BUDGET

The estimated budget for the said consultancy is **PKR 3 Million**.

7. PROFILE OF THE CONSULTANT

The Short-Term M & E Consulting Firm must fulfil the following criteria:

1. The Firm/Company must be registered with National Tax Number (NTN)
2. The Firm must be registered with Pakistan Engineering Council (PEC)
3. The Firm/Company has an operational history of at least three (03) years.

4. The Firm/Company must have a professional team of not less than five (05) professionals and provide CVs of key personnel describing qualifications and similar nature assignments experience.
5. The Team Leader / Project Manager should hold a Bachelors in Engineering having relevant experience in the relevant field of Monitoring & Evaluation consultancy contracts.
6. The Firm/Company must have an average Financial Turnover for the past three (03) years of PKR 5 million (must provide Audited statements).
7. The Firm must not be blacklisted by any national/international or donor agency.
9. The Firm must provide its detailed company profile and a list of relevant personnel for the assignment having expertise and relevant knowledge in M&E ((evidence of related work must be provided)
10. In case of a Joint Venture (JV), the Consultancy Firm shall attach the Joint Venture Agreement on the official letter head of the Firm.

8. PAYMENT DELIVERABLES

The payments of the M& E Consultant shall correspond to the Contractor’s deliverables for which the M&E consultancy services are sought. They are as follows:

	Payment Mechanism		
Sr. #	Milestone/Deliverables	Percentage %	Amount in PKR (inclusive of all applicable taxes)
1	On verification and validation of Survey & Design Approval.	5%	
2	On verification and validation of Construction of Brick Masonry Boundary Wall as per approved Design	5%	
3	On verification and validation of Site Preparation (Clearance of Land, Civil Work for PV Mounting Structure)	10%	
4	On verification and validation of Supply of PV Mounting Structure at Site/Warehouse in Okara	15%	
5	On verification and validation of Supply of Solar Modules at Site/Warehouse in Okara, Submission of approved Sample Test Reports of random 1% quantity of Solar PV Panels.	15%	
6	On verification and validation of Supply of Inverter at Site/Warehouse in Okara along with allied equipment as per approved design document	10%	
7	On verification and validation of Installation of Solar Modules, Inverter along with allied equipment as per approved design	10%	
8	On verification and validation of Complete Commissioning on Site	10%	
9	On verification and validation of Installation of Security Cameras on Site, Real Time as well as Online Monitoring access.	5%	
10	On verification and validation of Rectification of Punch List duly vetted by M&E Consultant	5%	
11	On verification and validation of Submission of Net Metering Application of Site to DISCO as per NEPRA rules, Generation of Net-Metering License and payment of Demand Notice	5%	

12	On verification and validation of Submission of Final report after successful completion of the Project and upon Submission of Performance Security against O&M	5%	
	Total	100%	

Note: Payment terms may vary at the time of signing of a contract with the mutual consent of both parties.

9. REPORTING ARRANGEMENTS

1. The M & E Consultant shall report to Managing Director, PEECA for the said services.
2. All documentation, and reports shall be submitted in the English Language.
3. All the data, documents, and reports produced by the M & E Consultant for the said services shall be the property of the PEECA. The M & E Consultant shall not share and use these data, documents and reports for any other purpose/job without explicit written approval of Managing Director, PEECA.
4. In case the M & E Consultant fails to fulfil the contractual obligations and violates the contract agreement, the contract agreement shall be terminated and the M & E Consultant shall not be liable to make any pending claims.