Section II: Schedule of Requirements

eSourcing reference:RFP/2021/27817

TERMS OF REFERENCES

Upgrading Design and Implementation of Energy Battery Storage Market Mechanism of the Philippines Electricity Market Mechanism

I. Background and Introduction

1. The Philippines has submitted its second nationally determined contribution (NDC) to the UNFCCC, committing to 75% greenhouse gas GHG) reduction by 2030.[1] This constitutes, together with the 2019 moratorium of coal fired energy production a basis for decarbonizing the Philippine economy and energy sector, twin goals aimed at enabling a conversion of the Philippines into a low carbon economy. A significant responsibility for decarbonizing the economy falls onto the energy sector, with the balance being shared by other sectors, predominantly industry, forestry, and agriculture.

2. The Philippines energy sector is governed by the policy making Department of Energy (DOE) under its Philippine Energy Plan (PEP) 2018–2040[2] embodying the United Nations Sustainable Development Goal (SDG) of affordable and clean energy, the Renewable Energy Act, Energy Efficiency Act, and the policy on Resiliency of Energy System and Infrastructure, PEP outlines eight energy sector strategy directions to: (i) ensure energy security, (ii) expand energy access; (iii) promote a low carbon future; (iv) strengthen partnership and collaboration between private sector and Government agencies on energy-related issues; (v) monitor and integrate sectoral roadmaps and action plans; (vi) advocate the passage of DOE's legislative agenda; (vii) strengthen consumer welfare and protection; and (viii) foster international relations and partnerships.

3. The Philippines is projected to rely heavily on imported fossil fuel, even after 25 years. Renewable energy (RE) provides some 10% of the total primary energy supply (TPES) mix, down from exceeding a quarter of the TPES, giving way to a dramatic increase of coal and gas. The RE Act of 2008 and its National Renewable Energy Program aim to triple RE supply from the 5,440 MW by 2030 and raise it to 20,000MW of capacity by 2040. Electricity generation bears the greatest responsibility for the Philippines growth in GHG emissions estimated at 4.5% from 75.9 million tons in 2010 to 230.2 million tons by 2035, ie. 6% per year and from coal-fired generation by 7.4% per year with domestic transport and industry sharing this responsibility among other sectors.

Philippine Electricity Market Mechanism

4. Section 30 of the EPIRA mandated the DOE to establish the Wholesale Electricity Spot Market (WESM) and the Philippine Electricity Market Corporation (PEMC) was established in 2003 to be the Autonomous Group Market Operator (AGMO) and at the same time will be the governing body for the WESM through the Philippine Electricity Market Board (PEM Board) which has

[1] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Philippines%20First/Philippines%20-%20NDC.pdf
[2] DOE. Philippine Energy Plan 2018-2040.
https://www.doe.gov.ph/sites/default/files/pdf/pep/pep-2018-2040_20210323.pdf

equitable representation from electric power industry participants. Since the transition to the Independent Market Operator pursuant to EPIRA in September 2018, PEMC revitalized its governance function focusing on (1) Market Assessment and Monitoring; (2) Enforcement and Compliance; and (3) Market Development and Enhancements. PEMC's role is to remain steadfast and proactive in its mission to ensure that there is power, efficiency, market, and competition in the energy industry through the effective and efficient governance of the WESM.

5. The Philippines displayed continued growth of RE capacities in the past decade. In 2010, the RE MW level stood at 5,304.25 MW (33.4%). The DOE already reported in 2020 a total installed capacity of 5,502 MW for commercial use and 210.87 MW for own use. The RE capacity figures are still expected to increase, noting the upcoming 44 RE project applications under the RE Act of 2008, with a total potential capacity of 1,478.9 MW.

6. With the noticeable uptick in RE capacities caused by the introduction of market-making mechanisms for RE such as the Feed-in-tariff Program and the Renewable Portfolio Standards, considerable level of battery/ energy storage capacities were also pipelined by major players of the power sector to complement the RE capacities in light of their variability. With the increasing penetration of variable RE (VRE), ESS is recognized as one of the technologies to manage the intermittency of the VRE-generating plants' output by ensuring system stability as well as ESS as one of the key elements in the Philippine Smart Grid Roadmap promulgated by DOE to guide ihe Electric Power Industry in the implementation of initiatives to modernize the power system.

7. The integration of renewable energy resources, characterized by their intermittent nature, particularly wind and solar, may, to a certain degree, depending on the amount of penetration into the grid, cause significant degradation of system performance brought about by the variability of their output An increase in variability requires a corresponding increase in ancillary service. The Battery Energy Storage System (BESS) is a new technology that can provide Frequency Control Ancillary Services (FCAS), particularly, Contingency Reserve (Primary Reserve) and Frequency Regulation (Secondary Reserve).

8. The DOE posted in its website 2020 statistics for the private sector-initiated power projects which include Battery Energy Storage Systems (BESS), which are phased to be online in the next ten (10) years with total capacities of 720 MW, 260 MW and 210 MW for Luzon, Visayas and Mindanao, respectively.

9. Taking into consideration this level of capacities for BESS, the DOE and the Energy Regulatory Commission (ERC) issued a number of policies to accommodate the participation of BESS in the power sector, as follows:

    a. DOE Circular No. DC2019-08-0012 that provided the Framework for Energy Storage System (ESS) in the Electric Power Industry;[3]
    b. ERC Resolution No. 09, Series Of 2015 which classified the battery energy storage system as a new source of frequency control ancillary services;[4] and
    c. The WESM Rules[6], which is the rulebook for the operations and governance of the wholesale market, also put in place the process and requirements for the registration and operations of BESS as a generator together with other players in the market.

[3] https://www.doe.gov.ph/sites/default/files/pdf/issuances/dc2019-08-0012.pdf
[4] https://www.wesm.ph/library/downloads/view-download/documents/market-rules-and-market-manuals/wesm-rules-and-amendments

10. **Rationale:** Recognizing the flexibility of ESS technologies, and their eventual significant capacity share in the market, power industry players owning ESS may eventually acquire considerable opportunities to affect the prices and outcomes in the spot market that may disadvantage other market players. Hence, the benefits reaped from the introduction of RE in the spot market, including reduced market prices may be reversed.

11. The coordinated operations by the ESS within the electricity market needs to be complemented by an effective governance framework in order to optimize the facilities' capabilities, while maximizing the near-zero costs of clean generation technologies participating in the market. Other jurisdictions such as the State of Texas in the United States were mindful of this and considered affecting some of these measures, among others as part of market governance:

    - Imposing tighter compliance standards for the planned injection/ withdrawal of energy of the battery versus the real-time injection/ withdrawal, and
    - Limiting the charging during low supply margin or emergency situations so that the supply level will be manageable and price spikes in the electricity market will be minimized.

II. The Purpose of the Project

12. **Purpose of the Project:** The Project will provide technical assistance for PEMC in the strategic context of the evolving role of power sector regulation, the regulator and the emerging objectives; as well as to establish a rule-based market operations in which battery energy storage can be extended to enable and to maintain a course for development of low-carbon electricity systems.

13. The Project will also provide technical assistance and capacity building to PEMC, in the establishment of a framework for the coordinated operations and governance of BESS and other ESS in the power grid for these facilities to reinforce the reliability and security of the grid where RE generators also participate. The selected applicant will provide advice and recommendations on this framework and identify mandates specific to PEMC in the performance of its governance mandate for BESS and other ESS participating in the electricity market.

III. Scope and Objectives of the Project

14. **The overall goal** of the Project is to ensure that PEMC holistically support energy transition and transition to low carbon energy systems and the Government's NDC. More specifically, the Project has the following specific objective:

    a. Provision of policy and technical assistance in the development of measures/ mechanisms necessary to adequately govern the participation of BESS and other ESS in the WESM. The technical support will broaden and strengthen PEMC's governance functions to emerging technologies participating in the electricity market which include battery and ESS as part of the country's energy transition program. Likewise, it will determine the completeness of market policies with respect to BESS and other ESS, and recommend possible enhancements to the market design and protocols, as applicable. Specific results of the project are defined in Para. 15.

IV. Outcomes, Objectives and Milestones

15. **Outcomes and Outputs for Policy and Technical Assistance to PEMC:** Upon completion of

the policy and technical assistance to PEMC, the Project will achieve the following outcome and outputs:

Outcome: Competitive conditions for the battery storage services in the wholesale electricity spot market, de-risking investments of the existing and new developers of renewable energy to finance renewable energy investments; and

Output 1: Conformance standards applicable to BESS and other ESS; and inception planning and preparation of the reports.

- **Activities within this Output include:** Conduct of workshops on international experience on the governance of ESS with PEMC-TWG as attendees and conduct of consultation meetings with relevant PEMC units, DOE, ERC and other relevant stakeholders (battery owners, RE developers, Grid Operator)

Output 2: Introduction of protocols for BESS and other ESS for their scheduling and dispatch in the energy-only and eventually in the co-optimized market for energy and reserves;

  - Activities within this Output include: The preparation of the general design document for the governance of BESS and other ESS in the WESM:
  - Identification of provisions of WESM Rules and Related Manuals that require amendments to incorporate the rules specific to the governance of the participation of ESS, and other needed enhancements under the WESM;
  - Determination of market mitigating measures (i. e. market triggers and conformance standards) applicable to the participation of ESS in the WESM; and
  - Identification of software functional specifications that include core functions to automate the market mitigating measures;

Output 3: Achievement of satisfactory compliance rating by the market participants who operate BESS and other ESS, determined by PEMC's Enforcement and Compliance Office; and

Output 4: Increased levels of competitiveness in the spot market in terms of BESS and Other ESS ownership.

- Activities within Outputs 3 and 4 include: Submission of finalized draft changes to relevant provisions in the WESM Rules and related Manuals; Conduct of public consultations regarding the proposed governance framework and market mitigating measures where the presence of advisors shall be required; Submission of software functional design and specifications; and Submission of final report (both public and complete versions) containing the final design of the governance framework and the market mitigating measures, and the proposed WESM Rules Changes taking into consideration the comments received from the public consultations and inputs from relevant stakeholders. A briefing on the final report and recommendations will be made by the advisors with PEMC-TWG, DOE and the ERC in attendance.

VI. Implementation Methodology

16. The Project will be implemented by making use of all existing information in the country, and particularly capitalizing on the existing knowledge of the policy, regulatory, legal, financial and

energy sector standards and conditions prevailing in the Philippines. The methodology comprises a close contact and liaison with the staff of PEMC at all levels, identification of capacity building and transfer of technology, in design and implementation of the regulations, and development of a deep understanding of the technical and implementation challenges. The implementation methodology also assures legally and otherwise required consultations, stakeholder coordination and processes to ensure full capacity for compliance by the entitles. The implementation methodology will strengthen PEMC's leadership and technical capacity in all areas under the Project.

VII. Scope of Work

17. The applicants shall provide all necessary resources, expertise, templates, data and Project management and coordination tasks and schedules required to meet the objectives and to complete the scope of work under the objectives in the specified time. The implementing agency will combine a fundamental practical knowledge of the best practices in the energy market mechanisms and global trends in development of energy, battery energy storage, ancillary services and related market management mechanisms in pursuing energy transition and low carbon energy systems and knowledge of the conditions prevailing, challenges to and opportunities for energy transition in the Philippines.

VIII. Payment Schedule:

1. **First payment:** Twenty (30) percent of the contract amount after completion of inception report providing a time-bound work plan, scheduling the work based on the PEMC's priorities designating in the order of priority and segmented to phase 1 and phase 2, and pathways for accomplishing the assignment under each phase, and a time-lined interactions and consultations with the PEMC and relevant stakeholder agencies throughout the process and a fully detailed results-based monitoring framework for the Project.

2. **Second payment**: Twenty (40) percent of the contract amount after a completion of an Interim Report a strategic assessment of the market mechanisms in the policy and regulatory context prevailing in the Philippines as well as with reference to the global best practices to foster energy transition; and accomplishment of the terms of reference of technical assistance and technology transfer objectives under activities under the milestones.

3. **Third payment**: Twenty (30) percent of the contract amount after the completion of a Final Report, which incorporates comments from the government parties and UNOPS, as well as relevant collaborating development partners, and comprises references to all the prior activities, provides a compendium of recommendations and a final results-based monitoring matrix duly filled with results data.

IX. Assumptions

18. The following information is provided to enable you to properly schedule and resource the project:

- The proposal will be delivered by a competent energy market expert with a fundamental knowledge of the energy transition issues, challenges and opportunities, as well as the policy, regulatory and market conditions and standards prevailing in the Philippines.

- Building on existing available information, PEMC will ensure that all data and documents are available for the implementing entity and its staff and management remain reasonably available to support the Project and to receive the technical assistance at each of its stages.

- PEMC will sequence the work based on its priority areas to cater to the needs of the market for energy services to advance energy transition.

- The Project will also capitalize on the latest information available on the energy market mechanisms globally and the role of the market managers and institution to capture all available information non establishing a dynamic, transparent, competitive and a thriving energy battery storage market in the Philippines.

- The Project denotes and consults the market participants that are and can in going forward participate in the future energy battery storage market mechanisms and ensure thorough inclusion of their guidance and concerns, integrating global best practice thinking and lessons learned in the context of the proposed market mechanism with the objective to to strive at meeting the NDC objectives.

- The Project will also capitalize on the latest information globally available on market implementation and integration of ESS in the power grid directed towards the achievement of the NDC and energy transition objectives.

- The Project will work under the overall guidance of the ETP Steering Committee, its Secretariat and Advisory Committee, the PEMC, and the Government of the Philippines. The Government will arrange for an inter-agency review process to provide guidance for the outputs of the Project and advise on its directions and focus to ensure comprehensive coverage of the energy sector responsibility and contributions with respect to the NDC goal.

- The Project will engage with the public and private energy sector stakeholders through a consultation process to ensure that all aspects of the energy transition are accounted for in the design of the regulations, including that the incentives and penalties these set are fully assessed and account for lessons learned from across the global energy sectors. The consultation process will consider all relevant stakeholder groups, the development and investment community, and civil society and its agencies.

- The Project will ensure that it accounts for environmental and social impacts in the context of the terms of reference and identifies environmental and social costs and benefits within the road map and its financing plan, with particular attention on potential mitigation requirements in accordance with the Government's policies and international standards. Furthermore, the project shall provide a response that demonstrates its commitment to support gender equality and women's empowerment through its operations.

X. Timeline

Key Milestones and Deliverables	Mobilization Inception Report (10/2021)	Draft Final Report (06/2022)	Final Report (07/2022)
Inception Report: Work Plan with a Results-Based Project Monitoring Framework for The Project - Mobilization of the Project	x		
Draft Final Report: A comprehensive report, incorporating all inputs and outputs, activities, and record of consultations undertaken under the project, and proposals (in the annexes) of the document		x	
Final Report: A fully developed report, in publishable English and format on all deliverables, that covers the project timeline, deliverables, and provides a compendium of all outputs of the project including reports of the consultations under all phases and incorporates comments received on the Draft Report			x

19. Bidders are encouraged to familiarize themselves with the UNOPS Gender Parity Strategy as an example, available online at https://www.unops.org/news-and-stories/news/unops-launches-gender-strategy.

XI. Timeframe

20. The expected timeframe for the consultancy is beginning immediately upon award and contract signature, aiming to start from November 2021, for a duration of 1 year, with a possibility of extension. The contract is renewable subject to the performance of the Agency.

XII. Qualification and Experience of the Service Provider

21. The consultant's project team should demonstrate the capacity to execute the works and should include all essential roles filled with personnel with relevant experience. CV's of the personnel proposed should be used to verify this information. The lead individual should have the following qualifications:

    - Education

Master's Degree in Energy, Engineering, Economics, Climate Change, Social Sciences, Political Sciences, Development or related field is required. Additional two years of similar experience with a Bachelor Degree is considered equivalent.

- Work Experience

1. A minimum of 10 years of relevant experience in similar role, with minimum 2 years of leadership experience
2. Professional experience in energy system modeling and forecasting Southeast Asia is preferred
3. Previous successful involvement with, and good knowledge of, donor, government, private sector and civil society is desired
4. Knowledge of the energy sector modelling and forecasting, coal abatement scenarios, energy transition, political, economic and social situation in Philippines is desired
5. Computer literacy in Microsoft packages (MS Word, MS Excel, MS Access, MS Power Point) is required

XIII. Evaluation Criteria

Eligibility and Formal Criteria: evaluated on Pass/Fail basis and checked during Preliminary Examination;

Criteria	Documents to establish compliance with the criteria
1. Offeror is eligible as defined in Instructions to Offerors, Article 4	● Form A: Offeror Information Form ● Form B: Joint Venture Partner Information Form, all documents as required in the Form, in the event that the Proposal is submitted by a Joint Venture. ● Form E: Proposal Submission Form
2. Completeness of the Proposal. All documents and technical documentation requested in Instructions to Offerors Article 10 have been provided and are complete	● All documentation as requested under Instructions to Offerors Article 10, Documents Comprising the Proposals
3. Offeror accepts UNOPS General Conditions of Contract as specified in Section IV	● Form C: Proposal Submission Form

Qualification criteria – evaluated on Pass/Fail basis;

Criteria	Documents to establish compliance with the criteria

Offeror should have annual sales turnover of minimum USD 200,000 for any of the last two years to show financial stability (Bidder must submit relevant financial statements) In case of a Joint-Venture, the annual turnover is calculated by combining the annual turnover of the JV members	● Copy of audited financial statements for the last two years or other relevant document to verify the information
The company should have a minimum of **3+** years of continuous experience in delivering similar projects in the past with a track-record of success. In case of a Joint-Venture, the experience is calculated by combining the years of experience of the JV members	● Certification of incorporation of the Offeror ● Form G: Performance Statement Form
Offeror must provide a minimum of three (3) customer references from which similar services have been successfully provided, within any of the last 5 years (references to provide name, company, and contact information such as email address) In case of Joint-Venture, the 3 references are assessed as a consortium	● Form G: Performance Statement Form

Technical criteria – evaluated based on a cumulative analysis methodology;

Criteria	Documents to establish compliance with the criteria
Evaluation will be conducted based on the cumulative analysis of Technical and Financial Proposals with a weighting of 80%-20% (Technical Proposal-Financial Proposal) The total number of points which an Offeror may obtain for its proposal is as follows: ● Technical Proposal = 80 points ● Financial Proposal = 20 points The maximum number of technical points is detailed in the below Technical Proposal Evaluation sections. To be substantially compliant, Offerors must obtain a minimum threshold of 70% of total points.	● Form E: Technical Proposal Form ● Form F: Format for Resume of Proposed Key Personnel ● Form G: Performance Statement Form

Technical Proposal Evaluation sections:

Section number/description		Points Obtainable
1.	Offeror's qualification, capacity and expertise	25
2.	Proposed Methodology, Approach and Implementation Plan	30
3.	Key Personnel proposed and Sustainability Criteria	25
Total Technical Proposal Points		80

Section 1: Offeror's qualification, capacity and expertise		**Points**	**Sub-Point**
1.1	Brief description of the organization, including the year and country of incorporation, and types of activities undertaken, including relevance of specialised knowledge and experience on similar engagements done in the past. Experience working with the UN or International Organizations will be considered an asset. (Max 4 pages written text plus Matrix 1)	15	
	1. Experience in projects of comparable size, type, complexity and technical specialty		5
	2. Experience in providing similar services in the region, especially the Philippines		5
	3. Understanding of local context, or partnering up with a Filipino entity to provide for the strategic consultation, translations; as well as the communications expertise		5
1.2	General organizational capability which is likely to affect implementation: management structure, financial stability and project financing capacity, project management controls, extent to which any work would be subcontracted. (Max 4 pages written text)	10	
Total points for section		**25**	

Section 2: Proposed Methodology, Approach and Implementation Plan		Points	Sub-Point
2.1	Description of the Offeror's approach, sequencing of activities/deliverables and methodology for meeting or exceeding the requirements of the Terms of Reference (Max 5 pages written text)	15	
	1. Management: Capacity to and know how to simultaneously manage logistics and implement the service		5
	2. Technical: The Offeror demonstrates how it envisions undertaking the proposed activities - from energy sector planning and modelling, desk review to report writing. Important aspects of the task have been addressed in sufficient detail and supported by work plan		10
2.2	Details how the different service elements shall be organized, controlled and delivered, including the quality assurance (Max 5 pages written text)	15	
	1. Details how the different service elements shall be organized, controlled and delivered are addressed		7
	2. A plan outlining how the bidder intends to ensure oversight and quality assurance throughout the assignment		8
Total points for section		**30**	

Section 3: Key personnel proposed and Sustainability Criteria		Points	Sub-point
3.1	Qualifications of key personnel proposed	20	
	1. Project Lead		10
	2. Qualification of the other proposed team members		10

3.2	The bidder should provide a clear statement and/or supporting documentation that outlines how gender is mainstreamed internally. (Max 4 pages written text)	5	
Total points for section		**25**	