

TERMS OF REFERENCE

SUPERVISORY ENGINEERING FIRM FOR COVID-19 EMERGENCY RELATED SOLAR INSTALLATION

[SINDH SOLAR ENERGY PROJECT (SSEP): COMPONENT 2]

1. BACKGROUND

Sindh Energy Department (SED) under Government of Sindh (GoS) has obtained financing and technical support from the World Bank to expand solar power and increase access to electricity under the Sindh Solar Energy Project (SSEP)¹. Component 2 of SSEP targets the first of these objectives and includes the installation of 20 MW of distributed solar power on and around public buildings in Karachi and Hyderabad, by 2021.

The services of a supervision engineer firm (the “Consultant”) are required to support SED in the procurement and commissioning of 1-2 MW of distributed solar under Component 2 (the first phase out of the total 20 MW target). The Consultant shall ensure that all installations are carried out to the highest national and international standards, as specified in the Request for Bids (RFB) that will be put out to competitive bidding, thus ensuring that Government of Sindh obtains excellent value for money.

Distributed Solar

Component 2 of SSEP will finance the installation of distributed solar PV on rooftops and other available space on and around public sector buildings in Sindh plus energy efficiency retrofits and energy management systems. Distributed solar, such as solar photovoltaic installations on and around buildings in urban areas, offers the benefit of being close to load centers, removing the need for transmission infrastructure and making efficient use of already-developed land. The distributed solar market in Pakistan is slowly gaining momentum, but has been hampered by the distribution companies’ (DISCOs) reluctance to facilitate the export of power, in part because the current ‘net metering’ regulations do not provide for any compensation of system costs. Where power export has not been possible, commercial consumers have resorted to sizing the solar system to be below their minimum daytime demand, thereby avoiding the need for a two-way flow of power. IPP-based models for distributed solar, under which rooftop space is leased to solar developers and 100 percent of the power is exported, have not yet taken off in Pakistan. In 2016, the WB commissioned a study² to assess the potential for distributed generation in Pakistan, particularly through solar for large public sector buildings. The study assessed 20 large buildings in the city of Karachi, and up to 79 MW of solar PV potential was identified, mostly on public buildings. The installation of solar on/around such buildings can reduce their electricity consumption, and thus the

¹ Refer to Project Appraisal Document for further details of SSEP: <http://projects.worldbank.org/P159712?lang=en>

² World Bank. 2016. “Demand for Distributed Renewable Energy Generation.” Washington, DC. <http://pubdocs.worldbank.org/en/651451464210676719/Report-Demand-Distributed-Renewable-Energy-Generation-Pakistan-Elan-Partners-World-Bank-Jun2016.pdf>.

recurrent problem of non-payment of bills. Solar installations can be combined with energy efficiency retrofits for even greater reductions in consumption. However, such installations need to be professionally installed and commercially operated to ensure that the solar systems are maintained and optimized to generate the maximum amount of power possible over their 20+ year lifetime.

Under Component 2 of SSEP the objective is to add at least 20 MW of solar power capacity within key load centers, stimulate the growth of the distributed and rooftop solar market in Sindh and Pakistan, and contribute to the reduction of the 'circular debt' problem by reducing the overall electricity consumption of the GoS through self-generation and energy efficiency measures. SED will identify candidate buildings for solar installations and energy efficiency retrofits, starting in Karachi. A building survey has been commissioned for this purpose, which started at the end of 2019. For the first 1-2 MW of sites identified (likely to be within the Jinnah Public Hospital and the Sindh Provincial Assembly), SED will issue an RFB for the construction and initial operation of distributed solar consisting of installations on multiple buildings. After a number of years of successful operation (no more than three), the intention is to pass the O&M responsibilities over to an appropriate entity (e.g. DISCO, SPV, or a private firm), in return for a management fee that would be subtracted from the value of the electricity generated. This model assumes that the selected entity will have a strong incentive to ensure good O&M and overall performance, and in the case of a DISCO would be able to subtract the value of the electricity generated from the outstanding public debt, thereby improving their cashflow situation. The assets will continue to be owned by the GoS, but with minimal responsibilities or duties placed on the site/building owners. This model has been designed to maximize the chances that the solar installations will be managed and cared for over the long term, thus generating an economic and social return to Sindh in perpetuity.

For the energy efficiency retrofits, the intention is to look for opportunities to carry out low cost, high impact installations such as replacement of existing lighting, cooling systems, and exterior windows, combined with installation of building management systems and rewiring to allow buildings to operate in a more limited 'low power' mode in the event of power failures. Replacement of diesel generators with smaller capacity battery storage systems may also be considered in some cases where economical. The potential for energy efficiency retrofits shall be estimated as part of the SED-commissioned building survey, but will not be a part of the initial 1-2 MW RFB.

2. OBJECTIVES OF THE ASSIGNMENT

The objective of this assignment is to ensure that the installation carried out under the initial 1-2 MW RFB under SSEP Component 2 are implemented professionally, to the required specifications and timelines, and in a manner that ensures long-term operational sustainability.

The firm contracted under the RFB process shall be responsible for commissioning, planning and delivering the installation required,³ and the Consultant shall therefore be responsible for supporting the procurement process and supervising these installations on behalf of SED; as Engineer, to ensure that all contractual obligations are met.

The following requirements shall apply to this assignment:

- i) The Consultant shall assist the Project Management Unit (PMU) within SED and shall act under the directions of the PMU and will be delegated to the extent required for this assignment;
- ii) The Consultant shall work closely with the PMU to support them on procurement and supervision

³ See annex for draft Terms of Reference for installation of distributed solar under Component 2.

activities;

- iii) The Consultant shall be fully cognizant of the relevant national and international standards relating to distributed solar PV installations;
- iv) The Consultant shall undertake their work with professionalism and integrity, representing the interests of the GoS in ensuring value for money and high quality installations that are fully compliant with all contractual requirements.

3. SCOPE OF WORK

The Consultant shall be responsible for achieving the objectives and requirements listed above. The assignment comprises seven key responsibilities, as follows:

1. Technical support to the PMU in managing the procurement processes (pre-procurement, procurement and contract award) for the commissioning of installations under the project;
2. Supporting SED in obtaining the relevant inter-agency agreements required for installation of distributed solar under Component 2;
3. Supervision as Engineer of the installation and commissioning of procurement under the project, to ensure compliance with all contractual requirements;
4. Monitoring of the initial electricity output and savings at each site/building under Component 2, for the first six months;
5. Supervision of the O&M responsibilities of the contractors under Component 2 for the first six months following the commissioning date, including investigation of any complaints or issues logged with SED by building occupants.

The Consultant shall be retained on a time-based contract to provide the above services according to the needs of the PMU. Each sub-assignment shall be specified and agreed in writing or by email in advance of commencement of work, with detailed time records kept and submitted alongside any invoices.

4. ACTIVITIES AND DELIVERABLES

The Consultant shall provide a flexible range of services and support to the PMU. A Work Plan shall be prepared following contract signing, which shall be updated at least monthly in consultation with the PMU.

The activities likely to be undertaken under this assignment include:

1. Preparation or review of technical specification documents to ensure that they comply with the latest national and international standards and with the objectives of the project;
2. Participation in planning, procurement and contract supervision meetings in support of the PMU;
3. Drafting of letters, technical briefings, and other correspondence as required by the PMU;
4. Site supervision where installations are taking place under the project;
5. Randomized sampling and testing of equipment procured under the project, including through field-based or central laboratories;
6. Collecting and reporting of data both remotely and physically to verify claimed electricity output;

7. Investigation and follow-up in response to any complaints received or issues raised regarding installations carried out under the project;
8. Support for stakeholder engagement and outreach relating to the project, including technical discussions with K-Electric and with federal agencies.

5. REPORTING REQUIREMENTS & TIME SCHEDULE FOR DELIVERABLES

The selected Consultant shall report to the PMU team made up of representatives from SED and shall work closely with the PMU to provide the specified technical services and support.

The assignment is expected to begin in July 2020 and continue until around June 2021, or whenever the six-month post-commissioning period ends. Upon award of the contract, a detailed timeline and reporting schedule shall be determined between the Consultant and SED.

Summary and timeline of deliverables:

Deliverables	Submission schedule
1. Submission of Work Plan	2 weeks after the award of the contract
2. Revision of Work Plan	Monthly following approval of initial Work Plan
3. Task Reports	As required

After submission of deliverables in a report/presentation format, the Consultant shall allow two weeks for review by PMU. All deliverables must be reviewed and accepted by PMU to be accepted as completed.

6. TEAM COMPOSITION & QUALIFICATION REQUIREMENTS

The selected Consultant shall be a professional engineering firm (or firms), incorporated for at least the past ten (10) years in this business, with at least five years of experience dealing with renewable energy technologies, and a track record of relevant work in Pakistan or any comparable context. They should have successfully completed at least two assignments of similar scale and complexity, out of which at least one assignment has involved renewable energy.

Essential staff for the assignment shall include:

- i) **Project Manager:** A relevant degree in engineering with at least 10 years of experience of working in the power sector, preferably within Pakistan;
- ii) **Solar Expert:** A relevant degree in engineering with at least 10 years of experience, out of which a minimum of five years of experience in solar projects is required;
- iii) **Civil Design Expert:** A relevant degree in engineering with at least 10 years of experience, out of which a minimum of five years of experience in design and refurbishment of construction buildings is required;
- iv) **Electrical System Design Expert:** A relevant degree in engineering with at least 10 years of experience, out of which a minimum of 10 years of experience in electrical system design is required;
- v) **Social and Environment Expert:** At least five years of experience of conducting social and environment assessments and implementation. Desirable to have experience in the power sector;

- vi) **Procurement/Contract Specialist:** At least 15 years of experience in contract management of DSI/goods/works/supply and install procurement in relevant sectors with a strong preference for experience in renewable energy projects and preferably with experience also in BESS. Experience with procurement under WB or Multilateral Development Bank financed projects is also an advantage but not mandatory;

Firms may propose other experts that they deem to be required for the fulfillment of the Scope of Work.

8. SELECTION METHOD

The Consultant shall be selected through Selection Based on Consultants Qualification Selection (“CQS”) in accordance with the procedures set out in the World Bank Procurement Regulations for Borrowers, 2016 (revised November 2017 and August 2018).