



INDIA

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

Proposal for Development of White Paper on Smart Grid An Assessment Study

January, 2010

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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

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1. BACKGROUND

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 (Bescm) 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 Bescm 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:

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

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

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 imbedded 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 has further thought of developing a White Paper on Smart Grid from the perspective of its possible implementation and roll out in Indian Distribution Sector. The below mentioned text envisages the requirements and conditions prevalent internationally and particularly in Indian context.

The problems were pervasive issues of poor metering, inefficient billing, no investment in improvement of distribution assets performance, negligible investment in information technology etc. In view of such financial mess power supplies companies continue to default on their obligation to generation companies, and to lenders and/or to borrow off-budget. As Government ultimately becomes liable to the loss of their utilities, this has exacerbated fiscal deterioration in many states.

There are now efforts galore to improve the performance of the sector as a whole and plug all the loopholes. The situation is though different in the developed world and they are not facing the similar situation but to meet the ever growing demand of the population, there are other challenges like to reduce the green house gases emission, provide more reliability and security of supply etc.

World over the problems are identified in this sector and now the thinking is to modernize the sector. The situation is not much different world over as illustrated in the below mentioned points:

- a) Presently most of the consumers get the electricity bills once in a month or may be once in two months time and then only come to know the energy consumption.
- b) In case of breakdown, the utility comes to know when a consumer logs the complaint.
- c) Utility is finding it difficult day by day to manage the peak load and demand.

This is the information era and we the people are living in the age of information.

- a) The requirement or the need of the hour is to provide detailed information of various home gadgets consumption on real time basis. These can be small displays or Web-based programs that give a real-time view of how much energy you're using, which appliances consume the most, and how your home compares to others.
- b) Similarly a situation may be to place a networked sensor inside a transformer or along wires to locate and report a problem, or prevent it from happening in the first place.
- c) Demand response is very important and it requires a two way communication on continual basis. It also helps to improve the efficiency. The goal is to reduce the consumption during peak period and/or inject more power preferably from green energy sources after conserving them during off peak period in to the grid. Consumers may be benefited by having reduced rate during off peak period thus becomes an incentive for them to use electricity during off peak period and at the same time deterrent to use the energy during peak period. The utility need not require adding additional costly generation sources and purchasing the power at sky rocketed price.

All the above and many more initiatives are possible only with two-way communications preferably through smart meters or some other kind of gateway. Once two way communications is established then Utility engineers will have more insight of the system behaviors, its working and then will be able to take timely action.

Networked intelligent appliances are smarter and more efficient at least in theory. Appliances should have the capability to act as per pre set program or should be able to take the communication either through web based system or through the smart meter and act according to the instructions given thus they can get information on fluctuating electricity prices to do its job more efficiently.

There is lot of emphasis to increase the percentage share of green energy in energy portfolio but the problem is that these are scattered, at times require distributed generation approach, energy is not predicted etc. Hence keeping all these new new happenings and requirements in consideration, the experts throughout the world are coming to the conclusion that present electricity grid which is conventional and serving the purpose for more than past 50 years is not equipped to address all such requirements and need modernization in this information age.

There are changes in the society. Today's era is digital era. So running today's society through the existing grid which is at least 50 years old is like the primitive stage of internet when old telephone instruments were used. It requires modernization. The modernization of electricity grid is termed as Smart Grid.

The requirement is not only to reinforce the existing needs like 'Reliability and quality', 'Stability', 'Environmental concerns', 'Energy efficiency', 'Market efficiency' etc. but also to address the new challenges / requirements like 'Blackout prevention', 'Green energy integration', 'Transmission and distribution optimization', 'New consumption modes integration and management' etc. so that the grid can become more efficient, more reliable and environmentally friendlier.

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. OBJECTIVE AND STATEMENT OF WORK

2.1 Study Objectives:

The objective of this study is to develop a white paper on Smart Grid containing different chapters. The chapters name, though, is self explanatory still the desired contents within the chapter are outlined. The report would contain total nine chapters and out of these nine chapters, solicitation is invited to develop the four chapters. Intended agency or individual may quote for development of all chapters or any one. If the quote is to be provided for development of more than one chapter, then please specify the quote individually and independently for each chapter development.

The above assignment is also intended to generate a wealth of information so that it can provide sufficient information for assessment and decision making purposes.

2.2 Tasks:

In order to fulfil the assignment objectives the selected firm and/or independent consultant shall have to develop the following chapters :

Chapter 1: Institutional and Policy Issues (Int'l)

Desired Contents

- Survey the existing policy and regulatory framework, incl. programs and institutions and their roles
- Survey the current policies and the legal, regulatory, programmatic and technological status of smart grids in the USA and other countries
- IPR (Intellectual property right) issues

Chapter 2: Institutional and Policy Issues (India)

Desired Contents

- Survey the existing policy and regulatory framework, incl. programs and institutions and their roles
- Survey current policies in India and the legal, regulatory, programmatic and technological status of smart grids
- The important role of standards
- Explore the upside potential and downside risks for India's power sector

Chapter 3: Existing and Future Markets:

Desired Contents

- Profile of key players, e.g. Government, Regulators, the IT & Telecom industry, electric utilities, professional institutes, standards organizations, etc.
- Sketch a need-based assessment methodology for the adoption/transition to smart grids (distribution system, renewable storage and use, etc).
- Readiness of India to implement Smart Grid
- Retail tariff structure
- Gains to India and other countries
- Identify barriers and gaps in the deployment of smart grids including policy and regulatory, financing, institutional, governance and technical
- Consumer education and capacity building

Chapter 4: Environmental Considerations

Desired Contents

- An overview of the expected potential benefit of Smart Grid applications – in whole or in part – on the environment.
- Listing of major impact areas, e.g. carbon reduction (quantification of figure), etc. and a segmented assessment of the impact of individual elements of a Smart Grid and an assessment of the system-integration effect, i.e. will there be a synergistic effect from implementation of all elements?

3. METHODOLOGY

The 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.

4. DELIVERABLES

- Draft report
- Soft Copy of the data
- Final Report clearly mentioning the various information sources and incorporation of suggestions provided by PA Consulting Group
- Soft Copy and Hard Copy in power point formats.

5. TIMELINES

The important timelines are as follows:

S. No.	Output	Timeline from the start of the assignment
1	Award of Contract	T_0
2	Draft Report	$T_0 + 10$ days
3	Final report	$T_0 + 15$ days
4	Power Point Presentation	$T_0 + 15$ days

The sub-contractor will be awarded a fixed price contract.

6. PROPOSAL SUBMISSION:

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.

Definition of Applicant:

The applicant can be either an Individual (Organization or Person) or a Consortium (of a set of individuals or Organization or both combining together). Each participant of a consortium will be known as the Member of the Consortium. One of the members in the consortium shall have the role of a lead member, with principal responsibility for the executive management of the endeavour.

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:

SI No	Particulars	AMOUNT	Total Cost
1	Fixed Fee for this assignment to complete all the stated task, analysis and report submission	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 January 31, 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 January 18, 2010.

Praveen Goyal
Deputy Chief of Party
PA Consulting Group
Mobile: +91 9818067160
Praveen.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:

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

Category	Points
Credentials and prior experience	10
Methodology	20
Team Structure	20
Price quotation	50
Total	100

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