

**REQUEST FOR PROPOSALS**

**FEASIBILITY STUDY FOR THE**

**NORTH DELHI POWER LIMITED SMART GRID PROJECT**

Submission Deadline: **4:00 PM**

**LOCAL TIME IN INDIA**

**SEPTEMBER 30, 2011**

Submission Place: Arunabha Basu  
Head ( Technology)  
North Delhi Power Limited  
CENNET Building, Near Netaji Subhash Place  
Adjacent to PP3 Grid Station  
Pitampura, Delhi 110034, India  
Phone: 011 2746 8027  
Fax: 011 2746 8023

**SEALED PROPOSALS SHALL BE CLEARLY MARKED AND RECEIVED PRIOR TO THE TIME AND DATE SPECIFIED ABOVE. PROPOSALS RECEIVED AFTER SAID TIME AND DATE WILL NOT BE ACCEPTED OR CONSIDERED.**

## REQUEST FOR PROPOSALS

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## **Section 1: INTRODUCTION**

The U.S. Trade and Development Agency (USTDA) has provided a grant in the amount of US\$686,447 to North Delhi Power Limited (the "Grantee") in accordance with a grant agreement dated July 19, 2011 (the "Grant Agreement"). NDPL in India (the "Host Country" requested from USTDA for a feasibility study to support the implementation of smart grid technologies across their network serving a large portion of the New Delhi Capital territory. The proposed project has been identified by NDPL as a top priority and is designed to improve the efficiency and reliability of its one-million customer distribution system and to help provide application models for other distribution networks in India. The Feasibility Study (the "Study") would develop requirements and specifications for a smart grid implementation roadmap for NDPL and would address a range of improvements and investments including integrating smart meters and automated meter reading into NDPL's distribution system as well as greater system integration with distributed generators and other smart grid applications. The Grant Agreement is attached at Annex 4 for reference. The Grantee is soliciting technical proposals from qualified U.S. firms to provide expert consulting services to perform the Feasibility Study.

### **1.1 BACKGROUND SUMMARY**

North Delhi Power Limited (NDPL) is a joint venture between Tata Power Company and the Government of the National Capital Territory (NCT) of Delhi, with the majority stake being held by Tata Power. It distributes electricity in the north and northwest parts of Delhi and serves a population of about 5,000,000. The company started operations on July 1, 2002, after the unbundling of the previously established Delhi Vidyut Board. With a registered customer base of around 1,000,000 and a peak load of around 1401MW the company provides electric service throughout an area of 510 square kilometers.

NDPL has been the frontrunner in implementing power distribution reforms in the capital city and is acknowledged for its implementation of advanced distribution system technologies and best practices. Since privatization, the aggregate technical and commercial (AT&C) losses in the NDPL service area have shown a record decline. Today they stand at about 13.25%, which is a significant reduction from a previous loss level of 54%. This decrease in loss levels and a subsequent increase in the reliability of the network have been made possible by the efforts of NDPL to incorporate new technologies and innovative systems into its distribution framework. In 2008, NDPL was awarded the Edison Award by the Edison Electric Institute for its operational excellence in the power industry and for utilizing and integrating its Geographical Information System (GIS) with other applications for network planning, operations, commercial and asset management.

Increasing demand for electricity and energy resource constraints at the global level have prompted the need for significant improvements in the efficiency of the power sector. The ability to connect renewable energy resources and distributed generation systems as part of a total power delivery mechanism, and use of electricity in the most efficient way based on demand-side management concepts, are critical parts of the Smart Grid concept. The vision of a Smart Grid is gaining credibility from pilot projects being implemented in several different European and U.S. utilities. NDPL wants to be a front runner in implementing the Smart Grid vision in India.

Successful implementation of the full concept for a Smart Grid requires a host of other systems to be commissioned by NDPL. NDPL proposes to include these systems in a pilot project: Automated (or Advanced) Metering Infrastructure (AMI or smart metering), Home Area Networking (HAN) to enable homeowners to reduce electricity usage automatically with sensors and controllers (demand side management), and facilitating installation by customers of various renewable energy generation facilities. In addition, the pilot project will include integration of AMI with Outage Management Systems (OMS) and implementation of Mobile Workforce Management (MWM) software to enhance the effective utilization of resources and ensure customer satisfaction, and transition to a Customer Relationship Management (CRM) system by SAP-ISU and its integration with all systems in the organization.

Smart Grid implementation is a complex exercise and has not been done in India before. There are challenges related to securing the right products or finding suppliers in the Indian market, and the lack of the appropriate regulatory framework. NDPL and other distribution companies who plan to use Smart Grid technology are planning for programs to assist the regulatory authorities to better understand the issues that such technology will present. NDPL has decided that the Smart Grid initiative consisting primarily of smart meters, home area networks (described above) and demand response system should be implemented on its distribution system in a phased manner. As an initial step, a pilot would be implemented for large 250 to 300 customers. These are the customers who mainly carry a load of more than 500kW. This would provide an ideal platform to evaluate the right technologies, supplier capabilities, realistic specification, appropriate business processes and the regulatory readiness before embarking on Smart Grid Demand Response roll out.

A background Definitional Mission is provided for reference in Annex 2

## **1.2 OBJECTIVE**

In support of its goals, NDPL has requested help from the U.S. Trade and Development Agency (USTDA) for funding of a feasibility study to develop requirements and specifications for a plan for integration for the facilities and business processes it has already implemented, or is in the process of implementing, and a Smart Grid implementation roadmap for further integrating smart meters, etc., into its distribution system. Based on the success of the pilot as well as based on the business case for investing in Smart Grid technologies and processes, the Smart Grid concept would be implemented across NDPL's customers who may benefit from use of such facilities.

The Terms of Reference (TOR) for this Feasibility Study are attached as Annex 5.

## **1.3 PROPOSALS TO BE SUBMITTED**

Technical proposals are solicited from interested and qualified U.S. firms. The administrative and technical requirements as detailed throughout the Request for Proposals (RFP) will apply. Specific proposal format and content requirements are detailed in Section 3.

The amount for the contract has been established by a USTDA grant of US\$686,447. **The USTDA grant of \$US686,447 is a fixed amount. Accordingly, COST will not be a factor in the evaluation and therefore, cost proposals should not be submitted.** Upon detailed evaluation of technical proposals, the Grantee shall select one firm for contract negotiations.

#### **1.4 CONTRACT FUNDED BY USTDA**

In accordance with the terms and conditions of the Grant Agreement, USTDA has provided a grant in the amount of US\$686,447 to the Grantee. The funding provided under the Grant Agreement shall be used to fund the costs of the contract between the Grantee and the U.S. firm selected by the Grantee to perform the TOR. The contract must include certain USTDA Mandatory Contract Clauses relating to nationality, taxes, payment, reporting, and other matters. The USTDA nationality requirements and the USTDA Mandatory Contract Clauses are attached at Annexes 3 and 4, respectively, for reference.

## **Section 2: INSTRUCTIONS TO OFFERORS**

### **2.1 PROJECT TITLE**

The project is called North Delhi Power Limited Smart Grid Feasibility Study.

### **2.2 DEFINITIONS**

Please note the following definitions of terms as used in this RFP.

The term "Request for Proposals" means this solicitation of a formal technical proposal, including qualifications statement.

The term "Offeror" means the U.S. firm, including any and all subcontractors, which responds to the RFP and submits a formal proposal and which may or may not be successful in being awarded this procurement.

### **2.3 DEFINITIONAL MISSION REPORT**

USTDA sponsored a Definitional Mission to address technical, financial, sociopolitical, environmental and other aspects of the proposed project. A copy of the report is attached at Annex 2 for background information only. Please note that the TOR referenced in the report are included in this RFP as Annex 5.

### **2.4 EXAMINATION OF DOCUMENTS**

Offerors should carefully examine this RFP. It will be assumed that Offerors have done such inspection and that through examinations, inquiries and investigation they have become familiarized with local conditions and the nature of problems to be solved during the execution of the Feasibility Study.

Offerors shall address all items as specified in this RFP. Failure to adhere to this format may disqualify an Offeror from further consideration.

Submission of a proposal shall constitute evidence that the Offeror has made all the above mentioned examinations and investigations, and is free of any uncertainty with respect to conditions which would affect the execution and completion of the Feasibility Study.

## **2.5 PROJECT FUNDING SOURCE**

The Feasibility Study will be funded under a grant from USTDA. The total amount of the grant is not to exceed US\$686,447.

## **2.6 RESPONSIBILITY FOR COSTS**

Offeror shall be fully responsible for all costs incurred in the development and submission of the proposal. Neither USTDA nor the Grantee assumes any obligation as a result of the issuance of this RFP, the preparation or submission of a proposal by an Offeror, the evaluation of proposals, final selection or negotiation of a contract.

## **2.7 TAXES**

Offerors should submit proposals that note that in accordance with the USTDA Mandatory Contract Clauses, USTDA grant funds shall not be used to pay any taxes, tariffs, duties, fees or other levies imposed under laws in effect in the Host Country.

## **2.8 CONFIDENTIALITY**

The Grantee will preserve the confidentiality of any business proprietary or confidential information submitted by the Offeror, which is clearly designated as such by the Offeror, to the extent permitted by the laws of the Host Country.

## **2.9 ECONOMY OF PROPOSALS**

Proposal documents should be prepared simply and economically, providing a comprehensive yet concise description of the Offeror's capabilities to satisfy the requirements of the RFP. Emphasis should be placed on completeness and clarity of content.

## **2.10 OFFEROR CERTIFICATIONS**

The Offeror shall certify (a) that its proposal is genuine and is not made in the interest of, or on behalf of, any undisclosed person, firm, or corporation, and is not submitted in conformity with, and agreement of, any undisclosed group, association, organization, or corporation; (b) that it has not directly or indirectly induced or solicited any other Offeror to put in a false proposal; (c) that it has not solicited or induced any other person, firm, or corporation to refrain from submitting a proposal; and (d) that it has not sought by collusion to obtain for itself any advantage over any other Offeror or over the Grantee or USTDA or any employee thereof.

## **2.11 CONDITIONS REQUIRED FOR PARTICIPATION**

Only U.S. firms are eligible to participate in this tender. However, U.S. firms may utilize subcontractors from the Host Country for up to 20 percent of the amount of the USTDA grant for

specific services from the TOR identified in the subcontract. USTDA's nationality requirements, including definitions, are detailed in Annex 3.

## **2.12 LANGUAGE OF PROPOSAL**

All proposal documents shall be prepared and submitted in English, and only English.

## **2.13 PROPOSAL SUBMISSION REQUIREMENTS**

The **Cover Letter** in the proposal must be addressed to:

Arunabha Basu  
Head ( Technology)  
North Delhi Power Limited  
CENNET Building, Near Netaji Subhash Place  
Adjacent to PP3 Grid Station  
Pitampura, Delhi 110034, India  
Phone: 011 2746 8027  
Fax: 011 2746 8023

**An Original and eight (8) copies of your proposal must be received at the above address no later than 4:00 PM, on SEPTEMBER 30, 2011.**

Proposals may be either sent by mail, overnight courier, or hand-delivered. Whether the proposal is sent by mail, courier or hand-delivered, the Offeror shall be responsible for actual delivery of the proposal to the above address before the deadline. Any proposal received after the deadline will be returned unopened. The Grantee will promptly notify any Offeror if its proposal was received late.

Upon timely receipt, all proposals become the property of the Grantee.

## **2.14 PACKAGING**

The original and each copy of the proposal must be sealed to ensure confidentiality of the information. The proposals should be individually wrapped and sealed, and labeled for content including "original" or "copy number x"; the original and eight (8) copies should be collectively wrapped and sealed, and clearly labeled.

Neither USTDA nor the Grantee will be responsible for premature opening of proposals not properly wrapped, sealed and labeled.

## **2.15 AUTHORIZED SIGNATURE**

The proposal must contain the signature of a duly authorized officer or agent of the Offeror empowered with the right to bind the Offeror.

## **2.16 EFFECTIVE PERIOD OF PROPOSAL**

The proposal shall be binding upon the Offeror for NINETY (90) days after the proposal due date, and Offeror may withdraw or modify this proposal at any time prior to the due date upon written request, signed in the same manner and by the same person who signed the original proposal.

## **2.17 EXCEPTIONS**

All Offerors agree by their response to this RFP announcement to abide by the procedures set forth herein. No exceptions shall be permitted.

## **2.18 OFFEROR QUALIFICATIONS**

As provided in Section 3, Offerors shall submit evidence that they have relevant past experience and have previously delivered advisory, feasibility study and/or other services similar to those required in the TOR, as applicable.

## **2.19 RIGHT TO REJECT PROPOSALS**

The Grantee reserves the right to reject any and all proposals.

## **2.20 PRIME CONTRACTOR RESPONSIBILITY**

Offerors have the option of subcontracting parts of the services they propose. The Offeror's proposal must include a description of any anticipated subcontracting arrangements, including the name, address, and qualifications of any subcontractors. USTDA nationality provisions apply to the use of subcontractors and are set forth in detail in Annex 3. The successful Offeror shall cause appropriate provisions of its contract, including all of the applicable USTDA Mandatory Contract Clauses, to be inserted in any subcontract funded or partially funded by USTDA grant funds.

## **2.21 AWARD**

The Grantee shall make an award resulting from this RFP to the best qualified Offeror, on the basis of the evaluation factors set forth herein. The Grantee reserves the right to reject any and all proposals received and, in all cases, the Grantee will be the judge as to whether a proposal has or has not satisfactorily met the requirements of this RFP.

## **2.22 COMPLETE SERVICES**

The successful Offeror shall be required to (a) provide local transportation and hotel expenses, however, office space and secretarial support required to perform the TOR will be provided by the Grantee; (b) provide and perform all necessary labor, supervision and services; and (c) in accordance with best technical and business practice, and in accordance with the requirements, stipulations, provisions and conditions of this RFP and the resultant contract, execute and complete the TOR to the satisfaction of the Grantee and USTDA.

## **2.23 INVOICING AND PAYMENT**

Deliverables under the contract shall be delivered on a schedule to be agreed upon in a contract with the Grantee. The Contractor may submit invoices to the designated Grantee Project Director in accordance with a schedule to be negotiated and included in the contract. After the Grantee's approval of each invoice, the Grantee will forward the invoice to USTDA. If all of the requirements of USTDA's Mandatory Contract Clauses are met, USTDA shall make its respective disbursement of the grant funds directly to the U.S. firm in the United States. All payments by USTDA under the Grant Agreement will be made in U.S. currency. Detailed provisions with respect to invoicing and disbursement of grant funds are set forth in the USTDA Mandatory Contract Clauses attached in Annex 4. In case of any dispute regarding payments, the Grantee will no way be responsible / liable to make any payment.

### **Section 3: PROPOSAL FORMAT AND CONTENT**

To expedite proposal review and evaluation, and to assure that each proposal receives the same orderly review, all proposals must follow the format described in this section.

Proposal sections and pages shall be appropriately numbered and the proposal shall include a Table of Contents. Offerors are encouraged to submit concise and clear responses to the RFP. Proposals shall contain all elements of information requested without exception. Instructions regarding the required scope and content are given in this section. The Grantee reserves the right to include any part of the selected proposal in the final contract.

The proposal shall consist of a technical proposal only. A cost proposal is NOT required because the amount for the contract has been established by a USDA grant of US\$686,447, which is a fixed amount.

Offerors shall submit one (1) original and eight (8) copies of the proposal. Proposals received by fax cannot be accepted.

Each proposal must include the following:

- Transmittal Letter,
- Cover/Title Page,
- Table of Contents,
- Executive Summary,
- Company Information,
- Organizational Structure, Management Plan, and Key Personnel,
- Technical Approach and Work Plan, and
- Experience and Qualifications.

Detailed requirements and directions for the preparation of the proposal are presented below.

#### **3.1 EXECUTIVE SUMMARY**

An Executive Summary should be prepared describing the major elements of the proposal, including any conclusions, assumptions, and general recommendations the Offeror desires to make. Offerors are requested to make every effort to limit the length of the Executive Summary to no more than five (5) pages.

## **3.2 COMPANY INFORMATION**

For convenience, the information required in this Section 3.2 may be submitted in the form attached in Annex 6 hereto.

### **3.2.1 Company Profile**

Provide the information listed below relative to the Offeror's firm. If the Offeror is proposing to subcontract some of the proposed work to another firm(s), the information requested in sections 3.2.5 and 3.2.6 below must be provided for each subcontractor.

1. Name of firm and business address (street address only), including telephone and fax numbers.
2. Year established (include predecessor companies and year(s) established, if appropriate).
3. Type of ownership (e.g. public, private or closely held).
4. If private or closely held company, provide list of shareholders and the percentage of their ownership.
5. List of directors and principal officers (President, Chief Executive Officer, Vice-President(s), Secretary and Treasurer; provide full names including first, middle and last). Please place an asterisk (\*) next to the names of those principal officers who will be involved in the Feasibility Study.
6. If Offeror is a subsidiary, indicate if Offeror is a wholly-owned or partially-owned subsidiary. Provide the information requested in items 1 through 5 above for the Offeror's parent(s).
7. Project Manager's name, address, telephone number, e-mail address and fax number.

### **3.2.2 Offeror's Authorized Negotiator**

Provide name, title, address, telephone number, e-mail address and fax number of the Offeror's authorized negotiator. The person cited shall be empowered to make binding commitments for the Offeror and its subcontractors, if any.

### **3.2.3 Negotiation Prerequisites**

1. Discuss any current or anticipated commitments which may impact the ability of the Offeror or its subcontractors to complete the Feasibility Study as proposed and reflect such impact within the project schedule.
2. Identify any specific information which is needed from the Grantee before commencing contract negotiations.

### 3.2.4 Offeror's Representations

If any of the following representations cannot be made, or if there are exceptions, the Offeror must provide an explanation.

1. Offeror is a corporation [*insert applicable type of entity if not a corporation*] duly organized, validly existing and in good standing under the laws of the State of \_\_\_\_\_. The Offeror has all the requisite corporate power and authority to conduct its business as presently conducted, to submit this proposal, and if selected, to execute and deliver a contract to the Grantee for the performance of the Feasibility Study. The Offeror is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment, or ineligible for the award of contracts by any federal or state governmental agency or authority.
2. The Offeror has included, with this proposal, a certified copy of its Articles of Incorporation, and a certificate of good standing issued within one month of the date of its proposal by the State of \_\_\_\_\_. The Offeror commits to notify USTDA and the Grantee if they become aware of any change in their status in the state in which they are incorporated. USTDA retains the right to request an updated certificate of good standing.
3. Neither the Offeror nor any of its principal officers have, within the three-year period preceding this RFP, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.
4. Neither the Offeror, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 3 above.
5. There are no federal or state tax liens pending against the assets, property or business of the Offeror. The Offeror, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.
6. The Offeror has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The Offeror has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected Offeror shall notify the Grantee and USTDA if any of the representations included in its proposal are no longer true and correct at the time of its entry into a contract with the Grantee.

### **3.2.5 Subcontractor Profile**

1. Name of firm and business address (street address only), including telephone and fax numbers.
2. Year established (include predecessor companies and year(s) established, if appropriate).

### **3.2.6 Subcontractor's Representations**

If any of the following representations cannot be made, or if there are exceptions, the Subcontractor must provide an explanation.

1. Subcontractor is a corporation [*insert applicable type of entity if not a corporation*] duly organized, validly existing and in good standing under the laws of the State of \_\_\_\_\_. The subcontractor has all the requisite corporate power and authority to conduct its business as presently conducted, to participate in this proposal, and if the Offeror is selected, to execute and deliver a subcontract to the Offeror for the performance of the Feasibility Study and to perform the Feasibility Study. The subcontractor is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment or ineligible for the award of contracts by any federal or state governmental agency or authority.
2. Neither the subcontractor nor any of its principal officers have, within the three-year period preceding this RFP, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.
3. Neither the subcontractor, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 2 above.
4. There are no federal or state tax liens pending against the assets, property or business of the subcontractor. The subcontractor, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.

5. The subcontractor has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The subcontractor has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected subcontractor shall notify the Offeror, Grantee and USTDA if any of the representations included in this proposal are no longer true and correct at the time of the Offeror's entry into a contract with the Grantee.

### **3.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND KEY PERSONNEL**

Describe the Offeror's proposed project organizational structure. Discuss how the project will be managed including the principal and key staff assignments for this Feasibility Study. Identify the Project Manager who will be the individual responsible for this project. The Project Manager shall have the responsibility and authority to act on behalf of the Offeror in all matters related to the Feasibility Study.

Provide a listing of personnel (including subcontractors) to be engaged in the project, including both U.S. and local subcontractors, with the following information for key staff: position in the project; pertinent experience, curriculum vitae; other relevant information. If subcontractors are to be used, the Offeror shall describe the organizational relationship, if any, between the Offeror and the subcontractor.

A manpower schedule and the level of effort for the project period, by activities and tasks, as detailed under the Technical Approach and Work Plan shall be submitted. A statement confirming the availability of the proposed project manager and key staff over the duration of the project must be included in the proposal.

### **3.4 TECHNICAL APPROACH AND WORK PLAN**

Describe in detail the proposed Technical Approach and Work Plan (the "Work Plan"). Discuss the Offeror's methodology for completing the project requirements. Include a brief narrative of the Offeror's methodology for completing the tasks within each activity series. Begin with the information gathering phase and continue through delivery and approval of all required reports.

Prepare a detailed schedule of performance that describes all activities and tasks within the Work Plan, including periodic reporting or review points, incremental delivery dates, and other project milestones.

Based on the Work Plan, and previous project experience, describe any support that the Offeror will require from the Grantee. Detail the amount of staff time required by the Grantee or other participating agencies and any work space or facilities needed to complete the Feasibility Study.

### **3.5 EXPERIENCE AND QUALIFICATIONS**

Provide a discussion of the Offeror's experience and qualifications that are relevant to the objectives and TOR for the Feasibility Study. If a subcontractor(s) is being used, similar information must be provided for the prime and each subcontractor firm proposed for the project. The Offeror shall provide information with respect to relevant experience and qualifications of key staff proposed. The Offeror shall include letters of commitment from the individuals proposed confirming their availability for contract performance.

As many as possible but not more than six (6) relevant and verifiable project references must be provided for each of the Offeror and any subcontractor, including the following information:

Project name,  
Name and address of client (indicate if joint venture),  
Client contact person (name/ position/ current phone and fax numbers),  
Period of Contract,  
Description of services provided,  
Dollar amount of Contract, and  
Status and comments.

Offerors are strongly encouraged to include in their experience summary primarily those projects that are similar to or larger in scope than the Feasibility Study as described in this RFP.

#### **Section 4: AWARD CRITERIA**

Individual proposals will be initially evaluated by a Procurement Selection Committee of representatives from the Grantee. The Committee will then conduct a final evaluation and completion of ranking of qualified Offerors. The Grantee will notify USTDA of the best qualified Offeror, and upon receipt of USTDA's no-objection letter, the Grantee shall promptly notify all Offerors of the award and negotiate a contract with the best qualified Offeror. If a satisfactory contract cannot be negotiated with the best qualified Offeror, negotiations will be formally terminated. Negotiations may then be undertaken with the second most qualified Offeror and so forth.

The selection of the Contractor will be based on the following criteria:

	<b>Points</b>
<b>Technical Proposal</b>	<b>40</b>
• Technical approach for developing a Smart Grid implementation Roadmap with phased implementation ( 15).	
• Technical approach for assessing grid maturity, developing business cases and Business Process Maps ( 25).	
<b>Personnel and Management Plan</b>	<b>30</b>

- Experience and expertise of the Project Manager in designing and supervising Smart Grid projects in a difficult international environment (15).
- Experience and expertise of the Team personnel in fulfilling the various functions of each component of the program (15).

**Firm Technical Capability and Past Performance**

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- Experience and years of performance in Smart Grid consulting in power distribution companies (15).
- Experience working with major and mid-sized power distribution companies and providing technical assistance to them (15).

Proposals that do not include all requested information may be considered non-responsive.

Price will not be a factor in contractor selection.

**ANNEX 1**

## FEDBIZOPPS ANNOUNCEMENT

Grantee Contact: Arunabha Basu Head ( Technology), North Delhi Power Limited, CENNET Building, Near Netaji Subhash Place, Adjacent to PP3 Grid Station, Pitampura, Delhi 110034, India, Phone: 011 2746 8027, Fax: 011 2746 8023

Project Title: North Delhi Power Limited Smart Grid project; Appropriation No.: 11 11/12 1001; Activity No.: 2011-31017A; Reservation No.:2011 230; Grant No.: GH 2011 31230

POC: Nina Patel, USTDA, 1000 Wilson Boulevard, Suite 1600, Arlington, VA 22209-3901, Tel: (703) 875-4357, Fax: (703) 875-4009. NORTH DELHI POWER LIMITED SMART GRID PROJECT. The Grantee invites submission of qualifications and proposal data (collectively referred to as the "Proposal") from interested U.S. firms that are qualified on the basis of experience and capability to develop a feasibility study that would provide an assessment of smart grid integration into the existing North Delhi Power Limited system and would assist in improving the efficiency of India's distribution networks.

### BACKGROUND SUMMARY

North Delhi Power Limited (NDPL) is a joint venture between Tata Power Company and the Government of the National Capital Territory (NCT) of Delhi, with the majority stake being held by Tata Power. It distributes electricity in the north and northwest parts of Delhi and serves a population of about 5,000,000. The company started operations on July 1, 2002, after the unbundling of the previously established Delhi Vidyut Board. With a registered customer base of around 1,200,000 and a peak load of around 1401 MW, the company provides electric service throughout an area of 510 square kilometers.

NDPL has been the frontrunner in implementing power distribution reforms in the capital city and is acknowledged for its implementation of advanced distribution system technologies and best practices. Since privatization, the aggregate technical and commercial (AT&C) losses in the NDPL service area have shown a record decline. Today they stand at about 13.25%, which is a significant reduction from a previous loss level of 54%. This decrease in loss levels and a subsequent increase in the reliability of the network have been made possible by the efforts of NDPL to incorporate new technologies and innovative systems into its distribution framework.

Increasing demand for electricity and energy resource constraints at the global level have prompted the need for significant improvements in the efficiency of the power sector. The ability to connect renewable energy resources and distributed generation systems as part of a total power delivery mechanism, and use of electricity in the most efficient way based on demand-side management concepts, are critical parts of the Smart Grid concept. The vision of a Smart Grid is gaining credibility from pilot projects being implemented in several different European and U.S. utilities. NDPL wants to be a front runner in implementing the Smart Grid vision in India.

The proposed project has been identified by NDPL as a top priority and is designed to improve the efficiency and reliability of its one-million customer distribution system and to help provide application models for other distribution networks in India. The Feasibility

Study would develop requirements and specifications for a smart grid implementation roadmap for NDPL and would address a range of improvements and investments including integrating smart meters and automated meter reading into NDPL's distribution system as well as greater system integration with distributed generators and other smart grid applications.

The U.S. firm selected will be paid in U.S. dollars from a \$686,447 grant to the Grantee from the U.S. Trade and Development Agency (USTDA).

A detailed Request for Proposals (RFP), which includes requirements for the Proposal, the Terms of Reference, and a background definitional mission/desk study report are available from USTDA, at 1000 Wilson Boulevard, Suite 1600, Arlington, VA 22209-3901. To request the RFP in PDF format, please go to:

<https://www.ustda.gov/businessopps/rfpform.asp>. Requests for a mailed hardcopy version of the RFP may also be faxed to the IRC, USTDA at 703-875-4009. In the fax, please include your firm's name, contact person, address, and telephone number. Some firms have found that RFP materials sent by U.S. mail do not reach them in time for preparation of an adequate response. Firms that want USTDA to use an overnight delivery service should include the name of the delivery service and your firm's account number in the request for the RFP. Firms that want to send a courier to USTDA to retrieve the RFP should allow one hour after faxing the request to USTDA before scheduling a pick-up. Please note that no telephone requests for the RFP will be honored. Please check your internal fax verification receipt. Because of the large number of RFP requests, USTDA cannot respond to requests for fax verification. Requests for RFPs received before 4:00 PM will be mailed the same day. Requests received after 4:00 PM will be mailed the following day. Please check with your courier and/or mail room before calling USTDA.

Only U.S. firms and individuals may bid on this USTDA financed activity. Interested firms, their subcontractors and employees of all participants must qualify under USTDA's nationality requirements as of the due date for submission of qualifications and proposals and, if selected to carry out the USTDA-financed activity, must continue to meet such requirements throughout the duration of the USTDA-financed activity. All goods and services to be provided by the selected firm shall have their nationality, source and origin in the U.S. or host country. The U.S. firm may use subcontractors from the host country for up to 20 percent of the USTDA grant amount. Details of USTDA's nationality requirements and mandatory contract clauses are also included in the RFP.

Interested U.S. firms should submit their Proposal in English directly to the Grantee by 4:00 PM local time in India, September 30, 2011 at the above address. Evaluation criteria for the Proposal are included in the RFP. Price will not be a factor in contractor selection, and therefore, cost proposals should NOT be submitted. The Grantee reserves the right to reject any and/or all Proposals. The Grantee also reserves the right to contract with the selected firm for subsequent work related to the project. The Grantee is not bound to pay for any costs associated with the preparation and submission of Proposals.

**ANNEX 2**

## **North Power Delhi Limited (NDPL) Definitional Mission Report**

### **A. Executive Summary**

North Delhi Power Limited (NDPL) is a joint venture between Tata Power Company and the Government of the National Capital Territory (NCT) of Delhi, with the majority stake being held by Tata Power. It distributes electricity in the north and northwest parts of Delhi and serves a population of about 5,000,000. The company started operations on July 1, 2002, after the unbundling of the previously established Delhi Vidyut Board. With a registered customer base of around 1,200,000 and a peak load of around 1401 MW, the company provides electric service throughout an area of 510 square kilometers.

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NDPL's success is due in part to a project for which USTDA provided funding in 2004 for consultation services by KEMA, a consulting firm specializing in the power industry. The USTDA-funded study assisted NDPL in improving the overall reliability of its distribution network in terms of both delivery of service and quality of energy by performing a Strategic Roadmap Study encompassing the development of a near-term application of distribution information technology, and a mid-term assessment of activities supporting distribution network reliability.

For the near-term IT Application Development, KEMA identified the overall requirements, assisted NDPL in the tendering processes (including review of NDPL-provided tendering documents), and provided implementation/project management services for several of the distribution technologies and systems listed below. KEMA also performed a mid-term assessment of distribution network reliability activities, and developed recommendations to improve NDPL's equipment diagnostic testing and maintenance practices. The overall objective of this analysis was to perform preemptive activities aimed at replacing/repairing equipment in a controlled manner prior to equipment failures.

Several of the new distribution technologies and systems recently implemented by NDPL based on the USTDA technical assistance program include: Supervisory Control and Data Acquisition (SCADA), a Distribution Management System (DMS), a Distribution Automation System (DA), an Energy Management System (EMS), Automated Meter Reading (AMR), an Outage Management System (OMS), Enterprise Resource Planning (ERP), a Geographical Information System (GIS) and a Trouble Call System (TCS) for

improved reporting and dispatching of repair crews. All existing ( Business & Operational) applications are running on NDPL's own fiber network comprising UG OFC & OPGW with RPR based Ethernet over SDH technology. According to NDPL, the USTDA funded technical assistance resulted in over \$5 million in U.S. exports.

Increasing demand for electricity and energy resource constraints at the global level have prompted the need for significant improvements in the efficiency of the power sector. The ability to connect renewable energy resources and distributed generation systems as part of a total power delivery mechanism, and use of electricity in the most efficient way based on demand-side management concepts, are critical parts of the Smart Grid concept. The vision of a Smart Grid is gaining credibility from pilot projects being implemented in several different European and U.S. utilities. NDPL wants to be a front runner in implementing the Smart Grid vision in India.

Successful implementation of the full concept for a Smart Grid requires a host of other systems to be commissioned by NDPL. NDPL proposes to include these systems in a pilot project: Automated (or Advanced) Metering Infrastructure (AMI or smart metering), Home Area Networking (HAN) to enable homeowners to reduce electricity usage automatically with sensors and controllers (demand side management), and facilitating installation by customers of various renewable energy generation facilities. In addition, the pilot project will include integration of AMI with Outage Management Systems (OMS) and implementation of Mobile Workforce Management (MWM) software to enhance the effective utilization of resources and ensure customer satisfaction, and transition to a Customer Relationship Management (CRM) system by SAP-ISU and its integration with all systems in the organization.

Smart Grid implementation is a complex exercise and has not been done in India before. There are challenges related to securing the right products or finding suppliers in the Indian market, and the lack of the appropriate regulatory framework. NDPL and other distribution companies who plan to use Smart Grid technology are planning for programs to assist the regulatory authorities to better understand the issues that such technology will present. NDPL has decided that the Smart Grid initiative consisting primarily of smart meters and home area networks (described above) should be implemented on its distribution system in a phased manner. As an initial step, a pilot would be implemented for large 250 to 300 customers. These are the customers who mainly carry a load of more than 500 KW. This would provide an ideal platform to evaluate the right technologies, supplier capabilities, realistic specification, appropriate business processes, data bandwidth requirement and the regulatory readiness before embarking on Smart Grid Demand Response roll out.

In support of its goals, NDPL has requested help from the U.S. Trade and Development Agency (USTDA) for funding of a feasibility study to develop requirements and specifications for a plan for integration for the facilities and business processes it has already implemented, or is in the process of implementing, and a Smart Grid implementation roadmap for further integrating smart meters, etc., into its distribution system. Based on the success of the pilot as well as based on the business case for investing in Smart Grid technologies and processes, the Smart Grid concept would be implemented across all NDPL's customers who may benefit from use of such facilities.

The NDPL Smart Grid Project represents an opportunity for U.S. exports of automation hardware, information and communication (Core, WAN & Access network) technology, software, computer hardware, cyber & network security, integration, training and related services. The total potential for U.S. exports is estimated to be from \$60 million to as much as \$110 million. The project would be financed from NDPL's annual budget that may be supplemented by international loans.

US suppliers of Smart Grid software, hardware, and consulting services are globally competitive and well positioned in the Indian market, and several U.S. companies, including GE and IBM, have already developed strategic relationships with NDPL. Based on the positive impact on U.S. exports and job creation prospects in the United States, as well as the developmental benefits that will accrue to India, the DM Team recommends this project, with a budget of \$686,477 for USTDA funding.

### **Project Description**

As the initial step for installing Smart Grid technologies throughout its system, a "smart grid" pilot would be implemented which will provide a platform to evaluate the right technologies, supplier capabilities, realistic specifications, appropriate business processes and the regulatory readiness before embarking on the Smart Grid roll out to customers pan NDPL. The installation of equipment and software for the pilot is expected to take about nine months. NDPL estimates that from three to six months will be needed for operation and maintenance of the pilot project before the results can be evaluated.

NDPL requests assistance from the U.S. Trade and Development Agency (USTDA) for a consulting firm to formulate the specifications for an Enterprise Application Interface that will bring all of its existing distribution automation modules, sensors, and control systems into a coherent and unified system for the efficient operation of NDPL's distribution function. These specifications should also provide for integration of data from smart meters and other components in the Pilot Project, as well as other feeders and customers who will eventually have these facilities. These specifications are for software and its related implementation that would integrate all of NDPL's recently installed automation modules and new Smart Grid components into one functioning platform.

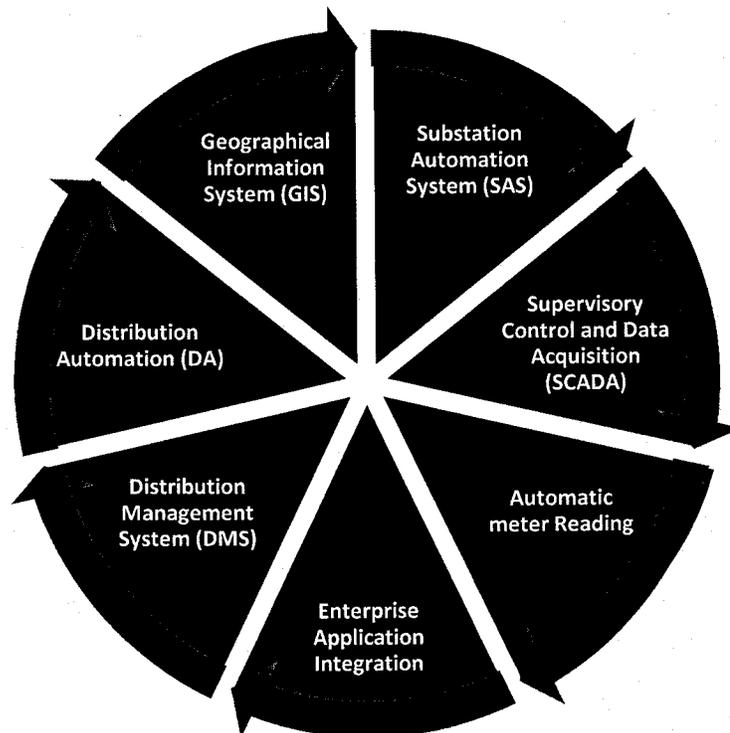
NDPL also requests that the consulting firm prepare a roadmap for the development of a comprehensive plan of implementation of the Smart Grid project throughout its system... The consulting firm funded by USTDA will conduct an independent evaluation and study to assess the technological, economic, regulatory support and financial aspects to implement Smart Grid projects for all consumers in NDPL. On the basis of its complete review of the state of NDPL's existing distribution facilities and processes, its formulation of specifications for the Enterprise Integration Application, its evaluation of the pilot project results, and / or its review of the blueprint from the firm implementing the pilot project, the consulting firm will prepare a roadmap for the development of an expansion of the Smart Grid components of the pilot project for NDPL's distribution system, and recommendations for any additional pilot projects for other components of a Smart Grid system not included in the original pilot

project. The Contractor funded by USTDA will not be responsible for designing, implementing, operating or maintaining the pilot project.

### Project History

NDPL's corporate strategic objectives for the 2003-2009 period were presented to KEMA in 2004 and included a goal of reducing the aggregate of technical and commercial (AT&C) losses of power and improving service reliability while accommodating new customers and a six percent load growth per year (commercial losses include theft and uncollected electric bills). NDPL was seeking to validate the potential benefit to be derived from implementing several components of a technologically up-to-date automation plan. NDPL hired KEMA to perform a "Strategic Roadmap Study" to analyze NDPL's power system, substations and distribution feeders to determine the potential impact and benefits of these initiatives.

To perform this study, KEMA gained an understanding of NDPL's business scenario, objectives of the project, corporate philosophy, and basic operation and maintenance practices, as well as its sub-transmission, grid substation, and distribution network management. The following automation modules (in pie chart graphic below) were identified for implementation in a phased manner over a period of five years:

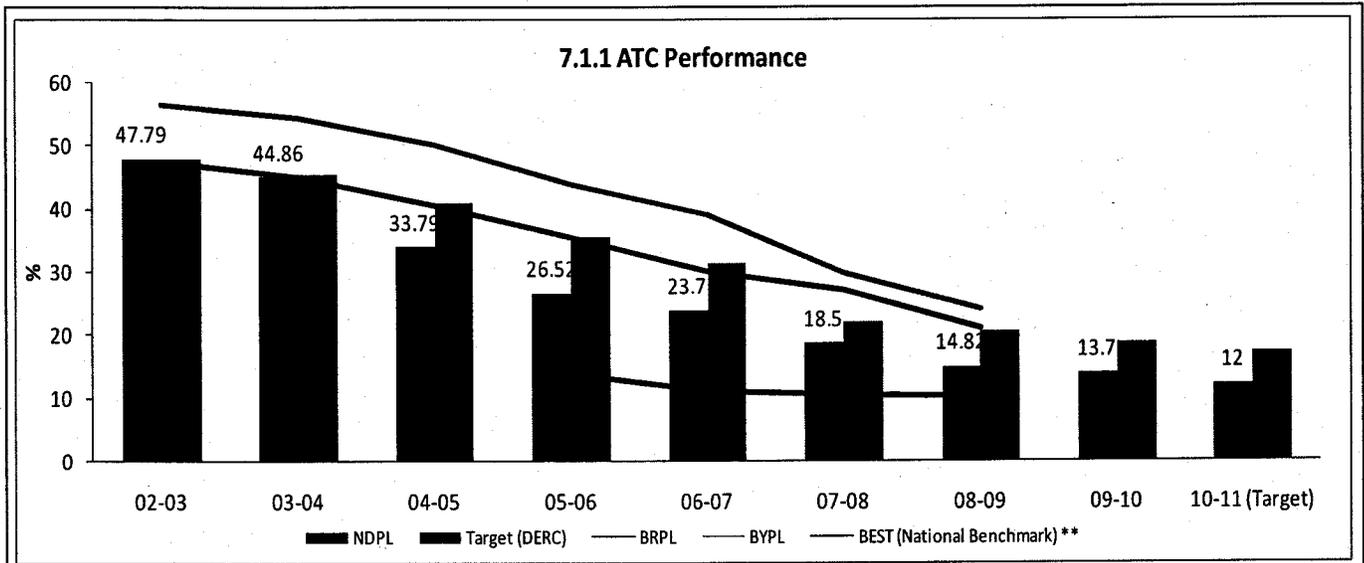


After the Strategic Roadmap Study, NDPL entered into a separate contract with KEMA (not funded by USTDA) to prepare an RFP for an Outage Management System for NDPL, to review NDPL's GIS specifications, to evaluate vendors for SCADA /EMS/DMS systems, to serve as project advisor to implement these systems, and develop a roadmap for increasing

reliability through effective distribution system planning. A summary of the status of all automation projects assessed under the USTDA study is shown in the table below:

System	Scope covered under USTDA contract	Project cost (US\$)	US Exports (US\$)	Companies	Status	Remarks
SCADA/DMS System/GSAS	Vendor evaluation and project advisor	4 million	1.25 million	SUN Microsystems (US) SIEMENS USA (US) BARCO Honeywell (US)	Completed in 2009	All grid stations are unmanned with centralized control from SCADA/DMS
GIS	Vendor evaluation	1 million	.5 million	GE (US) InfoTech India	Completed in 2007	Completed, NDPL won Edison award in international category for implementation of enterprise GIS.
Trouble call system	Specification review	4 million	4 Million	AVAYA (US) GISCO (US) Microsoft (US) IBM (US)	Completed in 2008	
Outage management System	Specification preparation	2 million	2 Million	GE (US) IBM (US)	In progress	first OMS system in India
Reliability Analysis	Specification preparation	1.3 Million	1.3 Million	KEMA (US)	Completed in 2009	Helped identify the points to be automated in distribution system
Reliability Analysis	Assessment of NDPL network for reliability and maintenance		Not Applicable	Network planning group and maintenance planning group setup in NDPL for effective assets utilization. KEMA Consulting, US, completed separate contract for study of distribution automation points in NDPL.		
<b>TOTAL</b>		<b>\$8.7 million</b>	<b>\$5.45 million</b>			

This project contributed to reduction of technical and commercial losses and improvement in the reliability indices as indicated below.



NDPL has achieved significant loss reduction within a period of 8 years, which is a benchmark among Indian utilities, and aspires to be a national leader by achieving single digit losses through innovative approaches, adoption of new technology, and consumer service. Beginning in 2005, NDPL's losses were less than the targets of the Delhi Electricity Regulatory Commission (DERC) and two other distribution companies in Delhi (BRPL and BYPL).

NDPL's present power system network includes a high-voltage transmission (HT) grid at 66 kV and 33 kV. Twenty-four Grid Stations from NDPL are at 66 kV and 32 are at 33 kV. A total of 8 Delhi Transco substations at 220 kV or higher provide the main supply to the NDPL power grid. In addition these substations also supply part of the NDPL customers at 11 kV.

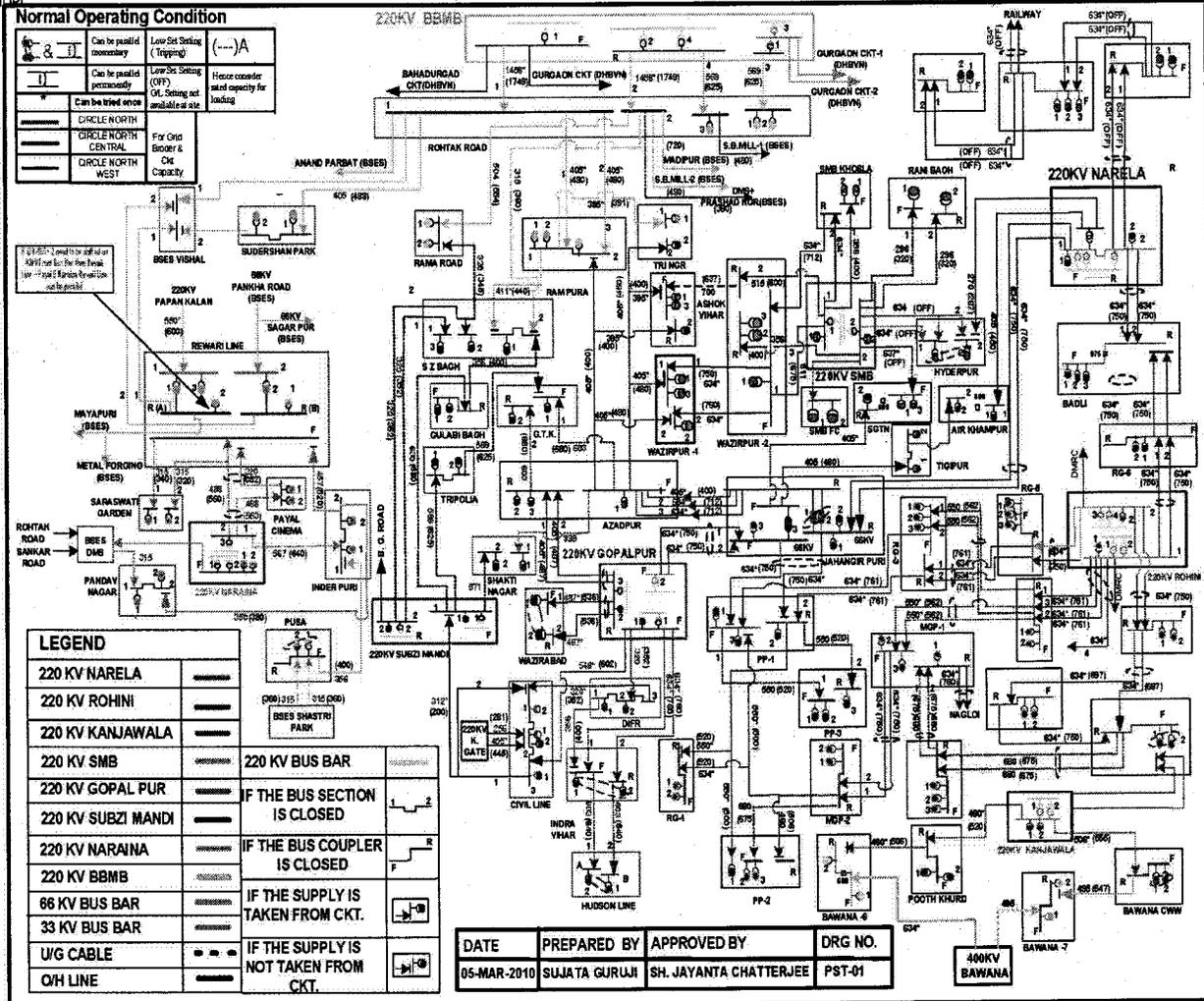
In addition to the interconnections with Delhi Transco, several interconnections with BSES (one of the other distribution companies in Delhi) are in place. These interconnections are used mainly in emergencies, and are being provided with energy meters on the NDPL side to accurately measure the exchange of energy at these border points. The typical substation configuration includes 2x20MVA transformers that supply the 11 kV feeders. Typically 9 to 10 feeders are implemented per station and each transformer has its own bus. A total of around 735 feeders at 11kV are supplied directly by NDPL grid stations. The details of the system are seen in the table below.

Item	Qty
66 kV input grid stations	24
33 kV input grid stations	32
66 kV OH lines Circuit kilometers (Ckt. Kms)	270
66 kV UG lines (Ckt. Kms)	33
33 kV OH lines (Ckt. Kms)	130
33 kV UG lines (Ckt. Kms)	161
No. of 66 kV feeders	58
No. of 33 kV feeders	77
66/33/11 Input transformation Capacity in million volt amperes (MVA)	3006
11 kV feeder length UG & OH Lines (Ckt. Kms)	3317
Distribution Transformers	2607
Total Distribution Transformers capacity in MVA	1800
No. of 11 kV grid feeders	735
No. of 11 kV substations	3000
No. of 415 V feeders	13000
Capacitors HT in mega-volt ampere reactive (MVAR)	693
Capacitors LT in MVAR	71

In addition to the systems installed through the USTDA funded project mentioned above, other recently installed upgrades include the following network analysis and planning utilizing tools: PSAF (Power Systems Analysis Framework); CYMDIST (Distribution System Analysis); DRAKE power supply systems for optimal utilization of capital expenditures; development and deployment of Customer Relationship Management (CRM) through SAP-ISU for ensuring distinguished services to high end consumers; and a Sanchay software portal for knowledge management.

In the last five years, NDPL has been transformed by these technological up-grades and is now regarded as most advanced utility in India. NDPL has been enlisted by the Government of India as a consultant for IT implementation and SCADA/DMS /EMS implementation in various state utilities under the Restructured Accelerated Power Development and Reforms Program (R-APDRP) for which the Government has earmarked \$20 billion for implementation of information and operational technologies in state utilities.

The figure below shows NDPL's grid and also shows the Delhi Transco stations that provide most of the energy that is distributed by NDPL.



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### NDPL's Smart Grid Planning

The utility industry today is faced with not only supplying resources to accommodate the projected growth in demand for energy, but also minimizing and reducing the impact on the environment from producing that energy. It is widely believed that the development of a Smart Grid could contribute to a solution to this challenge. The benefits and payoffs are numerous. For consumers, a Smart Grid means they can use electricity more efficiently and save money by setting "smart" appliances that slow down or shut down during periods of peak demand for power, when NDPL's corresponding costs of generation are highest. It means having many different options for using energy, and it means that consumers will have a much better understanding of their overall energy use. For environmentalists, a Smart Grid means using technology to help solve climate change by conserving energy and using it more efficiently. It also means better integration of renewable resources into standard operations, avoiding the creation of more greenhouse gases from fossil fuel generators, which have been

linked to global warming. For investors, it provides additional revenue opportunities, will lead to the deferral of significant capital infrastructure investments in new generation, and will provide the ability to dramatically upgrade systems. It also means significantly improving reliability and increasing customer satisfaction.

The availability of alternative media for communications plays a vital role in connecting homes to generation points through smart energy management systems. For example, Worldwide Interoperability for Microwave Access (WiMax), power line communication (PLC) and broadband over power lines (BPL) provide affordable options, as well as general packet radio service (GPRS) for mass communication applications.

In its distribution business scenario, NDPL expects the substantial impact of communication technologies will lead to implementation of different automation modules like automatic meter reading infrastructure, mobile work force management and home area networking. As more and more automation systems are implemented, there will be an increased need for integration of processes to reap the full benefit of each system; this will lead to enterprise application integration (or interface). Thus, integration software and selection of right communication technology is a key component of an evolving Smart Grid system, and a major component of NDPL's Smart Grid planning.

### **Smart Grid Pilot Project --Solution and Technology Overview**

NDPL has many high value customers who carry a load of 500 KW and above. NDPL's objective is to implement a demand response smart grid solution covering 250+ customers, mainly to enable NDPL to manage the demand load from these large customers. There are however many challenges in implementing an automated demand response smart grid project in India.

- (1) The customers need to be educated to participate in the demand response program
- (2) Although worldwide DSM is a proven concept, however this needs to be customized to the Indian market. This will also enable the Indian utilities to have a proven pilot with a business case.
- (3) The smart meters which are a key to the smart grid have not been implemented in India. There are technical challenges with smart meter technologies in India with respect to tamper characteristics and installation procedures. More than that there are no standard features of smart meters accepted in India and the smart meters are not yet approved by regulators in India.
- (4) The suppliers in India are not yet geared to provide the smart grid solution in the Indian market either with products or with skilled resources
- (5) NDPL also needs to make a business case to justify the investments in smart grid and take necessary approval from regulators; still it wants to reap the benefits of smart grid as soon possible.
- (6) Worldwide such projects have been implemented using both GPRS and PLC technologies. The PLC implementation requires high quality of power cable infrastructure which is yet to be tested for NDPL (from PLC perspective). GPRS may require enhanced provisioning and enhanced service quality from service providers.

In view of the above and as per the learnings from project implementations world-wide, it is being proposed that initially some key functionalities would be implemented. Based on the success of the

pilot as well as based on business case, the smart grid demand response concept would be implemented for other customers as well.

Along with the pilot, blue-printing exercise will be carried out. The key objectives of the blue-printing exercise would be the following:

- Assessment of Smart Grid Maturity
- Smart Grid Business Case and Charter
- Business Process Maps /Use Cases - Realigned with Smart Grid Objectives

The Pilot

### FUNCTIONAL SCOPE OF WORK FOR THE PILOT

1	Load Management	<ul style="list-style-type: none"> <li>▪ Connect / Disconnect</li> <li>▪ Load Limit setup</li> </ul>	<ul style="list-style-type: none"> <li>▪ Smart meters would include connect and disconnect feature and the NDPL user would be able to execute it</li> <li>▪ NDPL user can set the load limit on the smart meter. The meter would trip if the load exceeds the same</li> </ul>
2	Pricing	<ul style="list-style-type: none"> <li>▪ Demand Bidding Pricing</li> <li>▪ Critical Peak Pricing/TOU Pricing</li> </ul>	<ul style="list-style-type: none"> <li>▪ This functionality would be executed using the load management and customer campaigns</li> </ul>
3	Customer Outage	<ul style="list-style-type: none"> <li>▪ Customer Outage Detection</li> <li>▪ Online information</li> <li>▪ Integration with SAP ISU, OMS</li> </ul>	<ul style="list-style-type: none"> <li>▪ Smart meters can detect the outage and provide the information via MDC/ MDM and custom application</li> </ul>
4	Billing	<ul style="list-style-type: none"> <li>▪ Real Time Consumption</li> <li>▪ Web Display-Monthly detailed report</li> <li>▪ Monthly Billing</li> <li>▪ Exception Reporting via SMS</li> <li>▪ Soft bill generation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Custom portal would have this functionality</li> <li>▪ Meter data reading would come in through smart meters, MDC and MDM</li> </ul>
5	Automated Demand Response	<ul style="list-style-type: none"> <li>▪ Real time demand control</li> <li>• Load curtailment</li> </ul>	<ul style="list-style-type: none"> <li>▪ Automated demand response system will be implemented</li> <li>• This will alert the consumer when load is exceeded and give warning signals to take</li> </ul>

			appropriate load curtailment action.
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For the reporting requirements, standard reporting available with the packages in the solution is being considered. More specific reporting requirements would be documented during the project and appropriate solution would be suggested in the final blue print report. Distributed generation POC scope would be detailed out for appropriate POC during the blueprint phase of the pilot project. The net metering as needed for distribution generation will be provided by meter suppliers.

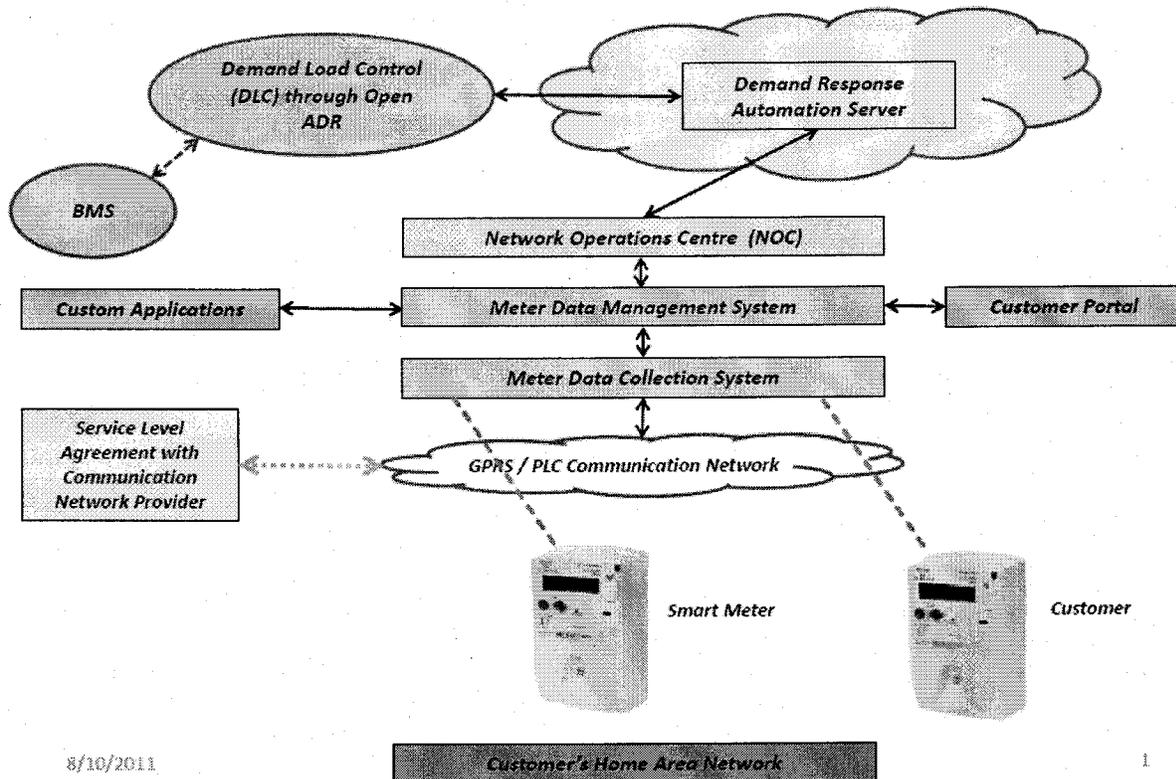
The pilot proposal is being prepared considering the following:

<b>Industrial Consumers</b>	<b>125</b>
<b>Commercial Consumers</b>	<b>125</b>
<b>Total Consumers</b>	<b>250</b>
<b>LT System U/G</b>	<b>TBD</b>
<b>LT System O/H</b>	<b>TBD</b>
<b>11 KV System U/G</b>	<b>TBD</b>
<b>11 KV system O/H</b>	<b>TBD</b>
<b>Length of feeder</b>	<b>TBD</b>
<b>Feeding Grid</b>	<b>TBD</b>

A field visits will have to be conducted at the premises of these customers to engage them to participate. .

## **SOLUTION ARCHITECTURE**

The overall solution is depicted below:



### **Developmental Impact**

NDPL has been working to implement a system wide distribution automation program for the last few years, most recently with assistance from a USTDA-funded technical assistance program. As a result of NDPL's automation strategy, it was able to reduced AT&C losses (from 54% to less than 13.25% over the past five years) in the system through improved monitoring and more efficient management using SCADA, substation automation, OMS and/or DMS.

The proposed project would have significant developmental impacts if fully implemented, including the following:

**Infrastructure** – The overall economic development of India continues to be severely constrained by the inadequate and irregular supply of electric power. More installed capacity is urgently needed, but the existing, dysfunctional distribution mechanisms have to be corrected also – to justify building more generation capacity. India's energy demand is predicted to more than double by 2030, potentially increasing the frequency of power outages even in the most developed areas of Delhi, Mumbai and Bangalore. These outages would have a significantly adverse impact on the economy and, as a result, the government of India is looking to Smart Grid technologies to improve the efficiency and the economic stability of the country's power sector.

- Part of India's growing power demands could soon be met with Smart Grid technologies that improve efficiency and reliability for businesses and consumers.
- Smart Grid solutions would immediately help NDPL in its ongoing quest to improve the quality and reliability of service while reducing technical and commercial power losses.
- Increased efficiency and effectiveness of NDPL's operations through smart metering, billing, and collection systems, would bring more revenues into the system to cover capital and operating costs of the system.

The reduction of loss and increased availability of electric power would stimulate commercial and industrial development. It would make commercial activities more efficient and open up industrial opportunities. In short it would spur economic activity and should contribute to increased economic development and improved quality of life in India.

**Human Capacity Building** – Implementation of the proposed Smart Grid project will require considerable training in new technologies. Training is typically provided as part of a procurement package for new systems.

**Technology Transfer and Productivity Improvement** – The project would introduce a wide range of IT and automation technologies not currently used at NDPL. The use of those technologies is expected to dramatically improve productivity of NDPL staff to manage the distribution system.

**Other Developmental Impacts: Government Revenues:** One of the most important developmental impacts of an invigorated and expanded electric distribution system sector and the resulting stimulation of economic activity everywhere would be the expected increase in state and local government revenues. That would stimulate further development of the infrastructure of the region, providing means to better roads, transportation systems, street lights, and general government, including social services. The success of this project in the nation's capital would serve as an example to other utilities serving Delhi and around the country, and its effect could be multiplied many times as the lessons learned and successes achieved are adopted by other distribution companies.

### **Implementation Financing**

Given the fact that NDPL has attained a comfortable level of network reliability in terms of network reinforcement, now NDPL wishes to aggressively move towards implementing a Smart Grid system. NDPL has the capital strength to assure financing if the results of the study are positive. NDPL is a mid-size utility with substantial cash flow from its ongoing operations. NDPL is a joint venture of Tata Power Company and Government of the National Capital Territory of Delhi, with Tata owning the majority of stock. Tata Power Company is part of the Tata Group, India's largest business conglomerate and an international company. The project would be financed from NDPL's annual budget, perhaps supplemented by international loans guaranteed by NDPL. NDPL invests \$60 Million per year in capital expenditures. For the balance of needed capital expenditures, it would seek international funds.

NDPL continues to be a regulated public utility. NDPL will advocate with the Delhi Electricity Regulatory Commission (DERC) for approval to invest from \$20 to 25 million per year implementing its Smart Grid project over the next 5 years.

The Ministry of Power, Government of India, has recently initiated the Restructured Accelerated Power Development and Reforms Programme (R-APDRP), a successor to the successful APDRP, which was begun in 2003. The focus of the program is on actual, demonstrable performance in terms of sustained loss reduction. Projects under the program are implemented in two parts in urban areas – towns and cities with population of more than 30,000 (10,000 in case of special category states). Part-A projects are for establishment of baseline data and IT applications for energy accounting/auditing and IT based consumer service centers and Part-B is regular distribution strengthening projects.

. The government has earmarked \$20 billion for implementation of information and operational technologies in state utilities for R-APDRP. NDPL estimates it will invest US \$100 to 150 million over the next five years in rolling out smart grid applications across its service area, depending on the number of metered accounts recommended by the study and the extent of demand side management it includes in the roll out. NDPL further estimates about 70 to 75 percent of the equipment, facilities and services for the roll out will be imported from the U.S.

## ANNEX 3



**U.S. TRADE AND DEVELOPMENT AGENCY**  
**Arlington, VA 22209-2131**

**NATIONALITY, SOURCE, AND ORIGIN REQUIREMENTS**

The purpose of USTDA's nationality, source, and origin requirements is to assure the maximum practicable participation of American contractors, technology, equipment and materials in the prefeasibility, feasibility, and implementation stages of a project.

**USTDA STANDARD RULE (GRANT AGREEMENT STANDARD LANGUAGE):**

Except as USTDA may otherwise agree, each of the following provisions shall apply to the delivery of goods and services funded by USTDA under this Grant Agreement: (a) for professional services, the Contractor must be either a U.S. firm or U.S. individual; (b) the Contractor may use U.S. subcontractors without limitation, but the use of subcontractors from host country may not exceed twenty percent (20%) of the USTDA Grant amount and may only be used for specific services from the Terms of Reference identified in the subcontract; (c) employees of U.S. Contractor or U.S. subcontractor firms responsible for professional services shall be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the U.S.; (d) goods purchased for implementation of the Study and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and (e) goods and services incidental to Study support (e.g., local lodging, food, and transportation) in host country are not subject to the above restrictions. USTDA will make available further details concerning these standards of eligibility upon request.

**NATIONALITY:**

1) Rule

Except as USTDA may otherwise agree, the Contractor for USTDA funded activities must be either a U.S. firm or a U.S. individual. Prime contractors may utilize U.S.

subcontractors without limitation, but the use of host country subcontractors is limited to 20% of the USTDA grant amount.

## 2) Application

Accordingly, only a U.S. firm or U.S. individual may submit proposals on USTDA funded activities. Although those proposals may include subcontracting arrangements with host country firms or individuals for up to 20% of the USTDA grant amount, they may not include subcontracts with third country entities. U.S. firms submitting proposals must ensure that the professional services funded by the USTDA grant, to the extent not subcontracted to host country entities, are supplied by employees of the firm or employees of U.S. subcontractor firms who are U.S. individuals.

Interested U.S. firms and consultants who submit proposals must meet USTDA nationality requirements as of the due date for the submission of proposals and, if selected, must continue to meet such requirements throughout the duration of the USTDA-financed activity. These nationality provisions apply to whatever portion of the Terms of Reference is funded with the USTDA grant.

## 3) Definitions

A "U.S. individual" is (a) a U.S. citizen, or (b) a non-U.S. citizen lawfully admitted for permanent residence in the U.S. (a green card holder).

A "U.S. firm" is a privately owned firm which is incorporated in the U.S., with its principal place of business in the U.S., and which is either (a) more than 50% owned by U.S. individuals, or (b) has been incorporated in the U.S. for more than three (3) years prior to the issuance date of the request for proposals; has performed similar services in the U.S. for that three (3) year period; employs U.S. citizens in more than half of its permanent full-time positions in the U.S.; and has the existing capability in the U.S. to perform the work in question.

A partnership, organized in the U.S. with its principal place of business in the U.S., may also qualify as a "U.S. firm" as would a joint venture organized or incorporated in the United States consisting entirely of U.S. firms and/or U.S. individuals.

A nonprofit organization, such as an educational institution, foundation, or association may also qualify as a "U.S. firm" if it is incorporated in the United States and managed by a governing body, a majority of whose members are U.S. individuals.

## **SOURCE AND ORIGIN:**

### 1) Rule

In addition to the nationality requirement stated above, any goods (e.g., equipment and materials) and services related to their shipment (e.g., international transportation and insurance) funded under the USTDA Grant Agreement must have their source and origin in the United States, unless USTDA otherwise agrees. However, necessary purchases of goods and project support services which are unavailable from a U.S. source (e.g., local food, housing and transportation) are eligible without specific USTDA approval.

### 2) Application

Accordingly, the prime contractor must be able to demonstrate that all goods and services purchased in the host country to carry out the Terms of Reference for a USTDA Grant Agreement that were not of U.S. source and origin were unavailable in the United States.

### 3) Definitions

“Source” means the country from which shipment is made.

“Origin” means the place of production, through manufacturing, assembly or otherwise.

*Questions regarding these nationality, source and origin requirements may be addressed to the USTDA Office of General Counsel.*

**ANNEX 4**

## GRANT AGREEMENT

LZ  
JW

JUL 20 2011

U.S. TRADE AND DEVELOPMENT AGENCY

HS  
SS  
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This Grant Agreement is entered into between the Government of the United States of America, acting through the U.S. Trade and Development Agency ("USTDA") and North Delhi Power Limited ("Grantee"). USTDA agrees to provide the Grantee under the terms of this Agreement US\$686,447 ("USTDA Grant") to fund the cost of goods and services required for a feasibility study ("Study") on the proposed North Delhi Power Limited Smart Grid ("Project") in India ("Host Country").

### 1. USTDA Funding

The funding to be provided under this Grant Agreement shall be used to fund the costs of a contract between the Grantee and the U.S. firm selected by the Grantee ("Contractor") under which the Contractor will perform the Study ("Contract"). Payment to the Contractor will be made directly by USTDA on behalf of the Grantee with the USTDA Grant funds provided under this Grant Agreement.

### 2. Terms of Reference

The Terms of Reference for the Study ("Terms of Reference") are attached as Annex I and are hereby made a part of this Grant Agreement. The Study will examine the technical, financial, environmental, and other critical aspects of the proposed Project. The Terms of Reference for the Study shall also be included in the Contract.

### 3. Standards of Conduct

USTDA and the Grantee recognize the existence of standards of conduct for public officials, and commercial entities, in their respective countries. The parties to this Grant Agreement and the Contractor shall observe these standards, which include not accepting payment of money or anything of value, directly or indirectly, from any person for the purpose of illegally or improperly inducing anyone to take any action favorable to any party in connection with the Study.

### 4. Grantee Responsibilities

The Grantee shall undertake its best efforts to provide reasonable support for the Contractor, such as local transportation, office space, and secretarial support. The Grantee shall also obtain all necessary approvals from relevant authorities in India for project activities as stated in this Grant Agreement prior to the commencement of the project activities.

## **5. USTDA as Financier**

### **(A) USTDA Approval of Competitive Selection Procedures**

Selection of the U.S. Contractor shall be carried out by the Grantee according to its established procedures for the competitive selection of contractors with advance notice of the procurement published online through *Federal Business Opportunities* ([www.fedbizopps.gov](http://www.fedbizopps.gov)). Upon request, the Grantee will submit these contracting procedures and related documents to USTDA for information and/or approval.

### **(B) USTDA Approval of Contractor Selection**

The Grantee shall notify USTDA at the address of record set forth in Article 17 below upon selection of the Contractor to perform the Study. Upon approval of this selection by USTDA, the Grantee and the Contractor shall then enter into a contract for performance of the Study. The Grantee shall notify in writing the U.S. firms that submitted unsuccessful proposals to perform the Study that they were not selected.

### **(C) USTDA Approval of Contract Between Grantee and Contractor**

The Grantee and the Contractor shall enter into a contract for performance of the Study. This contract, and any amendments thereto, including assignments and changes in the Terms of Reference, must be approved by USTDA in writing. To expedite this approval, the Grantee (or the Contractor on the Grantee's behalf) shall transmit to USTDA, at the address set forth in Article 17 below, a photocopy of an English language version of the signed contract or a final negotiated draft version of the contract.

### **(D) USTDA Not a Party to the Contract**

It is understood by the parties that USTDA has reserved certain rights such as, but not limited to, the right to approve the terms of the contract and any amendments thereto, including assignments, the selection of all contractors, the Terms of Reference, the Final Report, and any and all documents related to any contract funded under the Grant Agreement. The parties hereto further understand and agree that USTDA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the proper use of United States Government funds, and that any decision by USTDA to exercise or refrain from exercising these approval rights shall be made as a financier in the course of funding the Study and shall not be construed as making USTDA a party to the contract. The parties hereto understand and agree that USTDA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the Project with the parties to the contract or any subcontract, jointly or separately, without thereby incurring any responsibility or liability to such parties. Any approval or failure to approve by USTDA shall not bar the Grantee or USTDA from asserting any right they might have against the

Contractor, or relieve the Contractor of any liability which the Contractor might otherwise have to the Grantee or USTDA.

**(E) Grant Agreement Controlling**

Regardless of USTDA approval, the rights and obligations of any party to the contract or subcontract thereunder must be consistent with this Grant Agreement. In the event of any inconsistency between the Grant Agreement and any contract or subcontract funded by the Grant Agreement, the Grant Agreement shall be controlling.

**6. Disbursement Procedures**

**(A) USTDA Approval of Contract Required**

USTDA will make disbursements of Grant funds directly to the Contractor only after USTDA approves the Grantee's contract with the Contractor.

**(B) Contractor Invoice Requirements**

The Grantee should request disbursement of funds by USTDA to the Contractor for performance of the Study by submitting invoices in accordance with the procedures set forth in the USTDA Mandatory Clauses in Annex II.

**7. Effective Date**

The effective date of this Grant Agreement ("Effective Date") shall be the date of signature by both parties or, if the parties sign on different dates, the date of the last signature.

**8. Study Schedule**

**(A) Study Completion Date**

The completion date for the Study, which is April 20, 2013, is the date by which the parties estimate that the Study will have been completed.

**(B) Time Limitation on Disbursement of USTDA Grant Funds**

Except as USTDA may otherwise agree, (a) no USTDA funds may be disbursed under this Grant Agreement for goods and services which are provided prior to the Effective Date of the Grant Agreement; and (b) all funds made available under the Grant Agreement must be disbursed within four (4) years from the Effective Date of the Grant Agreement.

## **9. USTDA Mandatory Clauses**

All contracts funded under this Grant Agreement shall include the USTDA mandatory clauses set forth in Annex II to this Grant Agreement. All subcontracts funded or partially funded with USTDA Grant funds shall include the USTDA mandatory clauses, except for clauses B(1), G, H, I, and J.

## **10. Use of U.S. Carriers**

### **(A) Air**

Transportation by air of persons or property funded under the Grant Agreement shall be on U.S. flag carriers in accordance with the Fly America Act, 49 U.S.C. 40118, to the extent service by such carriers is available, as provided under applicable U.S. Government regulations.

### **(B) Marine**

Transportation by sea of property funded under the Grant Agreement shall be on U.S. carriers in accordance with U.S. cargo preference law.

## **11. Nationality, Source and Origin**

Except as USTDA may otherwise agree, the following provisions shall govern the delivery of goods and services funded by USTDA under the Grant Agreement: (a) for professional services, the Contractor must be either a U.S. firm or U.S. individual; (b) the Contractor may use U.S. subcontractors without limitation, but the use of subcontractors from Host Country may not exceed twenty percent (20%) of the USTDA Grant amount and may only be used for specific services from the Terms of Reference identified in the subcontract; (c) employees of U.S. Contractor or U.S. subcontractor firms responsible for professional services shall be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the U.S.; (d) goods purchased for performance of the Study and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and (e) goods and services incidental to Study support (e.g., local lodging, food, and transportation) in Host Country are not subject to the above restrictions. USTDA will make available further details concerning these provisions upon request.

## **12. Taxes**

USTDA funds provided under the Grant Agreement shall not be used to pay any taxes, tariffs, duties, fees or other levies imposed under laws in effect in Host Country. Neither the Grantee nor the Contractor will seek reimbursement from USTDA for such taxes, tariffs, duties, fees or other levies.

### **13. Cooperation Between Parties and Follow-Up**

The parties will cooperate to assure that the purposes of the Grant Agreement are accomplished. For five (5) years following receipt by USTDA of the Final Report (as defined in Clause I of Annex II), the Grantee agrees to respond to any reasonable inquiries from USTDA about the status of the Project.

### **14. Implementation Letters**

To assist the Grantee in the implementation of the Study, USTDA may, from time to time, issue implementation letters that will provide additional information about matters covered by the Grant Agreement. The parties may also use jointly agreed upon implementation letters to confirm and record their mutual understanding of matters covered by the Grant Agreement.

### **15. Recordkeeping and Audit**

The Grantee agrees to maintain books, records, and other documents relating to the Study and the Grant Agreement adequate to demonstrate implementation of its responsibilities under the Grant Agreement, including the selection of contractors, receipt and approval of contract deliverables, and approval or disapproval of contractor invoices for payment by USTDA. Such books, records, and other documents shall be separately maintained for three (3) years after the date of the final disbursement by USTDA. The Grantee shall afford USTDA or its authorized representatives the opportunity at reasonable times to review books, records, and other documents relating to the Study and the Grant Agreement.

### **16. Representation of Parties**

For all purposes relevant to the Grant Agreement, the Government of the United States of America will be represented by the U. S. Ambassador to Host Country or USTDA and Grantee will be represented by the Chairman. The parties hereto may, by written notice, designate additional representatives for all purposes under the Grant Agreement.

### **17. Addresses of Record for Parties**

Any notice, request, document, or other communication submitted by either party to the other under the Grant Agreement shall be in writing or through a wire or electronic medium which produces a tangible record of the transmission, such as a telegram, cable or facsimile, and will be deemed duly given or sent when delivered to such party at the following:

To: Arunabha Basu  
Vice President and Head of Technology  
North Delhi Power Limited

CENNET Building, Near Netaji Subhash Place  
Adjacent to PP3 Grid Station  
Pitampura, Delhi 110034, India  
arunabha.basu@ndpl.com

Phone: 011 2746 8027  
Fax: 011 2746 8023

To: U.S. Trade and Development Agency  
1000 Wilson Boulevard, Suite 1600  
Arlington, Virginia 22209-3901  
USA

Phone: (703) 875-4357  
Fax: (703) 875-4009

All such communications shall be in English, unless the parties otherwise agree in writing. In addition, the Grantee shall provide the Commercial Section of the U.S. Embassy in Host Country with a copy of each communication sent to USTDA.

Any communication relating to this Grant Agreement shall include the following fiscal data:

Appropriation No.: 11 11/12 1001  
Activity No.: 2011-31017A  
Reservation No.: 2011 230  
Grant No.: GH 2011 31230

#### **18. Termination Clause**

Either party may terminate the Grant Agreement by giving the other party thirty (30) days advance written notice. The termination of the Grant Agreement will end any obligations of the parties to provide financial or other resources for the Study, except for payments which they are committed to make pursuant to noncancellable commitments entered into with third parties prior to the written notice of termination.

**19. Non-waiver of Rights and Remedies**

No delay in exercising any right or remedy accruing to either party in connection with the Grant Agreement shall be construed as a waiver of such right or remedy.

**20. U.S. Technology and Equipment**

By funding this Study, USTDA seeks to promote the project objectives of the Host Country through the use of U.S. technology, goods, and services. In recognition of this purpose, the Grantee agrees that it will allow U.S. suppliers to compete in the procurement of technology, goods and services needed for Project implementation.

**[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]**

IN WITNESS WHEREOF, the Government of the United States of America and North Delhi Power Limited, each acting through its duly authorized representative, have caused this Agreement to be signed in the English language in their names and delivered as of the day and year written below. In the event that this Grant Agreement is signed in more than one language, the English language version shall govern.

**For the Government of the  
United States of America**

**For North Delhi  
Power Limited**

By: *Leonard J. Z...*

By: *Swadhwa*

Date: *July 19, 2011*

Date: *July 19, 2011*

Witnessed:

By: *A. H. Wyatt*

Witnessed:

By: *Arabhavan*  
*19/7/2011*

**Annex I -- Terms of Reference**

**Annex II -- USTDA Mandatory Clauses**

## Annex I

### **Terms of Reference**

The objective of this Project is to prepare a roadmap for the development of a comprehensive plan for implementing smart grid throughout the Grantee's distribution system based on the current smart grid feeder pilot project. The Project shall assess the technological, economic, regulatory support and financial aspects of scaling-up from the pilot project to other feeders on the Grantee's system.

#### **Task 1: Document Review, Kickoff Meeting, Stakeholder Consultations, and Work Plan**

The Contractor shall obtain from the Grantee and review all available information and relevant studies of the Grantee's current electricity distribution system structure, management and operating guidelines, and relevant information concerning the state of the pilot project before commencing travel.

The Contractor shall meet with the Grantee, pilot project implementation company and all stakeholders identified by the Grantee to discuss the pilot project and understand the perspectives and priorities of officials within relevant departments of the Grantee and pertinent government agencies, such as the Delhi Electricity Regulatory Commission, and the companies from which the Grantee receives electric power and transmission services. The Grantee shall ensure that the pilot implementation company cooperates in all respects with the Contractor, for the duration of this Study.

The Contractor and Grantee shall develop a work plan.

**Deliverable:** The Contractor shall provide the Grantee a report on all work conducted in Task 1 including its review of documents of the Grantee's existing distribution facilities and the Grantee's plans for the pilot project. The Contractor shall also prepare a summary of the initial meetings with the Grantee and pertinent stakeholders and submit a work plan.

#### **Task 2: Review and assess NDPL's current distribution system and ongoing and planned pilot project**

The Contractor shall perform a high level review of the overall distribution system, including infrastructure, operations, and management. The Contractor shall also review the previously prepared Strategic Roadmap Study as part of their review. The Contractor shall undertake a detailed review of the plans for the pilot project, based on meetings with the pilot project implementation company.

The Contractor shall examine all IT, automation, and management systems and tools currently in use by the Grantee.

**Deliverable:** The Contractor shall prepare a report on all work conducted in Task 2 including the documentation of its review of the distribution system and its evaluation and assessment of the Grantee's current distribution system, including technology, software, and distribution management systems and the status of the smart grid pilot project.

**Task 3: Develop Enterprise Application Interface and Smart Grid Pilot Project Integration**

The Contractor in coordination with Grantee staff shall identify the functional requirements and specifications for designing an Enterprise Application Interface (EAI) that will include scalability. The Contractor shall provide the Grantee with detailed specifications for the integration of the following systems using EAI strategies:

- SCADA/DMS systems for the distribution control center;
- Geographic information system (GIS);
- Customer information system (CIS);
- Enterprise resource planning system (SAP);
- Outage management system (OMS); and
- Automated meter reading (AMR)

The Contractor shall develop organizational workflow diagrams for leveraging benefits after implementation of the EAI Plan. The workflow diagrams shall depict processes interface for:

- breakdown in supply detected by the SCADA/DMS systems
- reflection of supply breakdown in the Outage Management System
- updates of customers affected by outages in the Customer Relationship Management system
- design and size of the IT system for secure data transfer among these applications

The Contractor shall develop specifications for the EAI Plan that will reflect the number and type of applications to be integrated and the requirements of data transfer among those applications. The Contractor shall set forth the architectural design and develop the EAI Plan specifications to incorporate smart meters and other components of the pilot project.

**Deliverable:** The Contractor shall prepare a report on all work in Task 3 including the EIA functional requirements, workflow and solution architecture, and specifications for smart grid integration.

**Task 4: Technology Assessment and Review**

The Contractor shall confirm with the Grantee and the pilot project implementation company regarding the specific technologies and processes the Grantee intends to test in the pilot project.

The Contractor shall research, review and evaluate three international case studies of smart grid pilot projects that utilized similar technology and processes being implemented in the Grantee pilot project.

The Grantee's pilot project team will recommend certain smart grid technologies to be tested in the pilot project and the Contractor shall provide an evaluation of the technologies and processes to be tested in the pilot project, suitable for presentation to electric utility regulators.

**Deliverable:** The Contractor shall prepare a report on all work conducted in Task 4 including the pertinent case studies from other countries, including an assessment of the potential for improvements through utilization of the smart grid technologies in the Grantee's pilot project. The report shall also include the Contractor's evaluation of the technologies to be used in the pilot project.

#### **Task 5: Implementation Roadmap**

The Contractor shall review the roadmap prepared by the pilot project implementation company to extend the smart grid components to the Grantee's other feeders. The Contractor shall independently develop an implementation roadmap which lays out the high-level sequencing and grouping of long-term activities, including recommendations for additional pilot projects, if needed, funding approaches, and regulatory approvals required to execute the smart grid strategy.

The Contractor shall meet with pertinent government agencies, such as the Delhi Electricity Regulatory Commission, and the electric companies with whom the Grantee is interconnected, and ascertain how the pilot project and subsequent scale-up of the Project will affect its tariff and relationships with the interconnected companies.

The Contractor shall identify and evaluate various options to implement the Project and provide functional definition of the scope of each phase of the Project. The Contractor shall investigate the advantages and disadvantages of alternative approaches to implementation of the Project, recommend the best solution, and prepare a report including an implementation plan and budget.

**Deliverable:** The Contractor shall prepare a report on all work conducted in Task 5 including a smart grid implementation roadmap and integration strategy report.

#### **Task 6: Financial, Economic and Regulatory Analysis**

The Contractor shall perform a financial analysis, cost-benefit analysis, and identify arguments for regulatory cost recovery for the smart grid components it recommends for

both the pilot project and the scale-up implementation throughout all or parts of the Grantee's distribution system.

The Contractor shall perform a financial analysis of the proposed systems, including internal rate of return and return on investment, and make recommendations regarding financing options. The Contractor shall conduct a cost-benefit analysis and articulate the business case for investments in each smart grid technology or process that the Grantee proposes to include in the pilot project and for scale-up implementation.

The Contractor will identify the best arguments to electricity regulators for recovering the costs through electricity rates of the specific smart grid technologies and processes identified by the Grantee for the pilot project and scale-up implementation.

**Deliverable:** The Contractor shall prepare a report on all work conducted in Task 6 including a financial, economic and regulatory analysis report.

### **Task 7: Developmental Impact Assessment**

The Contractor shall report on the potential developmental impact of the Project. The Contractor shall focus on what the economic development outcomes will be if the Project is implemented according to the USDTA recommendations and conclusions. While specific focus should be paid to the immediate impact of the Project, the Contractor should include, where appropriate, any additional developmental benefits to the Project, including spin-off and demonstration effects. The analysis of potential benefits of the Project shall be as concrete and detailed as possible. The Contractor shall provide estimates of the Project's potential benefits in the following areas:

**Infrastructure:** The Contractor shall provide a description of the infrastructure impact in India, specifically addressing new distribution systems implemented, the modernization of existing systems, and the expected impact on the ability to expand delivery and increase quality and reliability of power to its customer base. Specific metrics will be used to estimate the potential impacts.

**Human Capacity Building:** The Contractor shall address the number and type of positions that would be needed to construct and operate the proposed Project as well as the number of people who will receive training and a brief description of the training program.

**Technology Transfer and Productivity Enhancement:** The Contractor shall provide a description of any advanced technologies that will be implemented as a result of this Project.

**Other:** The Contractor shall identify any other developmental benefits to the Project, including any spin-off or demonstration effects.

**Deliverable:** The Contractor shall prepare a developmental impact assessment report on all work conducted in Task 7.

### **Task 8: Preliminary Environmental Impact Assessment**

The Contractor shall conduct a preliminary review of the Project's anticipated impact on the environment with reference to local requirements and those of multilateral lending agencies (such as the World Bank). This review would identify potential negative impacts, discuss the extent to which they can be mitigated, and develop plans for a full environmental impact assessment if and when the Project moves forward to the implementation stage. This includes the identification of steps that will need to be undertaken by the Project sponsor subsequent to completion and prior to Project implementation.

The Contractor shall also identify potential positive impacts of the Project, such as increased efficiency in the delivery of power.

**Deliverable:** The Contractor shall prepare a preliminary environmental impact assessment report on all work conducted in Task 8.

### **Task 9: Final Report**

The Contractor shall prepare and deliver to the Grantee and USTDA a substantive and comprehensive final report of all work performed under these Terms of Reference ("Final Report"). The Final Report shall be organized according to the above tasks, and shall include all deliverables and documents that have been provided to the Grantee. The Final Report shall be prepared in accordance with Clause I of Annex II of the Grant Agreement.

#### **Notes:**

- (1) The Contractor is responsible for compliance with U.S. export licensing requirements, if applicable, in the performance of the Terms of Reference.**
- (2) The Contractor and the Grantee shall be careful to ensure that the public version of the Final Report contains no security or confidential information.**
- (3) The Grantee and USTDA shall have an irrevocable, worldwide, royalty-free, non-exclusive right to use and distribute the Final Report and all work product that is developed under these Terms of Reference.**

## Annex II

### USTDA Mandatory Contract Clauses

#### A. USTDA Mandatory Clauses Controlling

The parties to this contract acknowledge that this contract is funded in whole or in part by the U.S. Trade and Development Agency ("USTDA") under the Grant Agreement between the Government of the United States of America acting through USTDA and North Delhi Power Limited ("Client"), dated \_\_\_\_\_ ("Grant Agreement"). The Client has selected \_\_\_\_\_ ("Contractor") to perform the feasibility study ("Study") for the North Delhi Power Limited Smart Grid project ("Project") in India ("Host Country"). Notwithstanding any other provisions of this contract, the following USTDA mandatory contract clauses shall govern. All subcontracts entered into by Contractor funded or partially funded with USTDA Grant funds shall include these USTDA mandatory contract clauses, except for clauses B(1), G, H, I, and J. In addition, in the event of any inconsistency between the Grant Agreement and any contract or subcontract thereunder, the Grant Agreement shall be controlling.

#### B. USTDA as Financier

##### (1) USTDA Approval of Contract

All contracts funded under the Grant Agreement, and any amendments thereto, including assignments and changes in the Terms of Reference, must be approved by USTDA in writing in order to be effective with respect to the expenditure of USTDA Grant funds. USTDA will not authorize the disbursement of USTDA Grant funds until the contract has been formally approved by USTDA or until the contract conforms to modifications required by USTDA during the contract review process.

##### (2) USTDA Not a Party to the Contract

It is understood by the parties that USTDA has reserved certain rights such as, but not limited to, the right to approve the terms of this contract and amendments thereto, including assignments, the selection of all contractors, the Terms of Reference, the Final Report, and any and all documents related to any contract funded under the Grant Agreement. The parties hereto further understand and agree that USTDA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the proper use of United States Government funds, and that any decision by USTDA to exercise or refrain from exercising these approval rights shall be made as a financier in the course of financing the Study and shall not be construed as making USTDA a party to the contract. The parties hereto understand and agree that USTDA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the Project with the parties to the contract or any subcontract, jointly or separately, without thereby incurring any responsibility or liability to such parties. Any approval or failure to approve by USTDA shall not

bar the Client or USTDA from asserting any right they might have against the Contractor, or relieve the Contractor of any liability which the Contractor might otherwise have to the Client or USTDA.

### **C. Nationality, Source and Origin**

Except as USTDA may otherwise agree, the following provisions shall govern the delivery of goods and services funded by USTDA under the Grant Agreement: (a) for professional services, the Contractor must be either a U.S. firm or U.S. individual; (b) the Contractor may use U.S. subcontractors without limitation, but the use of subcontractors from Host Country may not exceed twenty percent (20%) of the USTDA Grant amount and may only be used for specific services from the Terms of Reference identified in the subcontract; (c) employees of U.S. Contractor or U.S. subcontractor firms responsible for professional services shall be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the U.S.; (d) goods purchased for performance of the Study and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and (e) goods and services incidental to Study support (e.g., local lodging, food, and transportation) in Host Country are not subject to the above restrictions. USTDA will make available further details concerning these provisions upon request.

### **D. Recordkeeping and Audit**

The Contractor and subcontractors funded under the Grant Agreement shall maintain, in accordance with generally accepted accounting procedures, books, records, and other documents, sufficient to reflect properly all transactions under or in connection with the contract. These books, records, and other documents shall clearly identify and track the use and expenditure of USTDA funds, separately from other funding sources. Such books, records, and documents shall be maintained during the contract term and for a period of three (3) years after final disbursement by USTDA. The Contractor and subcontractors shall afford USTDA, or its authorized representatives, the opportunity at reasonable times for inspection and audit of such books, records, and other documentation.

### **E. U.S. Carriers**

#### **(1) Air**

Transportation by air of persons or property funded under the Grant Agreement shall be on U.S. flag carriers in accordance with the Fly America Act, 49 U.S.C. 40118, to the extent service by such carriers is available, as provided under applicable U.S. Government regulations.

#### **(2) Marine**

Transportation by sea of property funded under the Grant Agreement shall be on U.S. carriers in accordance with U.S. cargo preference law.

#### **F. Workman's Compensation Insurance**

The Contractor shall provide adequate Workman's Compensation Insurance coverage for work performed under this Contract.

#### **G. Reporting Requirements**

The Contractor shall advise USTDA by letter as to the status of the Project on March 1st annually for a period of two (2) years after completion of the Study. In addition, if at any time the Contractor receives follow-on work from the Client, the Contractor shall so notify USTDA and designate the Contractor's contact point including name, telephone, and fax number. Since this information may be made publicly available by USTDA, any information which is confidential shall be designated as such by the Contractor and provided separately to USTDA. USTDA will maintain the confidentiality of such information in accordance with applicable law.

#### **H. Disbursement Procedures**

##### **(1) USTDA Approval of Contract**

Disbursement of Grant funds will be made only after USTDA approval of this contract. To make this review in a timely fashion, USTDA must receive from either the Client or the Contractor a photocopy of an English language version of a signed contract or a final negotiated draft version to the attention of the General Counsel's office at USTDA's address listed in Clause M below.

##### **(2) Payment Schedule Requirements**

A payment schedule for disbursement of Grant funds to the Contractor shall be included in this Contract. Such payment schedule must conform to the following USTDA requirements: (1) up to twenty percent (20%) of the total USTDA Grant amount may be used as a mobilization payment; (2) all other payments, with the exception of the final payment, shall be based upon contract performance milestones; and (3) the final payment may be no less than fifteen percent (15%) of the total USTDA Grant amount, payable upon receipt by USTDA of an approved Final Report in accordance with the specifications and quantities set forth in Clause I below. Invoicing procedures for all payments are described below.

##### **(3) Contractor Invoice Requirements**

USTDA will make all disbursements of USTDA Grant funds directly to the Contractor. The Contractor must provide USTDA with an ACH Vendor Enrollment Form (available from USTDA) with the first invoice. The Client shall request disbursement of funds by

USTDA to the Contractor for performance of the contract by submitting the following to USTDA:

**(a) Contractor's Invoice**

The Contractor's invoice shall include reference to an item listed in the Contract payment schedule, the requested payment amount, and an appropriate certification by the Contractor, as follows:

**(i) For a mobilization payment (if any):**

"As a condition for this mobilization payment, the Contractor certifies that it will perform all work in accordance with the terms of its Contract with the Client. To the extent that the Contractor does not comply with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA."

**(ii) For contract performance milestone payments:**

"The Contractor has performed the work described in this invoice in accordance with the terms of its contract with the Client and is entitled to payment thereunder. To the extent the Contractor has not complied with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA."

**(iii) For final payment:**

"The Contractor has performed the work described in this invoice in accordance with the terms of its contract with the Client and is entitled to payment thereunder. Specifically, the Contractor has submitted the Final Report to the Client, as required by the Contract, and received the Client's approval of the Final Report. To the extent the Contractor has not complied with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA."

**(b) Client's Approval of the Contractor's Invoice**

**(i) The invoice for a mobilization payment must be approved in writing by the Client.**

**(ii) For contract performance milestone payments, the following certification by the Client must be provided on the invoice or separately:**

"The services for which disbursement is requested by the Contractor have been performed satisfactorily, in accordance with applicable Contract provisions and the terms and conditions of the USTDA Grant Agreement."

(iii) For final payment, the following certification by the Client must be provided on the invoice or separately:

"The services for which disbursement is requested by the Contractor have been performed satisfactorily, in accordance with applicable Contract provisions and terms and conditions of the USTDA Grant Agreement. The Final Report submitted by the Contractor has been reviewed and approved by the Client. "

**(c) USTDA Address for Disbursement Requests**

Requests for disbursement shall be submitted by courier or mail to the attention of the Finance Department at USTDA's address listed in Clause M below.

**(4) Termination**

In the event that the Contract is terminated prior to completion, the Contractor will be eligible, subject to USTDA approval, for reasonable and documented costs which have been incurred in performing the Terms of Reference prior to termination, as well as reasonable wind down expenses. Reimbursement for such costs shall not exceed the total amount of undisbursed Grant funds. Likewise, in the event of such termination, USTDA is entitled to receive from the Contractor all USTDA Grant funds previously disbursed to the Contractor (including but not limited to mobilization payments) which exceed the reasonable and documented costs incurred in performing the Terms of Reference prior to termination.

**I. USTDA Final Report**

**(1) Definition**

"Final Report" shall mean the Final Report described in the attached Annex I Terms of Reference or, if no such "Final Report" is described therein, "Final Report" shall mean a substantive and comprehensive report of work performed in accordance with the attached Annex I Terms of Reference, including any documents delivered to the Client.

**(2) Final Report Submission Requirements**

The Contractor shall provide the following to USTDA:

(a) One (1) complete version of the Final Report for USTDA's records. This version shall have been approved by the Client in writing and must be in the English language. It is the responsibility of the Contractor to ensure that confidential information, if any, contained in this version be clearly marked. USTDA will maintain the confidentiality of such information in accordance with applicable law.

and

(b) One (1) copy of the Final Report suitable for public distribution ("Public Version"). The Public Version shall have been approved by the Client in writing and must be in the English language. As this version will be available for public distribution, it must not contain any confidential information. If the report in (a) above contains no confidential information, it may be used as the Public Version. In any event, the Public Version must be informative and contain sufficient Project detail to be useful to prospective equipment and service providers.

and

(c) Two (2) CD-ROMs, each containing a complete copy of the Public Version of the Final Report. The electronic files on the CD-ROMs shall be submitted in a commonly accessible read-only format. As these CD-ROMs will be available for public distribution, they must not contain any confidential information. It is the responsibility of the Contractor to ensure that no confidential information is contained on the CD-ROMs.

The Contractor shall also provide one (1) copy of the Public Version of the Final Report to the Foreign Commercial Service Officer or the Economic Section of the U.S. Embassy in Host Country for informational purposes.

### **(3) Final Report Presentation**

All Final Reports submitted to USTDA must be paginated and include the following:

(a) The front cover of every Final Report shall contain the name of the Client, the name of the Contractor who prepared the report, a report title, USTDA's logo, USTDA's mailing and delivery addresses. If the complete version of the Final Report contains confidential information, the Contractor shall be responsible for labeling the front cover of that version of the Final Report with the term "Confidential Version." The Contractor shall be responsible for labeling the front cover of the Public Version of the Final Report with the term "Public Version." The front cover of every Final Report shall also contain the following disclaimer:

"This report was funded by the U.S. Trade and Development Agency (USTDA), an agency of the U. S. Government. The opinions, findings, conclusions or recommendations expressed in this document are those of the author(s) and do not necessarily represent the official position or policies of USTDA. USTDA makes no representation about, nor does it accept responsibility for, the accuracy or completeness of the information contained in this report."

(b) The inside front cover of every Final Report shall contain USTDA's logo, USTDA's mailing and delivery addresses, and USTDA's mission statement.

Camera-ready copy of USTDA Final Report specifications will be available from USTDA upon request.

(c) The Contractor shall affix to the front of the CD-ROM a label identifying the Host Country, USTDA Activity Number, the name of the Client, the name of the Contractor who prepared the report, a report title, and the following language:

“The Contractor certifies that this CD-ROM contains the Public Version of the Final Report and that all contents are suitable for public distribution.”

(d) The Contractor and any subcontractors that perform work pursuant to the Grant Agreement must be clearly identified in the Final Report. Business name, point of contact, address, telephone and fax numbers shall be included for Contractor and each subcontractor.

(e) The Final Report, while aiming at optimum specifications and characteristics for the Project, shall identify the availability of prospective U.S. sources of supply. Business name, point of contact, address, telephone and fax numbers shall be included for each commercial source.

(f) The Final Report shall be accompanied by a letter or other notation by the Client which states that the Client approves the Final Report. A certification by the Client to this effect provided on or with the invoice for final payment will meet this requirement.

#### **J. Modifications**

All changes, modifications, assignments or amendments to this contract, including the appendices, shall be made only by written agreement by the parties hereto, subject to written USTDA approval.

#### **K. Study Schedule**

##### **(1) Study Completion Date**

The completion date for the Study, which is April 20, 2013, is the date by which the parties estimate that the Study will have been completed.

## **(2) Time Limitation on Disbursement of USTDA Grant Funds**

Except as USTDA may otherwise agree, (a) no USTDA funds may be disbursed under this contract for goods and services which are provided prior to the Effective Date of the Grant Agreement; and (b) all funds made available under the Grant Agreement must be disbursed within four (4) years from the Effective Date of the Grant Agreement.

### **L. Business Practices**

The Contractor agrees not to pay, promise to pay, or authorize the payment of any money or anything of value, directly or indirectly, to any person (whether a governmental official or private individual) for the purpose of illegally or improperly inducing anyone to take any action favorable to any party in connection with the Study. The Client agrees not to receive any such payment. The Contractor and the Client agree that each will require that any agent or representative hired to represent them in connection with the Study will comply with this paragraph and all laws which apply to activities and obligations of each party under this Contract, including but not limited to those laws and obligations dealing with improper payments as described above.

### **M. USTDA Address and Fiscal Data**

Any communication with USTDA regarding this Contract shall be sent to the following address and include the fiscal data listed below:

U.S. Trade and Development Agency  
1000 Wilson Boulevard, Suite 1600  
Arlington, Virginia 22209-3901  
USA

Phone: (703) 875-4357  
Fax: (703) 875-4009

#### Fiscal Data:

Appropriation No.: 11 11/12 1001  
Activity No.: 2011-31017A  
Reservation No.: 2011 230  
Grant No.: GH 2011 31230

### **N. Definitions**

All capitalized terms not otherwise defined herein shall have the meaning set forth in the Grant Agreement.

**O. Taxes**

USTDA funds provided under the Grant Agreement shall not be used to pay any taxes, tariffs, duties, fees or other levies imposed under laws in effect in Host Country. Neither the Client nor the Contractor will seek reimbursement from USTDA for such taxes, tariffs, duties, fees or other levies.

**ANNEX 5**

## TERMS OF REFERENCE

The objective of this Project is to prepare a roadmap for the development of a comprehensive plan for implementing smart grid throughout the Grantee's distribution system based on the current smart grid feeder pilot project. The Project shall assess the technological, economic, regulatory support and financial aspects of scaling-up from the pilot project to other feeders on the Grantee's system.

### **Task 1: Document Review, Kickoff Meeting, Stakeholder Consultations, and Work Plan**

The Contractor shall obtain from the Grantee and review all available information and relevant studies of the Grantee's current electricity distribution system structure, management and operating guidelines, and relevant information concerning the state of the pilot project before commencing travel.

The Contractor shall meet with the Grantee, pilot project implementation company and all stakeholders identified by the Grantee to discuss the pilot project and understand the perspectives and priorities of officials within relevant departments of the Grantee and pertinent government agencies, such as the Delhi Electricity Regulatory Commission, and the companies from which the Grantee receives electric power and transmission services. The Grantee shall ensure that the pilot implementation company cooperates in all respects with the Contractor, for the duration of this Study.

The Contractor and Grantee shall develop a work plan.

**Deliverable:** The Contractor shall provide the Grantee a report on all work conducted in Task 1 including its review of documents of the Grantee's existing distribution facilities and the Grantee's plans for the pilot project. The Contractor shall also prepare a summary of the initial meetings with the Grantee and pertinent stakeholders and submit a work plan.

### **Task 2: Review and assess NDPL's current distribution system and ongoing and planned pilot project**

The Contractor shall perform a high level review of the overall distribution system, including infrastructure, operations, and management. The Contractor shall also review the previously prepared Strategic Roadmap Study as part of their review. The Contractor shall undertake a detailed review of the plans for the pilot project, based on meetings with the pilot project implementation company.

The Contractor shall examine all IT, automation, and management systems and tools currently in use by the Grantee.

**Deliverable:** The Contractor shall prepare a report on all work conducted in Task 2 including the documentation of its review of the distribution system and its evaluation and assessment of the Grantee's current distribution system, including technology, software, and distribution management systems and the status of the smart grid pilot project.

### **Task 3: Develop Enterprise Application Interface and Smart Grid Pilot Project Integration**

The Contractor in coordination with Grantee staff shall identify the functional requirements and specifications for designing an Enterprise Application Interface (EAI) that will include scalability. The Contractor shall provide the Grantee with detailed specifications for the integration of the following systems using EAI strategies:

- SCADA/DMS systems for the distribution control center;
- Geographic information system (GIS);
- Customer information system (CIS);
- Enterprise resource planning system (SAP);
- Outage management system (OMS); and
- Automated meter reading (AMR)

The Contractor shall develop organizational workflow diagrams for leveraging benefits after implementation of the EAI Plan. The workflow diagrams shall depict processes interface for:

- breakdown in supply detected by the SCADA/DMS systems
- reflection of supply breakdown in the Outage Management System
- updates of customers affected by outages in the Customer Relationship Management system
- design and size of the IT system for secure data transfer among these applications

The Contractor shall develop specifications for the EAI Plan that will reflect the number and type of applications to be integrated and the requirements of data transfer among those applications. The Contractor shall set forth the architectural design and develop the EAI Plan specifications to incorporate smart meters and other components of the pilot project.

**Deliverable:** The Contractor shall prepare a report on all work in Task 3 including the EIA functional requirements, workflow and solution architecture, and specifications for smart grid integration.

### **Task 4: Technology Assessment and Review**

The Contractor shall confirm with the Grantee and the pilot project implementation company regarding the specific technologies and processes the Grantee intends to test in the pilot project.

The Contractor shall research, review and evaluate three international case studies of smart grid pilot projects that utilized similar technology and processes being implemented in the Grantee pilot project.

The Grantee's pilot project team will recommend certain smart grid technologies to be tested in the pilot project and the Contractor shall provide an evaluation of the technologies and

processes to be tested in the pilot project, suitable for presentation to electric utility regulators.

**Deliverable:** The Contractor shall prepare a report on all work conducted in Task 4 including the pertinent case studies from other countries, including an assessment of the potential for improvements through utilization of the smart grid technologies in the Grantee's pilot project. The report shall also include the Contractor's evaluation of the technologies to be used in the pilot project.

### **Task 5: Implementation Roadmap**

The Contractor shall review the roadmap prepared by the pilot project implementation company to extend the smart grid components to the Grantee's other feeders. The Contractor shall independently develop an implementation roadmap which lays out the high-level sequencing and grouping of long-term activities, including recommendations for additional pilot projects, if needed, funding approaches, and regulatory approvals required to execute the smart grid strategy.

The Contractor shall meet with pertinent government agencies, such as the Delhi Electricity Regulatory Commission, and the electric companies with whom the Grantee is interconnected, and ascertain how the pilot project and subsequent scale-up of the Project will affect its tariff and relationships with the interconnected companies.

The Contractor shall identify and evaluate various options to implement the Project and provide functional definition of the scope of each phase of the Project. The Contractor shall investigate the advantages and disadvantages of alternative approaches to implementation of the Project, recommend the best solution, and prepare a report including an implementation plan and budget.

**Deliverable:** The Contractor shall prepare a report on all work conducted in Task 5 including a smart grid implementation roadmap and integration strategy report.

### **Task 6: Financial, Economic and Regulatory Analysis**

The Contractor shall perform a financial analysis, cost-benefit analysis, and identify arguments for regulatory cost recovery for the smart grid components it recommends for both the pilot project and the scale-up implementation throughout all or parts of the Grantee's distribution system.

The Contractor shall perform a financial analysis of the proposed systems, including internal rate of return and return on investment, and make recommendations regarding financing options. The Contractor shall conduct a cost-benefit analysis and articulate the business case for investments in each smart grid technology or process that the Grantee proposes to include in the pilot project and for scale-up implementation.

The Contractor will identify the best arguments to electricity regulators for recovering the costs through electricity rates of the specific smart grid technologies and processes identified by the Grantee for the pilot project and scale-up implementation.

**Deliverable:** The Contractor shall prepare a report on all work conducted in Task 6 including a financial, economic and regulatory analysis report.

### **Task 7: Developmental Impact Assessment**

The Contractor shall report on the potential developmental impact of the Project. The Contractor shall focus on what the economic development outcomes will be if the Project is implemented according to the USDTA recommendations and conclusions. While specific focus should be paid to the immediate impact of the Project, the Contractor should include, where appropriate, any additional developmental benefits to the Project, including spin-off and demonstration effects. The analysis of potential benefits of the Project shall be as concrete and detailed as possible. The Contractor shall provide estimates of the Project's potential benefits in the following areas:

**Infrastructure:** The Contractor shall provide a description of the infrastructure impact in India, specifically addressing new distribution systems implemented, the modernization of existing systems, and the expected impact on the ability to expand delivery and increase quality and reliability of power to its customer base. Specific metrics will be used to estimate the potential impacts.

**Human Capacity Building:** The Contractor shall address the number and type of positions that would be needed to construct and operate the proposed Project as well as the number of people who will receive training and a brief description of the training program.

**Technology Transfer and Productivity Enhancement:** The Contractor shall provide a description of any advanced technologies that will be implemented as a result of this Project.

**Other:** The Contractor shall identify any other developmental benefits to the Project, including any spin-off or demonstration effects.

**Deliverable:** The Contractor shall prepare a developmental impact assessment report on all work conducted in Task 7.

### **Task 8: Preliminary Environmental Impact Assessment**

The Contractor shall conduct a preliminary review of the Project's anticipated impact on the environment with reference to local requirements and those of multilateral lending agencies (such as the World Bank). This review would identify potential negative impacts, discuss the extent to which they can be mitigated, and develop plans for a full environmental impact assessment if and when the Project moves forward to the implementation stage. This

includes the identification of steps that will need to be undertaken by the Project sponsor subsequent to completion and prior to Project implementation.

The Contractor shall also identify potential positive impacts of the Project, such as increased efficiency in the delivery of power.

**Deliverable:** The Contractor shall prepare a preliminary environmental impact assessment report on all work conducted in Task 8.

### **Task 9: Final Report**

The Contractor shall prepare and deliver to the Grantee and USTDA a substantive and comprehensive final report of all work performed under these Terms of Reference ("Final Report"). The Final Report shall be organized according to the above tasks, and shall include all deliverables and documents that have been provided to the Grantee. The Final Report shall be prepared in accordance with Clause I of Annex II of the Grant Agreement.

#### **Notes:**

- (1) The Contractor is responsible for compliance with U.S. export licensing requirements, if applicable, in the performance of the Terms of Reference.**
- (2) The Contractor and the Grantee shall be careful to ensure that the public version of the Final Report contains no security or confidential information.**
- (3) The Grantee and USTDA shall have an irrevocable, worldwide, royalty-free, non-exclusive right to use and distribute the Final Report and all work product that is developed under these Terms of Reference.**



7. Project Manager's name, address, telephone number, e-mail address and fax number .

**B. Offeror's Authorized Negotiator**

Provide name, title, address, telephone number, e-mail address and fax number of the Offeror's authorized negotiator. The person cited shall be empowered to make binding commitments for the Offeror and its subcontractors, if any.

**C. Negotiation Prerequisites**

1. Discuss any current or anticipated commitments which may impact the ability of the Offeror or its subcontractors to complete the Feasibility Study as proposed and reflect such impact within the project schedule.

2. Identify any specific information which is needed from the Grantee before commencing contract negotiations.

**D. Offeror's Representations**

Please provide exceptions and/or explanations in the event that any of the following representations cannot be made:

1. Offeror is a corporation [*insert applicable type of entity if not a corporation*] duly organized, validly existing and in good standing under the laws of the State of \_\_\_\_\_ . The Offeror has all the requisite corporate power and authority to conduct its business as presently conducted, to submit this proposal, and if selected, to execute and deliver a contract to the Grantee for the performance of the Feasibility Study. The Offeror is not debarred, suspended, or to the best of its knowledge or

belief, proposed for debarment, or ineligible for the award of contracts by any federal or state governmental agency or authority.

2. The Offeror has included, with this proposal, a certified copy of its Articles of Incorporation, and a certificate of good standing issued within one month of the date of its proposal by the State of \_\_\_\_\_. The Offeror commits to notify USTDA and the Grantee if they become aware of any change in their status in the state in which they are incorporated. USTDA retains the right to request an updated certificate of good standing.
3. Neither the Offeror nor any of its principal officers have, within the three-year period preceding this RFP, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.
4. Neither the Offeror, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 3 above.
5. There are no federal or state tax liens pending against the assets, property or business of the Offeror. The Offeror, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.
6. The Offeror has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The Offeror has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected Offeror shall notify the Grantee and USTDA if any of the representations included in its proposal are no longer true and correct at the time of its entry into a contract with the Grantee.

Signed: \_\_\_\_\_  
(Authorized Representative)

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**E. Subcontractor Profile**

1. Name of firm and business address (street address only), including telephone and fax numbers.
  
  
  
  
  
  
  
  
  
  
2. Year established (include predecessor companies and year(s) established, if appropriate).

**F. Subcontractor's Representations**

If any of the following representations cannot be made, or if there are exceptions, the subcontractor must provide an explanation.

1. Subcontractor is a corporation [*insert applicable type of entity if not a corporation*] duly organized, validly existing and in good standing under the laws of the State of \_\_\_\_\_ . The subcontractor has all the requisite corporate power and authority to conduct its business as presently conducted, to participate in this proposal, and if the Offeror is selected, to execute and deliver a subcontract to the Offeror for the performance of the Feasibility Study and to perform the Feasibility Study. The subcontractor is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment or ineligible for the award of contracts by any federal or state governmental agency or authority.
  
2. Neither the subcontractor nor any of its principal officers have, within the three-year period preceding this RFP, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.

3. Neither the subcontractor, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 2 above.
4. There are no federal or state tax liens pending against the assets, property or business of the subcontractor. The subcontractor, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.
5. The subcontractor has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The subcontractor has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected subcontractor shall notify the Offeror, Grantee and USTDA if any of the representations included in this proposal are no longer true and correct at the time of the Offeror's entry into a contract with the Grantee.

Signed: \_\_\_\_\_  
(Authorized Representative)

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_