

Terms of Reference (TOR)
for the
Feasibility Study (F/S) of Hydropower Development in SPUG/Missionary Areas

1. BACKGROUND/RATIONALE

1.1. Contracting Authority

The General Appropriations Act (GAA) for 2014 has allocated the amount of Four Hundred Million Pesos (PhP 400,000,000.00) for the conduct of feasibility studies (F/S) to be administered by the National Economic and Development Authority (NEDA). Thus, the National Power Corporation (NPC) submitted the subject proposal to NEDA for consideration and inclusion under the said fund.

NEDA shall be the Executing Agency while NPC shall be Implementing Agency. The proposed project is consistent with NPC major programs/projects/activities (PPAs).

1.2. Relevant Country/Sector Context

The National Power Corporation (NPC), through the missionary electrification function of its Small Power Utilities Group (SPUG), is responsible for providing power generation and associated delivery systems in areas that are not connected to the main grid. Working under the Department of Energy's (DOE) Missionary Electrification Development Program (MEDP), it assesses the power requirements of the missionary areas and tries to develop prospects for bringing its functions to commercial viability on an area-by-area basis. This includes formulating a program that encourages the participation of the private sector by prioritizing the areas that show big growth in its electricity demand.

1.3. Current State of Relevant Sectors

While most of the SPUG areas are endowed with sizeable sources of renewable energy potential, NPC operation in these areas remain highly dependent on oil-based power generations. With some 99% of its total capacity comprised of oil-based plants, and given the unpredictability and continuously escalating prices of these products, dependence to this type of generation may soon become unaffordable unless indigenous and renewable energy alternatives are immediately identified and utilized.

Cognizant to the need for cheaper energy sources, NPC intends to develop a comprehensive program that will look into the prospect of harnessing the hydropower potentials in missionary areas and, in turn, reduce SPUG's dependence to oil based power generations. The program is also expected to compliment NPC's role of promoting the utilization of renewable energy resources in off-grid and island operations – in line with the DOE's policy direction on the use of renewable energy in SPUG areas.

1.4. Related Project/Programs

In the early 1990s, there have been hydropower projects in the missionary areas that were identified on feasibility study level and are as follows:

- a. Alag HEP (39.5 MW) in San Teodoro, Oriental Mindoro
- b. Dulangan HEP (24 MW) in Baco, Oriental Mindoro
- c. Catuiran HEP (18 MW) in Naujan, Oriental Mindoro
- d. Aglubang HEP (13.6 MW) in Victoria, Oriental Mindoro
- e. Bongabong HEP (28 MW) in Bongabong, Oriental Mindoro
- f. Babuyan HEP (5.6 MW) in Puerto Princesa City, Palawan
- g. Langogan HEP (6.8 MW) in Puerto Princesa City, Palawan

These projects were part of the “Feasibility Study of Small Hydroelectric Projects of the Visayas Islands” that was conducted for NPC by Sir William Halcrow & Partners, Ltd., in association with: 1) Kennedy & Donkin Power Systems, Ltd., and 2) Philnor Consultants & Planners, Inc. The said feasibility study was completed in June 1992.

While the islands of Mindoro and Palawan may be of the least priority in the currently proposed study, it cannot be discounted that there could be more than enough hydropower potential in these islands. Particularly in Mindoro, it has been highly notable that the previously identified projects in the island are all located in Oriental Mindoro/eastern side.

2. OBJECTIVE, PURPOSE AND EXPECTED RESULTS

2.1. Overall Objective of the Project/Study

Primarily, the contemplated study aims to identify and harness the hydropower potential of the various river basins in the island grids where SPUG currently operates. The study, which will be conducted through multi-level engineering studies, should be able lay the groundwork towards the implementation of the identified hydropower projects. It is also expected that the outcome of this study could supplement energy security in the particular missionary areas by enhancing the commercial viability of SPUG operations, consequent to its reduced dependence from oil-based power generations.

During the course of the study, efforts will be made to also examine the available financing options or schemes that can be used to implement the identified hydropower projects. Hence, the study should be able to provide firm, detailed and reliable information that will become the basis for NPC to authorize subsequent implementation of the viable project(s).

2.2. Specific Objective/s

To achieve the foregoing objective, the proposed study shall be conducted within the concept of projects planning and development stages focused on the following specific objectives:

- a. Identify, assess and catalogue the hydropower potential of every workable river basins in the SPUG areas;
- b. Select the more attractive hydropower projects/schemes (from those listed in the foregoing projects inventory catalogue);
- c. Appraise and establish the need for such projects to be carried into the next study level; and

- d. Determine the technical and economic/financial viability, including the social/environmental acceptability, of the identified hydropower projects.

Value/options analysis will be applied throughout the conduct of the study, including assessment of costs and risks for each option to determine the most economical and cost-effective option that would result to the highest value for money for government.

3. SCOPE OF WORKS

The contemplated study shall involve both office and field exploratory works. It shall be the responsibility of the Consulting Firm to formulate a suitable planned approach and methodology necessary in the proper execution and completion of the works, which shall be based on standard processes and engineering norms for hydropower project studies.

The study shall involve, but not limited to, the following work phases:

- 1) Hydropower Potential Assessment – shall be conducted in a manner similar to a hydropower projects inventory where the hydropower potential of every workable river basin in the SPUG areas shall be identified, assessed and catalogued;
- 2) Preliminary Screening – shall be in the same study level as a typical pre-feasibility study that is aimed to select the more attractive hydropower projects/schemes and subsequently appraised to establish the need for the identified projects to be carried into more comprehensive evaluation; and
- 3) Techno-economic Evaluation – shall be the feasibility study proper that will determine the technical, economic and financial viability of the proposed hydropower projects, including the assessment of their social and environmental acceptability.

The study, as it tries to identify viable hydropower projects in missionary areas, shall be of nationwide coverage – beginning with the islands that have river basins with significant potential for hydropower development. Among these initial prospects include the islands of Catanduanes, Masbate and Sibuyan in Romblon Province.

Given the prospect of reducing its dependence to oil-based power generations, the ultimate beneficiary of the study, once the identified hydropower projects are implemented, will be the SPUG operation particularly their host island grids.

Value/option analysis including risk analysis will be integrated in the study. During the contract period, conduct coordination meetings will be conducted with NPC and NEDA to: (a) discuss the progress of the work and preliminary output; (b) give the Government the opportunity to make comments and suggestions on a timely basis; and (c) resolve problems and issues that may be encountered. The Government may assign counterpart personnel to the study for purposes of transfer of technology and capacity building. The Consultant shall provide for the required office space for the government counterparts.

3.1. Specific Activities

3.1.1 Hydropower Potential Assessment (Projects Inventory)

Hydropower potential assessment, which shall be carried-out on nationwide coverage, will be undertaken to identify the hydropower potential of every workable river basins in the SPUG areas, which includes, among others, the islands of Catanduanes, Masbate and Sibuyan. To be conducted under the concept or scope of typical projects inventory, this work phase shall include the following tasks:

- 1) Site selection/identification – gathering of relevant data/information and establishment of site selection criteria. The proponent of the study should also be able to verify/validate with the proper government authorities as to whether the river basins under consideration in the study are still available for future development;
- 2) Development of schematic layouts – formulation of alternative schemes or options where principal hydropower structures are schematically put together as they suit, technically, to the existing site topography and geology while giving similar considerations to potential social and environmental constraints;
- 3) Selection of preferred schemes/sites – initial screening of the previously developed schemes where prospective hydropower sites or schemes that meet the selection criteria (i.e. capacity, grid requirement, practicability, etc.) are initially selected while the obviously unattractive ones are immediately discarded; and
- 4) Project listing/catalogue – compilation of the selected hydropower sites and schemes, which shall be listed and ranked distinctively in accordance to established criterion or purpose (i.e. power output, projected annual energy generation, grid requirement, etc.).

3.1.2 Preliminary Screening

This work phase shall be performed in a manner that is similar to the conduct a pre-feasibility study. It shall be undertaken in order to appraise the potential of the identified hydropower projects and assess if they are worthwhile to be brought forward to the next study level. Focus shall be on establishing the need and justification for the projects under consideration, as it seeks to initially determine their technical, economical/financial and environmental practicability.

Rivers and sites to be considered under this work phase shall be confined to those listed or pre-selected in the preceding projects inventory. Herein, alternative solutions or project concepts will be further explored to develop the more appropriate plans and conceptual designs which, subsequently, shall be the subject of subsequent field investigations.

In general, this work phase shall involve preparatory activities for the more detailed feasibility study, as follows:

- 1) Project screening – selection of preferred project sites or schemes that comply with pre-defined criteria or requirements;
- 2) Power market assessment – estimation of projected load growth, characteristics and probable location of load centers, including examination of other power sources in the project area under consideration;
- 3) Water resource assessment – review and appraisal of water resource data/information that are available for the river basin(s) under consideration;
- 4) Topography – using topographic maps in scale of 1:50,000, the task involves assessment of terrain features, available access, and project limits (particularly on reservoir types of development). Consequently, findings herein have to be verified through actual site visit/inspection;
- 5) Geology and geotechnics – preliminary assessment of geologic and foundation condition of the identified project site, including possible sources of construction (aggregate/earth) materials. Actual site visit/inspection is also necessary;
- 6) Scheme development, selection and optimization – formulation and selection of project schemes, including initial optimization of the selected schemes or layouts

to ascertain the appropriate and more effective operational and physical features of the proposed hydropower plant. Applicability of the schemes developed has to be verified at site; and

- 7) Formulation of field investigation program – preparation of Terms of Reference (TOR) defining the scope and extent of field investigation works (i.e. topographic mapping, detailed site geology, geotechnical exploration, etc.).

3.1.3 Techno-Economic Evaluation

This work phase shall be performed based on widely accepted engineering norms in hydropower projects development that shall include, but not limited to, the following major activities:

- 1) Power market survey – determination of actual (historical) and future power demand in the island grid under consideration;
- 2) Hydrology and water resource study – comprehensive examination of available records, scrutinizing the actual gauging results, and determination of rating curves to firmly established the hydrological parameters where inflow/flood analysis, operation simulation and spillages will be based;
- 3) Detailed field investigations – contracting-out the conduct of detailed topographic surveys at proposed sites of various civil works plant components, comprehensive geologic and geotechnical exploration (surface and subsurface investigations), and identification of potential sources of earth/aggregate materials (including assessment of their physical properties);
- 4) Hydropower study – preparation of plant layouts, sizing of power components/facilities, and conduct project optimization/simulation analysis;
- 5) Social and environmental study – identification and subsequent formulation of mitigating measures to address various social and environmental issues such as: a) actual physical disturbance that the project and its components may cause, and b) direct/indirect impacts of the proposed project to the environment and the affected communities, if any;
- 6) Social acceptability/ROW survey – information dissemination to affected communities to assess the acceptability of the project, including identification and costing of land acquisition and other problems associated with resettlement of affected residents and communities;
- 7) Cost estimation/construction planning – preparation of construction methodologies, schedule and cost estimates based on the scope and quantities of major construction works (i.e. civil, hydraulic/electro-mechanical equipment and other associated works); and
- 8) Economic and financial evaluation – provide sufficient basis to justify the implementation of the project.

4. TIMELINES AND DELIVERABLES

4.1. Commencement Date and Period of Implementation

The Study shall be completed within a period of fifteen (15) months, commencing from the date of receipt of the Notice to Proceed (NTP). Refer to Annex A for the table activities/expected outputs.

4.2. Table of Deliverables

A *detailed Work and Financial Plan (WFP)* shall be submitted by the Consulting Firm to NPC for review (copy furnished NEDA for monitoring purposes and payment processing) within five (5) working days from the date of commencement as indicated in the NTP.

The deliverables for the subject study as enumerated below shall be submitted by the Consulting Firm in four (4) hard copies to NPC for review and two (2) hard copies to NEDA for monitoring purposes and payment processing. An electronic/soft copy (in CDs, DVDs and/or other media types and in PDF, doc/x, xls/x, and other related format, if necessary) shall also be submitted to NPC and NEDA.

All analyses and findings resulting from this study shall be documented in a formal report that shall be prepared in a comprehensive manner, supported with sufficient details and information.

Deliverables	Timelines
Draft Inception Report including WFP	One (1) month from receipt of NTP
Final Inception Report	15 calendar days after receiving comments from NPC
Monthly Progress Reports	Monthly until the end of the thirteenth (13 th) month (excluding the third and sixth month), within seven (7) calendar days from end of agreed month-period
Interim Report	Three (3) months from the receipt of NTP
Midterm (Preliminary Screening) Report	Six (6) months from the receipt of NTP
Draft Final Report	Thirteen-and-a-half (13.5) months from receipt of NTP
Final Report	Thirty (30) calendar days after receipt from NPC of the evaluation/comments but not more than Fifteen (15) months from receipt of NTP

The *Inception Report and WFP* shall include, among others, the detailed work program for the scope of the study, as well a detailed schedule for all work, including field work related to applicable tasks. The Inception Report shall contain the initial assessment and appreciation of the Consultant on the available data/information collected relative to the study, including their recommendations and additional requirements. The Inception Report shall also include the fulfillment of the study conditions listed in this TOR as well as approaches, methodologies and other engineering norms to be utilized in the development of the study.

The *Monthly Progress Reports* shall include updates on the physical and financial accomplishments of each of the activities under the Work and Financial Plan, including the difficulties encountered and measures taken to overcome them.

The *Interim Report* shall contain the complete list/catalogue showing the indicative power potential of the prospective hydropower sites/schemes considered in the study. It shall also contain narrative discussions of the processes involved and the criteria used to generate the required project listings, including brief description (i.e. location, accessibility,

topography, regional geology, etc.) of the candidate hydropower project sites, in relation to the scope of work including the value/options analyses.

The *Midterm Report* shall contain narrative discussions of the results and processes used to identify the prospective hydropower sites or schemes that will be brought forward to the next level (*where they will be subjected to a more comprehensive assessment and analyses*). It shall also include discussions pertaining to the Consultant's significant findings and evaluation of the pre-selected sites. The Consultant should also be able to describe the various solutions and concepts examined during the process, which became the basis of the selection, recommendations and identification of subsequent activities necessary while moving forward to the next stage (techno-economic evaluation) of the study. The scope of field investigation works should also be mentioned in the report.

The *Draft Final Report*, which shall be submitted to NPC for final approval, will consist of the completed F/S including the results of the value/options analysis. It shall also contain concise but comprehensive discussions of what transpires during the course of the study, including the Consultant's findings and recommendations anchored on the calculations, analyses and evaluation of alternative schemes developed leading to the selection and plant simulation/optimization of the preferred hydropower sites. It shall also include narrative discussions of any deviation to the planned approach and methodology that might have cropped-up since the inception period until the preparation of this report.

This report shall consist of, but not limited to, the following:

- 1) **Volume 1** (Executive Summary) – shall contain brief discussions, project highlights and conclusions/recommendations pertaining to the selected/adopted sites;
- 2) **Volume 2** (Main Report) – shall contain detailed and narrative discussions of the Consultant's findings, evaluation and analyses generated on all aspects and disciplines involved in the study;
- 3) **Volume 3 to *n*** – shall consist of individual/stand-alone report for each island grid where potential hydropower sites are to be developed. Each volume shall contain detailed description and technical highlights of the selected sites, conceptual design drawings/layouts of the preferred scheme/plant configuration and brief discussions pertaining to the prospective plant components and associated facilities; and
- 4) **Appendices** – shall contain the primary/secondary data and references used in the study (i.e. hydrological, geological and geotechnical data, socio-environmental, etc.).

The *Final Report* shall be prepared and submitted by the Consultant, subject to the acceptance of NPC. The final report shall be prepared in a manner and format similar to the Draft Final Report including the adjustments made, if any, due to NPC's comments and/or suggestions to the draft final report.

5. EXPERTISE REQUIREMENTS

The consultants comprising the study team shall provide the following minimum required expertise unless specified otherwise in the conduct of the services:

5.1. Project Team Leader

Project Team Leader should be a licensed Civil/Electrical/Mechanical Engineer, with at least ten (10) years of professional experience in consultancy works; as well as with prior involvement in

consultancy contracts that are similar or relevant in nature, complexity and geographical area as the contemplated study.

The Project Team Leader must be knowledgeable on VE/VA and have at least three (3) projects of work experience related thereto.

The Project Team Leader is preferred to have completed post-graduate studies in relevant profession and/or advance education/training in hydropower engineering related courses, had project management/supervisory experience for at least two (2) consultancy contracts and with prior involvement in two (2) F/S of hydropower projects.

The consultant shall be responsible for the overall coordination of the tasks for the study, provide direction in the performance of the service, ensure compliance of requirements specified in the TOR, consolidate key experts' individual reports and submit all reports. Further, the consultant shall provide NPC all required support until the completion of the study.

5.2. Hydropower Planner/Civil Design Engineer

Hydropower Planner/Civil Design Engineer should be a licensed Civil Engineer with at least eight (8) years of professional experience in consultancy works; as well as with prior involvement in consultancy contracts that are similar or relevant in nature, complexity and geographical area as the contemplated study.

The consultant is preferred to have completed post-graduate studies in relevant profession and/or advance education/training in hydropower engineering related courses, completed three (3) consultancy contracts in similar capacity/designation as proposed to be assigned herein and with prior involvement in two (2) F/S of hydropower projects.

The consultant shall be responsible for the following: identify/assess potential hydropower sites, develop alternative hydropower schemes for the initially identified sites, determine the area to be covered by topographic survey, optimize major civil works components (i.e., dam/weir, waterways, etc.) of prospective hydropower projects, prepare conceptual design layouts of selected schemes, including sizing of various hydropower (civil works) components and prepare the report on the civil works component of the study.

5.3. Hydrologist/Water Resource Engineer

Hydrologist/Water Resource Engineer should be a licensed Civil Engineer with at least five (5) years of professional experience in consultancy works; as well as with prior involvement in consultancy contracts that are similar or relevant in nature, complexity and geographical area as the contemplated study.

The consultant is preferred to have completed post-graduate studies in relevant profession and/or advance education/training in hydropower engineering related courses, completed three (3) consultancy contracts in similar capacity/designation as proposed to be assigned herein and with prior involvement in two (2) F/S of hydropower projects.

The consultant shall be responsible for the following: examine/assess the applicability of available rainfall and streamflow records, conduct actual flow measurement (as necessary), perform hydrological analysis, establish the hydrological parameters needed by the hydropower planner and prepare the report on the hydrological component of the study.

5.4. Geologist/Geotechnical Engineer

Geologist/Geotechnical Engineer should be a licensed Geologist with at least five (5) years of professional experience in consultancy works; as well as with prior involvement in consultancy contracts that are similar or relevant in nature, complexity and geographical area as the contemplated study.

The consultant is preferred to have completed post-graduate studies in relevant profession and/or advance education/training in hydropower engineering related courses, completed three (3) consultancy contracts in similar capacity/designation as proposed to be assigned herein and with prior involvement in two (2) F/S of hydropower projects.

The consultant shall be responsible for the following: develop the scope and coverage of geological and geotechnical investigation works, determine the geological structure at the identified sites, assess the suitability of surface and subsurface condition of the site for power development, identify possible sources of aggregate materials and prepare the report on the geology and geotechnical components of the study.

5.5. Hydraulic-Mechanical Equipment Engineer

Hydraulic-Mechanical Equipment Engineer should be a licensed Mechanical Engineer with at least three (3) years of professional experience in consultancy works; as well as with prior involvement in consultancy contracts that are similar or relevant in nature, complexity and geographical area as the contemplated study.

The consultant is preferred to have completed post-graduate studies in relevant profession and/or advance education/training in hydropower engineering related courses, completed three (3) consultancy contracts in similar capacity/designation as proposed to be assigned herein and with prior involvement in two (2) F/S of hydropower projects.

The consultant shall be responsible for the following: identify the appropriate hydraulic and mechanical equipment for the identified hydropower projects/sites, prepare conceptual design/layouts, including sizing, hydro-mechanical components and prepare the report on the hydro-mechanical component of the study.

5.6. Electrical Systems/Transmission Engineer

Electrical Systems/Transmission Engineer should be a licensed Electrical Engineer with at least three (3) years of professional experience in consultancy works; as well as with prior involvement in consultancy contracts that are similar or relevant in nature, complexity and geographical area as the contemplated study.

The consultant is preferred to have completed post-graduate studies in relevant profession and/or advance education/training in hydropower engineering related courses, completed three (3) consultancy contracts in similar capacity/designation as proposed to be assigned herein and with prior involvement in two (2) F/S of hydropower projects.

The consultant shall be responsible for the following: estimate projected growth, characteristics and location of load centers near the project areas under consideration, assess the existing transmission system in the area, prepare conceptual design/layouts, including sizing, of various

electrical components (i.e., instrumentations, controls, transmission, etc.) and prepare the report on the electrical component of the study.

5.7. Construction Planner/Cost Estimator

Construction Planner/Cost Estimator should be a licensed Civil/Electrical/Mechanical Engineer with at least three (3) years of professional experience in consultancy works; as well as with prior involvement in consultancy contracts that are similar or relevant in nature, complexity and geographical area as the contemplated study.

The consultant is preferred to have completed post-graduate studies in relevant profession and/or advance education/training in hydropower engineering related courses, completed three (3) consultancy contracts in similar capacity/designation as proposed to be assigned herein and with prior involvement in two (2) F/S of hydropower projects.

The consultant shall be responsible for the following: prepare construction plan and methodologies for each selected hydropower sites, formulate alternative implementation plans, including additional engineering preparatory works (if any), determine the estimated project costs and prepare the report on the implementation plan and project costs components of the study.

5.8. Social/Environmental Specialist

Social/Environmental Specialist should have at least a Bachelor's Degree in Social or Environmental Science with at least three (3) years of professional experience in consultancy works; as well as with prior involvement in consultancy contracts that are similar or relevant in nature, complexity and geographical area as the contemplated study.

The consultant is preferred to have completed post-graduate studies in relevant profession and/or advance education/training in hydropower engineering related courses, completed three (3) consultancy contracts in similar capacity/designation as proposed to be assigned herein and with prior involvement in two (2) F/S of hydropower projects.

The consultant shall be responsible for the following: identify and formulate mitigating measures to address the expected social and environmental issues, conduct information dissemination and social survey to assess the project acceptability, and prepare the report on the social and environmental components of the study.

5.9. Power Economist

Power Economist should have at least a Bachelor's Degree in Economics or Civil/Electrical/Mechanical Engineering with at least three (3) years of professional experience in consultancy works; as well as with prior involvement in consultancy contracts that are similar or relevant in nature, complexity and geographical area as the contemplated study.

The consultant is preferred to have completed post-graduate studies in relevant profession and/or advance education/training in hydropower engineering related courses, completed three (3) consultancy contracts in similar capacity/designation as proposed to be assigned herein and with prior involvement in two (2) F/S of hydropower projects.

The consultant shall be responsible for the following: conduct economic and financial evaluation of each identified/selected project, formulate implementation alternatives and identify possible funding sources and prepare the report on economic/financial components of the study.

5.10. Field Investigation Engineer

Field Investigation Engineer should be a licensed Geologist or Civil/Geodetic/Mining Engineer with at least three (3) years of professional experience in consultancy works; as well as with prior involvement in consultancy contracts that are similar or relevant in nature, complexity and geographical area as the contemplated study.

The consultant is preferred to have completed post-graduate studies in relevant profession and/or advance education/training in hydropower engineering related courses, completed three (3) consultancy contracts in similar capacity/designation as proposed to be assigned herein and with prior involvement in two (2) F/S of hydropower projects.

The consultant shall be responsible for the following: spearhead and oversee the conduct of actual field investigation works, and prepare/submit periodic (progress) report to the Project Team Leader.

All licensed engineers must submit a photocopy of appropriate and valid Professional Regulation Commission (PRC) license.

6. CRITERIA FOR SELECTION

6.1 Prospective Consulting will be shortlisted based on the criteria shown in **Annex B** ("Criteria for Shortlisting") and as summarized below:

6.1.1 Applicable Experience of the Firm (within the past 25 years);

6.1.2 Qualification of Officer, Key Organic Personnel who may be Assigned to the Project (in case of nominated personnel who are not officers or organic, a notarized letter of commitment for each personnel should be submitted) ; and

6.1.3 Job Capacity.

6.2 The Consulting Firm shall be selected using the Quality-Cost Based Selection/Evaluation (QCBS/QCBE) procedure under Republic Act (RA) No. 9184, or the Government Procurement Reform Act (GPRA), and its Revised Implementing Rules and Regulations (IRR) and based on the following criteria:

6.2.1 Technical Proposal : 80%

6.2.2 Financial Proposal : 20%

7. SOURCE OF FUNDS

Funds for the conduct of subject F/S will be sourced from NEDA's F/S Fund.

8. INSTITUTIONAL SET-UP/RESPONSIBILITIES

8.1. NEDA

- 8.1.1 Shall be the Executing Agency (i.e., representative of the Government in the Contract Agreement with the consultant);
- 8.1.2 Shall, through its NEDA Bids and Awards Committee (NBAC), be responsible for facilitating the bidding and tendering of the consultancy services in compliance with RA9184 and its Revised IRR with the Implementing Agency as End-User;
- 8.1.3 Shall be responsible for the disbursement of the fund for the conduct of the F/S once the contract becomes executed;
- 8.1.4 Shall be responsible for the preparation and submission of financial reports as required by the Department of Budget and Management (DBM) and other reportorial requirements regarding the F/S Fund administration;
- 8.1.5 Shall evaluate, in coordination with NPC, all request for payments/billings and determine the acceptability/correctness of the same;
- 8.1.6 Shall have the option to detail at least two (2) counterpart technical personnel to the Project for the purpose of on-the-job capacity building/technology transfer; and
- 8.1.7 Shall provide, upon the request of the Consulting Firm, available information/data and also, if available, copies of previous related studies subject to the execution of the Non-Disclosure Agreement, if necessary.

8.2. Implementing Agency (IA)/NPC

- 8.2.1 Shall be the beneficiary/End-User of the consultancy services;
- 8.2.2 Shall be responsible for contract implementation and management, including ensuring the quality of outputs. Further, NPC, in coordination with NEDA, shall be responsible for the monitoring and evaluation of the progress of the Study and approval of reports to ensure delivery of outputs as specified in Sections 2, 3, and 4 of this TOR;
- 8.2.3 Shall provide assistance in coordination with other agencies related to the Study;
- 8.2.4 Shall provide, upon the request of the Consulting Firm, available information/data and also, if available, copies of previous related studies subject to the execution of the Non-Disclosure Agreement, if necessary;
- 8.2.5 Shall evaluate and endorse to NEDA the acceptability and correctness of the deliverables for the purposes of fund release/payment to the Consulting Firm; and
- 8.2.6 Shall have the option to detail at least two (2) counterpart technical personnel to the Project for the purpose of on-the-job capacity building/technology transfer.

8.3. Consulting Firm

- 8.3.1 Shall be responsible for the conduct of the study and the timely delivery of results/outputs as indicated under Sections 2, 3 and 4 of this TOR;

- 8.3.2 Shall be responsible for the provision of necessary office space, which shall be within close proximity to NEDA, for their project staff as well as the Government's detailed personnel, including the necessary office equipment (i.e., computer, printers, office supplies, etc.) for the conduct of the Study. All equipment procured for the development of the Project shall be transferred to the Government by the end of the Project;
- 8.3.3 Shall shoulder all expenses required in the conduct of the Study, including travel costs and lodging of detailed Government personnel during field visits, except for their salaries;
- 8.3.4 Shall (a) carry out the services with sound engineering theories and practices to ensure that the final works will provide the most economical and feasible development for the study, (b) accept full responsibility for the consulting services to be performed under this TOR for which the Consulting Firm is liable to NPC, (c) perform the work in an efficient and diligent manner and shall use its best effort to keep reimbursable cost down to the possible minimum without impairing the quality of services rendered, and (d) comply with, and strictly observe any laws regarding workmen's health and safety, workmen's welfare, compensation for injuries, minimum wage, hours of labor and other labor laws;
- 8.3.5 Shall (a) keep accurate and systematic records and accounts in respect of the services in such form and detail as is customary and sufficient to establish accurately that the costs and expenditures under this TOR have been duly incurred, and (b) permit the duly authorized representatives of the Government from time to time to inspect its records and accounts as well as to audit the same;
- 8.3.6 Shall not assign nor sub-contract any part of the professional engineering services under this TOR to any person or firm, except with prior written consent of NPC. The approval by the Government to the assignment of any part of said services or to the engagement of the Consulting Firm of sub-contractors to perform any part of the same shall not relieve the Consulting Firm of any obligations under this TOR;
- 8.3.7 Shall, during or after the conclusion or termination of the study, limit its role under the project to the provision of the services and hereby disqualifies itself and any other contractor, consulting engineer or manufacture with which it is associated or affiliated, from the provision of goods and services other than the services herein, except as NPC may otherwise agree.
- 8.3.8 Shall prohibit full-time foreign staff during his assignment under this TOR to engage, directly or indirectly, either in his name, or through the Consulting Firm, in any business or professional activities in the Philippines other than the performance of his duties or assignment under this TOR;
- 8.3.9 Shall not at any time communicate to any person or entity any information disclosed to them for the purpose of this services, nor shall the Consulting Firm make public any information as to the recommendations formulated in the course of or as a result of the services, except with prior consent of NPC.
- 8.3.10 Shall agree that nothing contained herein shall be construed as establishing or creating between Government and the Consulting firm, the relationship of employer and

employee or principal and agent, it being understood that the position of the Consulting Firm and anyone else performing the services is that of an independent contractor;

- 8.3.11 Shall hold the Government free from any and all liabilities, suits, actions, demands, or damages arising from death or injuries to persons or properties, or any loss resulting from or caused by said personnel incident to or in connection with the services under this TOR. The Consulting Firm shall agree to indemnify, protect and defend at its own expense the Government and its agents from and against all actions, claims and liabilities arising out of acts done by the Consulting Firm or its staff in the performance of the services, including the use of, or violation of any copyrighted materials, patented invention, article or appliance; and
- 8.3.12 Shall provide on-the-job capacity building/technology transfer to the Government's personnel detailed to the project.

9. MODE OF PROCUREMENT AND APPROVED BUDGET FOR THE CONTRACT

- 9.1. The procurement of the consulting services for the F/S shall be through competitive public bidding. The ABC for the proposed study is **THIRTY EIGHT MILLION EIGHT HUNDRED THOUSAND PESOS ONLY (Php 38.800 Million)**, inclusive of all applicable government taxes and charges, professional fees, and other incidental and administrative costs which shall be paid on a reimbursement basis (e.g., travel expenses, communication expenses, office supplies, office space, and other expenses deemed necessary for the project as certified by the Executing Agency). Attached as **ANNEX C** is the breakdown of the ABC.
- 9.2. Note that this consulting contract shall be a fixed price contract. Any extension of contract time shall not involve any additional cost to the Government.
- 9.3. All equipment, materials, item acquired for the study shall be turned over to NEDA at the conclusion of the study.

10. PAYMENT SCHEME/SCHEDULE

- 10.1. The monthly progress reports shall be the basis for payment of reimbursable items. Billing for the *reimbursable items* may be requested not more than once a month based on the *actual expenses incurred* and supported by *official receipts/documents*.

In the absence of *official receipts/documents* when claiming for *reimbursable costs*, the Consulting Firm may also be allowed to submit a *certification of actual disbursements made under oath*.

- 10.2. Billing for *non-reimbursable items, including professional fees*, shall be in accordance with the following delivery schedule.

Upon acceptance of the Inception Report and Work Plan	-10% of total cost for non-reimbursable items
Upon submission of the Interim Report	-15% of total cost for non-reimbursable items
Upon submission of the Midterm Report	-15% of total cost for non-reimbursable items
Upon submission of the Draft Final Report	-30% of total cost for non-reimbursable items
Upon acceptance of the Final Report	-30% of total cost for non-reimbursable items
	100%

- 10.3. The Consulting Firm may also be allowed to submit its own payment schemes for the remuneration component only subject to compliance with existing regulations/laws.
- 10.4. An advance payment shall be made to cover mobilization costs, but shall not exceed FIFTEEN PERCENT (15%) of the contract amount, subject to the posting of an irrevocable standby letter of credit issued by an entity acceptable to NEDA and of an equal amount to the advance payment. The advance payment shall be repaid by the Consulting Firm by deducting from his subsequent billings/payments such sum as agreed upon during contract negotiations until fully liquidated within the duration of the contract.

11. RETENTION PAYMENT

A retention payment of ten percent (10%) shall be withheld. It shall be based on the total amount due to the Consulting Firm prior to any deduction and shall be retained from every progress payment until fifty percent (50%) of the value of study, as determined by NEDA, are completed. If, after fifty percent (50%) completion, the study is satisfactorily done and on schedule, no additional retention shall be made; otherwise, the ten percent (10%) retention shall be imposed.

The total "retention money" shall be due for release upon approval of the Final Report. The Consulting Firm may, however, request the substitution of the retention money for each progress billing with irrevocable standby letters of credit from a commercial bank, bank guarantees or surety bonds callable on demand, of amounts equivalent to the retention money substituted for and acceptable to NEDA, provided that the project is on schedule and is satisfactorily undertaken. Otherwise, the ten percent (10%) retention shall be made. Said irrevocable standby letters of credit, bank guarantees and/or surety bonds, to be posted in favor of NEDA shall be valid for the duration of the contract.

12. LIQUIDATED DAMAGES

Where the Consulting Firm refuses or fails to satisfactorily complete the work within the specified contract time, plus any time extension duly granted and is hereby in default under the contract, the Consulting Firm shall pay NEDA for liquidated damages, and not by way of penalty, an amount, as provided in the conditions of contract, equal to at least one tenth (1 /10) of one (1) percent of the cost of the unperformed portion of the works for every day of delay. Should the amount of liquidated damages reach ten percent (10%) of the contract amount, NEDA shall, at its own discretion, terminate the contract without prejudice to any further action it may take to recover whatever losses incurred due to non-performance of the Consulting Firm.

To be entitled to such liquidated damages, NEDA does not have to prove that it has incurred actual damages. Such amount shall be deducted from any money due or which may become due the Consulting Firm under the contract and/or collect such liquidated damages from the retention money or other securities posted by the Consulting Firm whichever is convenient to NEDA.

ANNEX A

The consulting services will be undertaken over a fifteen (15)-month period as shown below:

SCHEDULE OF ACTIVITIES															
ACTIVITIES	CONTRACT DURATION (in months)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Project Inception															
- Data gathering															
- Formulation of work program															
- Preparation/Submission of Inception Report															
2. Projects Inventory															
- Site selection/identification															
- Development of schematic layout															
- Selection of preferred schemes/sites															
- Project listing/catalogue															
- Preparation/Submission of Interim (Projects Inventory) Report															
3. Preliminary Screening															
- Project screening															
- Power market assessment															
- Water resource assessment															
- Topography/Terrain assessment															
- Geological/Geotechnical assessment															
- Scheme development, selection and optimization															
- Formulation of field investigation program															
- Preparation/Submission of Midterm (Preliminary Screening) Report															
4. Techno-Economic Evaluation															
- Power market survey															
- Hydrology and water resource study															
- Detailed field investigation															
- Hydropower study															
- Social and environmental study															
- Social acceptability / R-O-W survey															
- Cost estimation / construction planning															
- Economic/Financial evaluation															
- Preparation/Submission of Draft Final Report															
5. Preparation/Submission of Final Report															

Note: The above chart is indicative only and does not preclude the shortlisted Consulting Firms from submitting their own work Plan and Gantt Chart of Activities as part of their Technical Proposal.

ANNEX B

Criteria for Shortlisting

	RATING FACTOR	POINTS/WEIGHT
I	Applicable Experience of the Firm (within the past 25 years) <ul style="list-style-type: none"> Completed consulting services of size, complexity and technical specialty comparable (similar/relevant) to the job under consideration, including quality of performance Other completed consulting services related to the job under consideration Known cases of prior performance, including quality of work conforming to obligations and cost of services 	30
II	Qualification of Officer, Key Organic Personnel who may be Assigned to the Project	50
III	Job Capacity <ul style="list-style-type: none"> Absorptive capacity to do additional works other than those currently being undertaken 	20
	Total	100

Note: Similar projects refer to contracts with scope of works covering the conduct of pre-Feasibility Study (F/S) or F/S of hydropower projects.

Relevant projects, on the other hand, are the: (i) pre-F/S, F/S or VE/VA, detailed engineering, or advisory services conducted for water resource-related and power facilities-related project; (ii) detailed engineering, advisory services, or components of an F/S (e.g., demand forecast, economic, financial, etc.) for hydropower project; and (iii) construction, supervision, civil works or operations and maintenance (O&M) of projects pertaining to hydropower project.

ANNEX C

Breakdown of the Approved Budget for the Contract (ABC)

COST ESTIMATE OF CONSULTING SERVICES					
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Php/unit)	AMOUNT (Php)
1	REMUNERATION OF PERSONNEL				
1.1	Key Personnel				
1.1.1	1 – Project Team Leader				
1.1.2	1 – Hydropower Planner/Civil Design Engineer				
1.1.3	1 – Hydrologist/Water Resource Engineer				
1.1.4	1 – Geologist/Geotechnical Engineer				
1.1.5	1 – Hydraulic Equipment/Mechanical Engineer				
1.1.6	1 – Electrical Systems/Transmission Engineer				
1.1.7	1 – Construction Planner/Cost Estimator				
1.1.8	1 – Social/Environmental Specialist				
1.1.9	1 – Project Economist				
1.1.10	1 – Field Investigation Engineer				
1.2	Support Staff				
SUB-TOTAL					
VAT				12%	
TOTAL (1. Remuneration of Personnel)					
2	REIMBURSABLE COSTS (Out-of-Pocket Expenses)				
2.1	Reimbursables (based on actual costs)				
2.1.1	Transportation Costs				
	a) Air Fares				
	b) Other Means of Transportation				
2.1.2	Food and Accommodation Cost				
2.1.3	Field/Office Supplies				
	a) Supplies				
	b) Communications				
	c) Office Equipment Rental				
	d) Office Space Rental				
2.1.4	Printing and Reproduction				
2.1.5	Field and Survey Works				
2.1.6	Miscellaneous				
TOTAL (2. Reimbursable Costs)					
SUMMARY					
1	Remuneration of Personnel (with 12% VAT)				PhP11,980,000
2	Reimbursable Costs (with 5% Contingency)				PhP26,820,000
TOTAL ESTIMATED COST OF CONSULTING SERVICES					PhP38,800,000