

**TERMS OF REFERENCE (TORs)
SHORT-TERM CONSULTING FIRM
FOR
MONITORING AND EVALUATION
FOR SOLARIZATION OF PUBLIC COLLEGES IN PUNJAB**

1. INTRODUCTION / BRIEF BACKGROUND

Punjab, the most populous province of Pakistan, faces significant challenges in energy accessibility, affordability, and sustainability. With rising energy demands, high dependence on fossil fuels, and increasing energy costs, there is a growing need to shift towards clean and renewable energy solutions.

To address these challenges and promote the use of sustainable energy sources, the Government of Punjab through the Punjab Energy Efficiency & Conservation Agency (PEECA) executing various solarization schemes / initiatives / projects. The *Solarization of Public Colleges in Punjab* is a forward-looking initiative designed to enhance energy efficiency and sustainability within the province's education sector. By installing solar power systems in government colleges, the scheme aims to reduce reliance on the national electricity grid, ensuring an uninterrupted and cost-effective energy supply for academic institutions. This transition to clean, renewable energy will not only decrease operational expenses but also significantly contribute to reducing the overall load on the national grid. The project aligns with the Government of Punjab's commitment to promoting green energy solutions, environmental stewardship, and long-term energy security across the province.

2. SCOPE OF THE PROJECT:

The scope of the solar project includes:

1. Site Selection and Assessment:

- Identification and evaluation of suitable sites for the installation of solar system.

2. Capacity Building:

- Training of officers/officials, and project stakeholders on the operation and maintenance of solar systems.

3. Monitoring and Maintenance:

- Implementation of a system for ongoing monitoring of energy production, including system performance.

4. Community and Stakeholder Engagement:

- Engaging officers/officials to ensure project alignment with regional needs and priorities.
- Establishing partnerships with local businesses for the Monitoring & Evaluation of materials and services.(if required)

5. Environmental Benefits:

- Reducing the carbon footprint by replacing fossil fuels with renewable solar energy.
- Enhancing the overall sustainability of the agroforestry systems by utilizing wasted forest lands for renewable energy production.

6. Monitoring & Reporting:

- Regular project evaluation and impact assessment to track progress and ensure that goals are met.
- Monthly reporting on the energy production.

3. OBJECTIVE

The objective of this assignment is to hire M&E / TPV Consulting Firm under rule 46(a) of PPRA Rules 2024 (amended upto date) for the following tasks

1. Certify all payments to the contractors
2. Control the cost, quality, and schedule of the contractor's work as per deliverables
3. On behalf of the Client, inspect and accept goods and services related to the project.
4. Recommend appropriate mitigation actions (as defined in the DSI&C contract) when the quality of deliverables does not meet the specifications.
5. Define and ensure that implementation by the Contractors of an installation safety process manual that follows local regulations, standards, and best practices as per internationally acceptable standards (IEEE, IEC), etc.
6. Define and ensure the proper implementation by the Contractor of the O& M manual.
7. Define and ensure that all local technical, legal, regulatory, and financial requirements are met in all aspects of the project, including but not limited to procurement of goods payments to the contractors,etc.

8. Efficient/Professional analysis, appraisal, examination, vetting of the project concept/design implementation, including supply & installation of appliances and other technical aspects as per the scope of work.
9. Monitor and review of quantities and qualities of equipment at all the sites.
10. To 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 works

4. SCOPE OF WORK

The consultancy will encompass the following tasks:

STEP-I

Site Inspection:

- The Consultant will visit and take an overview of the site to get familiar with the Client's requirements.

STEP-II

Monitoring & Evaluation

- Site monitoring services will cover:
 - Monitoring during the installation of solar system at site .
 - Evaluation of the project after completion & certification that all works are carried out as per the engineering design on standard specifications

STEP-III

Post Installation Evaluation

- 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. Also system data logging will be properly checked.

The field inspection will include the following steps:

- a) The consulting firm will check that boring & pumping are physically installed as per plans (number and layout).
- b) Proper monitoring & evaluation of the whole system being carried out

5. ROLE OF THE CLIENT

- The Client shall cooperate with the M&E Consultant and shall be obliged to provide the information/documents necessary to provide the services.
- The Client shall ensure that, where cooperation is required from, or decisions need to be taken or approvals given but the Client during the period of this Agreement that cooperation will be promptly given and these decisions or approvals will not be unreasonably withheld or delayed.

6. DURATION OF THE ASSIGNMENT

Duration of the assignment is set to 06 months or as per gestation period of PC-1.

7. DELIVERABLES

Payment (s) for the M & E Consultant shall be triggered pursuant to the validation and verification of each deliverable submitted by the contractor.

Sr. No .	Deliverables	Percentage	Lot-1	Lot-2	Lot-3	Lot-4	Lot-5	Lot-6	Lot-7	Lot-8	Lot-9	Total
1	On verification and validation Site Survey & Approval of Design	5%	44,167	44,167	44,167	44,167	44,167	44,167	44,167	44,167	44,167	397,500
2	On verification and validation Site Preparation (Clearance of Roof, Levelling of Land, Civil Work for PV Mounting Structure)	5%	44,167	44,167	44,167	44,167	44,167	44,167	44,167	44,167	44,167	397,500
3	On verification and validation Supply and Installation of PV Mounting Structure	10%	88,333	88,333	88,333	88,333	88,333	88,333	88,333	88,333	88,333	795,000
4	On verification and validation Supply of Solar PV Modules at Site after Submission of Approved Test Reports from CERAD random sampling of 01% of the total quantity	20%	176,667	176,667	176,667	176,667	176,667	176,667	176,667	176,667	176,667	1,590,000
5	On verification and validation Supply of following Equipment at Site Inverters and Allied Accessories	15%	132,500	132,500	132,500	132,500	132,500	132,500	132,500	132,500	132,500	1,192,500
6	On verification and validation Installation of Solar Modules at Site	10%	88,333	88,333	88,333	88,333	88,333	88,333	88,333	88,333	88,333	795,000
7	On verification and validation Installation of Following Equipment at Site Inverters and Allied Accessories, Construction of EV Charging Station for Two Wheeler (where applicable) and Commissioning of Solar System	15%	132,500	132,500	132,500	132,500	132,500	132,500	132,500	132,500	132,500	1,192,500

8	On verification and validation Rectification of Punch List and Training of Designated Officials	5%	44,167	44,167	44,167	44,167	44,167	44,167	44,167	44,167	44,167	397,500
9	On verification and validation Upon installation of Bi-Directional Meter (Net Metering) Issuance of Net Metering License. Payment of Demand Notice and Completion of Electrical Upgradation Work (If Applicable). Submission of Final Report after successful completion of the Project and upon submission of Performance Security against O&M	15%	132,500	132,500	132,500	132,500	132,500	132,500	132,500	132,500	132,500	1,192,500
Total Amount												7,950,000

Sr. #	Reporting	Timeline	Remarks
1	Draft Inception Report	1 week after the effectiveness of services	Soft & Hard Copies
2	Final Inception Report	1 week after the issuance of comments by the Client on the Draft Inception Report	Soft & Hard Copies
3	Draft Monitoring Report containing Equipment procurement by the contractor and commencement of the construction phase	1 week post-engagement of the contractor	Soft & Hard Copies
4	Monthly progress Report including installation	1 week after the contractor engagement for installation (start of construction phase)	Soft & Hard Copies
5	QA/QC Report containing Quality compliance and timelines adherence	1 month after the installation phase.	Soft & Hard Copies
6	Monthly Progress Report II	2 months after the commencement of the construction phase.	Soft & Hard Copies
7	Monthly Progress Report III	3 months after the commencement of the construction phase.	Soft & Hard Copies
8	Project M & E Report	3 months after the commencement of the construction phase.	Soft & Hard Copies
9	Project Completion Report	End of project report with Compliance Report.	Soft & Hard Copies

8. Team with following qualification and experience:

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

Sr.No	KEY STAFF	EDUCATION & EXPERIENCE	JOB DESCRIPTION	Man Months
1.	Project Manager (01 Position)	At least Graduate Mechatronic 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	Responsible for monitoring & evaluation of boring & pumping solar-powered tube wells ensuring they are delivered on time, within budget, and to quality standards. Leads cross-functional teams, manages stakeholder relationships, mitigates risks. and ensures regulatory compliance Maintains clear communication across all levels and continuously monitors progress	6 months

		sector procedures and laws in Pakistan /Punjab.	to address issues proactively. Having experience of about 5 years regarding monitoring & evaluation of similar projects.	
2.	Solar Expert (02 Positions)	At least Graduate Mechatronics/ Mechanical Engineer with minimum 05 years of experience.	Oversees all technical aspects of solar project implementation, including monitoring and evaluation, BOQ preparation. Ensures system performance through post-installation testing and equipment inspections.	6 months
3.	Electrical Engineer (03 Positions)	At least Graduate Electrical Engineer with minimum 05 years of experience.	Provides technical oversight for boring pumping of tube wells, project execution, ensuring adherence to design, safety, and quality standards. Manages installation, commissioning, and inspections, while tracking project performance through data analysis. Supports teams with technical expertise and delivers comprehensive reports to monitor progress and address challenges.	6 months
4.	Civil Engineer Civil Structure (01 Positions)	At least Graduate Civil Engineer with minimum 05 years of experience in the relevant fields with experience in design. Installation inspection and commissioning.	Ensures the structural soundness of civil components in solar projects, including foundations and buildings. Reviews designs, monitors construction through site visits, and enforces quality control. Supports project teams with technical input and tracks structural performance through evaluations and detailed reporting.	6 months
5.	Technicians (5 Positions)	DAE Electrical and 3 years experience relevant field.	Performs site surveys and data collection to support solar project implementation. Assists in monitoring and evaluation, conducts inspections, and ensures adherence to design and quality standards. Provides on-site technical support, collaborates with project teams, and maintains detailed reports on site conditions and project progress.	6 months

9. **PROFESSIONAL LIABILITY OF CONSULTANT:**

The professional liability of the consultant shall be as defined in Rule 54 of the Punjab Monitoring & Evaluation Rules, 2014 (amended till date).