



Rural Power Company Limited

Request for Expression of Interests (EOI)

For

Appointment of Owner's Engineer for Project Management and Construction Supervision of Mymensingh 420 MW Dual Fuel (Gas/HSD) Combined Cycle Power Plant Project at Mymensingh, Bangladesh.

**EOI REF. NO. : PUR-008(FS/MYMENSINGH 420 MW/QCBS)/2019-20;
Date: 05.12.2019**



RURAL POWER COMPANY LIMITED
Request for Expression of Interest (Firm)

| | | |
|----------------------------------|--|--|
| 1 | Ministry/Division | Ministry of Power, Energy and Mineral Resources/Power Division |
| 2 | Agency | Rural Power Company Ltd. (RPCL) |
| 3 | Procuring Entity Name | Executive Director (Engineering), Rural Power Company Limited |
| 4 | Procuring Entity code | Not used at present |
| 5 | Procuring Entity District | Dhaka |
| 6 | Expression of Interest for Selection of | Owner's Engineer for Project Management and Construction Supervision of Mymensingh 420 MW Dual Fuel (Gas/HSD) Combined Cycle Power Plant Project at Mymensingh, Bangladesh. |
| 7 | EOI Ref. No. | PUR-008(FS/MYMENSINGH 420 MW/QCBS)/2019-20 |
| 8 | Date | 05/12/2019 |
| KEY INFORMATION | | |
| 9 | Procurement Method | Quality & Cost Based Selection (QCBS) |
| 10 | Budget and Source of Funds | RPCL's Own Fund |
| 11 | Development Partner (If applicable) | N/A |
| PARTICULAR INFORMATION | | |
| 12 | Project/ Program code | Not applicable |
| 13 | Project/ Program name | Project Management and Construction Supervision of Mymensingh 420 MW Dual Fuel (Gas/HSD) Combined Cycle Power Plant Project at Mymensingh, Bangladesh. |
| 14 | EOI closing date and time | 29/12/2019 at 12:00 Noon |
| INFORMATION FOR APPLICANT | | |
| 15 | Brief description of the assignment | Provide Consultancy services for Project Management and Construction Works Supervision for development of a 420 MW Dual Fuel (Gas/HSD) Combined Cycle Power Plant Project at Mymensingh, Bangladesh. The assignment will include the following : 1. Project Management 2. Design, Audit and Construction Works Supervision 3. Testing and Commissioning 4. Training and Capacity Development |
| 16 | Experiences, Resources and Delivery capacity required. | Application has been invited from the competent consulting firms who have at least provided consulting engineering services involving design audit and construction supervision within the last 10 years, for at least one (1) Combined Cycle power plant project with capacity equal to or more than 200 MW. Consulting firm may form Joint Venture/Consortium/Association (JVCA). In such case, Lead partner must have experience in the field of consulting engineering services involving design audit and construction supervision within the last 10 years, for at least one (1) Combined Cycle power plant project with capacity equal to or more than 200 MW. Other partners should have remaining required experience to qualify. Any one Joint Venture/ Consortium/ Association member shall not be allowed to participate with more than one Applicant. |
| 17 | Other details (if applicable) | The intending consulting firms may collect the "Detailed Terms of Reference" as well as "Eoi document" from RPCL office by submitting an application to the Executive Director (Engineering), Rural Power Company Limited, House No.-19, Road No.-1/B, Sector No.-09, Uttara Model Town, Dhaka- 1230, Bangladesh during office hours till 26.12.2019. The document is also available in RPCL's website: www.rpcl.gov.bd The EOIs would be reviewed on the basis of the following: <ul style="list-style-type: none">• Registration and age of Firm• Experience of the firm in similar task• Availability of key professionals• Availability of resources• Managerial strength and financial capacity• Experience of the firm in other works Any application submitted later than the specified time shall not be entertained. A short list of Applicants will be made by evaluating the received applications in accordance with PPR-2008.RFP will be issued to short listed firms. |
| 18 | Association with foreign Firm is | Encouraged |
| 19 | Place of EOI submission | Rural Power Company Limited, House No.-19, Road No.-1/B, Sector No.-09, Uttara Model Town, Dhaka- 1230, Bangladesh. |
| PROCURING ENTITY DETAILS | | |
| 20 | Name of official Inviting EOI | Md. Salim Bhuiyan, PEng. |
| 21 | Designation of official Inviting EOI | Executive Director (Engineering) |
| 22 | Address of official Inviting EOI | Rural Power Company Limited, House No.-19, Road No.-1/B, Sector No.-09, Uttara Model Town, Dhaka- 1230, Bangladesh. |
| 23 | Contact details of official Inviting EOI | Phone: +88-02-7911201, Fax: +88-02-7913229, E-mail : edeng@rpcl.gov.bd, Website: www.rpcl.gov.bd |
| 24 | Special Instruction | The Procuring Entity reserves the right to accept any or reject any/all applications without assigning any reason. |

(Md. Salim Bhuiyan, PEng.)
Executive Director (Engineering)
Rural Power Company Limited

INSTRUCTION TO THE APPLICANTS

1. Application of the interested firms must include:
 - a. Name of the Principal Firm with complete address, Cable, Fax, Telephone Nos. E-mail address etc.
 - b. Name of the Associated Firm (if any) with complete address, Cable, Fax, Telephone Nos., E-mail address etc.
 - c. Notarized Joint Venture/Consortium/Association Agreement (JVCA) on Non-Judicial Stamp of the firms (in case of Joint Venture/Association with another firm) for the said consulting service. The value of Non-Judicial Stamp should be Tk. 300.00 (Three hundred Taka).
 - d. The name of the employees/owner(s) of the firms and corporate profile of the firms.
 - e. The name and qualification of the Management/Administrative Personnel.
 - f. List and qualification of the key-personnel likely to be involved in the proposed consulting service.

The proposed fields of expertise for the said consulting service would be at least the following:

| No | Experts | Estimated Man- Months | |
|----|---|-----------------------|------------|
| | | International | National |
| 1 | Project Manager / Team Leader | 30 | - |
| 2 | Mechanical Engineer (Intl.- 1, Local- 2) | 20 | 49 |
| 3 | Electrical Engineer (Intl.- 1, Local- 1) | 20 | 20 |
| 4 | Instrumentation & Control Engineer (Intl.- 1, Local- 1) | 12 | 16 |
| 5 | Commissioning Engineer (Intl.- 1) | 04 | 03 |
| 6 | Civil Engineer (Intl.- 1, Local- 1) | 20 | 30 |
| 7 | Environmental Specialist (Intl.- 1, Local- 1) | 03 | |
| 8 | EHS specialist (Local- 1) | | 12 |
| | Total | 109 | 130 |

- g. Identity, Structure, Organization of the firms(s) including copies of the documents defining the constitution or legal status, place of registration and principal places of business and/or principal offices of the company/firm.
 - h. Details of vehicles, instruments & office equipment the firm owns.
 - i. Audited Financial Statements of the firm for the last five fiscal years.
 - j. Experience of the firms along with a list of similar work at hand or carried out since 2005. The Consultant must submit the end user certificate in support of experience.
 - k. The Consultant should submit the signed CV of the proposed professional staff. The CV must contain a photography of the experts.
2. Applicant must submit information using the attached table/format [Annexure-1 to 6] with the document. The submitted document must be sealed and signed by a person duly authorized by the consulting firm.





Photo

Curriculum Vitae (CV) for Each Proposed Professional Staff (CV will be maximum within two (02) pages(Short Biography) & the consulting firm shall have to be submitted a soft copy of Annex-1 along with EOI document.)

- 1 PROPOSED POSITION FOR THIS PROJECT : *[From the Terms of Reference, state the position which the Consultant will be engaged. Only one candidate shall be nominated for each position].*
- 2 NAME OF PERSON : *[state full name]*
- 3 DATE OF BIRTH :
- 4 NATIONALITY :
- 5 MEMBERSHIP IN PROFESSIONAL SOCIETIES : *[state rank and name of society and year of attaining that rank].*
- 6 EDUCATION : *[list all the colleges/universities which the consultant attended, stating degrees obtained, and dates, and list any other specialized education of the consultant]*
- 7 OTHER TRAINING : *[indicate significant training since degrees under education were obtained, which is pertinent to the proposed tasks of the consultant].*
- 8 LANGUAGES & DEGREE OF PROFICIENCY :

| Language | Speaking | Reading | Writing |
|--------------|----------|-----------|-----------|
| e.g. English | Fluent | Excellent | Excellent |
- 9 COUNTRIES OF WORK EXPERIENCE :
- 10 EMPLOYMENT RECORD *[starting with position list in reverse order every employment held and state the start and end dates of each employment]* : *[The Consultant should clearly distinguish whether as an "employee" of the firm or as a "Consultant" or "Advisor" of the firm].*
[The Consultant should clearly indicate the Position held and give a brief description of the duties in which the Consultant was involved].

EMPLOYER 1

FROM:

TO:

*[e.g. January 1999]**[e.g. December 2001]*

EMPLOYER 2

FROM:



EMPLOYER 3 : FROM: TO:

EMPLOYER 4 : FROM: TO:

11 WORK UNDERTAKEN THAT BEST ILLUSTRATES YOUR CAPABILITY TO HANDLE THIS ASSIGNMENT : *[give an outline of experience and training most pertinent to tasks on this assignment, with degree of responsibility held. Use about half of a page A4].*

CERTIFICATION *[Do not amend this Certification].*

I, the undersigned, certify that (i) I was not a former employee of the Client immediately before the submission of this proposal, and (iii) to the best of my knowledge and belief, this biodata correctly describes myself, my qualifications, and my experience. I understand that any willful miss-statement described herein may lead to my disqualification or dismissal, if engaged.

Signature

Date of Signing

Day / Month /Year



Name and Qualification of Management/Administrative Personnel

| Serial No | Name of the Personnel | Position at the Firm | Temporary/ Permanent | Educational Qualification (Name of the Exam....., Passing year....., University....) | Experience in years |
|-----------|-----------------------|----------------------|----------------------|--|---------------------|
| | | | | | |

Note: The applicant shall have to be submitted a soft copy of Annex-2 along with EOI document.



Financial Statement**Summary of Assets & Liabilities:**

| SN | Year | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 | 2016-2017 |
|----|-------------------------------|-----------|-----------|-----------|-----------|-----------|
| 1 | Total Assets | | | | | |
| 2 | Total Liabilities | | | | | |
| 3 | Total investment | | | | | |
| 4 | Operative Expenditure | | | | | |
| 5 | Taxes Paid | | | | | |
| 6 | Profit after payment of Taxes | | | | | |
| 7 | Turnover | | | | | |

Note: The applicant shall have to be submitted a soft copy of Annex-3 along with EOI document.



Details of Vehicles, Instrument and Office Equipment

| Sl, No. | Name, Brand of the Vehicles/Equipment, Year of Manufacture | Model No., Serial No./ Registration No. | Present Condition |
|---------|--|---|-------------------|
| | | | |

Note: The applicant shall have to be submitted a soft copy of Annex-4 along with EOI document.



Similar Experience of the Firm

The following format should be used to indicate the similar experience of the firm in projects.

| | | |
|---|-----------------------|----------------------------|
| Project Name | | |
| Project Location | Start Date (M / Y) | Completion Date (M / Y) |
| | | |
| Name of the Client with address and Contact number | | |
| Contract amount | | |
| Name of the associated firm (if any) | | |
| Narrative description of actual service provided by the firm for the project: | | |
| | | |

Name of the Firm:

Signature of the authorized signatory:

- Note: 1. Experience must be supported by a certificate issued by respective client.
2. The applicant shall have to be submitted a soft copy of Annex-5 along with EOI Document.**



Experience of the firm in other works

| Sl. No. | Name of Services | Name of Client with address and Contact number | Contract amount | Start date | Completion time |
|---------|------------------|--|-----------------|------------|-----------------|
| | | | | | |
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Note: 1.The applicant shall have to be submitted a soft copy of Annex-6 along with EOI Document.



**Terms of Reference
of**

**OWNER'S ENGINEER for PROJECT MANAGEMENT AND CONSTRUCTION
SUPERVISION OF MYMENSINGH 420 MW DUAL FUEL (GAS/HSD)
COMBINED CYCLE POWER PLANT PROJECT**



I. INTRODUCTION

1. Rural Power Company Limited (RPCL) is one of the Governments owned Power Generation Company of Bangladesh. The government of Bangladesh (GoB) recognizes that the pace of power development has to be accelerated, both in the private as well public sector. In order to achieve overall economic development targets of the country and to mitigate power shortages and future load growth generation capacity has to be enhanced. In this consequence, Power Division has set up a target for RPCL to increase new power generation facility to 2,730 MW within 2030 at different locations of the country. Within the 2730 MW target RPCL has started its activity in order to implement a 420 MW Dual Fuel (Gas/HSD) Combined Cycle Power plant at Shambhuganj, adjacent to the existing Mymensingh 210 MW Combined Cycle Power Station under Mymensingh Sadar Upazila of Mymensingh District. The site is located at Geographic Position of $24^{\circ}45'50.50''N$, $90^{\circ}25'20.93''E$.

II. OBJECTIVES OF THE ASSIGNMENT

1. RPCL intends to procure the power plant on a turnkey basis, with the single contractor to be responsible for the site preparation and design, supply, delivery, erection, testing, and commissioning. The contractor is scheduled to be mobilized in the mid of 2020.
2. Now, RPCL intends to recruit a consulting firm (the consultant) to assist RPCL during project implementation. The role of the consultant in this process will be to assist RPCL in assuring that all steps are undertaken properly, so that the completed plant will deliver the performance, reliability, and operational flexibility specified. The service of the consultant covers design approval¹, supervision of construction activities, attending and supervision of the testing and commissioning of the power plant and assist RPCL to take over the power plant including issuance of Provisional Acceptance Certificate (PAC).
3. All conditions of this Terms of Reference (TOR) are aimed at selecting a suitable consulting firm to carry out the consulting services for the project. The consulting services assignment requires a team of consultants that have extensive experience in procurement, design and construction of combined cycle gas turbine (CCGT) power plants, including design, preparation and implementation of necessary social and environmental safeguards measures.



¹ The Employer will be responsible for the final approvals of design

III. SCOPE OF SERVICES

A. Project Management

The consultant shall provide necessary technical support to RPCL in order to manage and ensure that the project shall be completed within the schedule, meet quality requirements, ensuring the technical specifications as shown in the turnkey contract.

1. The consultant will prepare necessary project plans, progress reports, payment certificates, provisional and final take over certificates, claims evaluation reports, project final report and any other project management documents as required in accordance with good practice and RPCL requirements.
2. The consultant will assist RPCL Project Management Unit (PMU) in preparing and implementing a Project Performance Monitoring System (PPMS) to evaluate effectiveness of the project. The PPMS will measure project performance against the parameters as set out in the Design and Monitoring Framework (DMF). The PPMS will establish baseline data and benchmarks, collect necessary information, monitor progress, identify benefits and evaluate social impact.

B. Design audit and Construction Supervision

1. The turnkey contract will cover design and construction of the new power plant facilities. The consultant will provide oversight of all aspects of the turnkey contractor's works. This will include i) review and approval of the contractor's designs, ii) developing and implementing a construction quality assurance program, iii) monitoring contractor's schedule, iv) inspection of materials before shipment, upon arrival and upon erection, v) comparison of as-built drawings to design, vi) and addressing shortcomings in any of these areas.

C. Testing and Commissioning

1. For each component subject to test, the consultant will review the contractor's test procedures for compliance with manufacturers' requirements and design criteria. The consultant will witness selected tests and review the test results. The Consultant will also suggest Factory inspection and test required for major equipment of the said power plant.



D. Key Activities of the Assignment

1. The key tasks under the consulting services assignment include, but are not limited to the following:
 - i. Establish and implement PPMS;
 - ii. Assist RPCL in the management of the turnkey contract;
 - iii. Oversight of all aspects of the construction and inspect the construction activities as per Inspection & Test Plan (ITP) in order to assure that it is being conducted properly;
 - iv. Developing and implementing a quality assurance/control program for construction including ITP, review and approval of design, monitoring schedule, inspection of materials upon arrival and upon erection, review of documents to assure quality of delivered goods, comparison of as-built drawings to design, and addressing shortcomings in any of these areas;
 - v. Check overall project progress and monthly construction progress of the turnkey contractor;
 - vi. Maintain quality management of site survey works and design works carried out by the turnkey contractor;
 - vii. Monitoring the progress of manufacture and testing witness of main equipment for the project at the manufacturer workshop;
 - viii. Monitoring the quality of construction, installation, testing, commissioning of equipment, testing for determining guarantees parameters of contractor, and for Provisional Acceptance Certificate (PAC);
 - ix. Assisting RPCL in inspection and acceptance of the entire works from construction, Installation period to commissioning, acceptance, warranty period and taking-over;
 - x. Review the contractor's test procedures for compliance with manufacturers' requirements and design criteria. The Consultant will witness selected tests and review the test results. If test results are not satisfactory, the Consultant will require that the problem causing failure is addressed and that the equipment to be re-tested;
 - xi. Prepare and recommend an Operational Acceptance Certificate whenever due for the works of the contractor and advise RPCL regarding work deficiencies, if any. The Consultant will also confirm the remedial measures taken by the contractor;
 - xii. Monitor and provide comments to training programs of the turnkey contractor;
 - xiii. Review and approve list of spare parts, the special tools to be provided by the turnkey Contractor;
 - xiv. Monitoring environmental issues in accordance with applicable laws of Bangladesh;
 - xv. Monitoring the implementation of the environmental management plan (EMP)
 - xvi. Assist RPCL in reviewing the detailed EMP to be prepared by the contractors to ensure that such plan is consistent with the project's EMP and is adequate to address environmental and social impacts arising from project execution.



- xvii. Prepare semi-annual environmental and social safeguards monitoring reports on implementation of EMPs and mitigation measures taken by contractors, environmental and social effects and project performance as specified in the EMPs;
- xviii. Assist Project Management Unit in preparing quarterly progress report for submission to RPCL management;
- xix. Assist RPCL Project Management in Daily/weekly/Monthly Progress meeting
- xx. Prepare Daily/weekly/Monthly Progress report for RPCL Management
- xxi. Prepare the Project Completion Report.

IV. TEAM COMPOSITION, QUALIFICATION REQUIREMENTS AND TASKS

1. The Consultant shall provide consulting engineering services involving design audit and construction supervision within the last 10 years, for at least one (1) Combined Cycle power plant project with capacity equal to or more than 200 MW.
2. The expected duration of the consulting services is 55 months. It is expected that about 109 man-months of international consulting services will be needed from a firm specializing in project management, design audit, construction supervision and commissioning of Combined Cycle power plants. The team of international experts will be supported by about 239 man-months of national consulting services with expertise in similar areas. Prospective firms will propose at least 70% Man-Month as field input in order to ensure experts are available in the field for their timely input. Table 1 shows the indicative positions and their man-months.

Table 1:

| SN | Position | Number of Persons | Estimated Man-Months |
|---------------------------|---|-------------------|----------------------|
| Foreign Staff | | | |
| 1 | Project Manager | 1 | 30 |
| 2 | Mechanical Engineer | 1 | 20 |
| 3 | Electrical Engineer | 1 | 20 |
| 4 | I&C Engineer | 1 | 12 |
| 5 | Commissioning Engineer | 1 | 4 |
| 6 | Civil Engineer | 1 | 20 |
| 7 | Environment Specialist | 1 | 3 |
| | Sub-Total | | 109 |
| Local Staff | | | |
| Senior Local Staff | | | |
| 8 | Mechanical Engineer | 1 | 24 |
| 9 | Electrical Engineer | 1 | 20 |
| 10 | I&C Engineer | 1 | 16 |
| 11 | Civil Engineer | 1 | 30 |
| 12 | Commissioning Engineer | 1 | 3 |
| | Sub-Total | | 93 |
| Junior Local Staff | | | |
| 13 | Mechanical Engineer (Warranty Period) | 1 | 25 |
| 14 | EHS (Environment, Health & Safety) Specialist | 1 | 12 |
| | Sub-Total | | 37 |
| | Sub-Total of Local Staff | | 130 |
| | Total Man-Month | | 239 |



a) Project Manager / Team Leader (international; 30 man-months)

a.1. An International Project Manager/Team Leader will be responsible for the overall quality and implementation of the consulting services assignment. He/she must have at least bachelor degree in mechanical engineering. Master's degree will be an advantage. The expert should have 15 years of consulting experience in design and project management of CCGT power plant projects and 10 years experience as a project manager/team leader in similar assignment. Project management experience in development of CCGT power plant with capacity equal to or more than 420 MW will be required. The tasks under this position include, but are not limited to the following:

- (i) Develop a comprehensive project work program and implementation schedule;
- (ii) Monitor project progress against plan, report on progress and propose remedial measures as necessary;
- (iii) Oversee the assignment and coordinate activities of consultant team, including both field and home office staff. Act as the team's contact point with RPCL and others;
- (iv) Establish and maintain project performance monitoring system;
- (v) Review the project management (including administration) procedures of RPCL for the project implementation;
- (vi) Review, check and certify/approve suppliers' equipment system design, and approve the technical documents;
- (vii) Advise and assist RPCL to develop and maintain a project quality assurance, control plan with preparation of Inspection and Test Plan (ITP), and monitor that contractor's designs and works are executed in line with the plan and project requirements. As and when referred by RPCL, promptly advise on acceptability of such designs and works, and suggest corrective measures to be undertaken;
- (viii) Supervising the installation, testing and commissioning of the main and ancillary equipment, plant and utilities including Plant Gas Regulating & Metering Station. Monitor project progress against plan, report on progress, and propose remedial measures as necessary;
- (ix) Review Methods of Statements/Test Procedures;
- (x) Review contractor's claims for extension of time or additional costs; and undertake variation instructions and cost review; certify volume of works completed withdrawal applications and issue of monthly and final payment certificates;
- (xi) Review of contractor safety procedure including Hazard Identification & Risk Assessment, Prepare noncompliance report (defective works);
- (xii) Prepare preliminary punch list (list of incomplete works);
- (xiii) Witnessing commissioning, guarantee and acceptance tests and advice owner to issue provisional acceptance for taking over;
- (xiv) Prepare check list of materials/spares to be handed over to the client by the turnkey contractor;
- (xv) Prepare punch list (list of unfulfilled contractual obligations);
- (xvi) Review and certification of testing and commissioning plan, review of operation manuals



construction Manuals, training manuals. Maintenance manuals Drawings, As build Drawings and safety manuals;

- (xvii) Report on findings during the project implementation;
- (xviii) Assist RPCL in ensuring that its personnel receive adequate on-the-job training by the contractor on all relevant aspects of CCGT so that RPCL's personnel can independently perform the operation and maintenance functions;
- (xix) Delivering the required monthly reports including final reports;
- (xx) Prepare and submit final project completion report;
- (xxi) Conduct other duties as reasonably requested by RPCL and as required by the TOR.

b) Mechanical Engineer (GT & ST) (international; 20 man-months)

b.1. An International Mechanical Engineer (GT & ST and HRSG & BOP) must have at least bachelor degree in mechanical engineering. Master's degree in the relevant field will be an advantage. The experts should have 10 years of general experience in power sector. Experience in development of CCGT power plant project with capacity equal to or more than 200 MW is required. The tasks under these positions include, but are not limited to the following:

- (i) Assist the Team Leader in various assignments as determined by the Team Leader
- (ii) Assist in the development of a comprehensive project work program and implementation schedule
- (iii) Ensure training of client counterpart staff through on-the-job training and classroom training programs
- (iv) Review, check and certify suppliers' equipment system design, and assist RPCL in approving the technical documents
- (v) Review methods of statements/test procedures
- (vi) Witnessing site inspection as per ITP, commissioning guarantee and acceptance tests and issue provisional acceptance for taking over
- (vii) Prepare check list of materials/spares to be handed over to the client by the turnkey contractor
- (viii) Assist in preparing punch list (list of unfulfilled contractual obligations)
- (ix) Assist in preparation and submission of final project completion report; and
- (x) Perform other functions as may be assigned or delegated by the Team Leader from time to time during the tenure of assignment and as required by the TOR.

c) Electrical Engineer (international; 20 man-months)

c.1. An International Electrical and Power transmission Engineers must have at least bachelor degree in electrical engineering. Master's degree in the relevant field will be an advantage. The experts should have 10 years of general experience in power



sector. For Electrical Engineer project experience in development of gas fired combined cycle or thermal power plant project with capacity equal to or more than 200 MW will be an advantage. For Power Transmission Engineer project experience in construction of 230 kV or higher voltage substation and transmission lines is desirable. The key tasks under these positions include, but are not limited to the following

- (i) Review the existing design work on electrical works related to generator transformer, switchboards, cabling and bus bar arrangements
- (ii) Review the existing design work on the transmission network including plant substation and control system completed to date
- (iii) Ensure training of client counterpart staff through on-the-job training and classroom training programs
- (iv) Finalize all electrical system design and technical requirements with RPCL such as equipment ratings, type of equipment to be used, areas to be supplied, spares required and maintenance requirements
- (v) Provide technical design information to RPCL to enable them to obtain the necessary way leaves and construction permits for the new lines and substations
- (vi) Prepare specifications for equipment and services required for the transmission and network and control system
- (vii) Monitor tests on completion, pre-commissioning and commissioning procedures, provide commissioning assistance, and monitor rectification of detail and outstanding works for issue of taking-over certificate, Prepare noncompliance report (defective works)
- (viii) Prepare preliminary punch list (list of incomplete works)
- (ix) Prepare check list of materials/spares to be handed over to the client by the turnkey contractor
- (x) Prepare punch list (list of unfulfilled contractual obligations)
 - (xi) Assist in preparation and submission of final project completion report
 - (xii) Assist in training of RPCL staff through on-the-job training and classroom training programs, covering the installation techniques required for high voltage lines, low voltage connections, high voltage switchgear installation and in associated maintenance and repair procedures; and
 - (xiii) Perform other functions as may be assigned or delegated by Team Leader from time to time during the tenure of assignment and as required by the TOR.

d) Instrumentation & Control Engineer (international; 12 man-months)

- d.1. An International Instrumentation & Control Engineer must have at least bachelor degree in electrical/mechanical engineering. Master's degree in the relevant field will be an advantage. The expert should have 10 years of general experience in power sector. Experience in development of gas fired combined cycle or thermal power plant project with capacity equal to or more than 200 MW is



desirable. The tasks under this position include, but are not limited to the following:

- a. Review the existing design work on controls of CAPP e.g. DCS, SCADA, SAS and all instrumentations
- b. Review the existing design work on the transmission including plant substation. Ensure training of client counterpart staff through on-the-job training and classroom training programs;
- c. Finalize system design and technical requirements with RPCL such as equipment ratings, type of equipment to be used, areas to be supplied, spares required, and maintenance requirements
- d. Monitor tests on completion, pre-commissioning and commissioning procedures, provide commissioning assistance, and monitor rectification of detail and outstanding works for issue of taking-over certificate; Prepare noncompliance report (defective works)
- e. Prepare preliminary punch list (list of incomplete works);
- f. Prepare check list of materials/spares to be handed over to the client by turnkey contractor
- g. Prepare punch list (list of unfulfilled contractual obligations)
- h. Assist in preparation and submission of final project completion report; and
- i. Assist in training of RPCL staff through on-the-job training and classroom training programs, covering the installation techniques required for high voltage lines, low voltage connections, high voltage switchgear installation and in associated maintenance and repair procedures; and
- j. Perform other functions as may be assigned or delegated by Team Leader from time to time during the tenure of assignment and as required by the TOR.

e) Commissioning Engineer (international; 4 man-months)

- e.1. An International Commissioning Engineer must have at least bachelor degree in electrical/mechanical engineering. Master's degree in the relevant field will be an advantage. The expert should have 10 years of experience in power sector infrastructure projects. Experience in consulting services for development of gas fired combined cycle or thermal power plant project with capacity equal to or more than 200 MW is desirable. The tasks under this position include, but are not limited to the following:
 - (i) Coordinate and witness functional and operational performance, quality of work, and acceptance tests, with a view to issuing the contractual provisional and final operational acceptance, and/or completion certificates, as per the General Conditions of the supply and installation contract;
 - (ii) Verify quality, content, and completeness of Contractor's as-built drawings, manuals, operation and maintenance instructions, and similar contractual documentation for all work;
 - (iii) Assist Team Leader in checking and certifying all testing and commissioning



- plans and procedures, and preparation of reports;
- (iv) Supervising and monitoring all stages of testing and commissioning;
 - (v) Prepare noncompliance report (defective works);
 - (vi) Prepare punch list (list of unfulfilled contractual obligations);
 - (vii) Witnessing commissioning guarantee and acceptance tests and issue provisional acceptance for taking over;
 - (viii) Assist in preparation and submission of final project completion report; and
 - (ix) Perform other functions as may be assigned or delegated by Team Leader from time to time during the tenure of assignment and as required by the TOR.

f) Civil Engineer (international; 20 man-months)

f.1. An International Civil Engineer must have at least bachelor degree in civil engineering. Master's degree in the relevant field will be an advantage. The expert should have 10 years of experience in major infrastructure projects. Experience in consulting services for development of gas fired combined cycle power plant project with capacity equal to or more than 200 MW is desirable. The tasks under this position include, but are not limited to the following:

- (i) Review contractors submitted design and supervise contractor's works;
- (ii) Ensure training of client counterpart staff through on-the-job training and classroom training program;
- (iii) Review all civil work/structural design,
- (iv) Identify key technical challenges and risks, and prepare remedial measures;
- (v) Monitor and ensure turnkey contractor's work on repair of earthworks and concrete along the existing waterways and general civil works related to the rehabilitation of the intake area and power house;
- (vi) Assess the waterways conditions and assist in developing options for protecting the waterways as necessary;
- (vii) Prepare noncompliance report (defective works);
- (viii) Prepare preliminary punch list (list of incomplete works);
- (ix) Prepare punch list (list of unfulfilled contractual obligations);
- (x) Assist in preparation and submission of final project completion report; and
- (xi) Perform other functions as may be assigned or delegated by Team Leader from time to time during the tenure of assignment and as required by the TOR.

g) Environmental Specialist (international; 3 man-months)

g.1. An International Environmental Specialist must have at least master degree or equivalent, in environmental science; environmental management; environmental engineering or other related fields. He/she should have 10 years experience in carrying out environmental impact assessment and management



of infrastructure projects preferably in the power sector, with at least 5 years experience in supervision, monitoring and implementation of Environmental Management and Monitoring Plan (EMMP). Experience in consulting services for implementation of gas fired combined cycle power plant projects will be beneficial. The tasks under this position include, but are not limited to the following:

- (i) Supervise the implementation process of the EMMP detailing environmental mitigation measures to address each identified impact, and recommend appropriate environmental mitigation measures;
- (ii) Ensure that necessary EMMP provisions will be included in the contracts with the turnkey contractors for further implementation and compliance;
- (iii) Assist RPCL to update EMMP, undertake additional environmental impact assessment, improve monitoring indicators and prepare corrective action plans, if deemed necessary;
- (iv) Prepare semiannual environmental impact monitoring reports;
- (v) Assess costs, responsibilities, schedule, location, and monitoring framework associated with the implementation of the EMMP and mitigation measures; and
- (vi) Advise RPCL and EPC contractors on any environmental safeguards compliance issues and provide training as needed.

h) Senior Mechanical Engineer (National; 24 man-months)

h.1. A National Mechanical Engineers (GT & ST and HRSG & BOP) must have at least bachelor degree in mechanical engineering. Master's degree or higher recognized professional qualifications (viz. PEng, PMP) in the relevant field will be given preference. The experts should have 10 years of general experience in power sector. Experience in development of CCGT power plant project will be an advantage. Work experience with international organizations is desirable. The tasks under these positions are similar to those specified for International Mechanical Engineers.

i) Junior Mechanical Engineer (National; 25 man-months)

i.1. A National Mechanical Engineers (GT & ST and HRSG & BOP) must have at least bachelor degree in mechanical engineering. The experts should have 5 years of general experience in power sector. Experience in development of CCGT power plant project will be an advantage. Work experience with international organizations is desirable. The tasks under these positions is to coordinate and prepare report during warranty period activities.



j) Senior Electrical Engineer (National; 20 man-months)

j.1. A National Electrical, Substation and Transmission Engineers must have at least bachelor degree in electrical engineering. Master's degree or higher recognized professional qualifications (viz. PEng, PMP) in the relevant field will be given preference. The experts should have 10 years of general experience in power sector. Project experience in development of gas fired combined cycle or thermal power plant project will be an advantage for the electrical engineer. Experience in 230 kV or a higher capacity substation and transmission line project is desirable. Work experience with international organizations is preferred for all experts.

k) Senior I&C Engineer (National; 16 man-months)

k.1. A National Instrumentation & Control Engineer must have at least bachelor degree in electrical/electronic engineering. Master degree or higher recognized professional qualifications (viz. PEng, PMP) in the relevant field will be an advantage. The expert should have 10 years of general experience in power sector. Project experience in development of gas fired combined cycle or thermal power plant project will be an advantage. Work experience with international organizations is desirable. The tasks under this position are similar to those specified for International Instrumentation & Control Engineer.

l) Senior Civil Engineer (National; 30 man-months)

l.1. A National Civil Engineer must have at least bachelor degree in civil engineering. Master degree or higher recognized professional qualifications (viz. PEng, PMP) in the relevant field will be an advantage. The expert should have 15 years of experience in major infrastructure projects. Project experience in development of gas fired combined cycle or thermal power plant project is desirable. Work experience with international organizations will be an advantage. The tasks under this position are similar to those specified for International Civil Engineer.

m) Senior Commissioning Engineer (National; 03 man-months)

m.1. A National Commissioning Engineer must have at least bachelor degree in electrical/mechanical engineering. Master degree or higher recognized professional qualifications (viz. PEng, PMP) in the relevant field will be an advantage. The expert should have 10 years of experience in power sector. Experience in consulting services for commissioning of gas fired combined cycle or thermal power plant project will be an advantage. Work experience with international organizations is desirable. The tasks under this position are similar to those specified for International Commissioning Engineer.

n) EHS (Environment Health and Safety) Specialist (National; 12 man-months)

n.1. A National Environmental Specialist must have at least master degree or equivalent, in environmental science, environmental management, environmental engineering or other related fields. The expert should have 5 years of experience in carrying out environmental assessment and management of infrastructure projects preferably in the power sector. Experience in environmental monitoring of implementation of gas fired combined cycle or thermal power plant projects is desirable. Work experience with international organizations will be an advantage. The tasks under this position are similar to those specified for International Environmental Specialist and will ensure health and safety of the work place during construction work.



V) Report and Document Preparation

1. Within the scope of consulting services, the Consultant shall prepare and submit reports and documents as shown tentatively in Table 1. Among those copies, at least one (1) copy of each report should to be submitted to Financing Agency and the remaining copies to RPCL. The Consultant shall provide electronic copy of each of these reports.

The type of reports, timing and number of copies as shown in Table 2 is tentative and minimum requirement only and subject to change according to actual conditions and requirements.

| Table 2 : List of submission report | | | |
|--|--|--|----------------------|
| Category | Type of Report | Timing | No. of Copies |
| Consultancy Services | Monthly Progress Report | Every month after commencement of the services | 3 |
| | Project Completion Report | At the end of Services | 3 |
| Design Review | Design Review Report | Every month after commencement of the services | 5 |
| Construction Supervision | Quarterly Progress Report | Every quarter | 3 |
| | Quality Control Report | Every month | 3 |
| | Project Cost Control Report | Every month | 3 |
| | Claim Report | Every month | 3 |
| | Change & Variation Report | Every month | 3 |
| | Construction Completion Report (and As-built Drawings, if any) | At the end of the Project | 3 |
| | Performance report | At the end of the defect reliability period | 3 |
| Training | Operation and Maintenance Manual Review | Soon after completion | 3 |
| Environment, Social Safeguard, Quality Control | Environmental and Social Monitoring Report | Every quarter | 3 |
| | Environmental and Social Plan | At the end of the services | 3 |
| | Project Safety Report | Every month | 3 |
| | Factory Inspection Report | Every inspection | 3 |
| | Site Sampling and Testing Report | As required or upon request | As required |
| Warranty Period | Monthly Report | Every month | 3 |
| Other | Technical Report | As required or upon request | As required |

