

REQUEST FOR PROPOSALS

FEASIBILITY STUDY FOR THE

GEOHERMAL FOR DISTRICT HEATING AND COOLING PROJECT

Submission Deadline: **4:00 PM**
LOCAL TIME
April 15, 2010

Submission Place: MENA Geothermal Ground Energy and Investment Company Ltd.
UCI Headquarters Building, 3'd Floor
Al Masyoun Heights, Ramallah, West Bank
P.O. Box 4029
Palestinian Territories
khaled@menageothermal.com
Tel: +970.2.295.8355
Fax: +970.2.295.8354
Attention: Khaled Sabawi, President

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\$438,162 to MENA Geothermal Ground Energy and Investment Company Ltd. (the "Grantee") in accordance with a grant agreement dated January 20, 2010 (the "Grant Agreement"). USTDA has provided a grant to the Grantee for a Geothermal for District Heating and Cooling Feasibility Study. 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 carry out the Feasibility Study.

1.1 BACKGROUND SUMMARY

Today, Palestinians are paying the highest energy prices in the entire Middle East and North Africa. In addition, Palestinians are experiencing population growth rates that are amongst the highest in the world: 3.99% in Gaza and 2.9% in the West Bank. The West Bank has no sources of natural energy and it is largely dependent on Israeli sources, with some power coming from Jordan. If this situation continues, Palestinians living in the West Bank will continue to face significant energy problems.

Building construction remains one of the main industries in the West Bank and as a result, building loads make up a significant portion of energy consumption in the West Bank. As 60% of the energy consumed by a typical building is for heating and cooling, MENA Geothermal Ground Energy and Investment Company Ltd. (MENA), a private Palestinian business registered in the West Bank that specializes in the design and installation of residential and commercial geothermal heating and cooling systems, has focused on lowering the outside cost of this energy component, thereby creating the largest energy savings impact on its buildings. The most common conventional Heating, Ventilation, and Air Conditioning (HVAC) systems in the West Bank are diesel-powered boilers for heating, which burn fossil-fuels and directly produce CO₂ emissions. With the current energy prices in the West Bank, operating costs for conventional systems, especially diesel-powered boilers, have become a major burden for most Palestinians living in the West Bank.

For the planned 500-unit housing development, MENA and Union Construction and Investment Corp. (UCI), which is a partial owner of MENA, are planning to install a centrally located district geothermal heating and cooling system that would supply HVAC throughout the development. A district geothermal heating and cooling system would be more economical than installing individual geothermal systems for each household. This way all 500 units can receive heating and cooling energy from a renewable source, reducing the entire development's energy consumption by 70% and significantly reducing CO₂ emissions. This is also expected to produce significant capital and operating cost reductions for the individual units.

The proposed Feasibility Study would include: a detailed assessment of the thermal conductivity of the proposed site, economic analysis of the use of geothermal energy, a design of the district system, training on the potential system, operating cost savings analysis, financial modeling and

an implementation plan. Implementation of this technology will help achieve the goal of increasing the use of clean and renewable sources of energy and decreasing dependence on imported fossil fuels.

A background Definitional Mission is provided for reference in Annex 2.

1.2 OBJECTIVE

The Terms of Reference (TOR) for this Feasibility Study is 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.

COST will not be a factor in the evaluation and therefore, cost proposals should not be submitted; upon detailed evaluation of technical proposals, one firm will be selected for contract negotiations. The amount for the negotiated contract has been established by a USTDA grant of US\$438,162.

1.4 CONTRACT FUNDED BY USTDA

The negotiated contract will be funded by USTDA in accordance with the terms and conditions of its grant to the Grantee. The contract must include certain USTDA mandatory clauses relating to nationality, taxes, payment, reporting, and other matters. The USTDA nationality requirements and the USTDA mandatory clauses are attached at Annexes 3 and 4, respectively, for reference.

The Feasibility Study will be funded under a grant from USTDA and an in-kind cost share from the Grantee. The total amount of the USTDA grant is not to exceed US\$438,162. The total budget for the Project is US\$458,651, of which the Grantee shall provide an in-kind cost share of US\$20,489, which will consist of drilling and related services. The Grantee will supply the drilling and grouting equipment including a two man operating team needed to carry out the drilling and testing tasks. In addition, the Grantee shall undertake its best efforts to provide reasonable support for the Contractor, such as local transportation, office space, and secretarial support.

Section 2: INSTRUCTIONS TO PROPOSERS

2.1 PROJECT TITLE

The project is called Geothermal for District Heating and Cooling Project.

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. individual, or 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.

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 and an in-kind cost share from the Grantee. The total amount of the USTDA grant is not to exceed US\$438,162. The total budget for the Project is US\$458,651, of which the Grantee shall provide an in-kind cost share of US \$20,489, which will consist of drilling and related services. The Grantee will supply the drilling and grouting equipment including a two man operating team needed to carry out the drilling and testing tasks. In addition, the Grantee shall undertake its best efforts to provide reasonable support for the Contractor, such as local transportation, office space, and secretarial support.

2.6 RESPONSIBILITY FOR COSTS

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

2.7 TAXES

Offerors should submit proposals which note that in Annex 4, USTDA Mandatory Contract Provisions, USTDA funds are not to be used to pay taxes or duties under the laws of the West Bank.

2.8 CONFIDENTIALITY

The Grantee will use its best efforts to preserve the confidentiality of any business proprietary or confidential information submitted by the Offeror, which is clearly designated as such by the Offeror.

2.9 ECONOMY OF PROPOSALS

Proposal documents should be prepared simply and economically, providing a comprehensive and concise description of the Offeror's capabilities to satisfy the requirements of the RFP. There is no necessity for expensive bindings, colored displays, or other promotional material unless such material is absolutely pertinent to the proposal. Emphasis should be placed on completeness and clarity of content.

2.10 SUBSTANTIVE PROPOSALS

The Offeror shall certify (a) that its proposal is genuine and is not made in the interest of, or on the 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 himself 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 West Bank for up to 20 percent of the amount of the USTDA grant. USTDA nationality requirements 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:

MENA Geothermal Ground Energy and Investment Company Ltd.
UCI Headquarters Building, 3'd Floor
Al Masyoun Heights, Ramallah, West Bank
P.O. Box 4029
Palestinian Territories
khaled@menageothermal.com
Tel: +970.2.295.8355
Fax: +970.2.295.8354
Attention: Khaled Sabawi, President

An Original and six (6) copies of your proposal must be received at the above address no later than 4:00 PM Local Time, on April 15, 2010.

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

Each 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 six (6) copies should be collectively wrapped and sealed, and clearly marked for content.

Neither USTDA nor the Grantee will be responsible for premature opening of proposals not properly 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

Firms agree by their response to the RFP announcement to abide by the procedures set forth therein. Material modifications in the TOR or responsibilities of the parties will not be accepted.

Any exceptions in the proposal shall be clearly identified, and shall include the scope of such exception, and its impact, on the procurement. The Grantee shall make final determination as to the responsiveness of such exceptions and their acceptability.

2.18 OFFEROR QUALIFICATIONS

As provided in Section 3, Offerors shall submit evidence that they have relevant past experience and have previously delivered advisory and Feasibility Study services similar to those required in the TOR.

2.19 RIGHT TO REJECT PROPOSALS

The Grantee reserves the right to reject any and all proposals and to accept or reject any or all of the items in the proposal, and to award the contract in whole or in part if it is deemed in the best interest of the Grantee.

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 consultants and subcontractors. USTDA nationality provisions are set forth in detail in Annex 3. The successful Offeror shall cause appropriate provisions of its contract, including all mandatory USTDA clauses, to be inserted in all subcontracts ensuing to ensure fulfillment of all contractual provisions by subcontractors.

2.21 AWARD

An award resulting from this RFP shall be made to the best qualified Offeror, taking into consideration the evaluation factors set forth herein; however, the right is reserved 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) furnish all supplies, supervision, transportation, and other execution accessories, services, and facilities to perform the TOR if such support is not provided by the Grantee; (b) provide and perform all necessary labor; and (c) in accordance with good technical practice, with due diligence, and in accordance with the requirements, stipulations, provisions and conditions of this RFP and the resultant contract, execute and complete all specified work to the satisfaction of the Grantee.

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. Upon approval of each invoice, the Grantee will forward the invoice to USTDA which will process payment to the Contractor. All payments by USTDA under the Grant Agreement will be made in U.S. currency.

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. No cost proposal is required as the value of the USTDA grant is established at US\$438,162.

Offerors shall submit one (1) original and six (6) copies of the proposal. Proposals received by fax cannot be accepted.

The following sections and content are required for each proposal:

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

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

3.1 SECTION 1: INTRODUCTION AND EXECUTIVE SUMMARY

An Executive Summary should be prepared describing the major facts or features of the proposal, including any conclusions, assumptions, and generalized 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 SECTION 2: COMPANY INFORMATION

For convenience, the information required in this Section 3.2 may be submitted in the form Attached in Annex VI 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), similar information 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 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 impact of any current or anticipated commitments which may impact the ability of the Offeror or its subcontractors to complete the Feasibility Study as proposed and 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. 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 _____.
2. 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.
3. 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 2 above.
4. 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.
5. 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. USTDA retains the right to request an updated certificate of good standing from the selected Offeror.

3.3 SECTION 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 must have the responsibility and authority to act on behalf of the Offeror in matters related to the proposed Feasibility Study.

Provide a listing of personnel (including subcontractors and consultants) to be engaged in the project, either U.S. or local 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 organizational relationship between the firms must be described.

A manpower schedule and the level of effort for the project period, by activities and tasks, as detailed under the 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 SECTION 4: TECHNICAL APPROACH AND WORK PLAN

Describe in detail the proposed technical approach and work plan. Discuss the project requirements as perceived by the Offeror. Include a brief narrative of 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 Technical Work Plan, including periodic reporting or review points, incremental delivery dates, and other project milestones. The schedule of performance will include a project timeline detailing expected timeframes for each of the tasks in the Technical Work Plan.

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

3.5 SECTION 5: EXPERIENCE AND QUALIFICATIONS

Provide a discussion of the Offeror's experience, qualifications, and certifications which 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. Relevant experience and qualifications of key staff proposed shall be provided including letters of commitment from the individuals proposed concerning their availability for contract performance.

As many as possible but not more than six (6) relevant and verifiable project references must be provided, 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,
- Total Heating and Cooling Loads
- Detailed description of Geothermal System
- 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.

3.6 SECTION 6: FINANCIAL STATEMENTS

Provide financial statements for the previous two (2) fiscal years giving information about the financial position and performance of the Offeror. These financial reports shall include a statement of cash flows as well as an income (or profit and loss) statement on income, expenses and profits.

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, and the Grantee shall promptly negotiate a contract with 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 shall then be undertaken with the second most qualified Offeror and so forth.

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

1. Design Consulting - The design consultant selected to design the district system must be experienced in the design and simulation of large commercial or large multi-unit residential geothermal systems. This experience must include the overall integration of the ground loop, ground source heat pump(s), distribution and integration of the whole system. Experience with multi-dwelling/building systems and various ground source (ground aquifer and water source closed loop, open loop, and various configurations (vertical, horizontal) is important. In addition, the design consultant must be experienced in heating and cooling load calculation, all types of internal distribution system design, and energy efficiency measures to reduce building loads. Relevant professional certifications the Offeror currently holds, such as the Commercial Geo-Exchange Designer (CGD) Certification, will be considered as an advantage during the selection process but are not a requirement.
2. Technical Analysis – A team member must be experienced in the analysis of the data that is collected from thermal conductivity tests.
3. Local Experience – In order to price a district geothermal system after it has been designed, a local contractor experienced in the installation of geothermal system will be required.
4. Financial Analysis – In order to create a financial model that would analyze the different operation options of the district geothermal system, an experience financial analyst would be required.

The following scoring system may be used as the basis for the ranking of qualified Offerors:

Expertise and skills of proposed personnel	40
Proposed approach to the TA and to the individual tasks	35
Pertinent international experience and cross-cultural skills	25
Total:	100

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

KHALED SABAWI, MENA GEOTHERMAL GROUND ENERGY AND
INVESTMENT COMPANY LTD., UCI HEADQUARTERS BUILDING 3D FLOOR,
P.O. BOX 4029, AL MASYOUN HEIGHTS, RAMALLAH, WEST BANK,
PALESTINIAN TERRITORIES, TEL: +970-2-295-8355, FAX: +970-2-295-8354

GEOTHERMAL FOR DISTRICT HEATING AND COOLING FEASIBILITY STUDY

POC Nina Patel, USTDA, 1000 Wilson Boulevard, Suite 1600, Arlington, VA 22209-3901, Tel: (703) 875-4357, Fax: (703) 875-4009. Geothermal for District Heating and Cooling Feasibility Study. The Grantee invites submission of qualifications and proposal data (collectively referred to as the "Proposal") from interested U.S. firms which are qualified on the basis of experience and capability to develop a feasibility study for Geothermal for District Heating and Cooling project.

Today, Palestinians are paying the highest energy prices in the entire Middle East and North Africa. In addition, Palestinians are experiencing population growth rates that are amongst the highest in the world: 3.99% in Gaza and 2.9% in the West Bank. The West Bank has no sources of natural energy and it is largely dependent on Israeli sources, with some power coming from Jordan. If this situation continues, Palestinians living in the West Bank will continue to face significant energy problems.

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The proposed Feasibility Study would include: a detailed assessment of the thermal conductivity of the proposed site, economic analysis of the use of geothermal energy, a design of the district system, training on the potential system, operating cost savings analysis, financial modeling and an implementation plan. Implementation of this technology will help achieve the goal of increasing the use of clean and renewable sources of energy and decreasing dependence on imported fossil fuels.

The U.S. firm selected will be paid in U.S. dollars from a US\$438,162 grant to the Grantee from the U.S. Trade and Development Agency (USTDA) and a grantee cost share of US\$20,489, for a total Project budget cost of US\$458,651.

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/USTDA/FedBizOpps/RFP/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 the West Bank. The U.S. firm may use subcontractors from the West Bank 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, April 15 2010** 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.

DM REPORT FOR GEOTHERMAL DISTRICT HEATING & COOLING IN RAMALLAH, WEST BANK

1. EXECUTIVE SUMMARY

Background

Building construction remains one of the main industries in the West Bank and as a result, building loads make up a significant portion of the energy consumption in the West Bank. Considering that 60% of the energy consumed by a typical building is for heating and cooling, MENA Geothermal (MENA) has focused on lowering this majority demand thereby creating the largest energy savings impact on buildings. The most common conventional HVAC systems in the West Bank are diesel-powered boilers for heating, which burn fossil-fuels and directly produce CO₂ emissions, and forced-air split units for air conditioning. With the current energy prices in the West Bank, operating costs for conventional systems, especially diesel-powered boilers, have become a major burden for most Palestinians.

Union Construction and Investment Corp. (UCI) and MENA have developed an advanced geothermal system adapted to local conditions and using some specialty local supplies. Their geothermal system has already been installed in an office building in Ramallah and in individual apartments in a housing development on the outskirts of the city. These systems have proved to be both technically and economically successful. UCI is current embarking on the development of a 500 apartment complex outside Ramallah. For this complex they are planning to install a centrally located district geothermal heating and cooling system that would supply heated and chilled water to the 500-unit development. A district geothermal heating and cooling system would be more economical than installing individual geothermal systems for each household. This way all 500 units can receive heating and cooling energy from a renewable source, reducing the entire development's energy consumption by 70% and significantly reducing CO₂ emissions. It is expected that at the same time significant capital and operating costs would be achieved related to the individual units. While the geothermal technology and the central district heating concepts are well established the combination of the two needs careful economic evaluation prior to definitively committing to this route. This will require a thorough feasibility study and analysis in order to determine the technical and financial feasibility of such a system.

The following components of the system must be addressed and evaluated:

1. **Thermal Conductivity Test and Analysis:** In order to accurately design the ground loop component of a geothermal system, it is necessary to determine the thermal conductivity and diffusivity of the ground. A thermal

conductivity test requires the installation of a vertical borehole, associated pipe, and grouting to facilitate the acquisition of data from the soil and rock formations beneath the earth at a depth of 100m. It is currently estimated that up to 12 holes may have to be drilled to adequately define the needs of the district heating needs;

2. **District System Design:** Once the data from a sufficient number of thermal conductivity tests is acquired, a geothermal heating and cooling system can then be designed to meet the full heating and cooling demand of the 500 unit development;
3. **Operating Costs Savings:** An operating cost savings calculation must be completed to determine the expected energy savings compared to the standard conventional HVAC systems used; and
4. **Financial Model & Analysis:** A financial analysis must be conducted to determine the financial feasibility of a district geothermal heating and cooling system.

US Export Potential

It is estimated that the potential US export of goods and services for this project will be of the order of \$2 million primarily consisting of a heat pump package. This project will be however the MENA's geothermal pioneer project, which if successful will be replicated both in the West Bank and abroad. To put the potential US exports in perspective - it is currently estimated that there is a need for 400,000 new housing units in the West Bank in the near future. A 5 percent penetration of the domestic West Bank market would translate into a potential for \$100 million of U.S. goods and services exports.

All the companies that MENA has used in the past during its design and installation of geothermal systems in the West Bank have been American businesses. In fact, MENA is the exclusive distributor for the ground-source heat pump manufacturer, WaterFurnace International, which manufactures its heat pumps out of Fort Wayne, Indiana. MENA has installed WaterFurnace's heat pumps in all of its geothermal projects in the West Bank. Furthermore, MENA currently leases a thermal conductivity testing machine from the American business Geothermal Resource Technologies, Inc (GRTI) and uses GRTI's services for the calculation and analysis of thermal conductivity tests.

Recommendation

The Definitional Mission (DM) after meeting with the Sponsors and others in the West Bank is of the opinion that the project meets USTDA criteria and has potential for significant exports from the US, both for this immediate project and subsequent projects based on this technology. Accordingly the DM recommends that USTDA fund this project and that MENA be the Grantee.

2. PROJECT DESCRIPTION

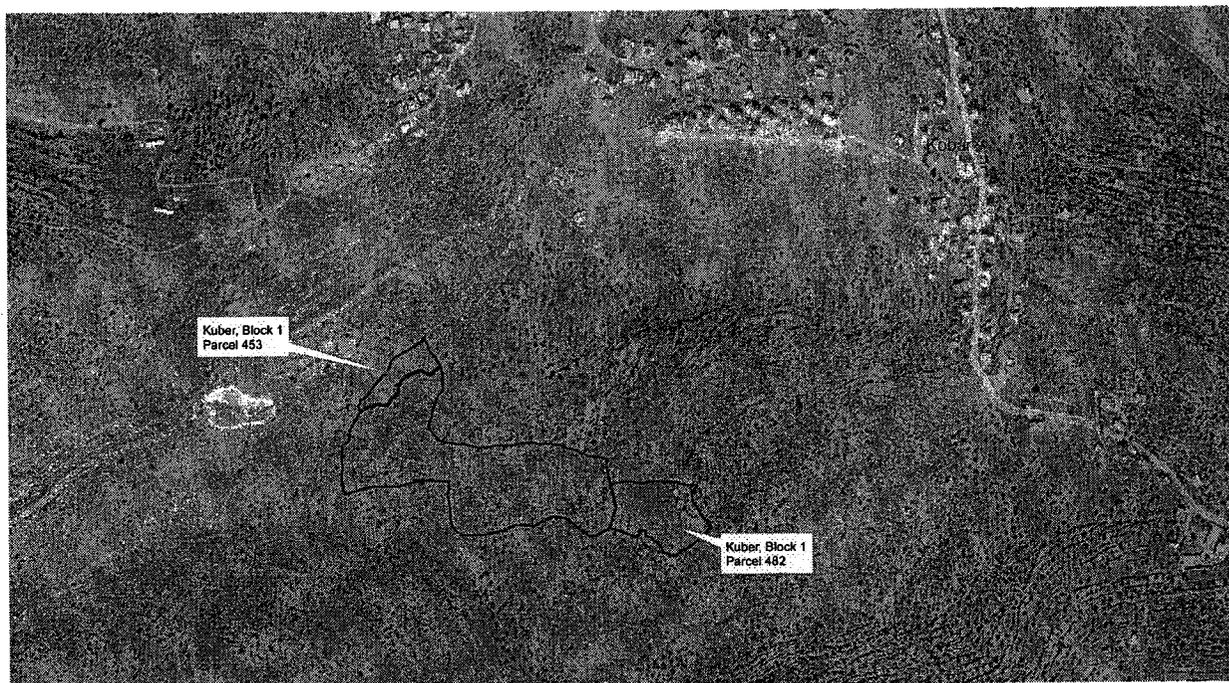
Host country and/or other project sponsors - West Bank - MENA Geothermal (MENA)

MENA is a subsidiary of Union Construction and Investment Company which owns 50% of MENA's capital. The other two shareholders of MENA are United Marketing and Services Shareholding (UMS) a private company and Khaled Mohamed Al Sabawi, which own 34% and 16% of MENA respectively. UMS is owned by AIG a local insurance company.

Sector – Renewable Energy

Project location: Ramallah, West Bank – Palestinian Territories

UCI plans to construct a 500 unit affordable housing development in Kobar, an area 5 km outside of Ramallah, West Bank and only a 5 minute drive from Birzeit University, West Bank's most popular university. The Kobar UCI development is 90 dunums (90,000 m²) in area. The development will include 20 apartment buildings with 25 apartments in each building.



Source of raw materials: Geothermal/Ground Source Energy (energy stored in the earth from the Sun, also referred to as passive solar energy)

Infrastructure requirements,

In order to develop the 500-unit project, all the necessary infrastructure including roads, electricity, water, and sewage must be delivered to the project site. For the district heating and cooling system described below, insulated underground pipe must be extended through the project site from the district plant to the buildings.

OPIC has been talking to various project developers (including the developers this project) to put together donor financing for the infrastructure needs for these developments. In total this would include over USD 100 million in infrastructure requirements. According to the DM discussions with OPIC, their recommendations for funding have been presented to the Palestine Authority (PA) where it is being currently reviewed. A decision of which projects will be supported is expected from the PA before the end of 2009. OPIC's expectations are that funding will be fast tracked for these developments.

Proposed technological approach,

Today, Palestinians are paying the highest energy prices in the entire Middle East and North Africa. In addition, Palestinians are experiencing population growth rates that are amongst the highest in the world: 3.99% in Gaza and 2.9% in the West Bank. The West Bank has no sources of natural energy and it is largely dependent on Israeli sources, with some power coming from Jordan. If this situation continues, Palestinians will continue to face significant energy problems.

Building construction remains one of the main industries in the West Bank and as a result, building loads make up a significant portion of the energy consumption in the West Bank. Considering that 60% of the energy consumed by a typical building is for heating and cooling, MENA has focused on lowering this majority demand thereby creating the largest energy savings impact on buildings. The most common conventional HVAC systems in the West Bank are diesel-powered boilers for heating, which burn fossil-fuels and directly produce CO₂ emissions, and forced-air split units for air conditioning. With the current energy prices in the West Bank, operating costs for conventional systems, especially diesel-powered boilers, have become a major burden for most Palestinians.

UCI and MENA have developed an advanced geothermal system adapted to local conditions and using some specialty local supplies. Their geothermal system has already been installed in an office building in Ramallah and in individual apartments in a housing development on the outskirts of the city. These systems have proved to be both technically and economically successful.

UCI is currently embarking on the development of a 500 apartment complex outside Ramallah. For this complex they are planning to install a centrally located district geothermal heating and cooling system that would supply heated and chilled water to the 500-unit development. A district geothermal heating and cooling system should be more economical than installing individual geothermal systems for each household. This way all 500 units can receive heating and cooling energy from a renewable source, reducing the entire development's energy consumption by 70% and significantly reducing CO₂ emissions. It is expected that at the same time significant capital and operating costs savings would be achieved related to the individual units. While the geothermal technology and the central district heating concepts are well established the combination of the two needs careful economic evaluation prior to definitively committing to this route. This will require a thorough feasibility study and analysis in order to determine the

technical and financial feasibility of such a system. The following components of the system must be addressed and evaluated:

- a) **Thermal Conductivity Test and Analysis:** In order to accurately design the ground loop component of a geothermal system, it is necessary to determine the thermal conductivity and diffusivity of the ground. Thermal conductivity/diffusivity of the ground is essentially the ability of the ground to absorb and/or release energy. A thermal conductivity test requires the installation of a vertical borehole, associated pipe, and grouting to facilitate the acquisition of data from the soil and rock formations beneath the earth at a depth of 100m. The gathered data will provide information regarding the thermal conductivity, thermal diffusivity, and undisturbed temperature of the earth at the depth of test borehole; information which is necessary to accurately design a geothermal heat exchanger capable of transferring energy to and from the earth for the purpose of heating and cooling a building. It is currently estimated that up to 12 holes may have to be drilled to adequately define the district heating needs.
- b) **District System Design:** Once the data from a sufficient number of thermal conductivity tests is acquired, a geothermal heating and cooling system can then be designed to meet the full heating and cooling demand of the 500 unit development. Such a design would require a heat loss/heat gain analysis on the 500 units to be completed, sizing of the geothermal heat-pumps, and finally a design of the ground heat-exchanger required to meet the demands of the 500 units.
- c) **Operating Costs Savings:** Based on the expected hours of the operation determined by the designers and the total heat extracted and rejected the ground by the geothermal system, an operating cost savings calculation can be completed to determine the expected energy savings compared to the standard conventional HVAC systems used.
- d) **Financial Model & Analysis:** A financial analysis must be conducted to determine the financial feasibility of a district geothermal heating and cooling system.

Legal and regulatory framework (licenses, permits, etc.),

Both UCI and MENA are registered companies in the West Bank. MENA's engineers have been certified in the design and installation of geothermal systems by Oklahoma State University's International Ground Source Heat Pump Association (IGSHPA)

Implementation schedule,

UCI owns the registered titled deed for the land in Kobar on which the 500-unit development will be constructed. The implementation schedule is highly dependent on the timing of the delivery of the infrastructure to the project site, which is the

responsibility of the PA and the local municipalities. A decision on the funding of the infrastructure by the PA is expected before the end of 2009.

With regards to planning, the master plan for the 500-unit Kobar project is currently under development and is expected to be completed by November 2009. Once the master plan is completed and the building designs are complete, MENA can finalize a feasibility study on the application of a district geothermal heating and cooling system to the entire project.

Economic fundamentals

The following numbers are for installing a district geothermal heating and cooling system for a 500 unit development. These are estimations only and are based on MENA's experience of installing geothermal systems in the West Bank. The following assumptions have been made:

General Assumptions

Cooling Load (kW):	6.25 MW
Heating load (kW):	5.04 MW
Load / m ² (watt/m ²):	100
Total # of Conditioned Unit (125m ² / Apt)	500
Total Conditioned Area (m ²)	62,500
Avg # of Hours of Operation / Unit / Day	12
Diesel Price (\$/Liter)	\$1.15
Electricity Price (\$/kWh)	\$0.17

System Costs

District Geothermal System Cost*	\$5.1 Million
Equivalent District Conventional System Cost	\$1.5 Million
* Includes 10 year warranty on the heat pumps	

Operating Cost Savings

Conventional System Operating Costs / Year	\$1.3 Million
Geothermal System Operating Costs / Year	\$580,000
Savings / Year	\$720,000
CO2 Emission Saved / Year	1,400 TONS

Simple Payback Period	5 Years*
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*Assuming no increase in energy prices (this represents the worst case scenario, as energy prices are surely to increase. A rise in energy price can significantly lower the payback period on the initial capital investment).

Other key variables or issues

The West Bank imports most of its energy either as petroleum products or as electricity. The petroleum product imports (all coming from Israel) are a major problem and financial burden for the West Bank. Both the magnitude of the petroleum bill and the

volatility of petroleum prices have (and will continue) to create problems for the PA. Anything that can be done to reduce petroleum imports into the West Bank will help to diminish the demands on the PA's financial resources.

3. PROJECT SPONSOR'S CAPABILITIES AND COMMITMENT

Project Sponsor's business/government operations or authority

MENA (Grantee), is a private business registered in the West Bank that specializes in the design and installation of residential and commercial geothermal heating and cooling systems.

Project Sponsor's previous commitments, responsiveness, business activities, and government mandate.

MENA successfully installed and tested the first residential geothermal system in the entire Middle East and North Africa in Ramallah, in the model home of the Etihad Subdivision. This achievement has brought a great sense of pride to the West Bank and has reaffirmed the Palestinian people's prominent level of education in the Arab world. The first geothermal system was an enormous success, saving 3,600 liters of diesel fuel, 2,400 kWh of electricity annually, and 5,000 kg of CO₂ emission every year. It reduced operating costs for heating and cooling from \$8,100 to only \$2,700 per year, resulting in a payback period of 3.5 - 5 years. This success was broadcasted on regional TV stations including Al Arabiya and MBC, demonstrating that while living under the harshest occupied conditions, Palestinians are still able to innovate and advance.

Upon completion of the first residential geothermal system, MENA went on to complete the first and largest commercial geothermal system in the entire region in their parent company's 4,600m² office building in Al Masyoun in Ramallah. This installation generates savings of \$30,000 in energy consumption, 220,500 kWh of electricity, and 40,000 kg of CO₂ emissions every year. For their design of this commercial geothermal system, MENA was recently awarded the *Energy Globe Award 2008*.

In addition to these achievements, MENA has found a way to uniquely develop geothermal technology using local materials available here in the West Bank, thereby further increasing efficiency and improving the environment. To increase the efficiency of the holes that are drilled to access the energy stored in the earth a conductive material must be used to seal these holes. After months of research, MENA's engineers found a material that is naturally available and free of charge to use: limestone powder, a by-product of the blocks used to construct and embellish buildings in the West Bank. Limestone powder was dumped before MENA discovered this novel way of recycling it and putting it to excellent use.

4. IMPLEMENTATION FINANCING

A financial analysis must be conducted to determine the financial feasibility of a district geothermal heating and cooling system. The financial analysis would include the following:

1. Determine the initial capital investment in a district geothermal heating and cooling based on the results of numerous thermal conductivity test completed on-site;
2. Conducting a payback period analysis on the initial capital invested;
3. Analyzing a financial model that would considers the option of dividing the capital investment on the 500 units and including the extra capital as part of housing mortgage for the homeowner. This would transfer the both the savings and the payback period to the homeowner, thus it would make the homeowner the investor; and
4. Analyzing a financial model that would consider the option of no capital investment on the 500 units, rather the sale of thermal energy to all units. This would require a third party to invest in the district geothermal plant and generate revenues from the sales of thermal energy at a price equal to or less than the current price of conventional energy.

The financing of MENA's previous projects (office building and apartment complex) has been done either by auto-financing or by inclusion of the cost in the cost of the individual apartment and thus appeared as a homeowner's addition capital/mortgage investment. As mentioned above, the use of a central district heating and cooling system opens the possibility to more creative financing options for the installation. OPIC is currently looking at ways of financing the infrastructure needs (roads, utilities, etc.) for housing development in the West Bank with the PA. These options are currently under consideration by the PA. The possibility of extending the funding solution decided upon for this project will have to be considered. It is expected that a significant portion of this development (similar to UCI's previous apartment development) will attract investment from Palestinian expatriates.

5. U.S. EXPORT POTENTIAL

All the companies that MENA has used in the past during its design and installation of geothermal systems in the West Bank have been American businesses. In fact, MENA is the exclusive distributor for the ground-source heat pump manufacturer, WaterFurnace International, which manufacturers its heat pumps out of Fort Wayne, Indiana. MENA has installed WaterFurnace's heat pumps in all of its geothermal projects in the West Bank. Furthermore, MENA currently leases a thermal conductivity testing machine from the American business Geothermal Resource Technologies, Inc (GRTI) and uses GRTI's services for the calculation and analysis of thermal conductivity tests.

If a district geothermal system is to be installed in the future, it would benefit American business in the following ways:

- Design Consultant:** A design consultant would be required to design the ground heat exchanger component of the district geothermal system and size the geothermal heat pumps.
- Data Collection:** In order to accurately design the ground loop component of a geothermal system, it is necessary to determine the thermal conductivity and diffusivity of the ground. The American business Geothermal Resource Technologies, Inc (GRTI) provides the technology required to conduct the test and the services for the calculation and analysis of thermal conductivity tests. Dollar value of service: \$30,000.
- Manufacturing:** If the district system is to be installed, it would generate a very large order of heat pumps from numerous potential American ground source heat pump manufacturers. WaterFurnace International is one of the leading American ground source heat pump manufacturers. The dollar value of goods manufactured in the US and exported to the West Bank would be approximately \$2,000,000.
- Training:** Installing a district system would require training for both the engineers supervising the installation and the skilled laborers that will physically install the system. This will provide an opportunity for American businesses/institutions that are certified in the training of the installation of geothermal systems to provide training services for the staff that will be installing the district system. WaterFurnace and Oklahoma State University's International Ground Source Heat Pump Association employ trainers that can provide such training services. Dollar values of service: \$20,000.00.

This project will be the MENA's geothermal pioneer project, which if successful will be replicated both in the West Bank and abroad. To put the potential US exports in perspective - it is currently estimated that there is a need for 400,000 new housing units in the West Bank in the near future. A 5 percent penetration of the domestic West Bank market would translate in \$100 million of U.S. goods and services.

6. FOREIGN COMPETITION AND MARKET ENTRY ISSUES

There are numerous foreign or non-US business that offer competitive products and services in the geothermal or ground source heat pump industry. Major foreign

competition comes from Sweden, Switzerland, Germany and Canada. To list a few foreign heat pump manufacturers:

Ground-Source Heat Pump Manufacturers:

There are numerous Canadian, Swedish, and German ground-source heat-pump manufacturers are competing with American manufacturers, for example:

Maritime Geothermal Ltd. - Canadian manufacturer of residential and commercial ground source heat pumps.

Viessmann - German manufacturer of commercial and residential ground source heat pumps.

Geo-Energie - Canadian consulting firm that specializes in the design of geothermal systems. Geo-Energie also offers training.

Also, the Canadian geothermal marketing is expanding rapidly. The success of the Canadian Geo-Exchange Coalition (www.geo-exchange.ca) in providing standards, trainers, and training courses demonstrates strong potential competition to the U.S.

Discussions with German suppliers indicates that European manufactured heat pumps designed for the European markets are approximately 70 percent more expensive than US (or Canadian) machines for the same heat-load, due to the more sophisticated and automated heat pumps demanded by the European market.

7. DEVELOPMENTAL IMPACT

7.1 Primary Developmental Benefits:

Infrastructure (including any positive environmental impacts)

A district geothermal heating and cooling system designed for a 500 unit development will provide significant reductions on the energy infrastructure of the West Bank. Using a geothermal district system will reduce energy consumption by 70% for the 500 unit development, amounting to a reduction of roughly 1.1 million kWh of electricity consumption in cooling per year and 280,000 liters of diesel fuel per year. Such a reduction in energy consumption will result in an estimated reduction of 1400 tons of CO2 emission per year. This does not take into account the energy and environmental benefits of completely eliminating the need for diesel delivery trucks to and from development. The completion of a district geothermal system will also result in better energy security for the West Bank (less dependence on energy imports) and higher availability of energy to the population through the reduced consumption caused by the district geothermal system.

Human Capacity Building (including jobs and training)

As mentioned in the section above, an installation of a district geothermal heating and cooling system would create a significant number of new jobs in the West Bank. Installing such a system would require a number of engineers, skilled, and unskilled laborers. All the staff involved in installing the district system would have to be trained by a certified trainer in the installation of geothermal systems. New skills such as pipe fusion, grouting, ground loop installing, ground-source heat pump installation, etc. will be provided.

Technology Transfer and Productivity Improvement

Training in the design and installation of a district geothermal heating and cooling system will essentially transfer geothermal technology to the West Bank in a unique way, as it will be applied in a district system.

Market Oriented Reforms.

The installation of a district geothermal system for 500-unit development in the West Bank will help with the creation a new green energy/alternative energy market in the West Bank. The already high energy prices in the West Bank have reduced payback period on renewable energy system and have allowed renewable energy systems to be more economically attractive. Conducting a proper feasibility study on a district geothermal system will alleviate the risks involved with the implementation of a new concept and will thus increase the chances of a successful installation, which will thereby increase the chances of a thriving market in green energy. Virtually all of the energy used in the West Bank today has to be imported either in the form of petroleum products and/or electricity. The development of this type of project will give the Palestinian's increased control of and autonomy with respect to their energy supply.

Other host country economic development benefits

Paying for imported energy is a major component of the PA budget. Hence any saving in energy import requirement will become available for much needed other social, educational, and infrastructure needs.

Purpose and objective of the study

UCI and MENA are considering installing a district geothermal heating and cooling system that would supply circulating heated and chilled water to heat and/or cool the 500-unit development. A district geothermal heating and cooling system could be significantly more economical than installing individual geothermal systems for each household. This way all 500 units can receive heating and cooling energy from a renewable source, reducing the entire developments' energy consumption by 70% and significantly reducing CO2 emissions.

While MENA has already installed geothermal units in office buildings and individual homes in the West Bank, this will be the first of a kind using a central geothermal system to service multiple dwellings. This district geothermal heating and cooling system thus requires a thorough feasibility study and analysis in order to determine the technical and financial feasibility of the system. The FS will serve as a bankable document for the

implementation of this project and will also serve as a basis for replication in future housing development projects both domestically and abroad.

Alternatives

For a 500-unit development in the West Bank, the only alternative to a district geothermal system would be the use of conventional HVAC systems such as diesel-powered boilers for heating, which burn fossil-fuels and directly produce CO₂ emissions, and forced-air split units for air conditioning. With the current energy prices in the West Bank operating costs for conventional systems, especially diesel-powered boilers have become a significant burden for most Palestinians.

8. IMPACT ON THE ENVIRONMENT

Since geothermal systems do not burn any fossil fuels during heating and cooling, they generate virtually no direct carbon dioxide. Geothermal systems are considered by the U.S. Environment Protection Agency as the most "environmentally friendly" heating and cooling system available. Not only do geothermal exchange systems significantly reduce electricity consumption, they actually benefit the environment by significantly reducing emissions that would be produced by conventional systems. Installing geothermal in an average 2-bedroom house is equivalent to taking 2 cars off the road or planting an acre of trees. In the U.S. every 100,000 homes with geothermal exchange systems reduce foreign oil consumption by 2.15 million barrels annually and reduce electricity consumption by 799 million kilowatt hours (kWh) annually with a corresponding decrease of carbon dioxide emissions.

In addition to directly reducing CO₂ emissions, ground-source heat pumps have significantly longer service life than conventional heating and cooling equipment. The average service life of ground-source heat pumps is 24.4 years.

9. IMPACT ON U.S. LABOR

Based upon this review, the DM has found that Project does not provide (a) any financial incentive to a business enterprise currently located in the United States for the purpose of inducing such an enterprise to relocate outside the United States if such incentive or inducement is likely to reduce the number of employees of such business enterprise in the United States because United States production is being replaced by such enterprise outside the United States; (b) assistance for any project or activity that contributes to the violation of internationally recognized workers rights; or (c) direct assistance for establishing or expanding production of any commodity for export by any country other than the United States, if the commodity is likely to be in surplus on world markets at the time the resulting productive capacity is expected to become operative and if the assistance will cause substantial injury to United States producers of the same, similar, or competing commodity.

The project will use packaged heat pumps manufactured in the US to replace conventional HVAC systems sourced locally in the Middle East. As such it will have a net positive impact on the manufacturing sector in the U.S.

10. QUALIFICATIONS

The study team selected to conduct a feasibility study on the installation of a district geothermal heating and cooling system must be qualified in the following ways:

5. Design Consulting - The design consultant selected to design the district system must be experienced in the design and simulation of large commercial geothermal systems. This experience must include the overall integration of the ground loop, heat pump(s), distribution and integration of the whole system. Experience with multi-dwelling/building systems and various ground source (ground aquifer and water source closed loop, open loop, and various configurations (vertical, horizontal) is important.
6. Technical Analysis – A team member must be experienced in the analysis of the data that is collected from thermal conductivity tests.
7. Local Experience – In order to price a district geothermal system after it has been designed, a local contractor experienced in the installation of geothermal system will be required.
8. Financial Analysis – In order to create a financial model that would analyze the different operation options of the district geothermal system, an experience financial analyst would be required.

11. RECOMMENDATIONS

The DM after meeting with the Sponsor MENA and others in the West Bank is of the opinion that the project meets USTDA criteria and has the potential for significant exports from the US, both for this immediate project and subsequent projects based on this technology. Accordingly DM recommends that USTDA fund this project and that MENA Geothermal be the Grantee.



**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 the West Bank 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 the West Bank 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 West Bank 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 West Bank 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 West Bank 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 West Bank 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.

GRANT AGREEMENT

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 MENA Geothermal Ground Energy and Investment Company Ltd. ("Grantee"). USTDA agrees to provide the Grantee under the terms of this Agreement US\$438,162 ("USTDA Grant") to fund the cost of goods and services required for a feasibility study ("Study") on the proposed Geothermal for District Heating and Cooling Project ("Project") in the West Bank.

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. In addition, the Grantee will provide a cost share of \$20,489, which will consist of drilling and related services. The Grantee will supply the drilling and grouting equipment including a two man operating team needed to carry out the drilling and testing tasks. The Grantee will assume all risks and costs, such as but not limited to, drilling replacement of drill bits, equipment repair and other incidents associated with the drilling of the test holes. Failure

of the Grantee to provide the drilling in a timely and satisfactory condition shall lead to the termination of the Study in accordance with the provision of Task 2 of the Terms of Reference.

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). 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 January 31, 2011, 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 the West Bank 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 the West Bank 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 the West Bank. 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. Consul General in Jerusalem or USTDA and Grantee will be represented by the Khaled Al Sabawi (General Manager). 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: Khaled Al Sabawi
UCI Headquarters Building, 3'd Floor
Al Masyoun Heights, Ramallah, West Bank
Phone: +970-2-295-8355
Fax: +970-2-295-8354

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. Consulate in Jerusalem 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 10/11 1001
Activity No.: 2010-21007A
Reservation No.: 2010210006
Grant No.: GH 2010210003

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 Grantee 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.

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IN WITNESS WHEREOF, the Government of the United States of America and MENA Geothermal Ground Energy and Investment Company Ltd., 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 MENA Geothermal Ground
Energy and Investment Company Ltd.**

By: _____

By: _____

Date: _____

Date: _____

Witnessed:

Witnessed:

By: _____

By: _____

Annex I -- USTDA Mandatory Clauses

Annex I

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 MENA Geothermal Ground Energy and Investment Company Ltd. ("Client"), dated _____ ("Grant Agreement"). The Client has selected _____ ("Contractor") to perform the feasibility study ("Study") for the Geothermal for District Heating and Cooling Project ("Project") in the West Bank. 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 the West Bank 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 the West Bank 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. Consulate in Jerusalem 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 West Bank as the location of the Activity, 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 January 31, 2011, 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 10/11 1001

Activity No.: 2010-21007A

Reservation No.: 2010210006

Grant No.: GH 2010210003

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 the West Bank. Neither the Client nor the Contractor will seek reimbursement from USTDA for such taxes, tariffs, duties, fees or other levies.

TERMS OF REFERENCE

Purpose and objective of the study

MENA Geothermal Ground Energy and Investment Company Ltd. (the Grantee) is considering installing a district geothermal heating and cooling system that would supply heated and chilled water to heat/cool a 500-unit development. The planned complex will be located on a plot of 60 dunams in an area called Kobar, which is approximately 15 km from Ramallah. A district geothermal heating and cooling system would be significantly more economical than installing individual geothermal systems for each household. This way all 500 units can receive heating and cooling energy from a renewable source, reducing the entire developments' energy consumption by 70% and significantly reducing CO2 emissions.

While the Grantee has already installed geothermal units in office buildings and individual homes in the West Bank, this will be the first of a kind using a central geothermal system to service multiple dwellings. This district geothermal heating and cooling system thus requires a thorough feasibility study and analysis in order to determine the technical and financial feasibility of the system. The Feasibility Study (FS) will serve as a bankable document for the implementation of this project and will also serve as a basis for replication in future housing development projects both in the West Bank and beyond. The individual tasks required to ascertain economic viability are as follows:

Task 1 - Study Initiation

The Contractor shall travel to the West Bank to meet with the Grantee in Ramallah to discuss the details and methodology for carrying out the FS. The Contractor shall review currently available information and discuss the Grantee's expectations for the Project. The Contractor will also meet with other Government and private sector entities as deemed appropriate to execute the FS, including, but not limited to the Palestinian Authority, and the Palestine Investment Fund.

The Grantee will make available to the Contractor all data, statistics, reports and other available necessary information on the Project. The Grantee will also provide the Contractor with details and operating experience of the Grantee's existing geothermal installations in the West Bank.

The Contractor's Study initiation activities shall include but not be limited to the following pre-design survey and analysis activities:

Project Survey

- Building Development Objectives;
- Building, Use, Occupancy Levels and Features;
- Site Characteristics (Aspect, Climate, Soil); and
- Installation Logistics, Schedules and Budgets.

Preliminary Project Analysis and Configuration

- Review of Local Geologic Conditions based on prior projects in the area;
- Review of possible Ground loop configurations including various options of type and number of ground loops;
- Estimation of Ground loop Number, Size and Flow Rates; and
- Estimation of Land Area Needed.

Preliminary Definition of Integrated System Options

- Single versus Multi loop option;
- Alternative configurations, ground sources, hybrid systems;
- Water-to-air versus water-to-water ground source heat-pumps;
- Integrated system options; and
- Definition of preferred option.

Deliverables - The Contractor shall prepare a preliminary report detailing the data gathered and reporting the preliminary analysis of the options considered. Based on this information the Contractor shall recommend the option(s) to be considered for further analysis. This shall include recommendations for the number of wells and location that will be needed to be drilled and tested to serve as a basis for a more accurate and definitive design of the system.

Task 2 - Drilling and Conductivity Assessment

Based on the initial assessment of the projected heating and cooling load requirements and topography, the Contractor shall determine the number and location of test holes that will be needed to adequately define the ultimate Project's geothermal source and sink needs. It is anticipated that the number of test holes will not exceed twelve (12) test holes.

Grantee Responsibility - The Grantee will supply the drilling and grouting equipment including a two man operating team needed to carry out the drilling and testing tasks. The Grantee will assume all risks and costs, such as but not limited to, drilling replacement of drill bits, equipment repair and other incidents associated with the drilling of the test holes. If the Grantee fails to provide the drilling equipment and labor to complete the drilling on or before three months (90 days) have passed following the completion of Task 1, the Contractor shall notify USTDA in writing and USTDA shall cease its funding of the feasibility study and the Grant Agreement shall be terminated in accordance with Clause 18 thereof.

Contractor Responsibility - The Contractor shall be responsible for the drilling, grouting, and testing of the test holes in sufficient detail to serve as a definitive basis for designing and implementing the ground loop. This shall include but not be limited to:

- a) Supervision and direction of the drilling of the test wells – the actual drilling will be the responsibility of the Grantee, using its own drilling equipment and manpower;
- b) Supply and insertion of down hole tubing;
- c) Preparation and Grouting of the test holes;

- d) Testing of each well and the gathering and interpretation of data needed to determine the information regarding the thermal conductivity, thermal diffusivity, and undisturbed temperature of the earth at the depth of test borehole; and
- e) Carrying out of any further test/analysis deemed appropriate by the Contractor.

The Contractor shall be responsible for all supplies and costs associated with the drilling, preparation and testing of the test wells, with the exception as referenced above, that the Grantee will supply the drilling and grouting equipment along with a two person crew to operate the Grantee-supplied drilling rig to drill the bore holes. All other costs, including the provision of all labor, equipment, supplies, fuels (e.g. gasoline/ diesel) and power, security and support personnel required to drill, equip and test the wells shall be the responsibility of the Contractor. The estimated budget for the drilling-related costs associated with this task that will be borne by the Contractor is \$86,040.96. The estimated budget for the Grantee's contribution (supply of the drilling equipment and drilling labor) is \$20,488.92.

Preparation and testing of the test holes shall be carried out using Grantee's proprietary grouting methods unless otherwise agreed upon by the Contractor and Grantee.

Deliverables – The Contractor shall prepare a report detailing the results of the drilling program and the results of the thermal conductivity and thermal diffusivity tests of each well.

Task 3 - Heat Load Assessment and System Design

The Contractor shall produce a design of the heating and cooling system, including but not limited to the following:

- The Contractor shall carry out a heat loss/heat gain analysis on the 500 units to be completed for the Project. This analysis shall take cognizance of the development of insulation and other improvements in household heat efficiency applicable in the West Bank;
- The Contractor shall provide recommendations on details such as: building orientation, shading, insulation, double-glazing, and other aspects that will reduce the heating and cooling load of the 500 units;
- The Contractor shall select and design efficient and economical internal distribution systems for the 500 units that would achieve comfortable and adequate inside temperatures during winter and summer using the thermal energy supplied by the geothermal district system; and
- The Contractor shall determine the sizing of the ground source heat-pumps, and prepare a final design of the ground heat-exchanger required to meet the demands of the 500 units, based on the data acquired from the thermal conductivity test, and the interconnecting distribution infrastructure requirements of the integrated system.

Deliverables – The Contractor shall prepare a final design for the system including details of the Ground loop, heat pump and distribution system to service the 500 units in sufficient detail to allow an investment cost estimate to be made to an accuracy of +/- 20 percent. The

design shall include the location, size, specifications and integration of all major equipment needed.

Task 4 - Economic Analysis of the Project

The Contractor shall prepare an economic analysis of the Project. This shall include capital and operating cost requirements, sensitivity analysis to market conditions, comparison with alternatives for different fuel and electricity prices. The Capital cost estimate shall include a detailed breakdown for the ground loop, heat pump, and distribution system. The Contractor shall identify any import duties, tariffs and/or taxes for imported components and include them in the cost estimate.

The Contractor shall clearly define any subsidies or other financial or legislative support that the Project would need from the Palestinian Authority (PA) and/or the Israeli and Jordanian power suppliers to make the Project more economically viable. The Contractor shall present a sensitivity analysis demonstrating the need for subsidies under different economic or other exogenous conditions (e.g. Diesel prices, electricity rates). The Contractor shall also prepare a comparison of subsidies, credits and other subsidization mechanisms used to promote similar geothermal projects in other countries such as those used in the US, Europe, Israel and other Mediterranean countries.

The economic analysis shall also include an analysis of potential delays or actions that could occur as a result of import impediments that could occur in the import of foreign equipment through Israel into the West Bank or other administrative delays (PA and/or Israeli).

Deliverables – The Contractor shall prepare a report of the economic analysis identifying the economics of the geothermal system and the sensitivity to the major parameters as well as a competitive comparison with conventional heating and cooling systems currently used in the West Bank. The report shall include a preliminary estimate of the viability of the Project based on work carried out in Tasks 1 through 4.

Task 5 - Local Training

The Contractor shall prepare and present a training program in the West Bank for local staff of the Grantee covering latest geothermal technology and implementation practices. A training session of approximately one week's duration will cover the following topics:

- a) Drilling and Conductivity Analysis;
- b) Design of Ground Loop and Heat Pump Systems;
- c) Overall Integrated System Design;
- d) Design of multi dwelling systems – special considerations and case studies; and
- e) Overview of current development and practices in the US and other countries.

The training program will be directed at training the local staff of the Grantee to a) be able to implement and manage the system under consideration, and b) develop the necessary skills to design and implement similar projects in the West Bank in future. The level of training shall be such as to allow student(s) to qualify for the Certified Geo-Exchange Designer Certification provided by the International Ground-Source Heat-Pump Association or equivalent.

Deliverables - The training sessions will take place in Ramallah for approximately six people. It is anticipated that the Contractor shall provide at least two instructors. The number of instructors shall be determined by the Contractor and dictated by the need to provide detailed specialized instruction in each of the areas of importance: e.g. ground loop design, drilling and testing, system integration, multi-dwelling/commercial system design, etc. The Contractor shall prepare a post training report including a record of attendees, topics covered, certifications obtained. It shall also include recommendations for further training needs to attain international level of certification and competence to implement this type of project in the West Bank.

Task 6 - Financial Analysis

The Contractor shall prepare a financial analysis to determine the financial feasibility of the district geothermal heating and cooling system. The Contractor shall at a minimum, address the following aspects:

- a) ***Identification of Source of Financing*** - This analysis shall consider the various options and funding mechanisms that could be made available to the Project and/or the individual homeowner. This shall include the identification of both domestic West Bank and foreign sources of funds. The Contractor shall address the potential for attracting special donor, environmental specific and other sources of funds for the Project.
- b) ***Definition of Financing Mechanisms Options*** - The financial analysis shall also consider various options, including but not limited to financing as a separate utility; development cooperative financing; inclusion in apartment mortgage by individual owners; and service supply by the State Electricity Company.
- c) ***Sensitivity Analysis*** - The analysis shall include a cash flow analysis, profitability, and rate of return, and shall include a sensitivity analysis for variations in capital investment, drilling costs, funding mechanisms, tax tariff and subsidies.
- d) ***Financial Comparison with Alternative Options of Heating and Cooling Systems***. The Contractor shall develop a financial comparison of alternative methods of supplying the heating and cooling services to the development, such as conventional systems (electricity, diesel, LPG). The Contractor shall also include an analysis of the avoided cost of the Project's impact on the central power grid requirements that would result from the use of conventional heating and cooling.

Deliverables – The Contractor shall prepare a report of the financial analysis carried out in this Task. This shall include details of all discussions with potential financial sources, expressions of interest, potential terms and conditions, as well as recommendations for sources of financing.

Task 7 - Preliminary Environmental Impact Assessment

The Contractor shall prepare a preliminary review of the Project's anticipated impact on the environment with reference to local requirements and international agencies (such as the EU, World Bank). This review shall identify potential negative impacts, discuss the extent to

which they can be mitigated, and develop plans for a full environmental impact assessment for project implementation. This shall include the identification of steps that will need to be undertaken by the Grantee subsequent to the Study's completion and prior to Project implementation.

Deliverables – The Contractor shall prepare a report containing the details of the environmental impact assessment carried out under this Task.

Task 8 - Review of Regulatory Issues Related to the Project

The Contractor will review all rules, regulations and legislation pertaining to home construction and utilization, water use, energy generation, consumption and distribution, land use and any other aspects that would impact the viability of this Project. This shall include but not be limited to rules in the West Bank, but should also include regional and international (e.g. EU) regulations and standards that may impact this Project.

The Contractor shall review all fiscal policies that may impact this Project such as environmental taxes and/or subsidies, tax benefits or holidays for new environmental companies, penalties for environmental degradation, grant funds availability. The contractor shall also review all regulatory issues, restrictions and other mandates, agreements and protocols flowing from the Israeli Administration of the West Bank that would apply to this Project.

Deliverables – The Contractor shall prepare a report detailing all the regulatory issues in place or that would need to be addressed to implement this Project.

Task 9 - Analysis of Key Development Impacts

The Contractor shall prepare a benefit analysis intended to provide the Grantee and interested parties with a broader view of the Project's potential effects on the West Bank.

The analysis shall focus on what development impact is likely if the Project is implemented according to the Study recommendations. Specific focus shall be paid to the immediate impact of the Project. The analysis shall also include any additional developmental benefits that may result from the Project's implementation, including spin-off and demonstration effects. The analysis shall assess each of the following categories with respect to the Project's potential Development Impact:

- (1) Infrastructure:** A synopsis on the infrastructure that would be built as a result of the Project;
- (2) Market- Oriented Reform:** The Contractor shall provide a description of any regulation, laws, or institutional changes that are recommended and the effect they would have if implemented;
- (3) Human Capacity Building:** The Contractor shall assess the number and type of local positions that would be needed to construct and operate the proposed Project, as well as the number of local people who would receive training. The Contractor shall also describe any such potential training program;

(4) Technology Transfer and Productivity Enhancement: The Contractor shall provide a description of any advanced technologies that would be utilized as a result of the Project; and

(5) Other: Describe any other developmental impacts or benefits that would result from the Project, for example, follow-on or replication projects, safer workplace, increased good governance or improved financial revenue flows to the West Bank.

Deliverables – The Contractor shall prepare a report detailing the development impact that this Project will have on the West Bank. This shall include the potential development impact that the replication of this Project (as a pioneer project) would have on the development of the West Bank.

Task 10 – U.S. Sources of Supply

While aiming at optimum specifications and characteristics for the Project, the Contractor shall make an assessment of the availability of potential U.S. sources of goods and services that may be needed by this Project including, but not limited to: heat-pumps, energy meters, engineering and construction services, specific equipment, and legal and financial services.

Deliverables – The Contractor shall prepare a report of the assessment of US potential suppliers that would be needed for this and other similar projects. The Contractor shall supply business name, points of contact, address, telephone, e-mail, and fax numbers for each source.

Task 11 - Implementation Plan

Based on the work carried out in Task 1 through 9 above, the Contractor shall develop an implementation strategy and plan for the successful implementation of this Project. This shall include but not be limited to the following:

- a) Define the next steps and timing necessary to implement the Project;
- b) Define any Palestinian Authority support, legislation, subsidies, protection or other vehicles that will be required to make the Project economically viable;
- c) Identification of any regulatory administrative or legislative impediments to the execution of the Project; and
- d) Prepare an Investment Memorandum which will include a project description and allow the Grantee to solicit international expressions of interest of potential partners who will invest in this Project together with the Grantee.

Deliverables – The Contractor shall prepare a report identifying a recommended strategy for the implementation of the Project and detailing specific options where appropriate. The Contractor shall also provide the Investment Memorandum.

Task 12 - 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. 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 _____.

2. 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.
3. 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 2 above.
4. 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.
5. 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. USTDA retains the right to request an updated certificate of good standing from the selected Offeror.

Signed: _____
(Authorized Representative)

Print Name: _____

Title: _____

Date: _____