REQUEST FOR PROPOSALS:

TRAINING ON GEOSCIENCE AND GEOCHEMISTRY

FOR GEOTHERMAL RESERVOIR MANAGEMENT

OPPORTUNITY OPEN DATES:

May 11 - 26, 2017

BACKGROUND:

The U.S.-East Africa Geothermal Partnership (EAGP) is a public-private partnership between the U.S. Agency for International Development (USAID) and the US Geothermal Energy Association (GEA), implemented by the U.S. Energy Association (USEA). It was established in September 2012 to promote the development of geothermal energy projects and increase private sector investments in geothermal in East Africa. It also encourages and facilitates the involvement of the U.S. geothermal industry in the region.

EAGP is part of the Power Africa Initiative. One of the goals of the Initiative is doubling access to power in sub-Saharan Africa in five years. Power Africa uses a wide range of U.S. government tools to support investment in Africa's energy sector. From policy and regulatory best practices, to prefeasibility studies and capacity building, to long-term financing, insurance, guarantees, credit enhancements and technical assistance, Power Africa provides coordinated support to help African partners expand their electricity generation capacity and access. With an estimated 15,000 MW of potential geothermal capacity in East Africa - a clean, reliable, baseload power solution – geothermal energy is critical to East Africa's economic development especially as a base-load power source.

The Government of Kenya(GoK) is working to develop the country's geothermal resources for power generation and direct use. GoK, through the parastatal Geothermal Development Company (GDC) and Kenya Electricity Generation Company (KenGen), is developing or preparing to develop several geothermal resource areas in the next 15 years. In order to support GoK's objectives, EAGP plans to provide training to GDC's reservoir management staff in key innovations in geothermal reservoir management. Although geothermal energy is renewable, project developers and operators must carefully maintain the underground resources to ensure sustainable fuel supply for the power plant. Understanding the physical and chemical makeup of the geothermal resource is critical to project planning. Increasingly, the private sector is employing cutting edge applications of geosciences to improve reservoir performance, identify changes in reservoir behavior, and predict future reservoir behavior.

This consultancy, funded by Power Africa through the U.S. – East Africa Geothermal Partnership (EAGP), aims to build the capacity of GDC reservoir management staff to efficiently and effectively manage

geothermal reservoirs in their concession areas at Menengai and other resource areas under development. The consultant will:

1. Produce an agenda and training material for a single five (5) day training program for GDC reservoir management staff on the role of geoscience and geochemistry in reservoir management;
2. Highlight innovative and/or cutting edge technologies and techniques for geoscientific monitoring and management of geothermal reservoirs;
3. Travel to Nairobi and Nakuru, Kenya for five (5) working days to deliver the training program to GDC reservoir management staff;
4. Administer a pre-training and post-training survey to measure trainees' progress; and Deliver a post-training report to EAGP summarizing the training program and outcomes for trainees.

PROJECT TASKS AND DELIVERABLES

The Consultant will carry out the following:

Task 1: Preparation and Delivery of an Agenda/Course Outline and Training Materials for a Five (5) Day Training Course on the Role of Geoscience in Reservoir Modeling and Management

Prior to travel to Kenya, the Consultant(s) will liaise with EAGP management to develop a course outline/agenda for the training program and the corresponding training materials. In coordination with EAGP and USAID/Kenya, the Consultant(s) will communicate with GDC to determine ideal dates for the training program.

Upon arrival in Kenya, the Consultant(s) will travel with EAGP staff to the GDC training facility in Nakuru. The Consultant(s) will then deliver a five (5) day training program on the use of geochemistry and geoscience in geothermal reservoir modeling and management. The Consultant(s) will be responsible for monitoring participation by GDC staff and providing a list of participants by day to EAGP. The Consultant(s) will have limited logistical support from EAGP, but will be responsible for ensuring that all audiovisual and other equipment required to deliver the training is available. The presentations delivered by the Consultant(s) should provide a brief introduction to the Consultant(s), their educational backgrounds, professional experience, and the Consultant's company capabilities. The presentations should be targeted to highly skilled and educated geoscientists.

The core focus of the presentations should be an overview of key concepts in geochemistry, geoscience, and reservoir management to be explored and discussed throughout the week of assessment. The Consultant(s) shall cover the following topics, and shall be responsible for topics appropriate for his/her areas of expertise.

- **Basic Reservoir Properties and Processes**
    - Enthalpy
    - Pressure

    - Temperature
    - Permeability and Connectivity
- **Physical Changes in Reservoir with Production and Injection**
    - Boiling
    - Pressure decline
    - Temperature decline
    - Pressure and Temperature increases
    - Permeability and Connectivity
- **Chemical Changes in Reservoir Fluids**
    - Boiling
    - Pressure and temperature declines
- **Geochemical Monitoring/Measurements**
    - Sampling
    - Brine
    - Steam
    - Physical properties
    - Analyses
- **Interpretation of Reservoir Behavior from Geochemical Monitoring**
    - Boiling
    - Pressure decline
    - Temperature decline
    - Pressure and Temperature increases
    - Permeability and Connectivity
    - Procedures and Methodology
    - Schedule and Sampling Frequency
    - Data Management
    - Interpretation and reporting

Deliverables for Task 1:

Any draft-version digital files or physical handouts to be presented as part of the training program should be submitted to USEA/EAGP no later than one week prior to the start of the training program. Final presentation materials should be submitted to USEA/EAGP no later than one week after the training program.

Task 2: Submit a Report Following Completion of the Training Program

Following completion of the training program, the Consultant(s) shall submit one report that summarizes major outcomes from the training program, challenges encountered, and progress/knowledge gained by participants. The report should include a summary of the pre-training and post-training surveys administered by the Consultant(s). The report will be marked "Confidential" and will not be distributed by the Consultant(s) without the express permission of GDC and/or USEA/EAGP. The report will include the following sections:

1. Consultant's name, company affiliation, position within the company and contact email
2. Brief summary of the training program delivered to GDC
3. Identification of challenges facing GDC staff in completing the training or implementing the techniques and technologies discussed in the training
4. Recommendations for additional training and technical assistance, as appropriate

Deliverables for Task 2:

The Consultant shall turn in a draft version of the confidential report described above for review by USEA/EAGP no later than three weeks following the completion of the in-country assignment**.** After USEA has returned any comments or questions, the Consultant shall prepare a final draft of the assessment report to be submitted to USEA/EAGP no later than one week following the receipt of USEA's edits. In addition to the report, the Consultant(s) should provide to USEA the participant list from the training and the results of the pre-training and post-training survey.

METHODOLOGY

The consultant shall outline the full methodology in the proposal, but should make use of a combination of industry standard practices and innovative technologies and techniques.

DESIRED COMPETENCIES, SKILLS AND EXPERIENCE

- A team that comprises experts with advanced degrees in Geology, Geochemistry, Geoscience, Reservoir Engineering, Chemistry, Geophysics, or a related field
- Demonstrated experience working with public agencies, private sector stakeholders, and multilateral/regional institutions
- Minimum of eight (8) years of professional experience in geothermal development, reservoir monitoring, reservoir management or related fields
- Knowledge of East Africa's geothermal stakeholders, development history, and potential for growth
- Understanding of geothermal reservoir management
- Excellent communication, analytical and writing skills
- Ability to work independently and with a variety of organizations
- Ability to travel for this assignment internationally and to conduct remote desk reviews

EVALUATION CRITERIA AND CONTRACT MANAGEMENT/OVERSIGHT

Evaluation of proposals will be conducted by a stakeholder review team on a Quality and Cost-Based Selection (QCBS) basis with a Cost weight of 30% and Quality weight of 70%. Contract management, oversight and payment will be carried out by the United States Energy Association (USEA).

CONTRACT TYPE

This contract will be awarded as a fixed price contract**.**

PROPOSAL SUBMISSION

Proposals should be submitted by email in PDF form to Mr. Scena Nayak at snayak@usea.org. Proposals should be in PDF format and not exceed 4 separate PDF files.

DEADLINE FOR SUBMISSION

Proposals must be submitted no later than 5:00 PM PDT on May 26, 2017.

DOCUMENTS TO INCLUDE WHEN SUBMITTING A PROPOSAL

Applicants must submit the following:

- Letter of Interest explaining the qualifications of the Applicant
- Technical proposal outlining the proposed work plan and methodology. This proposal should include a narrative detailing the qualifications and roles of any team members, how each objective of the consultancy will be met, an estimated timeline for the delivery of services, any additional or alternative proposed deliverables, any necessary international travel and the location of work carried out.
- CV(s) including past experience in similar projects and demonstrating a minimum of eight (8) years of professional experience in a relevant field.
- Financial proposal detailing anticipated cost of services to complete the consultancy aligned with the work plan in the proposal, including, but not limited to:
    - Labor, fringe and overhead
    - Equipment, supplies and communications
    - Local and international travel expenses, compliant with all USAID travel regulations and the Fly America Act.

QUESTIONS AND CLARIFICATIONS

For any questions or clarifications about this consultancy, please contact Mr. Scena Nayak at snayak@usea.org. Please submit questions prior to 5:00pm PST on May 19, 2017. All questions and answers shall be made public on the USEA website on May 19th so that all interested parties are fully informed.