



**United States Energy Association
Request for Proposal: Power System Modeling and Long-term Planning – Barqi Tojik (Tajikistan)**

REQUEST FOR PROPOSAL – Power System Modeling and Long-term Planning – Barqi Tojik (Tajikistan)

Closing date of RFP: November 11, 2020

Implementing Agency: United States Energy Association

Funding Agency: United States Agency for International Development

The United States Energy Association (USEA) is inviting prospective organizations or individuals through this Request for Proposal (RFP) to submit proposals for developing a national dynamic model and planning models and providing comprehensive training on network modeling using DigSILENT’s PowerFactory software to Barqi Tojik.

Proposals are due by 17:00 hours EST of the closing date. Please submit all proposals with a read receipt to Ms. Marina N. Barnett, Senior Program Coordinator, at mbarnett@usea.org. Proposals must be in digital format (PDF).

As this is a USAID-funded program, the RFP follows USAID Procurement Regulations and Laws. All bidder details will be kept confidential.

I. INTRODUCTION

The United States Energy Association (USEA) is an association of public and private energy-related organizations, corporations, and government agencies. USEA represents the broad interests of the U.S. energy sector by increasing the understanding of energy issues, both domestically and internationally.

Through a cooperative agreement with the USAID Bureau for Economic Growth, Education and Environment (E3), USEA implements the Energy Utility Partnership Program (EUPP), available to all USAID-assisted countries and USAID Missions. EUPP supports the efforts in USAID-assisted developing countries to increase environmentally sustainable energy production and to improve the operational efficiency and increased financial viability of their utilities and related institutions, with the goal of increasing the access of these countries to safe, reliable, affordable and environmentally sound energy services.

In Central Asia, EUPP works to create an enabling environment for the regional transfer to cleaner, more reliable power supply and encourage establishment of an integrated power market.

II. BACKGROUND

Energy independence by 2030 is one of the highest political and economic priorities for the Government of Tajikistan, as reflected in the National Development Strategy. Tajikistan’s total installed generation capacity is 6,100 MW, comprising of several large and a few small hydropower plants (HPPs) and three fossil-fueled combined heat and power plants. HPPs generate 98% of the country’s electricity, and Tajikistan’s hydropower potential is estimated at 527 billion kWh per year. However, the high reliance on hydropower generation results in a power surplus in summer and severe deficits in winter.

Tajikistan’s power grid consists of three separate electricity systems – the northern region, the southern region and the Gorno-Badakhshan region. The power sector consists of Barqi Tojik, a vertically integrated utility owned by the Government of Tajikistan, three independent power producers (IPPs), and a concession in the Gorno-Badakhshan region (GBAO). Barqi Tojik owns and operates most of electricity generating plants, and is responsible for transmission, dispatch, and distribution services to approximately nine million people in all but one regions of the country. Two of the IPPs – Sangtuda 1 and Sangtuda 2 hydropower plants (HPPs) – supply power to Barqi Tojik under 20-year Power Purchase Agreements (PPAs). The third IPP – Rogun HPP – is under construction. The GBAO concession – Pamir Energy Company – generates and supplies power to approximately 245,000 customers in the Pamir mountains region.

Tajikistan’s power system was disconnected from the Central Asia Power System (CAPS) since 2009, although Tajikistan retains formal participation in the parallel operations agreement and is working to re-connect to CAPS via Uzbekistan. The re-connection project, funded by a \$35 million grant from the Asian Development Bank (ADB) and slated for completion in 2022, will provide the necessary infrastructure to achieve a full parallel operation between Tajikistan and Uzbekistan’s electricity grids.

Barqi Tojik utilizes DlgSILENT’s PowerFactory software tool for transmission network analysis, modeling and planning. In 2018, a prospective model of the Barqi Tojik power system was developed through a USAID-funded technical assistance program. The model included expansion stages for all planned installations up to 2030, and four seasonal scenarios for different load regimes.

III. IMPLEMENTATION AND APPROACH

The purpose of this RFP is to solicit proposals from various candidate organizations or individuals, conduct a fair evaluation, and select the organization deemed most suitable to undertake the project.

USEA Responsibilities

USEA will be responsible for all logistical arrangements for the participants and consultants. This includes arrangements and associated costs for the following, for each of the two training sessions:

- Economy-class roundtrip airfare to Dushanbe, Tajikistan for up to 2 consultants per trip;
- Per diem (meals and lodging) for up to 2 consultants to include all travel and training days and maximum of 1 full day of rest prior to start of activity (Note: Lodging to be provided according to U.S. government regulations);
- Reimbursement of visa fees;
- Reimbursement of vaccinations (if needed) and travel medication costs;
- International health insurance for the duration of the travel to Tajikistan;
- Ground transportation to/from the airport;
- Local transportation to sites (if needed);
- Meeting space and A/V.

Subcontract Agreement Management and Oversight

A subcontract agreement between USEA and the Consultant shall be subject to all USAID Special Terms and Conditions, including all mandatory FAR Flow-Down clauses, where applicable, and the provisions included in 2CFR200 and 2CFR700. All bidders are strongly encouraged to review these provisions prior to submitting a proposal.

- Standard Provisions for U.S. Nongovernmental Organizations:
<https://www.usaid.gov/sites/default/files/documents/1868/303maa.pdf>
- 2CFR200: <https://www.gpo.gov/fdsys/pkg/CFR-2014-title2-vol1/pdf/CFR-2014-title2-vol1-part200.pdf>
- 2CFR700: <https://www.gpo.gov/fdsys/pkg/CFR-2015-title2-vol1/pdf/CFR-2015-title2-vol1-part700.pdf>

Subcontract agreement management, oversight and payment will be carried out by USEA.

IV. SCOPE OF WORK

Purpose: The purpose of this program is to enhance Barqi Tojik’s capacity for network modeling, analysis and long-term planning. The ultimate outcome will be the creation of an enabling environment for expanded integration of renewable generation and for the establishment of a unified power system in Central Asia.

Objectives: The objectives of this program shall include:

- 1) Developing a Barqi Tojik national dynamic model for the existing network topology;
- 2) Developing planning models – static and dynamic – for 5- and 10-years horizons to include planned renewable generation;
- 3) Providing Barqi Tojik planning engineers with comprehensive training on developing and improving national models using the DlgSILENT’s PowerFactory software.

Tasks: The tasks to be performed by the Consultant under this Scope of Work shall include the following:

- Task 0:** Sign Subcontract Agreement: Once the subcontract agreement has been signed by both parties, the consultant will be allowed to invoice 10% of the total cost of the subcontract agreement.
- Task 1:** Conducting a webinar on project methodology and data collection to prepare Barqi Tojik to collect and provide all data necessary to develop a national dynamic model and planning models.
- Task 2:** Conducting a 3-day training program (Training 1) to prepare Barqi Tojik to develop/improve a national dynamic model using DlgSILENT PowerFactory software.
- Task 3:** Developing a national dynamic model for the existing network topology. The model will be constructed to represent two characteristic regimes (peak and off-peak) and three hydrology scenarios for each regime (wet, average and dry hydrology).
- Task 4:** Conducting a 3-day training program (Training 2) to further enhance Barqi Tojik’s modeling and analytical capacity to perform advanced contingency analyses taking into account multi-level contingencies, tripping simulations and corrective actions; implement renewable generation and simulate their effects on the grid; perform Inertia/Governor load flow calculation; perform PV, QV analysis, and reactive power planning using DlgSILENT PowerFactory software.
- Task 5:** Developing planning models – static and dynamic – for 5- and 10-years horizons to include planned renewable generation.

Training sessions and webinars shall be delivered in the Russian language.

Training sessions shall include pre-training and post-training surveys administered to all participants. A pre-training survey shall be designed to assess participants’ baseline knowledge and competencies and to identify knowledge gaps and weak areas. The planned training courses shall be modified to address the identified gaps. A post-training/skill assessment survey shall be designed to measure participating trainees’ progress.

Deliverables: Based on the Scope of Work, the following deliverables and products shall be submitted:

- Task 1:** **Deliverable 1.** Digital copies – in English and in Russian – of a presentation outlining project methodology and data questionnaires to be provided to Barqi Tojik for collecting all data necessary to develop a national dynamic model and planning models submitted to USEA at least 2 weeks prior to conducting the webinar.

- Task 2:** **Deliverable 2.** Digital copies – in English and in Russian – of a draft training program 1 curriculum, and pre-training and post-training surveys submitted to USEA at least 2 weeks prior to conducting the training.
- Deliverable 3.** Conduct a 3-day training program (Training 1), including all necessary theoretical and practical elements, for up to 10 participants to prepare Barqi Tojik to develop/improve a national dynamic model using DlgSILENT PowerFactory software. Digital copies – in English and in Russian – of the full training curriculum, including manuals, presentations and all other training materials developed for Barqi Tojik and distributed to the participants.
- Deliverable 4.** Digital copies – in English – of a Training Report 1 on approach, accomplishments and recommendations.
- Task 3:** **Deliverable 5.** A national dynamic model for the existing Barqi Tojik network topology. The model will be constructed to represent two characteristic regimes (peak and off-peak) and three hydrology scenarios for each regime (wet, average and dry hydrology).
- Deliverable 6.** Digital copy – in English – of a brief Model Creation Report, comprising the developed dynamic model overview and recommendations for future steps.
- Task 4:** **Deliverable 7.** Digital copies – in English and in Russian – of a draft training program 2 curriculum, and pre-training and post-training surveys submitted to USEA at least 2 weeks prior to conducting the training.
- Deliverable 8.** Conduct the 2nd 3-day training program (Training 2), including all necessary theoretical and practical elements, for up to 10 participants to further enhance Barqi Tojik’s modeling and analytical capacity to perform advanced contingency analyses taking into account multi-level contingency analyses, tripping simulations and corrective actions; implement renewable generation and simulate their effects on the grid; perform Inertia/Governor load flow calculation; perform PV, QV analysis, and reactive power planning using DlgSILENT PowerFactory software. Digital copies – in English and in Russian – of the full training curriculum, including manuals, presentations and all other training materials developed for Barqi Tojik and distributed to the participants.
- Deliverable 9.** Digital copies – in English – of a Training Report 2 on approach, accomplishments and recommendations.
- Task 5:** **Deliverable 10.** Planning models – static and dynamic – for 5- and 10-years horizons to include planned renewable generation.
- Deliverable 11.** Digital copy – in English – of a brief Models Creation Report, comprising the developed planning models overview and recommendations for future steps.
- Deliverable 12.** Digital copy – in English – of a final report to include the following:
- An overview of the consultancy (background and the Scope of Work);
 - Statement of consultant’s background and key qualifications;
 - Recommendations for improving operations of the utility based on the work performed during this consultancy;
 - Recommendations for further technical assistance.

Reporting: The consultant will report to USEA.

Schedule: The project is expected to begin in January 2021 – pending lifting of international travel restrictions due to COVID-19 – and take approximately 12 months to complete.

Task	Activities	Deliverables	Target Completion Date
Task 1	Conduct webinar on project methodology & questionnaires	Presentation on methodology Data questionnaires	January 31, 2021
Task 2	Conduct 3-day training program	Curriculum Pre- and post-training surveys Training materials Training report	April 30, 2021
Task 3	Develop national dynamic model	National dynamic model	May 31, 2021
		Model Creation Report	June 30, 2021
Task 4	Conduct 2 nd 3-day training program	Curriculum Pre- and post-training surveys Training materials Training report	August 31, 2021
Task 5	Develop planning models	Planning models	October 31, 2021
		Models Creation Report	November 30, 2021
		Final report	December 31, 2021

These tentative assignment dates are provided solely for information purposes and the benefit of bidders. Modification of these assignment dates will not constitute a change in scope.

V. PROPOSAL CONTENT

The proposal must contain the following:

- a) A cover letter to the proposal, including a bidder's Data Universal Numbering System (D-U-N-S) number and proof of a current registration in the System of Award Management (SAM). **Proposals without a DUNS number or proof of SAM registration will not be considered.**
- b) A technical proposal, including:
 - a. Demonstration of an understanding of the issues to be addressed under the proposed scope of work specified above by providing a summarized technical approach (not to exceed 3 pages). This section should include the bidder's general approach to implementing different tasks and activities described in the SoW above and must include an adequate description of training methodology;
 - b. Proposed project schedule to perform the tasks under this project highlighting any deviations from the scope of work specified above;
 - c. Bio sketches of personnel, including at least 1 – 2 subject matter experts one of which will be a team leader that will be dedicated to the project. Proposed personnel must be skilled at DigSILENT PowerFactory modeling software;
 - d. Summary of relevant experience of each proposed team member for (not beyond) the past 10 years. Relevant experience should be listed chronologically (starting with the most recent). Not to exceed 3 pages for each proposed team member;
 - e. Summary of the work to be performed by each employee proposed for this project.
- c) A financial proposal, including:
 - Detailed justification (i.e. line item budget), including direct and indirect costs (translation (if applicable), interpretation (if applicable), printing, administrative supplies, etc.);
 - Labor costs (detailed structure of man-hours) and level of effort for each employee proposed for this project.

- d) Completed USAID Contractor Employee Biographical Data Sheet forms for each employee proposed for this project (<https://www.usaid.gov/forms/aid-1420-17>).

VI. EVALUATION CRITERIA

All bidders are required to provide a DUNS number and maintain a current SAM registration. Proposals without a DUNS number or proof of SAM registration will not be considered.

Selection of an offer for a subcontract award will be based on an evaluation of proposals against qualifications, subject matter expertise, technical approach and budget justification. Proposals shall first be evaluated from a technical standpoint (qualifications, subject matter expertise and technical approach) without regard to proposed budget justification. For those proposals determined to be technically acceptable, budget justification will be evaluated.

Evaluation Criteria: 25%: Experience with similar projects (for each consultant & the organization in general)
 25%: Subject matter expertise (education and professional experience)
 30% Technical approach
 20%: Cost

VII. QUESTIONS AND CLARIFICATIONS

All questions and clarification requests related to this RFP should be submitted via email to Ms. Marina N. Barnett, Senior Program Coordinator, at mbarnett@usea.org no later than October 28, 2020. All questions and answers will be provided to all prospective bidders.

END OF RFP