

## **TERMS OF REFERENCE (TOR)**

### **CONSULTANCY SERVICES FOR OPERATIONS & DEVELOPMENT OF COMPETITIVE TRADING BILATERAL CONTRACT MARKET (CTBCM) IN POWER SECTOR OF PAKISTAN**

#### **PART –I: BACKGROUND**

Central Power Purchasing Agency Guarantee Ltd. (CPPA-G) has been granted Market Operator (MO) license by National Electric Power Regulatory Authority (NEPRA) vide a determination dated May 31st, 2022. The Authority approved the Market Commercial Code for test-run during the soft launch of the Market and a test-run plan. The test-run plan had various actions to be performed by relevant power sector entities.

Moreover, NEPRA assigned to CPPA-G the role of central coordinator/facilitator for implementation of the test-run plan, which was monitored on a bi-weekly basis by NEPRA. Moreover, the Authority also directed CPPA to furnish monthly and final test run reports.

The test run phase of the CTBCM was defined as the pre-phase before CTBCM goes live. The test-run phase – also sometimes referred to as “trial run”, “dry run”, or “parallel run”– was aimed to simulate the CTBCM transactions under “actual and real conditions” without imposing any financial obligations on the market participants and to test all IT systems, applications, and software in real time scenarios.

In the test run phase, the readiness of relevant power sector entities to provide data inputs for the Market Management System (MMS) and other related IT systems was carried out. In this phase, the market participants were made aware of the MMS data requirements and processes, and they successfully completed their internal IT and operational changes to accommodate the new system and its associated procedures. Specifically, this phase also ensured that the power sector entities underwent a thorough exercise of relaying and processing the relevant data sets as required.

The test-run phase also allowed market participants to review and evaluate the output data reports generated from MMS, in relation to their operational and commercial needs. This hands-on experience and knowledge gained will enable them to participate in the competitive wholesale market and make informed decisions when financial implications are put into effect after the launch of the CTBCM.

Furthermore, the test run phase incorporated an elaborate test run plan entailing 24 action items pertaining to various power sector entities including DISCOs, KE, NTDC and NPCC. The plan was further segregated in three heads including:

- i) Actions under Market Commercial Code (MCC) – 12 Actions
- ii) Test Run Tools & Systems – 10 Actions (as discussed above)
- iii) Awareness, Capacity Building & Test Run Sessions – 2 Actions

The Commercial Code processes were thoroughly tested including execution of Balancing Mechanism for Energy (BME) and issuance of monthly settlement statements, calculation of ex ante capacity obligations, charging of capacity based on allocation factors and preparation of merit order on shorter duration etc.

Similarly, CPPA-G organized 6 consultative sessions on the test run supported by 14 online sessions on contract management and regulatory affairs. CPPA-G also conducted roadshows in major cities of Pakistan to raise public awareness.

After the successful completion of the test run anticipated in 2023, the Market Operator function of CPPA-G will commence the market operations on a commercial scale under CTBCM, upon the formal commencement of the power market in Pakistan.

Throughout the journey of market transition, the Market Operator function of CPPA-G has been facilitated by international consultants funded by multi-lateral donors for the design and development of the power market of Pakistan. As of now, the donor's funding has been ended. However, a loan from the World Bank to support market reforms in Pakistan has been allocated to the Ministry of Energy (Power Division).

In light of the anticipated World Bank loan, the Market Operator function of CPPA-G thus seeks the services of a Consultancy Firm specializing in wholesale competitive power market operations, development, implementation and aligned activities. It is expected that the firm has performed such tasks in countries across the globe and can demonstrate the capacity of the firm and staff to carry out such activities. Deep knowledge about the Pakistan power sector, its entities, and the features of the market to be implemented are considered a significant advantage for the Consultants.

### **Documentation Available for Interested Consultants**

Access to the following documents will be provided to the interested consultant for information:

- CTBCM Design and Implementation Roadmap
- Market Operator License Determination incl. Commercial Code
- Key Regulations including Procurement Regulations, Open Access Regulations and Supplier Regulations etc. (Regulations notified by the Authority can be found at <https://nepra.org.pk/Legal.php>)

## **PART – II: SCOPE OF CONSULTANCY SERVICES**

A consulting firm of international repute (The Consultants) is requested to provide a team of international and local experts to deliver the scope of work outlined below. The Consultants must have in-depth experience in power sector restructuring; competitive electricity market development and design; power sector financial and settlement systems; power trading regulations; market and system operations; modeling; drafting of power sector legal and regulatory instruments [market code, grid code and related rules and regulations etc.]; change management, etc. The consultants will be placed with Market Operator function of CPPA-G and primarily be based in Islamabad.

### **Few Guidelines for the Consultants**

These ToRs are designed based on Tasks to be developed by the Consultants, following the mechanisms as indicated below:

1. Each Task have defined activities to be performed by the Consultants and the associated indicative Deliverables.

2. The Consultant will nominate for each task a Key Expert in charge of its development. For the Task 3, the Consultant will propose two Key Experts, one for Legal and other for Finance and Taxation.
3. The Key Expert(s) should possess the required qualifications and experience mentioned against each Task.
4. The Consultant will be free to nominate additional experts as part of the team that will work on the development of the Activities and Deliverables for each Task.
5. The Market Development & Evolution Expert will also exercise the role of Team Leader, with the role of coordinating the activities of the whole Consultant's team and the relationship with the the Market Operator function of CPPA-G.
6. The deliverables mentioned under the tasks are indicative and are included to give the interested Consultants an idea of the work expected under each task. The consultants may propose any other deliverables that are aligned with the overall task requirement. The deliverables will not form the basis of the payment rather the actual time spent for rendering the services shall be the basis of payment. The Consultant shall carefully review the TORs and shall confirm the mentioned deliverables or add the deliverables as part of the technical proposal after due consideration of the relevant sector.

### **Definition of Tasks**

Each of the seven Tasks indicated below, in addition to the Activities and indicative Deliverables, also specifies the Qualifications and the Experience required for the Key Expert(s) in charge of it.

## **Task # 1. Market Development & Evolution**

### **Activities Expected to be Performed by the Market Development & Evolution Expert:**

- Evaluate existing features and evaluate need and feasibility of developing new features of CTBCM including but not limited to:
  - Establishment of a short-term trading platform.
  - Design and implementation of a market for ancillary services.
  - Transition towards a retail market.
  - Establishment of a day-ahead market.
  - Improvement in the definition of existing products.
  - Introduction of new products in the markets.
- Identify key objectives and desired outcomes for the transition from the existing design to an advanced design, considering factors such as market efficiency, competitiveness, reliability, and sustainability.
- Provide on-the-job training to the Market Operator function of CPPA-G regarding international best practices and experiences in advanced electric power market designs around the globe especially the centrally dispatched markets.
- Identification of potential problems and propose remedial measures in transition towards the more advanced phases of the CTBCM considering the specific context and characteristics of the local power sector.
- Devise roadmaps, plans and presentations for evolution of the market by specifying the targets that shall be achieved and to communicate findings, recommendations, and progress updates to stakeholders, decision-makers, and the public.
- Develop strategies and roadmaps for new products development and retail market opening.
- Prepare the high level and then detailed design of the new or the to-be-reformed functions, products and stages of market as discussed above.
- Support CPPA-G in promoting competition and achieving liquidity in market transactions and trading.
- Review of existing power sector documents including but not limited to laws, policies, codes, regulations, agreements, other regulatory and governance documents etc., and developing assessment / post-review reports alongside compliance framework for relevant entities.

### **Qualifications:**

The Market Development & Evolution Expert shall at least have a bachelor's degree and preferably a post-graduate qualification in engineering, economics, finance or law.

### **Required Experience:**

Minimum 20 years of international experience in the power sector, particularly in competitive electricity market development, design and implementation, product development, market operations, system operations etc., including relevant experience regarding transition towards the competitive electricity market in multiple countries is desirable. In-depth knowledge/

experience of the Pakistani Power Sector and its peculiarities is highly desirable and will be considered an added advantage.

**Indicative Deliverables:**

- Report on market evaluation and enhancement of existing CTBCM features based on the performance of them during the start of the market.
- Development of Product development plan(s).
- Strategy and report for medium-term to long term market evolution: New Products
- Strategy and roadmap for retail market opening.
- Reports on high level and then detailed design on all updated features, new features or products, market stages etc. as mentioned in the activities under Task 1.
- Training & Capacity Building of the Market Operator function of CPPA-G and other key professionals.

**Estimated Level of Effort (LoE):**

The Market Development & Evolution Expert is expected to have 22 person-months of LoE throughout the duration of the contract.

## Task # 2. Market Operations & Surveillance

### Activities Expected to be Performed by the Market Operations & Surveillance

#### Expert:

- Analyze the market's results since its inception, with a focus on identifying any issues that may have been detected or otherwise.
- Support the Market Operator function of CPPA-G in improving the execution of the market operation functions which performance are net efficient and transparent enough.
- Analyze existing procedures, identify gaps, and recommend for process improvement.
- Assist in devising plans to disseminate market results and increase participation.
- Guide and support in managing any issues that arise in the market, including stakeholder management.
- Improve the settlement system of CPPA-G's Market Operator function by comparing it with international systems and propose new features aligned with international best practices for more efficient transactions.
- Support the Market Operator function of CPPA-G in promoting competition and achieving liquidity in market transactions and trading.
- Provide assistance in implementation of any provision of power sector codes and modification in the power sector codes, as and when required.
- Provide assistance in the upgradation of any Commercial Code Operating Procedures (CCOPs) and during the approval process of new CCOPs under the Market Commercial Code
- Provide guidance on the development of robust market monitoring and enforcement mechanisms to ensure compliance with overall governing framework including market rules, regulations, policies, codes and the NEPRA Act and prevent market manipulation or abuse.
- Prepare detailed procedures for market surveillance and compliance.
- Identify data sets and relevant benchmarks/standards for accurate surveillance of market participants' behaviors will be carried out.
- Support in developing an automated system and/or databases on suitable platforms for capturing market data for monitoring, assessment, and reporting purposes.
- Support in drafting warning letters, non-compliance and default notices, suspension orders, disconnection orders, and termination orders.
- Assist in preparing compliance benchmarks for Market Participants and Service Providers based on the Market Commercial Code.

#### Qualifications:

The Market Operations and Surveillance Expert shall at least have a bachelor's degree and preferably a post-graduate qualification in engineering, economics, finance or law.

#### Required Experience:

Minimum 20 years of international experience in power sector restructuring and competitive wholesale electricity market development, design and implementation, market operations, codes system operations etc. including relevant experience regarding transition towards the competitive electricity market in multiple countries. In-depth knowledge of the Pakistani Power Sector and its peculiarities is highly desirable and will be considered an added advantage.

Experience in the management of autonomous power sector settlement companies will also be considered a plus.

**Indicative Deliverables:**

- Report on Market Operations covering activities discussed in Task 2.
- Report on market maturity and state of competition of CTBCM. Identification of aspects of the market Operations which performance is below what should be expected. Recommendations on how to enhance the market operation's performance.
- Design of actions to be taken to enhance the performance of the aspects recommended by the consultant and its implementation upon approval by the Market Operator function of CPPA-G.
- Report on proposed actions to enhance the settlement system in light of best international practices and once approved by the Market Operator function of CPPA-G, provide assistance in its implementation.
- Complete proposal of the functions and duties of the MO's Market Surveillance, Compliance and Enforcement Department including structure, tasks and duties of the department.
- Drafting of templates of warning letters, non-compliance and default notices, suspension orders, disconnection orders, and termination orders.
- Prepare compliance benchmarks for Market Participants and Service Providers based on the Market Commercial Code.
- Report identifying data sets and relevant benchmarks/standards for accurate surveillance of market participants' behaviors will be carried out.
- Training & Capacity Building of the Market Operator function of CPPA-G in operational aspects and particularly surveillance.

**Estimated Level of Effort (LoE):**

The Market Operations & Surveillance Expert is expected to have 20 person-months of LoE throughout the duration of the contract.

**Task # 3. Finance, Taxation and Legal**

**Activities Expected to be Performed by the Key Experts:****Finance and Taxation:**

- Assist and provide support to the Market Operator function of CPPA-G in all issues pertaining to the wholesale electricity market's financial management.
- Build on the existing evaluation of taxation analysis carried out for the Market Operator function of CPPA-G by identifying new taxation issues emerging due to amendments and changes in the tax laws as well introduction of new products in the electricity market by the Market Operator and resulting market transactions.
- Evaluate the existing billing and settlement models for settlement of BME/BMC/Ancillary etc. and propose improvements.
- Identify revenue streams for the Market Operator function of CPPA-G.
- Provide guidance in implementation of the proposed improvements in the existing billing and settlement mechanisms once approved by the Market Operator function of CPPA-G.
- Capacity building of existing team and develop their expertise in financial management of the competitive wholesale market.

**Legal:**

- Provide local legal expertise with sound understanding of the legal regime of the power sector of Pakistan. Accompany the implementation of all outcomes of this consultancy requiring legal elaboration.
- Facilitate legal services to the CPPA-G and other entities through CPPA-G involved in CTBCM implementation in the tasks of legal nature.
- Ensure compliance with legal requirements while safeguarding the interests of CPPA-G and other entities involved in the implementation of the CTBCM.
- Analyze existing power sector policies, laws, and regulations in Pakistan. Assess their impact on CTBCM implementation and provide recommendations for legal and policy reforms to promote efficient and sustainable power trading practices.
- Ensure proper management and retention of legal documents, including contracts, and regulatory filings.
- Provide legal drafting and review services for the documents under preparation including market contracts, agreement, codes, rules, regulations etc.
- Provide assistance in the process of legal bifurcation of CPPA-G and allied activities in coordination with the SO restructuring expert.
- Provide legal input and opinion on policy and regulatory framework.
- Provide legal assistance in implementation of activities pertaining to formation and establishment of ISO and associated tasks related to corporate governance.

**Qualification:**

The Finance and Taxation Expert shall at least have a bachelor's degree in accounting or finance or be a member of a professional accounting body.

The Legal Expert shall at least have a bachelor's degree and preferably a post-graduate qualification in law.

**Required Experience:**

**Finance and Taxation Expert:** Minimum 15 years of local experience in accounting standards, cash management and business/financial planning and other activities related to financial and accounting aspects in public/private sector of Pakistan. The Expert should be aware of the billing

and collection mechanism of the electric power utilities, collaterals used internationally as Security Covers and Guarantees etc. Knowledge related to banking system of Pakistan and understanding of the local taxation laws etc. in relation to the Power Sector will be highly preferred. Proficiency in ERP systems will be an added advantage. Experience in the Power sector of Pakistan will be highly preferred.

**Legal Expert:** Minimum 12 years of work experience in the power sector of Pakistan, including experience with the policy, legal, regulatory, and contractual framework of the Pakistani Power Sector.

#### **Indicative Deliverables:**

##### **Finance and Taxation Expert:**

- Prepare financial models for assessing the financial implications (ROI etc.) of bilateral contracts and other market transactions.
- Prepare reports on periodic basis covering new taxation issues emerging due to amendments and changes in the tax laws having implication on the market transaction as well introduction of new products.
- Prepare report(s) on how to diversify potential revenue streams for the market operator.
- Training & Capacity Building of the Market Operator function of CPPA-G and other key professionals.

##### **Legal Expert:**

- Legal drafting of assigned documents.
- Legal review of documentation under process.
- Legal opinion on the matters requiring legal assistance.
- Report with the results of the analyses of existing power sector policies, laws, and regulations in Pakistan and their impact on CTBCM, including recommendations for legal and policy reforms to promote efficient and sustainable power trading practices.
- Report on other activities as mentioned in Task 09.  
Training & Capacity Building of CPPA-G staff and other key stakeholders

#### **Estimated Level of Effort (LoE):**

The Finance & Taxation Expert is expected to have 6 person-months of LoE throughout the duration of the contract.

The Legal Expert is expected to have 6 person-months of LoE throughout the duration of the contract.

#### **Task # 4. Market Contracts Development**

##### **Activities Expected to be Developed by the Market Contracts Development Expert:**

- With the support of World Bank, the Security Package Documents (SPDs) for solar technology has already been prepared, and the SPDs for wind technology are expected to prepare in a month. This consultant will build on the work already done under the technical assistance of the World Bank and will work on development of SPDs for thermal and hydel technologies considering the risks involved in power project construction and operation, as well as the design of the target wholesale market in Pakistan. All these SPDs are aimed towards power procurement to be carried out directly by DISCOs under CTBCM regime.
- The Expert will work through CPPA-G and assist IAA, DISCOs & CPPA-G regarding preparation of the SPDs as discussed in the point above.
- While preparing Security Package Documents, cover all possible risks and contingencies while aligning with the regulatory framework and wholesale market dynamics.
- Provide insights and guidance to ensure efficient and effective power procurement while complying with regulatory requirements.
- The compatibility of proposed Security Package Documents with the market design will be cross-checked, and potential issues or inconsistencies will be identified by the Consultants.
- Guidance will be provided on addressing these issues in line with the market design, ensuring compatibility with contracts.
- Identify potential issues and provide guidance to avoid legal or financial risks associated with contracts.
- The Consultants will deliver comprehensive conclusions addressing potential legal and financial risks associated with the Security Package Documents and Market Contracts.
- The existing or proposed Security Package Documents will be evaluated to ensure optimization according to the needs of market participants in the Pakistani power sector and the CTBCM.
- In consideration of the gradual maturing of the market, the Consultant will analyze and make recommendations regarding the possibility of transitioning to a more open market, where players assume higher risks with leaner security packages, reducing market-related risks.
- Consistently with the recommendations above, the Consultants will develop SPDs for the thermal and hydel technologies including:
  - Power Purchase Agreement (PPAs)
  - Implementation Agreement
  - Buyer's Participation Agreement
  - Fuel Supply Agreement
  - Allied Annexure and Schedules
- Apart from above SPDs, the Consultant will prepare the templates for the following technology-oriented structured power purchases contracts for non-regulated market participants:
  - Generation Following Contract
  - Load Following Contract
  - Fixed Quantity (Profile-Based) Contract

**Qualifications / Certifications:**

- The Market Contracts Development Expert shall at least have a bachelor's degree and preferably a post-graduate qualification in economics, finance, law, or engineering.

**Required Experience:**

Minimum 20 years of international experience in power sector in market contracts development in at least 05 different countries. The Expert should have hands-on experience in drafting contractual documents pertaining to power sector. In-depth knowledge of the Pakistani Power Sector and its peculiarities is highly desirable and will be considered an added advantage.

**Indicative Deliverables**

- Preparation of complete set of SPDs for conventional technologies.
- Power Purchase Agreement.
- Implementation agreement.
- Fuel Supply Agreement.
- Buyer's Participation Agreement.
- Structured Power Purchase Contract Templates for non-regulated market participants.
- Consultation sessions with the stakeholders during document development phase.
- Support in the approval of the subject documents at the appropriate forums.
- Training & Capacity Building of involved entities.

**Estimated Level of Effort (LoE):**

The Market Contracts Development Expert is expected to have 10 person-months of LoE throughout the duration of the contract.

## **Task # 5. Market Simulation & Modelling**

### **Activities Expected to be Performed by the Market Simulation & Modelling Expert:**

- Provide guidance in different scenarios in the electricity market and their reporting mechanism including changes in demand, supply, or pricing and potential outcomes of different market conditions.
- Provide assistance in development of effective strategies to optimize market operations.
- Provide assistance in production of market outlook reports and publication guide.
- Utilize data analytics to provide direction on market evolution.
- Provide guidance and support for monitoring the regulatory compliance particularly with regard to the optimal operation including restrictions in the system. Propose methodology and way of presentations of results through compliance matrices.
- Provide guidance on compliance with renewable energy mandates.
- Improvement in market simulation models already developed by the Market operator which are informed by the already approved generation plan prepared by the System Operator and approved by the Regulator.
- Evaluation of Marginal Price application and methodology and propose recommendations thereof.
- Preparation of financial models linked with despatch models to evaluate market transactions.

### **Qualifications / Certifications:**

The Market Simulation and Modeling Expert shall at least have a bachelor's degree and preferably a post-graduate qualification in engineering, IT, data sciences, economics or finance.

### **Required Experience:**

Minimum of 10 years of international hands-on experience on different market simulation optimization tools and software globally used in the power sector and power markets, ensuring least cost dispatch, day ahead or week ahead dispatch planning, hydrothermal coordination, security constraints optimization, market price simulation, data analytics etc., including relevant experience in multiple countries. Relevant experience in countries like Pakistan will be considered a plus.

### **Indicative Deliverables**

- Report on assessment of existing methodology for determination of Marginal Price and its impact on ancillary charges, and improvements in the methodology if required.
- A Market Outlook report for next couple of years in order to guide the market participants on future prospects of short terms trading.
- Report on methodology for monitoring the system and the market optimal operation and systematic presentation of results.
- Assessment of the benefits of introducing day ahead markets, and how to articulate it with the design of the CTBCM, based on the objective studies made with the simulation tools used in the CTBCM.
- Optimization of market simulation models of the Market Operator.
- Models to evaluate market transformation.
- Report on other remaining actions under this Task.
- Capacity Building of the Market Operator function of CPPA-G on standard simulation and modeling tools and software.

**Estimated Level of Effort (LoE):**

The Market Simulation and Modeling Expert is expected to have 10 person-months of LoE throughout the duration of the contract.

**Task # 6. System Operator (SO) Restructuring & Strengthening****Activities Expected to be Performed by the System Operator (SO) Restructuring & Strengthening Expert:**

- Guide in this institutional reform process and objectively identify the steps to be taken for the transition from an existing TSO structure towards the ISO structure w.r.t roles, functions, HR and corporate affairs.
- Design and implementation of the activities pertaining to formation and establishment of ISO in line with North American ISOs having centralized dispatch markets.
- Prepare proposals on all perspectives of this transition including technical systems, IT resources needed, corporate and regulatory aspects and HR, including organizational aspects, necessary recruitments, staff categorization and remuneration, etc. and provide support in the implementation of subject transition.
- Propose detailed procedures on the SO functions, which will be prepared along with the capacity building/ training of the SO staff on the newly developed procedures.
- Gap analysis between existing and required professional capacity for running the ISO function in its different department. Prepare a Capacity Building Plan and deliver a number of courses, which will be selected once the Capacity Building Plan is in place.
- Provide assistance for the review and improvement of the expansion planning processes, which are the responsibility of the SO.
- Provide support to Market Operator pertaining to MO restructuring activities.
- Improve existing dispatch processes, marginal price discovery and other processes related to SO effective operations that are related to competitive market.
- Evaluate existing IT systems for effective use by SO.

**Qualifications:**

The SO Restructuring and Strengthening Expert shall at least have a bachelor's degree and preferably a post-graduate qualification in engineering, economics, finance or management sciences.

**Required Experience:**

Minimum 10 years of international experience in power sector particularly in system operations, system planning, transmission networks, metering services, Grid Codes, performance standards, including relevant experience preferably in multiple countries. Expertise in change management, operational restructuring, business processes restructuring, etc. will be considered as an added advantage.

**Indicative Deliverables**

- Comprehensive restructuring report for transitioning from the existing TSO model to an ISO structure similar to North American ISOs in central dispatch markets. Provide assistance in restructuring implementation after the acceptance and approval of the report.
- Operating manuals mainly for the System Operator (SO) on reserve requirements, marginal prices and ancillary services.
- Capacity building plan for new recruitments and existing personnel.
- Deliver courses and impart training as agreed with the ISO management.
- Day ahead market evaluation in coordination with Market Development and Evolution Expert.
- MO restructuring report linked with the ISO structure discussed above.
- Training & Capacity Building for MO & SO staff.

**Estimated Level of Effort (LoE):**

The SO Restructuring and Strengthening Expert is expected to have 11 person-months of LoE throughout the duration of the contract.

**Task # 7. Independent Auction Administrator (IAA) Restructuring & Strengthening**

**Activities Expected to be Performed by the Independent Auction Administrator (IAA) Restructuring & Strengthening Expert:**

- The Expert will be working through the Market Operator function of CPPA-G and mainly supporting IAA.
- Provide significant insights and guidance in redefining the IAA role, streamlining the procurement process, and ensuring transparency and fairness in auction process.
- Preparation of SOPs for standardized procurement mechanisms.
- Provide assistance to IAA in developing a comprehensive auction plan and development of bidding documents.
- Propose and design of an online bidding platform for the Independent Auction Administrator for efficient and effective procurement mechanisms.
- Prepare a gap analysis of existing HR processes and IT systems with respect to the functions of the IAA that need to be operationalized in the competitive electricity market as per the approved model.
- Provide training and capacity building to auction administrators and stakeholders.
- Provide guidance on regulatory compliance, developing robust policies, and implementing effective risk management strategies.

**Qualifications:**

The IAA Restructuring & Strengthening Expert shall at least have a bachelor's degree and preferably a post-graduate qualification in engineering, finance, management sciences or law.

**Required Experience:**

Minimum 15 years of international experience on procurement auctions, competitive bidding, bidding platforms etc. in the competitive wholesale electricity markets, including relevant experience preferably in multiple countries. Experience in change management, organizational restructuring, business processes restructuring etc. will be also preferred. Relevant experience in countries similar to Pakistan will be considered a plus.

**Indicative Deliverables:**

- Detailed report on IAA restructuring plan with interventions required with respect to people, processes and IT interventions required.
- Development of Auction plan.
- Development of bidding documents.
- Report and roadmap for implementing online bidding platforms for efficient and effective procurement.
- Organization of capacity building sessions for IAA on competitive auctions and delivery of courses and training activities as agreed with the IAA management.
- Organization of capacity building sessions for DISCOs on contract management & negotiations.

- Assisting DISCOs in preparation of Power Acquisition Plan.

**Estimated Level of Effort (LoE):**

The IAA Restructuring & Strengthening Expert is expected to have 7 person-months of LoE throughout the duration of the contract.

**Scope of Work – Other Details**

The Consultants will be required to develop a detailed Gantt (as part of the Inception Report) against all Activities and Deliverables in consultation with the Market Operator function of CPPA-G and complete the implementation of these deliverables as per their prescribed timelines.

The Market Operator function of CPPA G reserves the right to reschedule the dates of the Tasks in consultation with the Consultant.

Capacity building sessions pertaining to each Task for the staff of Market Operator function of CPPA-G and other involved power sector entities are essential Activities. The exact number of sessions and their themes will be decided later.

**Indicative Deliverables & Working Mechanism**

The deliverables mentioned under the tasks are indicative and are included to give the prospective Consultants an idea of the work expected under each task. The consultants may propose any other deliverables that are aligned with the overall task requirement and objective of the assignment in the technical proposal.

After the award of the contract, for each quarter shortly before it starts, the Consultant and market operator function of CPPA will agree on the specific deliverables / reports to be submitted during the upcoming quarter. Based on this, the Consultant will formulate a Quarterly Action Plan (QAP) and submit to CPPA at latest by the first working day of the related quarter. Each Quarterly Action Plan will also feature a complete methodology of the activities scheduled for the upcoming quarter along with the estimated LOE required to undertake the activities and complete deliverables agreed upon under the quarterly plan as well as any other information useful for the management of this project.

In short, the Quarterly Action Plan shall mention the specific deliverables, proposed by the Consultant with reference to the scope of work listed under these TORs, on which the Consultant will be working on for submission to market operator function of CPPA during the respective quarter. The periodic payments under the contract would be associated with the LOEs of the Key Experts consumed against production of agreed upon deliverables under the QAP. Upon acceptance of these specific deliverable by market operator function of CPPA, the LOE consumed for that quarter will be paid.

Similarly at the end of each quarter, the Consultant shall submit a Quarterly Progress Report (QPR) of the passing quarter in line with the respective QAP. QPR shall summarize the achievements vs. targets of the particular quarter in terms of deliverables produced by the Consultant and submitted to CPPA-G. It will also give the status of actual LOE consumed by the Consultants for the production of deliverables and execution of activities in a defined quarter.

## Task Summary

#	Task	Indicative Deliverables
1.	<b>Market Development &amp; Evolution</b>	<ul style="list-style-type: none"> <li>• Report on market evaluation and enhancement of existing CTBCM features based on the performance of them during the start of the market.</li> <li>• Development of Product development plan(s).</li> <li>• Strategy and report for medium-term to long term market evolution: New Products</li> <li>• Strategy and roadmap for retail market opening.</li> <li>• Reports on high level and then detailed design on all updated features, new features or products, market stages etc. as mentioned in the activities under Task 1.</li> <li>• Training &amp; Capacity Building of the Market Operator function of CPPA-G and other key professionals.</li> </ul>
2.	<b>Market Operations &amp; Surveillance</b>	<ul style="list-style-type: none"> <li>• Report on Market Operations covering activities discussed in Task 2.</li> <li>• Report on market maturity and state of competition of CTBCM. Identification of aspects of the market Operations which performance is below what should be expected. Recommendations on how to enhance the market operation's performance.</li> <li>• Design of actions to be taken to enhance the performance of the aspects recommended by the consultant and its implementation upon approval by the Market Operator function of CPPA-G.</li> <li>• Report on proposed actions to enhance the settlement system in light of best international practices and once approved by the Market Operator function of CPPA-G, provide assistance in its implementation.</li> <li>• Complete proposal of the functions and duties of the MO's Market Surveillance, Compliance and Enforcement Department including structure, tasks and duties of the department.</li> <li>• Drafting of templates of warning letters, non-compliance and default notices, suspension orders, disconnection orders, and termination orders.</li> <li>• Prepare compliance benchmarks for Market Participants and Service Providers based on the Market Commercial Code.</li> <li>• Report identifying data sets and relevant benchmarks/standards for accurate surveillance of market participants' behaviors will be carried out.</li> <li>• Training &amp; Capacity Building of the Market Operator function of CPPA-G in operational aspects and particularly surveillance.</li> </ul>

3.	<b>Finance, Taxation and Legal</b>	<p><b>Finance and Taxation Expert:</b></p> <ul style="list-style-type: none"> <li>• Prepare financial models for assessing the financial implications (ROI etc.) of bilateral contracts and other market transactions.</li> <li>• Prepare reports on periodic basis covering new taxation issues emerging due to amendments and changes in the tax laws having implication on the market transaction as well introduction of new products.</li> <li>• Prepare report(s) on how to diversify potential revenue streams for the market operator.</li> <li>• Training &amp; Capacity Building of the Market Operator function of CPPA-G and other key professionals</li> </ul> <p><b>Legal Expert:</b></p> <ul style="list-style-type: none"> <li>• Legal drafting of assigned documents.</li> <li>• Legal review of documentation under process.</li> <li>• Legal opinion on the matters requiring legal assistance.</li> <li>• Report with the results of the analyses of existing power sector policies, laws, and regulations in Pakistan and their impact on CTBCM, including recommendations for legal and policy reforms to promote efficient and sustainable power trading practices.</li> <li>• Report on other activities as mentioned in Task 09.</li> <li>• Training &amp; Capacity Building of CPPA-G staff and other key stakeholders</li> </ul>
4.	<b>Market Contracts Development</b>	<ul style="list-style-type: none"> <li>• Preparation of complete set of SPDs for conventional technologies.</li> <li>• Power Purchase Agreement.</li> <li>• Implementation agreement.</li> <li>• Fuel Supply Agreement.</li> <li>• Buyer's Participation Agreement.</li> <li>• Structured Power Purchase Contract Templates for non-regulated market participants.</li> <li>• Consultation sessions with the stakeholders during document development phase.</li> <li>• Support in the approval of the subject documents at the appropriate forums.</li> <li>• Training &amp; Capacity Building of involved entities</li> </ul>
5.	<b>Market Simulation &amp; Modelling</b>	<ul style="list-style-type: none"> <li>• Report on assessment of existing methodology for determination of Marginal Price and its impact on ancillary charges, and improvements in the methodology if required.</li> <li>• A Market Outlook report for next couple of years in order to guide the market participants on future prospects of short terms trading.</li> <li>• Report on methodology for monitoring the system and the market optimal operation and systematic presentation of results.</li> </ul>

		<ul style="list-style-type: none"> <li>• Assessment of the benefits of introducing day ahead markets, and how to articulate it with the design of the CTBCM, based on the objective studies made with the simulation tools used in the CTBCM.</li> <li>• Optimization of market simulation models of the Market Operator.</li> <li>• Models to evaluate market transformation.</li> <li>• Report on other remaining actions under this Task</li> <li>• Capacity Building of the the Market Operator function of CPPA-G on standard simulation and modeling tools and software.</li> </ul>
6.	<b>System Operator (SO) Restructuring &amp; Strengthening</b>	<ul style="list-style-type: none"> <li>• Comprehensive restructuring report for transitioning from the existing TSO model to an ISO structure similar to North American ISOs in central dispatch markets. Provide assistance in restructuring implementation after the acceptance and approval of the report.</li> <li>• Operating manuals mainly for the System Operator (SO) on reserve requirements, marginal prices and ancillary services.</li> <li>• Capacity building plan for new recruitments and existing personnel.</li> <li>• Deliver courses and impart training as agreed with the ISO management.</li> <li>• Day ahead market evaluation in coordination with Market Development and Evolution Expert.</li> <li>• MO restructuring report linked with the ISO structure discussed above.</li> <li>• Training &amp; Capacity Building for MO &amp; SO staff.</li> </ul>
7.	<b>Independent Auction Administrator (IAA) Restructuring &amp; Strengthening</b>	<ul style="list-style-type: none"> <li>• Detailed report on IAA restructuring plan with interventions required with respect to people, processes and IT interventions required.</li> <li>• Development of Auction plan.</li> <li>• Development of bidding documents.</li> <li>• Report and roadmap for implementing online bidding platforms for efficient and effective procurement.</li> <li>• Organization of capacity building sessions for IAA on competitive auctions and delivery of courses and training activities as agreed with the IAA management.</li> <li>• Organization of capacity building sessions for DISCOs on contract management &amp; negotiations.</li> <li>• Assisting DISCOs in preparation of Power Acquisition Plan</li> </ul>

**Anticipated Team Composition and Minimum Input Summary**

#	Expert	Input (Person-months)
---	--------	-----------------------

1.	Market Development & Evolution Expert	22
2-	Market Operations & Surveillance Expert	20
3.	Finance & Taxation Expert	6
4.	Legal Expert	6
5.	Market Contracts Development Expert	10
6.	Market Simulation & Modelling Expert	10
7.	System Operator (SO) Restructuring & Strengthening Expert	11
8.	Independent Auction Administrator (IAA) Restructuring & Strengthening Expert	7

The Consultant may propose input equal to higher than the minimum including any additional resource as deemed appropriate by the Consultant in the proposal. The Selection of Consultants shall be carried out in accordance with Quality and Cost Based Selection (QCBS) following the World Bank Procurement Regulations (Nov 2020).