



**United States Energy Association
Clean EDGE (Enhancing Development and Growth through Energy) Asia
Indo-Pacific Energy Market Investment and Modernization (EMIM)
Request for Proposals – Cambodia Battery Energy Storage Systems (BESS) Study**

Request for Proposals – Battery Energy Storage Systems Market Study for Cambodia

Closing date: March 17, 2023

Implementing Organization: United States Energy Association

Funding Agency: U.S. Department of State, Bureau of Energy Resources, Power Sector Program

The United States Energy Association (USEA) is inviting battery energy storage systems (BESS) or other relevant energy experts through this Request for Proposals (RFP) to submit proposals to conduct a BESS market study to support the Kingdom of Cambodia. Eligible applicants for this RFP include non-profits, for profit entities, individuals/consultants, and educational institutions. This is an activity implemented by the United States Energy Association (USEA) with funding from the U.S. Department of State, Bureau of Energy Resources (ENR), as part of the Japan-U.S.-Mekong Power Partnership (JUMPP). As this is a U.S. Government-funded project, the RFP follows all relevant federal procurement regulations and laws. Following U.S. Government funding rules, profits cannot be charged to this project. All bidder details will be kept confidential.

Proposals are due by 17:00 hours EST of the closing date. Please forward your proposal in soft copy (PDF form) to Mr. Brendon Thomas, Senior Program Coordinator, at bthomas@usea.org.

I. INTRODUCTION

The U.S. Energy Association (USEA), headquartered in Washington, D.C., 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 ENR, USEA implements the Clean EDGE Asia Indo-Pacific Energy Market Investment and Modernization (EMIM) program to support the U.S. Government’s Clean EDGE Asea initiative. EMIM aims to strengthen the energy security of allies and partners; create open, efficient, rule-based, and transparent energy markets; improve free, fair, and reciprocal trading agreements; and to expand access to affordable and reliable energy. This activity in Southeast Asia will support the Kingdom of Cambodia, specifically supporting Electricité du Cambodge (EDC), the Ministry of Mines and Energy (MME), and the Electricity Authority of Cambodia (EAC).

II. PROGRAM BACKGROUND

Over the course of several months through 2021 and 2022, the U.S. and Japanese governments established a Technical Advisory Group (TAG) with the governments of Cambodia, Lao PDR, Thailand, and Vietnam. The TAG convened a series of meetings to develop a comprehensive action plan for the Japan-U.S.-Mekong Power Partnership (JUMPP). This ENR-funded EMIM activity in Cambodia will take place under the auspices of the JUMPP Action Plan that was approved in 2022. ENR will continue managing EMIM activities, including this market study, and lead communication with EDC, MME, and EAC.

INTRODUCTION TO CAMBODIA AND BESS DEPLOYMENT GOALS

Cambodia has an installed domestic generation capacity of 3009.67 MW, with hydropower and coal representing over 86% of installed generation capacity. Cambodia's power generation mix in 2022 included 35.58% coal, 5.70% fuel oil, 51.93% hydropower, 6.28% solar, 0.51% biomass, as well as power imports from Thailand, Vietnam, and Lao PDR. Domestic power generation accounted for 74.16% of Cambodia's energy mix, with power imports meeting the remaining 25.84% of demand¹. Cambodia's Power Development Masterplan 2021 – 2040 anticipates a significant growth of variable renewable energy resources in the future, with installed solar PV capacity expected to exceed 3 GW in 2040. As the amount of variable renewable energy in Cambodia's energy mix increases, BESS represents a critical tool to maintain system stability and reliability, while also ensuring energy security and affordability.

This RFP aims to identify qualified experts to provide assistance to Cambodia's key energy stakeholders under the direction of USEA. Submissions may include a single expert or multiple experts, and submissions will be accepted from companies, institutions, and individual consultants.

The proposals could include and detail the submitter's:

- Knowledge of BESS technical and economic characteristics
- Regulatory expertise in BESS deployment and interconnection
- Experience in integrating BESS into power grids at the generation, transmission and distribution level
- Knowledge of mitigating impacts to the power grid of variable energy resources including wind and solar

Additional experience sought includes:

- Ability to conduct a price analysis (financial and economic analysis) of BESS deployment and integration
- Regional experience and/or knowledge of Cambodia's energy sector
- Experience in drafting energy market studies with technoeconomic analysis of impacts to the power system

III. SCOPE OF WORK

The objective of this market study is to prepare and assist Cambodian stakeholders in their efforts to understand and potentially deploy BESS on the Cambodian power grid to increase system stability and enable the integration of variable renewable energy resources. Through the study of BESS market potential, it is expected that EDC, MME, and EAC will be able to successfully determine their plans for BESS development and ensure sustainable development for the people of Cambodia.

NOTE: All materials produced during the performance of this Scope of Work, including presentations, reports, and written deliverables, must follow U.S. Department of State branding guidelines, including acknowledgments that the work is funded by the U.S. Department of State, Bureau of Energy Resources in support of the Japan-U.S.-Mekong Power Partnership.

¹ "Salient Features of Power Development in the Kingdom of Cambodia Until December 2022", Electricity Authority of Cambodia, 2022.

PROJECT TASKS AND DELIVERABLES

Hired experts will conduct a market study for the potential deployment of transmission and distribution-connected BESS in Cambodia and analyze cost and power system performance impacts of BESS integration. The study will identify potential locations for BESS installations, analyze optimal BESS technologies, recommend the best use case for BESS in Cambodia, and identify expected impacts on power prices and power system performance. The study shall propose recommendations and policy/regulatory interventions for BESS deployment, as well as established best practices in the field of BESS planning.

Experts will be responsible for collecting background information and conducting research and will maintain an open line of communication (via email, phone, virtual meeting) with relevant EDC, MME, EAC, and USEA staff throughout the period of performance to ensure the market study is on the right track and topics are relevant. In addition to providing monthly reports to USEA and EDC on the status of the market study, experts will participate in bi-weekly coordination calls with USEA, as well as USEA-facilitated virtual introductory, draft review, and final meetings with EDC, MME, EAC, and USEA.

At the onset of this contract the chosen institution or individual will review available documentation on Cambodia's background, including Cambodia's power design, generation and load forecasts, and other relevant market information related to planning BESS deployment. Travel may be required to complete the tasks in this project, and applicants must be willing and able to conduct short-term international travel. The chosen institution or individual will then carry out the following tasks:

Task 1: Document Review & Progress Reports

Experts will prepare a Request for Information (RFI) detailing any required documents and data about Cambodia's power system and BESS targets to be shared with EDC, MME, and EAC. The data and documents included in the RFI will include confidential and proprietary information, so the hired experts may be required to sign a Non-Disclosure Agreement (NDA) with Cambodian stakeholders as appropriate. The hired experts will then conduct a remote review of documents and both in-person and virtual meetings. To begin the study, the hired experts will familiarize themselves with Cambodia's current power system and planned power system development, evaluate the existing performance metrics and regulations, and acquire additional data/research for the draft report. Hired experts will work closely with USEA/ENR staff by sharing outlines and drafts for review and comments and submit monthly progress reports to USEA throughout the engagement.

Task 2: BESS Market Study

The BESS market study length and number of pages will be determined in coordination with EDC, MME, and EAC, be in Microsoft Word document form, and should include, but is not limited to, analysis of the following:

- Potential locations for BESS projects, including:
 - Evaluation of the current power system and planned future power system for optimal BESS locations at both the transmission and distribution level, as appropriate.
 - Recommend optimal BESS technologies considering the best use case in Cambodia for short-term and/or long-term storage for peak shaving, congestion management, or increasing the deployment of renewable energy technologies.
- Estimating the technically viable potential for BESS deployment based on the current power system and future planned expansions of the power system.
- Estimate of the economically viable potential of BESS in Cambodia.
- Impacts to power system performance by deploying grid-connected BESS and operational best practices to optimize

grid-connected BESS performance.

- Policy and regulatory recommendations to support deployment of BESS projects in Cambodia.
- Strategies for Cambodia to pursue project finance for BESS installations, including public sector, private sector, and donor organization finance.
- Recommendations for next steps for Cambodia to pursue to accelerate the deployment of grid-connected BESS projects.

Final structure and topics for analysis in the study will be subject to agreement between EDC, MME, EAC, USEA and hired experts, and may evolve as the project progresses (e.g., after the initial assessment report).

Task 3: Mid-Project Check in Meeting

Upon completion of the draft BESS market study, hired experts will share the draft study with EDC, MME, and EAC and provide a presentation of the recommendations and findings to the Cambodian stakeholders using Microsoft PowerPoint. The presentation should be at least 30 minutes in duration, with at least 30 minutes allocated to responding to questions from EDC, MME, and EAC. Discussion time will also be allocated for feedback on the report and consideration of areas for future support to Cambodia. Final structure of the presentation will be subject to agreement between the EDC, MME, EAC, USEA, and hired experts. Draft presentation materials and the draft study will be due to USEA and ENR at least one week before the presentation.

Task 4: Submission of Final Report

After the mid-project check in meeting the hired experts will review the feedback received from EDC, MME, and EAC. The feedback received from Cambodian stakeholders should be incorporated and used to draft the final report. One month after the mid-project check in meeting it is expected that the hired experts will submit their final draft report to USEA for review. The detailed analysis models or tools (technical, economic, financial etc.) used for the market study will then be shared along with the draft final report to EDC, MME, and EAC.

Task 5: Technical Workshop to Present Findings to EDC, MME, and EAC and Final Study Submission

After the approval of the draft final report by USEA and ENR, an in-country technical stakeholder workshop will be held to present the findings of the market study to EDC, MME, and EAC, including the detailed analysis models or tools (technical, economic, financial etc.) used for the market study and address any follow up questions, as well as explore areas for possible future cooperation.

During the workshop, the hired experts will provide capacity building sessions to EDC, MME, and EAC staff. The capacity building is intended to support technology and knowledge transfer to enable EDC, MME, and EAC staff to conduct ongoing analysis of opportunities for BESS integration in Cambodia after completion of the study. The hired experts will provide editable versions of technical and financial models developed during this project and walk the EDC, MME, and EAC staff through the process of updating the models and conducting BESS analysis. The final structure of the technical workshop will be subject to agreement between the EDC, MME, EAC, USEA, and hired experts, and draft workshop materials will be due to USEA one week before the workshop.

Following the workshop, the hired experts will make any adjustments to the study as identified during the workshop and submit a final study to USEA and ENR for approval. The final study will then be shared with EDC, MME, and EAC.

Please note that travel and other relevant workshop costs will be covered directly by USEA and do not need to be detailed in the financial proposal.

IV. TENTATIVE SCHEDULE

Tasks	Deliverables	Duration (Tentative)
1. Document Review & Progress Reports	1. Initial assessment report 2. Monthly progress report	21 days after project launch
2. BESS Market Study	1. Draft market study 2. Monthly progress reports	90 days after project launch
3. Mid-Project Check in Meeting	1. Draft virtual presentation materials 2. Monthly progress report	100 days after project launch
4. Submission of Draft Final Study	1. Draft Final Study 2. Monthly progress report	130 days after project launch
5. Technical Workshop to Present Findings to EDC, MME, and EAC and Final Study Submission	1. Draft presentation materials and formal agenda for the workshop 2. Final Study	140 days after project launch

V. SUBMISSION CONTENT

The proposal must contain the following:

- a) A cover letter; explaining areas of expertise and work experience, proposed approach of completing the tasks and work schedule, as well as knowledge of Cambodia’s energy sector, if applicable. The letter should not exceed 10 pages in length.
- b) A CV or CVs, including:
 - Summary of past relevant experience
 - Description of past work as it relates to BESS planning and deployment
 - Summary of work conducted in international energy markets
 - Note: listed professional experience must include date ranges
- c) Company/organization Unique Entity Identifier (UEI) number and confirmation of current status in the System of Award Management (SAM); **if the submitter is an individual consultant, SAM/UEI information is not required.**
- d) Financial proposal including submitter’s proposed hourly rate for this project and any other proposed expenses broken out by the following cost categories:
 - a. Personnel (labor costs should be broken out by individual)
 - b. Fringe Benefits
 - c. Travel*
 - d. Equipment*
 - e. Supplies
 - f. Contractual
 - g. Construction*
 - h. Other Direct Costs
 - i. Total Indirect Costs (overhead)

Based on previous experience with similar projects, USEA anticipates that the successful completion of the tasks in the Scope of Work may require approximately 100 – 150 person-days of effort. The majority of the work will

be performed remotely as a desk study, with an anticipated 5 days of in-country work performed in Cambodia. However, submitters are encouraged to propose their own level of effort to meet the requirements of the Scope of Work for this project, and are welcome to propose additional in-country working days required to meet the tasks detailed in the Scope of Work.

*Note: no equipment purchases or construction costs are anticipated to complete this study. However, these line items should still be included in the financial proposal with a line item reading \$0. All travel and workshop costs will be directly funded by USEA and do not need to be included in the financial proposal.

VI. EVALUATION CRITERIA AND CONTRACT MANAGEMENT/OVERSIGHT

Selection of an offer for subcontract award will be based on a quality and cost assessment of the technical qualifications, including prior relevant experience, as well as the financial proposal. Subcontract agreement management, oversight, and payment will be carried out by USEA. Costs incurred for the preparation and submission of a proposal are not eligible for reimbursement.

Submissions will be evaluated by a review team on the following basis:

- Technical proposal – 80%
- Financial proposal – 20%

VII. QUESTIONS AND CLARIFICATIONS

For all questions and clarification requests please contact Mr. Brendon Thomas, Program Coordinator, at bthomas@usea.org. Please submit questions prior to 17:00 EST March 1, 2023. All questions and answers will be made public on the USEA website on March 3, so that all interested parties are fully informed.

END OF REQUEST FOR
PROPOSALS