

**Alternative Energy Promotion Centre (AEPC)  
Renewable Energy for Rural Livelihood (RERL)**

**REQUEST FOR PROPOSAL FOR CONSULTING SERVICES**

**Title of Consulting Services**

**Preparation of Guideline for Utility-Scale Solar PV Project**

**Project Name** : Renewable Energy for Rural Livelihood (RERL)

**Office Name** : Alternative Energy Promotion Centre (AEPC)

**Office Address** : Khumaltar Height, Lalitpur, Nepal

**Financing Agency:** RERL

**Date of RFP Issue:** 27 August 2017

**Deadline for Submission of RFP:** 26 September 2017

**Date.....**

Dear Sir/Madam

**Subject: Preparation of "Guideline for Utility Scale Solar PV Project"**

Please study the evaluation criteria and provide the relevant information

To enable you to submit a proposal, attached are:

- i. Instruction to Offeror .....Annex I
- ii. General Terms and Conditions of the Contract .....Annex II
- iii. Proposal Submission Form .....Annex III
- iv. Financial Proposal Submission Form.....Annex IV
- v. Terms of Reference (TOR).....Annex V

Your offer comprising of both a technical proposal and a financial proposal, in a separate sealed envelopes, should reach the following address no later than **26 September 2017**

The National Programme Manager  
Renewable Energy for Rural Livelihood (RERL)  
Khumaltar Height, Lalitpur, Nepal  
Phone: 01 5539390, 5539391, Fax: 01 5542397  
Website: <http://www.aepc.gov.np/rerl/>  
Email: [info.rerl@aepc.gov.np](mailto:info.rerl@aepc.gov.np)

If you required additional information, we are ready to provide information, but any delay in providing such information will not be considered a reason for extending the submission date of your proposal.

Yours sincerely,

Mr. SatishGautam  
National Programme Manager(NPM)

## **A.Introduction**

### **1. General**

The purpose of this RFP is to invite technical and financial proposals from the potential consulting firms who have skill, knowledge and expertise for **Preparation of "Guideline for Utility Scale Solar PV Project"**.

### **2. Cost of Proposal**

The offeror shall bear all costs incurred during submitting the proposal. The offeror shall bear all costs associated with the preparation and submission of the proposal. RERL will in no case be responsible or liable for those costs, regardless, of the conduct or outcome of the evaluation of this proposal.

## **B. Solicitation Documents**

### **3. Contents of solicitation documents**

Proposals must offer services for total requirement. The Offeror is expected to examine all corresponding instructions; forms, terms and specifications contained in the solicitation Documents. Failure to comply with these documents will be at the offeror's risk and may affect the evaluation of the Proposal.

### **4. Clarification of solicitation documents**

The offerors requiring any clarification of the Solicitation Documents can forward their queries in the following email address

Email: [info.rerl@aepec.gov.np](mailto:info.rerl@aepec.gov.np)

### **5. Amendment of solicitation documents**

At any time prior to the deadline for submission of proposals, the RERL may, for any reason, whether at its own initiative or in response to a clarification requested by a shortlisted Offeror, modify the Solicitation Documents by amendment.

All offerors that have received the Solicitation Documents will be notified in writing of all amendments to the Solicitation Documents. In order to afford prospective Offerors reasonable time in which to take the amendments into account in preparing their offers, RERL will notify in time.

## **C. Preparation of Proposals**

### **6. Applying for providing services**

The Offerors need to read the RFP including the ToR and prepare proposal accordingly. The proposal must address all the requirements of the proposal including required documents.

### **7. Language of the proposal**

The proposal prepared by the Offeror and all correspondence and documents relating to the proposal exchanged by the Offeror and the RERL shall be written in the English language.

### **8. Documents comprising the proposal**

The proposal shall comprise the following **mandatory documents**:

- a. Proposal submission form
- b. Organizational Profile/Brochure—describing the nature of business, field of experience, licenses, certification and accreditations
- c. Valid registration and renewal certificate
- d. VAT certificate
- e. Tax Clearance Certificate of 2072/73
- f. Track records of Human resource- with list of similar services relevant to objective and scope of works included in this RFP.
- g. CVs of proposed human resources signed by concern individual
- h. The proposal must provide clear methodology to meet the activities proposed for completing this task

### **9. Proposal form**

The Offeror shall structure the operational and technical part of its proposal as follows:

#### **i. Proposed methodology**

This section should demonstrate the Offeror's responsiveness to the specification by identifying the specific components proposed, addressing, the requirements, as specified, point by point, providing a detailed description of the essential performance characteristics proposed warranty; and demonstrating how the proposed methodology meets or exceeds the specifications. **This section should explain clearly how the required information as mentioned in the scope of work in the attached ToR will be collected and analyzed.**

Pricing information shall be separated and only contained in the appropriate Price Schedules.

It is mandatory that the Offeror's Proposal numbering system corresponds with the numbering system used in the body of this RFP. All the references to descriptive material and brochures should be included in the appropriate response paragraph, though material/documents themselves may be provided as annexes to the Proposal/response.

Information which the Offeror considers proprietary, if any, should be clearly marked "proprietary" next to the relevant part of the text and it will then be treated as such accordingly.

## ii. Summary Sheet

The Offeror is required to prepare a summary sheet (Table 1) with information related to preparation of Guideline for Utility-Scale Solar PV Projects

Table 1 Summary sheet

SN	Name of the program/project	Contract agency	Duration	Amount of contract

## iii. Qualification of the Service Provider

The consulting firm (Offeror) must have at least 2 years of experience in renewable energy projects. Preference will be provided to the consulting firms with prior experience in preparing guideline for Utility Scale Solar PV Systems. The consulting firm must be legally registered as per the rule of Government of Nepal and provide the following documents

1. Company Registration Certificate
2. VAT Registration Certificate
3. 2072/73 Tax Clearance Certificate

## iv. Human Resource Requirement

**Team Leader:** The Team Leader must have at least a master degree in engineering with atleast 10 years of experience in Electrical/ Electronics or Renewable Energy specially in the field of solar PV system. Additional degree in management, economics, development studies or any other relevant subjects will be an added advantage. The candidate shall have demonstrated experience in the field of preparation of technical standards and specifications in RE, individually or in terms of Solar PV Projects will have added advantage. It is desired to have knowledge of policy/act/guidelines/rules/directives related to electricity in Nepal. The Team Leader will be responsible for coordinating all the activities mentioned in the ToR. Team Leader should possess very good interpersonal, technical and communication skills, as well as proficiency in written and spoken English and Nepali language. The Team Leader should also possess a strong working knowledge of the power sector, quality management system, and rules and regulations of government of Nepal. Prior proven experience in the field of grid interconnection of solar system will get higher weightage in the technical evaluation of the proposal.

**Civil/Mechanical Engineer:** The Civil/Mechanical Engineer should have Bachelor degree in Civil Engineering/Mechanical Engineering with atleast 5 years of experience. The candidate having experience in structural analysis of solar PV system shall get higher weightage in the technical evaluation of the proposal.

**Electrical/Electronics:** The Electrical/Electronics Engineer should have Bachelor degree in Electrical/Electronics Engineering with atleast 5 years of experience. The candidate shall have some experience of working in the field of standards and specifications, individually or in team of Solar PV projects will have added advantage. The candidate should have knowledge of designing Solar PV system. The candidate having experience of grid interconnection shall get higher weightage in technical evaluation of the proposal.

**Software Engineer-** The Software Engineer should have Bachelor degree in Engineering /Software/ Application /Information Technology with atleast 5 years of experience in designing software. Basic knowledge of solar system shall have added advantage.

**Environment Expert-** The Environment Expert should have Bachelor in Environmental Science/Environmental Management/Environmental Engineering with atleast 5 years of experience in preparation of Initial Environmental Examination (IEE) and Environmental Impact Assesment(EIA).

**Social Safeguard Expert-** The Social Safeguard Expert should have Bachelor in Social Science/Anthropology with at least 5 years of experience in Gender Equality and Social Inclusion (GESI) related activities.

**Energy Finance Expert:** The Financial Expert should have Bachelor in Engineering Management/Engineering Economic with atleast 5 years of experience in financial analysis of RE projects. The candidate having experience in financial analysis of solar PV project shall get higher weightage in the technical evaluation of the proposal.

## **10. Proposal prices**

The Offeror shall indicate on an appropriate Price Schedules, the price of a service it proposes to supply under the contract. The VAT should be included in the offer, if applicable. The tax will be deducted at source as per prevailing tax rule of the government.

## **11. Proposal currencies**

All prices shall be quoted in the Nepalese Rupees (NRs)

## **12. Period of validity of proposals**

Proposals shall remain valid for One Hundred And twenty (120) days after the date of the Proposal submission prescribed by the RERL, pursuant to the deadline clause. A Proposal valid for a shorter period may be rejected by RERL on the grounds that it is non-responsive.

In exceptional circumstances, the RERL may solicit the Offeror's consent to an extension of the period of validity. The request and the responses there to shall be made in writing. An Offeror granting the request will not be required or permitted to modify its proposal.

### **13. Format and signing of Proposals**

The Offeror shall prepare the Proposal. The Proposal shall be in typed or written in indelible ink and shall be signed by the Offeror or a person or persons duly authorized to bind the Offeror to the contract. The latter authorization shall be indicated by written power-of-attorney accompanying the proposal.

The Proposal shall contain no interlineation, erasures, or overwriting except, as necessary to correct errors made by the Offeror, in which case such corrections shall be initialed by the person of persons signing the proposal.

### **14. Estimated Completion Date**

The desired delivery date for completion of this task is 6 months after signing the contract.

### **15. Terms of Payment and Deliverables**

**a. Payment** The RERL shall effect payments to the Contractor/Offeror after acceptance by the RERL of the invoices submitted by the Contractor/Offeror. The payments will be made in installment basis based on deliverables.

<u>Amount in percentage</u>	<u>Payment</u>
i) 20%	Immediately after Signing Contract.
ii) 30%	After submission of draft report
iii) 50%	After submission of final report, approval from concern authority of AEPC/RERL

The above payment plan shall apply GON and UNDP NIM guideline.

### **b. Deliverable (output)**

The followings will be suggested outputs of the assignment:

Draft Inception report- soft copy within 1 month of contract signing

Draft report - soft copy within 5 month of contract signing

Final report- 3 copies in hard and soft copy

### **D. Submission of Proposals**

### **16. Sealing and marking of Proposals**

The Offeror shall seal (lahachhap) the proposal in one outer and two inner envelopes, as detailed below.

- (i) The outer envelope shall be

Addressed to:  
The National Project Manager  
Renewable Energy for Rural Livelihood (RERL)  
Khumaltar Height, Lalitpur, Nepal  
Phone: 01 5539390, 5539391, Fax: 01 5542397  
Website: <http://www.aepc.gov.np/rerl/>  
Email: [info.rerl@aepc.gov.np](mailto:info.rerl@aepc.gov.np)

And,

Marked with:

**Preparation of " Guideline for Utility Scale Solar PV Project"  
".**

(ii) Both inner envelopes shall indicate the name and address of the Offeror. The first inner envelope shall contain the information specified in clause 8 (Proposal Form) above. The second inner envelope shall include the price schedule and price schedule of individual Offeror duly identified as such.

**NOTE**, if the inner envelopes are not sealed and marked as per the instructions in this clause, the RERL will not assume responsibility for the Proposal's misplacement or premature opening.

#### **17. Deadline for the submission of Proposals**

Proposals must be received by the RERL at the address specified under clause *Sealing and Marking of Proposals* no later than **17:00 hrs, 26 September 2017**.

RERL may, at its own discretion extend this deadline for the submission of Proposals by amending the solicitation documents in accordance with clause *Amendments of Solicitation Documents*, in which case all right and obligations of the RERL and Offerors previously subject to the deadline will thereafter be subject to the deadline as extended.

#### **18. Late Proposals**

Any Proposals received by RERL after the deadline for the submission of Proposals, pursuant to clause *Deadline for the submission of Proposals*, will be rejected.

#### **19. Modification and withdrawal of the Proposals**

The Offeror may withdraw its proposal after the Proposal's submission, provided that written notice of the withdrawal is received by the RERL prior to the deadline prescribed for the submission of the Proposals.

The Offeror's withdrawal notice shall be prepared, sealed, marked, and dispatched in accordance with the provisions of the Clause *Deadline for Submission of Proposals*. The withdrawal notice may also be sent by telex or fax but followed by a signed confirmation copy.



No proposal may be modified subsequent to the deadline for the submission of the Proposals.

No Proposal may be withdrawn in the interval between the deadline for submission of proposals and the expiration of the period of the Proposal validity specified by the Offeror on the Proposals Submission Form.

## **E. Opening and evaluation of the Proposals**

### **20. Opening of proposals**

The RERL will open the Proposals in the presence of AEPC and UNDP representatives at the Programme Office.

### **21. Clarification of the proposals**

To assist in the evaluation and comparison of Proposals, the Purchaser may at its discretion, ask the Offeror for clarification of its Proposal. The request for clarification and the response shall be written form and no change in price or substance of the Proposals shall be sought, offered or permitted.

### **22. Preliminary examination**

The Procurer will examine the Proposals to determine whether they are complete, whether any computational errors have been made, whether the documents have been properly signed, and whether the Proposals are generally in order.

Arithmetical errors will be rectified on the following basis: If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price errors, its proposal will be rejected. If there is a discrepancy between the words and figures the amount in words will prevail.

Prior to the detailed evaluation, the Procurer will determine the substantial responsiveness of each Proposal to the request for Proposals (RFP). For the purposes of these clauses, a substantially responsive Proposal is one which confirms to all the terms and conditions of RFP without material deviations. The producer's determination of a proposal's responsiveness is based on the contents of the proposal itself without recourse to extrinsic evidence.

### **23. Evaluation and comparison**

**Total Score (100%) = Technical Evaluation (70%) + Financial Evaluation (30%)**

**Maximum Total Score = 1000**

The Financial Proposal carries a total score of 300 points. The points for the financial proposal will be allocated as per the following formula:

Lowest Bid Offered \*

----- X 300  
 Bid of the Firm/Offeror

\* “Lowest Bid Offered” refers to the lowest aggregate price offered by proposers scoring at least 70% points in Technical Evaluation.

The Contract will be awarded to the (agency/Organization/Firm) Offeror scoring the highest combined scores (Technical and Financial).

**Technical evaluation** criteria will be as follows:

Summary of technical proposal evaluation form	Score weight	Point obtainable
Expertise of the firm submitting proposal	10%	100
Methodology, its appropriateness to the ToR, condition and timeliness of the implementation plan	40%	400
Qualification and experience of personnel	50%	500
Total		1000

**NOTE:** Seventy percent weightage will be given to technical proposal and thirty percent for financial proposal.

**Form 1: Criteria for evaluation of expertise of the firm**

SN	Criteria	Obtainable points	Company/Firm				
			A	B	C	D	E
1	Minimum of 2 Years of Experience in Renewable Energy Projects	30					
2	Organizational structure (size of the firm, strength of project management)	35					
3	Completed task relevant to this activity	35					
	<b>Sub-total</b>	<b>100</b>					

Form 2 Criteria for evaluation of approach, methodology and appropriateness

SN	Criteria	Obtainable points	Company/Firm				
			A	B	C	D	E
1	Understanding of Existing GON act/guidelines/rules/directives of Electricity Sector in Nepal	80					
2	Understanding of Context on Grid interconnection of Solar PV in Nepal	90					
3	Proposed approach and methodology	80					
4	Guideline Outline and Presentation	80					

5	Timeline plan	70					
	<b>Sub-total</b>	<b>400</b>					

**Form 3. Criteria for evaluation of proposed human resources**

SN	Criteria	Obtainable points	Company/Firm				
			A	B	C	D	E
Team leader	Minimum of Master Degree in Engineering	40					
	Minimum of 10 Years experience in designing renewable energy projects	35					
	Minimum of 5 Years of specific experience in preparing technical standards and specifications related to RE	35					
Civil/Mechanical Engineer	Minimum of Bachelor's Degree in Civil/Mechanical Engineering	20					
	Minimum of 5 Years demonstrated experience in RE Projects	25					
	Specific experience related to Solar sector, having experience in structural analysis of Solar PV	25					
Electrical/Electronics Engineer	Minimum of Bachelor Degree in Electrical/Electronics Engineering	20					
	Minimum of 5 Years of Experience in Designing Solar PV project	25					
	Experience of grid interconnection of RE project and knowledge of grid code applicable in Nepal	20					
Environment Expert	Minimum of Bachelor Degree in Environmental Science/Environmental Management/Environmental Engineering	20					
	Minimum of 5 Years of Experience in Preparing IEE/EIA for Renewable Energy Projects	25					
	Minimum of 1 Year of Demonstrated Experience in carrying out Environment Assessment related to Solar PV project	20					
Social Safeguard Expert	Minimum of Bachelor Degree in Social Science/Anthropology	20					
	Minimum of 5 Years of Experience in Preparing GESI assessment for Renewable Energy Projects	25					

Software/Application Expert	Minimum of Bachelor's Degree Related to Engineering /Software/ Application /Information Technology	20					
	Minimum of 1 Year of Demonstrated Experience in making GUI related to RE Projects	25					
Energy Finance Expert	Bachelor in Engineering Management/Engineering Economic	20					
	Minimum of 5 years of experience in financial analysis of RE projects	25					
	Specific experience related to financial analysis of MW Scale Solar PV Project	25					
Team composition	Coherence in team composition	30					
	<b>Sub-total</b>	<b>500</b>					

**B. Award of contract**

**24. Award criteria, award of contract**

The RERL reserves the right to accept the proposal or reject all proposals at any time prior to award of the contract, without thereby any liability to the affected Offeror or any obligation to inform the affected Offeror or Offerors of the grounds for the Purchaser's action prior to the expiration of the period of proposal validity, the RERL will award the contract to the qualified Offeror whose proposal after being evaluated is considered to be the most responsive to the needs of the organization and activity concerned.

**25. Purchaser's right to vary requirements**

The purchaser reserves the right at the time of award of the contract to vary the quantity of services and goods specified in the RFP without any change in price or other terms and conditions.

**26. Signing of the conditions**

After the evaluation of the proposals, **a selected Offeror will be asked to enter into contract.** Within 5 days of the receipt of the contract, the successful Offeror shall sign and date the contract and return it to the purchaser.

## General Terms and Conditions of the Contract

### 1. Independent Relationship

Nothing contained in the contract shall be construed as establishing or creating between Government and the Organization the relationship of a master and a servant or principal and agent, it being understood that the Organization is an independent person vis-à-vis Government.

### 2. Organization /Expert/Consultant's General Responsibilities

- The organization shall carry out services under this contract with due diligence and efficiency and in conformity with the highest standards of professionals and ethical competence and integrity.
- The Organization shall act at all times so as to protect, and not be in conflict with the interests of Government.
- The organization shall be responsible for the professional and technical services provided by him/her in the implementation of this contract.

### 3. Workmen's compensation and other insurance

The organization shall make his/her own arrangements regarding insurance for the medical expenses and for an accident, death and permanent disability for the period of this contract. All costs involved will be borne by the Organization.

### 4. Source of Instruction

The organization shall neither seek nor accept instructions from any authority other than NPC/RERL's authorized agent in connection with the performance of services under this contract.

### 5. Prohibition on conflicting activities

The Organization shall ensure that he/she will not directly/indirectly engage in any activity that would conflict with those of RERL in respect of this evaluation.

### 6. Officials no to benefit

The Organization warrants that no RERL has been or will be admitted by him/her to any direct/indirect benefit arising from this contract or award thereof.

### 7. Assignment

The Organization shall not assign, transfer, pledge or make other disposition of this contract or any other parts thereof rights, claims or obligations under this contract, without prior written approval of RERL.

### 8. Records, Accounts, Information and Audit

- The organization shall maintain accurate and systematic records and accounts in respect of the services to be performed under this contract.

- The Organization shall furnish, compile or make available at all times to RERL any records or information, oral or written, which RERL may reasonably request for in respect of the services to be performed under this contract.
- The Organization shall allow RERL or its authorized agents to inspect and audit all such records or information upon reasonable notice.

### **9. Language**

Unless otherwise specified in this contract, English language shall be used by the Organization in all written communications to RERL with respect to the services rendered and with respect to all documents procured or prepared pertaining to such services.

### **10. Equipment of property**

Equipment or property furnished to the organization with funds supplied or reimbursed by the RERL or its agent shall be the property of the RERL and such equipment shall be returned to the duly authorized official of RERL upon completion of the services, conclusion of this contract or upon completion of the services, conclusion of this contract or upon termination thereof or when no longer required by the Organization. Such equipment or property when returned to RERL shall be in the same conditions as when delivered to the Organization, subject to the normal wear and tear. The organization shall in any event, be liable to RERL for the loss of or damage to such equipment or property through his/her fault or negligence.

### **11. Confidential Nature of Documents**

All maps, drawings, photographs, mosaics and plans.

### **12. Amendments**

The terms and conditions of this contract may be amended only in writing signed by both parties to this contract or their duly authorized representatives.

### **13. Obligation to Inform RERL of change in condition**

The organization shall promptly and fully notify RERL in writing of any conditions, which interfere, or threatens to interfere, with successful carrying out of the services under this contract. Such notice shall not however relieve the Organization of his/her obligations to continue to provide services under this contract. Upon receipt of such notice, RERL shall take such action as in its sole discretion it considers to be appropriate or necessary under the circumstances.

### **14. Taxation**

The Organization shall be liable for any tax levied on the remuneration and allowances paid as per this contract. Income tax on the remuneration and allowances paid to the organization will be deducted at source.

**Proposal Submission Form (Company Letter Head)**

The National Programme Manager  
Renewable Energy for Rural Livelihood (RERL)  
Khumaltar Height, Lalitpur, Nepal  
Phone: 01 5539390, 5539391, Fax: 01 5542397  
Website: <http://www.aepc.gov.np/rerl/>  
Email: [info.rerl@aepc.gov.np](mailto:info.rerl@aepc.gov.np)

Dear Sir,

Having examined the Solicitation Documents, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to provide services to conduct evaluation of the Preparation of "**Guideline for Utility Scale Solar PV Project**" for the sum as may be ascertained in accordance with the Price Schedule attached herewith and made part of this proposal.

We undertake, if our proposal is accepted, commence and complete delivery of all services specified in the contract within the time frame stipulated.

We agree to abide by this Proposal for a period of 120 days from the date fixed for opening of Proposals in the invitation for proposal, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

We understand that you are not bound to accept any proposal –whole or part –you may receive.

Dated this day/Month of year

Signature  
Name  
Position  
Stamp

Duly authorized to sign Proposal for and on behalf of

## Financial Proposal Submission Form

### PRICE SCHEDULE

The Consulting Firm/Contractor is asked to prepare the Price Schedule alongwith the cost breakdown (as provided in this annex IV below) in separate envelop. All prices/rates quoted must be inclusive of all taxes. The Price Schedule must provide a detailed cost breakdown. Provide separate figure for each functional grouping or category. The format shown on the following pages should be used in preparing the Price Schedule. The format includes specific expenditures, which may or may not be required or applicable but are indicated to serve as the examples. Therefore, it should be considered as broad guidelines for Price Schedule (s).

#### Cost Breakdown by Cost Component [*This is only an Example*]:

S.N.	Particulars	Quantity	Unit	Rate NRs	Amount NRs.
<b>A</b>	<b>Human Resource</b>				
1	Team leader		MD		
2	Civil/Mechanical Engineer		MD		
3	Electrical/Electronics Engineer		MD		
4	Environment Expert		MD		
5	Social Safeguard Expert		MD		
6	Software/Application Expert		MD		
7	Energy Finance Expert		MD		
8	Analysis and Report writing cost		LS		
9	Other administrative cost (if any)		LS		
10	Company Management Fee		LS		
<b>B</b>	<b>Travel cost and DSA (if any)</b>				
<b>C</b>	<b>Total (A +B)</b>				
<b>D</b>	<b>VAT (13%) of C</b>				
	<b>Total (C+D)</b>				

Notes:

1. Financial proposals will be selected on the basis of compliance with RERL costing parameters.
2. Payment will be made only for the activities costed in the financial proposal.

(Signature)

[Name and Signature of the Service Provider's Authorized Person]

[Designation]

[Date]

(Office Stamp)



**Terms of Reference  
for  
Preparation of " Guideline for Utility -Scale Solar PV Project"**

## **1. 1 Background**

The Ministry of Energy (MoEn) is primarily responsible for the development of electrical energy in the country. The Ministry is accountable for planning, policy formulation for hydro power generation, transmission and distribution and other large scale electricity generation projects . The Ministry of Energy is responsible for the implementation of the Electricity Act 2049BS, Water Resource Act 2049B.S., Electricity Regulation 2050 etc.

Under MoEn, the Department of Electricity Development (DoED) is responsible for assisting the Ministry in implementation of overall government policies related to power/electricity sector. The major functions of the Department are to ensure transparency of regulatory framework, accommodate, promote and facilitate private sector's participation in power sector by providing "One Window" service and license to power projects.

Under MoEn, Nepal Electricity Authority (NEA) is responsible to generate, transmit and distribute adequate, reliable and affordable power by planning, constructing, operating and maintaining all generation, transmission and distribution facilities in Nepal's power system both interconnected and isolated.

Alternative Energy Promotion Centre (AEPC) is the apex government body under the Ministry of Population and Environment which was established on 1996 with one of the objective of promotion of Renewable Energy Technologies for enhancement of the socio-economic status of the rural people. Under AEPC, UNDP-GEF-RERL Programme has been under implementation, from 1st July, 2014 upon the successful completion of the Rural Energy Development Program (REDP) and Renewable Energy for Rural Livelihood (RERL), with main focus on enhancing rural livelihood. The objective of the programme is to remove barriers to increased utilization of renewable energy resources in rural Nepal in order to support economic, environmental, and social development of people in the rural areas and to reduce GHG emissions.

Based on the experiences of AEPC on solar sector, DoED has requested to support to prepare "Study Guideline for Utility Scale Solar PV Project". Furthermore, AEPC and DoED has envisaged this would be national document to be implemented mainly by DoED, NEA, AEPC and its line ministries. Thus it was decided to prepare this guideline under the supervision of members representing from MoEn, DoED, NEA and AEPC/RERL. The ownership of this document lies with all of these institutions.

## **2. Context of Preparing Guideline for Utility -Scale Solar PV Projects**

Grid connected solar PV has been discussed widely in Nepal these days. Currently total capacity of grid connected solar PV in Nepal is about 2.3MWp. Two years back, Ministry of Energy has formed a committee comprising of experts from MOE, NEA, AEPC, Institute of Engineering Pulchowk Campus and Nepal Academy of Science and Technology (NAST) to conduct a technically feasible potential of grid connected Solar PV in Nepal. This committee has given several positive recommendations for deployment of utility scale solar PV. Furthermore, National Energy Crisis Mitigation Plan and Ten Year Electricity Development Plan 2016 also envisaged that 10% of total grid capacity equivalent

renewable energy sources can be injected into the grid. In addition, NEA has called Request for Proposal (RfP) for development of MW scale Solar PV projects in various locations equivalent to total of 64MWp cumulative capacity. Out of which some of Independent Power Producers (IPPs) as submitted proposal to NEA quoting the PPA rate under the benchmark Power Purchase Rate of Rs9.61/kWh. These IPP has also approached to DoED for Survey License Applications. A very recently, NEA has also approved policy for Net Metering for Solar PV. In a nut shell, it can be said that the grid connected Solar PV is gearing up for its implementation. Thus, it is high time to develop a design guideline which will be owned by DOED, NEA and AEPC.

### **3. Objectives of the Assignment**

The main objectives of this task are:

1. To Develop Utility scale Solar PV Survey and Design Guideline
2. A software based Design Tool for Engineers.

### **4. Scope of Work**

The scope of the assignment are as follows;

- a. Review similar type of design guideline practiced in other countries and prepare the outcomes.
- b. Interact with MOEn/DOED/NEA/AEPC related officials for a good understanding of the whole exercise. AEPC will help to set-up first meeting with these major stakeholders and the further meetings and interactions have to be conducted by consultant.
- c. Review the previous reports and all other relevant documents available in MOEn/DOED/NEA/AEPC and other related reports/study available in Nepal.
- d. The consultant should prepare guideline for minimum requirements for Survey and Generation licensing of DoED, minimum requirements for NEA Grid Connection Agreement.
- e. The guideline should contain clear information on design aid for site identification, pre-feasibility (PFS) and feasibility study (FS). It is recommended to incorporate photos, figures, line diagrams and flow charts, excel sheet etc for clear understanding of outcomes.
- f. The consultant should prepare format/checklist for pre-feasibility study incorporating all the requirements of DoED based on the capacity range.
- g. The selection of parameters for Energy Yield Predication and calculation of factors like specific yield, capacity factor, performance ratio,  $P_{dc}/P_{ac}$  ratio etc of the plant. Also maximum value shall be given to bound these parameters.
- h. Prepare the technical specifications/standards for Utility-Scale Solar PV Project
- i. Solar Resource Assessment- Global Horizontal Irradiance (GHI), Global Tilted Irradiance (GTI), annual and inter-annual variation, impact of shading etc.

- j. Environmental and Social Safeguard- This should comply with the GON act/guidelines/rules/directives. This should align with Environment Protection Act, 2053 (1997).
- k. General design criteria for selection of solar PV technology components. Technical Design and Criterion should contain but not limited to:
  - a. General features of utility scale solar PV
  - b. Civil works; land availability and design for solar PV array structure, power transmission line and power house.
  - c. Estimation of Power and determination of installed capacity
  - d. Voltage Selection for interconnection with the grid.
  - e. Selection of components; PV Module, Grid Tie Inverter, Transformer, DC & AC cables, Surge Protection Device, Circuit Breaker etc.
  - f. Design guideline for switchgear for grid connected solar PV.
  - g. Sizing and selecting protection and safety equipment
  - h. Selection of metering and measurement units.
- l. Financial analysis of Utility scale Solar PV projects. The consultant should also provide tool for it.
- m. The scope of work also include following tools/format in excel sheet; technical design tool BOQ, Cost Estimate, Revenue and Expenditure, Investment and Funding, Financial Analysis, Economic Analysis, Debt Calculation, B/C ratio, sample etc.
- n. Prepare a draft table of content (ToC) for the design guideline and discuss the ToC with MOE/DOED/NEA/AEPC.
- o. Submit inception report to AEPC/RERL.
- p. Prepare the final draft addressing the all stakeholders comments. Incorporate the comments received from the International Expert (may/may not) and suitably adjust the draft final report to prepare the final guideline for submission to the AEPC.
- q. The consultant should organize wider stakeholder consultation. The cost for this shall not be included in the proposal.
- r. This guideline shouldn't conflict with any of GON act/guidelines/rules/directives.