



**INDIA**

**DISTRIBUTION REFORM, UPGRADES & MANAGEMENT PROGRAM  
(DRUM)**

# **Proposal for Engineering Drawing Preparation for two numbers of Solar PV based Power Plant in Andaman & Nicobar Islands**

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The views expressed in this document do not necessarily reflect the views of the United States Agency for International Development or the United States Government

# **Proposal for Engineering Drawing Preparation for two numbers of Solar PV based Power Plant in Andaman & Nicobar Islands**

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## **DISCLAIMER**

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## **1. BACKGROUND**

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The Distribution Reform, Upgrades and Management (DRUM) Project is an ambitious joint undertaking sponsored by India's Ministry of Power (MOP) and the U.S. Agency for International Development (USAID) focused on "the last mile" of the electricity network. The three dimensions to the DRUM goal are to:

1. Create Centers of Excellence in distribution
2. Test new concepts (technology, business process, etc.)
3. Identify possible "breakthroughs" that will help to accelerate the pace of reform

Under this program, DRUM team led by PA Government Services, is working with three reforming distribution utilities, Maharashtra State Electricity Distribution Company Ltd. (MSEDCL), Bangalore Electricity Supply Company (Bescom) and Madhya Gujarat Vij Company Ltd (MGVCL) to create a replicable, sustainable, upgradeable and model for creating a center of excellence. At the same time, three pilot locations, Aurangabad Division-I in MSEDCL, Umreth Subdivision in MGVCL and Dodaballapur Subdivision in Bescom have been selected to implement the model of excellence to develop a learning curve for each of these utilities.

The DRUM team envisages that availability, reliability and cost of power supply coupled with good customer relations are the key ingredients of customer satisfaction. The resultant definition of success under the DRUM paradigm is embodied the following formula:

$$\text{ARC} + \text{GCR} = \text{CS}$$

$\Sigma$  (Availability + Reliability + Cost) + Good Customer Relations = Customer Satisfaction

The Indian power sector is characterized by inadequate and insufficient power supply. About 1.25% of the GDP was draining in the technical and commercial losses of the power distribution system. The situation is more acute during the peak load conditions. There are other chronic problems also associated with the dilapidated network and other inefficiencies which are imbibed in the system. DRUM program focus is to create a learning curve for the entire nation so that it can be replicated to have sustained benefit.

DRUM program is also working intensively for 'Market Development of Renewable Energy'. Renewable energy supplies 18 percent of the world's final energy consumption, counting traditional biomass, large hydropower and new renewable technologies (wind, small hydro, solar geothermal, biomass and bio fuels). Out of this, energy supplied through new renewable technologies alone represents 2.4 percent in developed countries and in some developing countries. Renewable energy replaces conventional fuels in four distinct sectors: power generation, hot water and space heating, transport fuels and rural (off-grid) energy. The multi-sectoral use of renewable energy makes it imperative from the point of view of long term energy supply security, decentralization of energy supply particularly for the benefit of the rural population, environmental benefits and sustainability.

Like in other developing countries, there is a wide gap between demand and supply of energy in India. In several developing countries such as India, there are large sections of the population living in areas without access to electricity. There is also considerable environmental and resource degradation because of a higher dependence on fossil fuels. This dependence on fossil fuels, which are imported, exacerbates India's foreign exchange debt burden. These factors, along with India's large endowment of renewable resources, suggest

that the development of RE (renewable energy) will be an important contributor in meeting the challenge of providing clean power in India.

The Electricity Act 2003 provides for the Independent Power Producers (IPP) to set up renewable power plants for captive use, third party sale, power trading and distribution.

In pursuance of this Act, India has been pursuing a three-fold strategy for promotion of renewable energy:

- Providing budgetary support for research, development and demonstration of technologies,
- Facilitating institutional finance through various financial institutions, and
- Promoting private investment through fiscal incentives, tax holidays (lower customs duty, sales tax, and excise tax exemption), depreciation allowance and remunerative returns for power fed into grid.

However, there is a need to optimize utilization of India's vast potential for energy generation from renewable and to alleviate the severe energy crunch faced by the country. The renewable energy needs to be integrated into the national energy planning thereby enabling the creation of a balanced energy-mix. This in turn calls for taking renewable energy technologies beyond the stage of research and development, for demonstrating the commercialization of renewable energy technologies.

As part of its effort, DRUM has associated itself for preparation of detailed project report for two numbers of Solar PV power plant having 5 MW and 1 MW capacity each at two locations in Andaman and Nicobar Islands. The more details about site specifics are available in the Annexure – 1.

This document is a call for proposals by PA government Services from reputed organizations to undertake the work as laid down in the Statement of Work (Section 2).

## **2. STATEMENT OF WORK**

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### **SCOPE OF WORK**

The scope of work will cover providing the engineering drawings in support of 5 MW and 1 MW solar PV power plant in Andaman and Nicobar Islands. Note that engineering drawings for the 5 MWp project will precede the 1 MWp project. The drawings are primarily required for following:

1. Typical plant layout drawing (preferably on the survey map), for modules oriented due south and tilted at the latitude angle, showing complete array layout including the inverters, transformers, the position of the control room and service area. For each of the proposed plants, the layout drawing should be accompanied by a bill of materials specifying number of modules, invertors, mountings and foundations, transformers, length of different wire gauges, fencing etc. Selection of a PV module size shall be made with consultation with the owner.
2. Typical single PV array and single string layouts showing parallel and series interconnect.
3. Typical foundation and mounting structure drawings along with calculations of the wind load on a single string for a maximum of 6 x 8 array configuration. Wind speed data for the locations will be provided.
4. Typical cable trench drawing with indicative wire ratings.
5. Detailed drawing of the switchyard. Detailed drawing of the control room showing the scheme of inverters, transformers and grid interconnection.
6. Schematic of the back-up or station power.
7. A single line diagram with 33 KV grid interconnect.
8. Two additional drawings as per specifications of the owner. Price per drawing is provided separately.

### **3. METHODOLOGY**

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Bidder is required to include a detailed methodology in their proposal for which scoring shall be done as per criteria mentioned in of this RFP document. If no value enrichment is envisaged then all the bidders shall be provided the equal maximum marks.

**REPORTS**

**Two rounds of iteration on “draft” drawings are to be taken into consideration before final acceptance. The deliverables include:**

1. Draft drawings within two weeks of the release of the order. The draft drawings could be delivered in paper printouts or in soft-copy format in AutoCAD release 14 or higher and also in PDF format.
2. Final drawings within one week of receiving comments from owner representatives.
3. Final drawings in three sets of hard copies and in a CD in AutoCAD release 14 or higher software format and also in the PDF. The PA Consulting will have the right to modify / get it modified subsequently and it shall remain property of PA Consulting Group.
4. For each site separate sets of drawings are developed.

## 5. TIMELINES

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The important timelines are as follows:

S. No.	Output	Timeline from the start of the assignment
1	Award of Contract	$T_0$
2	Draft Drawings along with Report	$T_1 = T_0 + 14$ days
3	Final Drawings along with Report	$T_1 + 10$ days

The development phase of each site is likely to be different hence two Separate contract will be placed for each site. The sub-contractor will be awarded a fixed price contract. However the prices are required to be quoted separately for both locations.

## **6. PROPOSAL SUBMISSION:**

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Each applicant shall submit a proposal incorporating technical particulars and a price quotation. The technical particular should consist of Credentials, Team Structure etc. as outlined below:

### **A. Credentials:**

Prior experience will be evaluated according to the following criteria and the firm needs to submit the supporting documents for all the credentials:

- i) Years of Experience in similar field
- ii) Organizational structure and constitution
- iii) Methodology and work programme for the proposed assignments;
- iv) Qualification of key team members to be deployed in the work (full time & part time separately).
- v) Details of partner firms (if any) along the above (i) – (iv).

### **B. Approach:**

The proposal must include a section on applicant's approach and methodology to reflect its knowledge of the assignment as mentioned in methodology section.

**C. Team Structure:** The applicant shall form a team led by a senior professional with significant experience in similar area. The bidder is required to submit short CVs of the proposed personnel proposed to be deployed for the study.

### **D. Price Quotation:**

The applicant will have to quote the lump sum price for the entire assignment

1. Fixed fee for this assignment

Therefore, the format for submission of price quotation shall be as follows:

<b>SI No</b>	<b>Particulars</b>	<b>AMOUNT</b>	<b>Total Cost</b>
1	Fixed Fee for this assignment to complete all the stated task, drawing preparation and report submission for 5 MW plant at Port Blair	TO BE QUOTED	
2	Fixed Fee for this assignment to complete all the stated task, drawing preparation and report submission for 1 MW plant at Rangaut	TO BE QUOTED	
3	Fixed fee for additional drawing (On per unit basis), if requested	TO BE QUOTED	
Total			

The quoted price should include all the expenses to be incurred for completion of all the stated tasks and taxes, duties and other statutory charges, if any.

The quotation shall remain valid till May 15, 2010.

The price should include all cost relating to the assignment and all applicable taxes.

**E. Proposal Content:**

The proposal shall be submitted in two separate parts, one for technical particulars incorporating credentials, project approach etc. and other for financial bid.

**F. Proposal Submission Date:**

The “Technical Bid” and financial bid should be submitted in two separate envelopes with respective marking in bold letters. No financial information shall be provided in the “Technical Bid”.

Both the sealed envelopes should reach the following office at the following address on or before 1700 hrs Indian Standard Time on February 22, 2010.

Rakesh Kumar Goyal  
Chief of Party, DRUM Project  
PA Consulting Group  
Mobile: +91 9818067160  
[Rakeshkumar.goyal@paconsulting.com](mailto:Rakeshkumar.goyal@paconsulting.com)

**G. Opening of Proposal:**

The proposals shall be opened at a prescheduled date and time at the office of the Chief of Party of the DRUM Project. The decision of the Chief of Party, DRUM will be final in this regard. The Chief of Party can reject any of the bids without assigning any reason thereof.

## **7. EVALUATION CRITERIA:**

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The evaluation of bids will be graded according to the following categories and the following point scale.

<b>Category</b>	<b>Points</b>
Credentials and prior experience	10
Methodology	10
Team Structure	15
Price quotation	65
<b>Total</b>	<b>100</b>

### **Final Selection:**

The final selection shall be on the basis of the combined technical and financial score attained by the bidder on the parameters indicated above