
**INVITATION OF EXPRESSION OF INTEREST FOR DESIGN AND
INSTALLATION OF A PILOT GRID-TIED 500kWp FLOATING SOLAR
PHOTOVOLTAIC SYSTEM IN RESERVOIRS OF KERALA STATE
ELECTRICITY BOARD LIMITED.**

No: KSEBL/CECP/INN/ FLOATSPV/ 2014-15/ EOI/01 Dated 19-08-2014

Kerala State Electricity Board Limited (**KSEBL**) is a Government of Kerala owned utility company engaged in Generation, Transmission and Distribution of electricity in Kerala. KSEBL is planning to pursue Solar Photovoltaic (PV) Power which is a commercially available and reliable technology with a significant potential for long-term growth. Most parts of Kerala receive 5-6kWh/m²/day of solar radiation with about 250 sunny days in a year. A major hindrance for planning large scale harnessing of SPV power in Kerala is scarcity of large tracts of land. KSEBL has hydro reservoirs spread over thousands of hectares of land. The surface of these water bodies can be partially covered with floating solar panels to commercially tap SPV power. To begin with a pilot project of 500kWp is to be implemented to assess the maturity of technology, costs and benefits. Large scale capacity addition of floating SPV systems can be considered later, based on the outcome of this pilot project.

1. OBJECTIVE :

To identify competent Project Developers for Design, Engineering, procurement, quality assurance, testing at manufacturer's works, packing, supply, erection including transmission of power generated upto the point of grid connectivity, performance testing, commissioning and successful operation

comprising of a two year defect liability period too followed by Annual Maintenance Contract of five years for a 500 KWp pilot grid-tied floating solar photovoltaic systems(GTFPVS) with associated components in reservoirs of Kerala State Electricity Board Limited. The defect liability period of two years shall be from the date of commissioning following which the Annual Maintenance Contract of five years comes into effect. The system shall be complete with PV modules, floating mounts, anchoring mechanisms, marine cables if necessary, inverters, metering, junction boxes, AC, DC distribution boards and cables, LT/HT lines with grid interconnection, communication interface, and any other equipment necessary for safe and efficient operation of the GTFPVS.

To subsequently add capacity in large scale utilising the hydro reservoirs of KSEBL.

2. SCOPE OF WORK

Design, Engineering, procurement including transportation to site and storage, quality assurance, testing at manufacturer's works, packing, supply, erection including transmission & termination at suitable grid point of GTFPVS, performance testing, commissioning and successful operation comprising of a two year defect liability period too followed by Annual Maintenance Contract of five years for a 500 kWp pilot grid-tied floating solar photovoltaic systems(GTFPVS) with associated components in reservoirs of Kerala State Electricity Board Limited. The defect liability period of the system shall be two years from the date of commissioning. The system shall be complete with PV modules, floating mounts, anchoring mechanisms, marine cables (if necessary), inverters, metering, junction boxes, transformation to the required voltage for necessary connection to the nearest grid at suitable voltage level, switchgears along with adequate protection as per safety standards and monitoring facilities up to the grid connection point. Augmentation of the bus, in case required to be carried out at the grid connection point, AC, DC

distribution boards and cables, communication interface, and any other equipment necessary for safe and efficient operation of the GTFPVS. The work shall also include interconnection of GTSFPVS with the LT/HT distribution network, Construction of office cum control room, supply and installation of adequate ventilation system for control & protection equipment. Arrangement of adequate power supply for construction and O&M of plant and arrangement for module washing in the reservoir also comes in the purview.

Training on the various aspects of design, maintenance and operation of the system after commissioning for at least three persons nominated by KSEBL is to be provided. The developer shall also submit the drawings and design. The supplier will treat as confidential all data and information about the KSEBL structures obtained in the execution of his responsibilities.

3. ELIGIBILITY CRITERIA

Following are the minimum qualifying requirements for Project Developers (PD) who intend to express their interest:

1. Individuals, firms, Companies, Joint Ventures or Consortium etc registered in India can submit their proposals. Project Developers must submit the organization chart of the company clearly showing the details of Technical Personnel, Installation, Commissioning capability & training set up etc.
2. Project Developers shall have experience in executing grid-tied solar power projects on turnkey basis with 500kWp in the last three years. (Evidence supported by List of Purchase Orders and Project completion certificates).

3. Project Developers should have an annual turnover of not less than Rupees one Crore in last three completed financial years (Supported by Audited balance sheets).
4. Project Developers should have experience of operation and maintenance of solar power stations cumulative capacity of 500 kWp in India (Supported by client's AMC orders/ performance certificates).

4. FINANCIAL TERMS

1. Initially 50% of the agreed system cost will be funded by KSEBL to the developer to whom the project has been allocated against Bank Guarantee.
2. 40% after successful installation, commissioning and commercially operationalizing the system
3. 10% after the Defect liability period /warranty period of two years.
4. Annual Maintenance Contract- After the initial warranty period, a five years Comprehensive Annual Maintenance Contract has to be quoted by the developer with B.G for the amount, 20% of the amount will be released on successful completion of each year

5. OTHERS

1. The EoI should not contain any details about pricing.
2. NOTES:
 - a. On reservoirs of KSEBL: The developer shall invariably visit KSEBL reservoir before submitting the price bid and assess the local conditions including change in reservoir water level due to usage and inflow, local climatic conditions, dam silting etc. The reservoir

level will fluctuate more than 10m usually and bed level can be expected to be at a depth of more than 20m.

- b. KSEBL may permit the firms which successfully run this pilot project to scale up the same in reservoirs of KSEBL on condition that the firm will sell power to KSEBL at a rate 20% less than the SERC rate for first five years after commissioning the scaled up project.

6. SUBMISSION OF EOI:

1. Refer Annexure - i for application form for Expression of Interest (EOI). The duly filled in application form along with all relevant supporting documents is to be attached. The applicant should submit details of their background and experience in related projects.
2. Applicant shall submit man power resources available to establish Engineering and project handling capabilities.
3. A single firm/company is eligible to be part of only one application, either individually or as a part of a consortium.
4. The applicant must submit Company registration certificate in case of Company and partnership deed in case of partnership firm or affidavit in case of sole propriety firm.
5. All the pages of EOI documents should be signed with date and the seal of the applicant and the EOI should be submitted as hardcopy in duplicate and soft copy in CD

6. EOI shall contain

- i. The estimated solar energy generation (MU) per annum by the 500kWp Floating Solar PV power plant proposed by them.
- ii. The complete technical specification of floating Solar PV Power pilot Plant which includes
 - a. Design details & layout arrangement of solar Modules and other components, brief Technical parameters of the proposed plant, Plant general layout, Description of plant & machinery.
 - b. Floating module mounting structure with description of automatic adjustment of tether length w.r.t the reservoir level variation provided in the floating structure.
 - c. Synchronizing equipment & scheme
 - d. Control & protection scheme
 - e. Scheme & layout of power distribution network
 - f. Integration of PV power with grid
 - g. Reactive power supplying capability of Inverter
 - h. Behaviour during system disturbance
 - i. Evacuation scheme.
 - j. Metering scheme
 - k. Communication interface & SCADA / updated technology.
- iii. BOQ list without prices.
- iv. Arrangement for cleaning of solar PV panels and removal of algae.
- v. The applicant shall also indicate the requirement of Auxiliary power to run the Plant.

7. SELECTION PROCESS:

The selection process would be of following two steps:

Step 1. Short listing based on documents submitted by the firm along with the expression of interest, in proof of satisfying all the eligibility conditions given above.

Step 2 Subsequent evaluation of the competency and other technical merits of the product and also the financial capabilities during the presentation. This will be carried out by a Technical Evaluation Committee (TEC). If necessary, TEC will inspect the projects already carried out by the vendors, as well as their manufacturing facilities for finally deciding on the selection at this stage. The TEC will have rights to reject any proposal without disclosing any reasons if it feels the technical competency or reputation of the company is inadequate.

Only those firms who satisfy step-1 will be selected for the evaluation process under step 2. Only those firms who are finally short listed after step 2 will be qualified for further participation in the project.

8. WARRANTY/GUARANTEE:

The entire Floating Solar power plant :

- a) Total system shall be under warranty for a minimum period of 2 years from the date of commissioning and commercial operation.
- b) The PV modules shall be guaranteed for a minimum period of 10 years from the date of commissioning and handing over to KSEBLtd.
- c) The PCU shall be guaranteed for a minimum period of 5 years from the date of commissioning and handing over to KSEBLtd.

Further, a comprehensive maintenance of the GTSFPVS for FIVE years from the date of completion of Warranty/Defect Liability period is also required.

The life of system shall be minimum 25 years after commercial production. PV modules used must be warranted for their output peak watt capacity, which

should not be less than 90% at the end of 10 years and not less than 80% at the end of 25 years from date of system acceptance.

Last date of Submission of EoI

- | | |
|---|-------------------------------------|
| i) Last date and time for issue of EoI forms | : 10/09/2014
12.00 noon. |
| ii) Last date and time of receipt of EoI | : 10/10/2014
3.00 p.m. |
| iii) Date and time of opening of EoI | : 10/10/2014
4.00 p.m. |

For any clarifications contact:

Innovation @ ksebnet.com

9. GENERAL

The interested suppliers or manufacturers may obtain details of the reservoirs from office of the Chief Engineer (Corporate Planning) & Safety Commissioner, KSEB, 9th Floor, Vidyuthi Bhavanam, Pattom, Thiruvananthapuram-695 004.

All communications shall be addressed to the Chief Engineer (Corporate Planning) & Safety Commissioner only. Expression of Interest documents should be submitted by registered post/speed post/hand delivery only, at the address given below on or before 10-10-2014 at 3.00 p.m.

Chief Engineer (Corporate Planning) & Safety Commissioner,
KSE Board, 9th Floor, Vidyuthi Bhavanam,
Pattom, Thiruvananthapuram-695 004.

- The applicant should be prepared for a detailed presentation of his system and capability when intimated from KSEBL.
- Short listed firms may be invited for further submission of their financial offer which will be intimated on notification of the qualified list of the participants. Additional Technical and other parameters of the system may be intimated thereon

- The application should be accompanied by a covering letter (See Annexure-ii) signed by a competent authority representing the participant organization.
- Board reserves the right to cancel /re-tender this empanelment process if the necessity arises.
- The empanelment does not in any way constitute any contract of agreement of any kind what so ever with the firms.
- Empanelment will be valid for a period of six months
- In subsequent periods new empanelment will be considered by KSEB.
- The annexure attached is a part of the EOI and shall be filled in by the developer

APPLICATION FORM

(TO BE FILLED BY THE DEVELOPER)

- 1) Name of the Applicant / Organization :
- 2) Brief Profile : (of leader & all consortium members if any)
- 3) Full address (Registered Office) : (of leader & all consortium members)
- 4) Name of the contact person with e-mail & Telephone no.: (of leader and each consortium member)
- 5) Type of the organization. (Public Sector/Limited/Private Limited Partnership/Proprietary/Society/Others.)
- 6) Chief of the organization & contact details of the persons with e-mail, phone nos. (of leader and each consortium member).
- 7) Registration details (Enclosed certificates).
- 8) PAN No (Enclosed certificates),
- 9) Service Tax, EPF & VAT Registration (Enclosed certificates)
- 10) Activities of the Company
- 11) List of clients
- 12) Annual Turnover of the last 3 financial years (2010-11, 2011-12,

2012-13) supported by balance sheet or certified by a registered Chartered Accountant.

13) Total number of employees

14) No. of Offices/Centers.

15) List of similar projects handled during the last 3 years including those work in hand (Name of the clients, contact person, address in Telephone No. , Title of the Project, Cost of the Project, Duration of the Project, Actual time of completion, Technology used, brief statement how their requirements are similar to those in this proposal, date of implementation/completion.)

16) Project implementation/completion certificates from the Customers

17) Any other information the applicant wants to furnish -Pl mention the nature of information here and the corresponding Annex. No.

DECLARATION

I/we here declare that the above information is true to best of knowledge of my knowledge.

Place:
Date:

Signature with name & Seal

LETTER FOR SUBMISSION

THE CHIEF ENGINEER(CORPORATE PLANNING) & SAFETY COMMISSIONER
VYDYUTHI BHAVANAM
PATTOM
THIRUVANANTHAPURAM
KERALA

Sub : Expression of Interest for design and installation of a Pilot Grid-Tied
500kWp floating solar photovoltaic system in reservoirs of Kerala State
Electricity Board Limited

Dear Sir,

We express our interest in design and installation of a Pilot Grid-tied
500kWp Floating Solar Photovoltaic system in reservoirs of Kerala State
Electricity Board Limited.

The EOI application is being submitted by(Name of the
bidding Company) for selection as stipulated in EOI document. We have
examined, understood and will abide by all the terms and conditions
stipulated in the EOI documents issued by KSEBL. Our application is
consistent with the requirements in the EOI documents. The information
submitted in our application is complete, is strictly as per the requirements
as stipulated in the EOI document, and is correct to the best of our
knowledge and understanding. We shall be solely responsible for any errors
or omission or misrepresentation in our bid.

Place:
Date:

Signature with name & Seal