

TERMS OF REFERENCE

Conduct of Feasibility Study (F/S) for the Establishment of an Accelerator Facility

1. BACKGROUND/RATIONALE

1.1 Contracting Authority

The General Appropriations Act (GAA) for FY2015 has allocated the amount of *Four Hundred Million Pesos (PhP 400,000,000.00)* for funding for the conduct of F/S to be administered by the National Economic and Development Authority (NEDA).

For this Terms of Reference (TOR), NEDA shall be the Executing Agency and contracting party while the Department of Science and Technology - Philippine Nuclear Research Institute (DOST-PNRI) shall be the Implementing Agency. The proposed project is consistent with the PNRI's mandate and major programs/projects/activities (PAPs).

1.2 Relevant Country/sector context

Decades have passed and today the present reality of nuclear science and technology (S&T) in the country is aging and diminishing in terms of manpower and its facilities. This situation is mainly the result of less attention allocated to nuclear S&T especially after the extended shutdown of the PNRI's Philippine Research Reactor 1 and the non-operation of the Bataan Nuclear Power Plant (BNPP). Thus, PNRI may now be less relevant to its stated mission – to contribute to the improvement of the quality of Filipino life through the highest standards of nuclear research and development (R&D), specialized nuclear services, nuclear technology transfer and effective and efficient implementation of nuclear safety practices and regulations.

Through this undertaking, the PNRI is resuming in earnest the capability building that was started decades ago in order to re-establish and maintain knowledge, expertise and competency in the general areas of nuclear reactions and safety, by-products of nuclear reactions (both man-made and cosmogenic) and fissionable materials. This is consistent with International Atomic Energy Agency's (IAEA) declaration, during its 59th General Conference held last 15 September 2015, expressing its support in achieving the United Nation's (UN) Post 2015 Sustainable Development Goals (SDGs) through nuclear S&T.

While this might be new, at least in the Philippines, the introduction of the accelerator technology to the country would definitely fall under the DOST's call for new competencies and its applications will enhance the nuclear S&T status of the country up to a point that it will have potential commercial applications.

1.3 Current state of the relevant sector

The Government is anticipating the establishment of a multipurpose accelerator facility for training and education, R&D, products, services, and applications, and that this technology will eventually be utilized in the country as part of future additions to the infrastructure for nuclear manpower development.

As part of the DOST's call for new competencies in S&T, PNRI is proposing this undertaking to promote awareness and understanding on the various beneficial applications of nuclear S&T to a new generation of Filipinos such as professional science workers and university students; and improving the country's capability to utilize available and proven nuclear technologies, and implement nuclear safety practices and regulations.

1.4 Related Projects/Programs and Other Donor Activities

In 2010, PNRI submitted a project proposal to the DOST - Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) entitled "*Development of Long-lived Radioisotope Tracers Applications Using Accelerator Mass Spectrometry and Other Nuclear Related Techniques for Environmental and Biomedical Applications*" costing approximately Seven Million Dollars (US\$ 7,000,000.00) the bulk of which goes to the acquisition of the Ion Beam Accelerator (IBA) and Accelerator Mass Spectrometry (AMS). However, the project did not push through due to non-availability of funds.

2. OBJECTIVE, PURPOSE & EXPECTED RESULTS

2.1 Objective of the project/study

The objective of the proposal under this TOR is to determine the viability of establishing an Accelerator Facility, identify the appropriate type of accelerator and explore possible commercial opportunities that can be catered by the resulting output of said accelerator facility once it has been put into operation.

2.2 Expected result/s

By the end of the contract period under this TOR, the Consulting Firm should be able to produce a comprehensive and detailed F/S that will become the Pre-Project Assessment Report (PPAR) containing the following information:

- 2.2.1 Stakeholder profiles and potential commercial applications;
- 2.2.2 Specifications for the appropriate accelerator, or alternative similar technology, and detailed design of its ancillary facilities;

- 2.2.3 Recommendations on personnel requirement for the accelerator facility operation and utilization;
- 2.2.4 Analysis of potential government commitments associated with operation of the accelerator facility;
- 2.2.5 Recommendations that will be used by DOST-PNRI Officials as basis/reference to push for its implementation and approval from its principals and other approving bodies with the aim of uplifting the status of nuclear S&T in the country.
- 2.2.6 Additionally, a Value/Options Analysis¹ should be undertaken with regard to the selection of the best alternative technologies and best possible implementation options/configurations for the project.

3. ASSUMPTIONS & RISKS

3.1 Assumption underlying the project intervention

It is assumed that nuclear S&T in the country may not advance, or at least take a small increment step towards advancement, without the viable realization of this undertaking.

3.2 Risks/Limitations

Given the current status of nuclear S&T in the country, there may be a limited number of people who can qualify as experts to participate in this study. It may be necessary to engage the services of international experts, who have already conducted similar study, may assist local counterparts during said undertaking that will enable knowledge and technology transfer, benefitting PNRI staff members, student trainees, universities, and other researchers from different agencies and institutions.

4. SCOPE OF WORKS

4.1 General

The Consulting Firm's scope of works shall include, but not limited to, the following:

- 4.1.1 Preparation of the general and detailed work and financial plan for the conduct of F/S. The work plan shall include the timetable/schedule for each of the activities (such as Gantt chart) and the composition of the team to be assigned in said undertaking;
- 4.1.2 Conduct market/commercial assessment, identify potential stakeholders (local and international) and undertake primary data gathering including

¹ For reference, the *Value Analysis Handbook for NEDA (2009)* may be downloaded from: <http://www.neda.gov.ph/wp-content/uploads/2014/01/Value-Analysis-Handbook.pdf>.

interviews/coordination with relevant individuals, agencies, institutions, etc., as may be needed;

- 4.1.3 Prepare and submit reports, including the facility design and the identified appropriate accelerator, as required by the DOST-PNRI and present such findings to the DOST-PNRI, if needed; and
- 4.1.4 Performance of other tasks as needed.

4.2 Specific Activities

4.2.1 Demand Analysis

Profiling of potential stakeholders and conduct of surveys to collect relevant data in discussion with the identified individuals, based on their experience, qualifications, current and expected future technical needs and demands for an accelerator. The survey results, and other data related thereto, shall be submitted to NEDA and DOST-PNRI.

4.2.2 Socioeconomic Appraisal

The Consultant shall conduct a review and evaluation of the study area in relation to the following aspects:

- 4.2.2.1 Philippine development plans, focusing on nuclear S&T;
- 4.2.2.2 Social impact of establishing an accelerator facility;
- 4.2.2.3 Conduct of activities related to social impact and mitigation as required by Government;
- 4.2.2.4 Discussion on the value of an accelerator facility within the context of the national economy, focusing on the extent to which the project will facilitate the development of science and technology in terms of research, medical application, technology and other fields which the accelerator can be applied;
- 4.2.2.5 Discussion on the extent to which the project may have commercial capabilities;
- 4.2.2.6 Discussion on the direct benefits to the local research and development – potential commercial applications, medical technology, food processing, agriculture, environment etc.; and
- 4.2.2.7 Discussion on the increased economic activity directly induced by the project, developmental benefits accruing to S&T sectors, business, and other socio-economic benefits

4.2.3 Technical Design and Specification

- 4.2.3.1 Identify functional specification for the accelerator facility, or alternative similar technology, and its ancillary facilities that will allow the appropriate technical features to be developed.
- 4.2.3.2 Recommend technical aspects of the proposed project. The study shall include interviews with relevant accelerator vendors/operators for initial assessment of key issues and

technical challenges which require resolution before an appropriate accelerator can be identified. The technical assessment will specify the design, materials, manufacture, fabrication, construction, licensing, operation, sites, safety, and security.

4.2.3.3 An initial assessment will be based on the following criteria:

- Technical maturity and viability;
- Maturity of Safety Case and Certification;
- Key strengths and areas for development;
- Programs to address development needs;
- Available resources – people, capability, facilities and funding; and
- Potential revenue generating capabilities.

4.2.3.4 Technical areas shall be identified that can provide innovation opportunities. These include concept design areas that are challenging for the current designers, detailed design issues that are likely to be important for regulatory approval and generic design subjects that have the potential for significant cost reduction of any of the designs.

4.2.3.5 Recommendations for the site of the accelerator facility - The suitability of a site for the accelerator will be evaluated.

4.2.3.6 Provide DOST-PNRI and NEDA all electronic survey data, demand analysis, specifications and drawings of the proposed design of the accelerator facility.

4.2.4 Financial Analysis

4.2.4.1 Provide estimates of investment cost, including operations and maintenance cost and potential revenues that may be generated by the project.

4.2.4.2 Provide the breakdown and details on manpower costs, power costs, materials costs, and other costs;

4.2.5 Economic Analysis

The specific objective of the economic analysis is to determine the net contribution of the proposed accelerator facility project to the economy and identify the significant factors that influence the level of economic viability. Thus, the Consulting Firm shall determine, among others, the following:

4.2.5.1 *Economic Costs.* Compute the itemized economic costs in accordance with the projected construction period, following NEDA's guidelines and classifications, and distinguish the foreign exchange costs from local costs;

- 4.2.5.2 *Economic Benefits.* Only direct economic benefits shall be considered for the purpose of evaluating the economic viability of the project.
- 4.2.5.3 *Economic Evaluation.* Compute the Economic Internal Rate of Return (EIRR) and the Net Present Value (NPV) discounted at fifteen percent (15%) social discount rate (SDR); and
- 4.2.5.4 *Sensitivity Analysis.* Ascertain how the economic potential of the project is influenced by fluctuations of some factors such as increase in capital costs and reduction in economic benefits, and determine the effects of such critical factors on the project's profitability.

4.2.6 Implementation and Institutional Analysis

- 4.2.6.1 Identify the specialized training for the full range of scientific and technical disciplines needed for the accelerator project. Assess the availability of these disciplines within the country. Assess national educational capabilities and the option for foreign education and training.
- 4.2.6.2 Conduct a gap analysis and identify specialized training needed even for experienced personnel in nuclear safety, security, safeguards, and radiation protection and management systems. Propose a realistic plan to develop and maintain the human resource requirement in conjunction with all parties which will be involved in the project.
- 4.2.6.3 Analysis of government commitments associated with operation of the accelerator facility - Develop a thorough understanding of the long term governmental obligations and commitments and the national strategy to achieve these commitments.
- 4.2.6.4 Analysis of the capacity and capability of the implementing agency to operate and maintain the electrostatic ion beam accelerator facility - Consider the appropriate organization structure, reporting relationships and internal performance measures for operators.
- 4.2.6.5 Identify role of the research accelerator in the regional and international contexts and the requirements and options for regional and international cooperation - Evaluate the advantages and disadvantages of the regional approach as compared to a national approach.

4.2.7 Regulatory and Legal Framework Analysis

- 4.2.7.1 Recommend for updating relevant legislations and regulations - Based on the results of the preceding two activities, provide recommendations to update existing legislative and regulatory framework that is relevant for all activities involving the accelerator, from the planning stage, operation and maintenance.

- 4.2.8 Perform the Study in accordance with accepted professional standards, utilizing sound engineering and economic evaluation practices.

Specific activities to be performed by the members of the Consulting Firm, as indicated in Section 4.1., for said undertaking are summarized below.

Consulting Firm Members	Man Months	Activities			
		4.1.1	4.1.2	4.1.3	4.1.4
Project Manager (Team Leader)	6				
Nuclear Engineer/Physicist/Accelerator Specialist	3				
Financial Analyst/Specialist	2				
Economic Analyst/Specialist	3				
Mechanical/Chemical Engineer	3				
Legal/Regulations Specialist	3				

5. TIMELINES AND DELIVERABLES

5.1. Commencement Date & Period of Implementation

The Study shall be completed within a period of six (6) months, commencing from the date of receipt of the Notice to Proceed (NTP). Refer to **Annex A** for an illustration of the indicative implementation timelines for the subject study.

5.2. Table of Deliverables

The following deliverables for the subject as enumerated below shall be submitted by the Consultant in four (4) hard copies to DOST-PNRI for review, and one (1) hard copy to NEDA for monitoring purposes and payment processing.

An electronic/soft copy shall also be submitted to DOST-PNRI and NEDA

Deliverables	Timeline
Work and Financial Plan (WFP)	Within five (5) calendar days after receipt of NTP
Inception Report	Within fifteen (15) calendar days after PNRI approval of the WFP
Monthly Progress Reports	Monthly, within seven (7) calendar days from end of agreed month-period
Interim Report	Not later than the third (3 rd) month from the receipt of NTP
Draft Final Report (Draft Final PPAR)	Not later than the fifth (5 th) month from the receipt of NTP
Final Report (Final PPPAR)	Fifteen (15) calendar days after receipt of feedback/evaluation from PNRI of the Draft Final Report (Draft Final PPAR)

- 5.2.1 The WFP shall include, among others, the detailed work program for the scope of the study, as well a detailed schedule for payment to applicable Milestones.
- 5.2.1 The Inception Report shall include the fulfilment of the study conditions listed in this TOR as well as approached and methodologies to be utilized in the development of the study.
- 5.2.3 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.
- 5.2.3 The Interim Report shall include the results of the environmental study, marketing study and business models, financial and legal study, as well as the status of implementation of the study, in relation to the scope of work.
- 5.2.4 The Final Report shall be submitted to DOST-PNRI for final approval, which will become the Final PPAR.

6. EXPERTISE REQUIREMENTS AND QUALIFICATIONS

6.1 The Consultant for the F/S shall be a Consulting Firm, with the following composition and qualifications:

6.1.1 The Consulting Firm – at least five (5) years of relevant experience

6.1.2 Project Manager (Team Leader)

- At least a Master's degree in Nuclear Engineering, Physics, or related technical discipline in Basic or Applied Sciences and Engineering with at least five (5) years of work experience in accelerator utilization and identification which may include, among others, accelerator operations, utilization, facility management, design and construction
- Must have conducted at least three (3) F/S of similar or relevant to accelerator operations, utilization, facility management, design and construction, of which one of those undertakings acted as Project Manager.
- The tasks of the Team Leader shall include, but is not limited to, the following:
 - Prepare a detailed WFP for the conduct of the F/S;
 - Supervise and coordinate all activities of the Consulting Team;
 - Submit the work plan and shall inform of any changes or variations; and
 - Attend meetings and submit reports and other documents as required by NEDA and/or DOST-PNRI.

6.1.3 Nuclear Engineer/Physicist/Accelerator Specialist

- Must have at least a Master's Degree in Nuclear Engineering, Nuclear Physics, or related technical discipline such as Mechanical or Chemical Engineering.
- At least five (5) years of work experience in the conduct of F/S for accelerator projects and familiar with all areas of accelerator utilization and identification which may include, among others, accelerator operations, utilization, facility management, design and construction.
- Must have conducted at least two (2) F/S of similar or relevant to accelerator operations, utilization, facility management, design and construction.

6.1.4 Financial Analyst/Specialist

- At least a Bachelor's degree in Business Management or Finance or related discipline with at least five (5) years of professional experience.
- Should have professional experience in economics and/or should have experience in conducting feasibility studies of at least two (2) project of relevant nature.
- The tasks of the Financial Analyst/Specialist shall include, but is not limited to, identification of stakeholders, assessment of their corresponding needs and justification of establishing an accelerator facility.

6.1.5 Economic Analyst/Specialist

- The Economic Analyst/Specialist should have at least a Bachelor's degree in Economics or related discipline with at least five (5) years of professional experience.
- Should have experience in conducting feasibility studies of at least two (2) projects of relevant nature.
- The tasks of the Economic Analyst/Specialist shall include, but is not limited to, performing economic analysis on the benefits of establishing an accelerator facility and its potential contribution to the economy.

6.1.6 Mechanical/Chemical Engineer

- At least a Licensed Mechanical or Chemical Engineering, with Bachelor's Degree, with at least five (5) years of professional experience and at least two (2) projects relevant to accelerator facility design and construction.
- At least conducted one (1) F/S relevant to accelerator facility design and construction or of similar nature.

- The tasks of the Mechanical/Chemical Engineer shall include, but is not limited to, providing recommendations in the development of the outline facility specification

6.1.7 Legal/Regulations Specialist

- The Legal/ Regulatory Framework Specialist should have a Bachelor's Degree in Natural Science, Engineering, Law or equivalent such as Political Science with at least ten (10) years of professional experience and at least two (2) projects / studies relevant to nuclear regulations.
- Familiar with the existing legal and regulatory framework in the Philippines, has previous experience in conducting F/S and/or project management of a relevant nature, and must have knowledge in the requirements and regulations for nuclear installations programs.
- The tasks of the Nuclear Legal/ Regulatory Framework Specialist shall include, but is not limited to, the following:
 - Identification of long-term government commitments and policy issues;
 - Assessment of organizational issues;
 - Assessment of relevant legislative and regulatory frameworks; and
 - Evaluation of regional and international cooperation.

6.2 Selection Criteria for Shortlisting

In case of foreign Consultants, they are hereby advised to refer to the Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184, otherwise known as the Government Procurement Reform Act, for rules regarding their participation in the bidding process.

Prospective bidders are required to submit the following:

For the Consulting Firm:

- List of completed (with Certification) and ongoing relevant F/S conducted within the past fifteen (15) years;
- Company Profile; and;
- Curriculum Vitae (CV) of Key Experts highlighting their relevant work experience.

For the Team Leader:

- Sworn statement of their role in the similar F/S, exact duration they have worked on said similar F/S and brief description of the task they have carried out.

6.3 Criteria for Selection

6.3.1 Prospective Consulting Firms shall be evaluated based on their previous engagements/contracts related to this TOR and rated based on the criteria shown in **Annex B** (“*Criteria for Shortlisting*”) and as summarized below:

- Applicable Experience of the Firm;
- Qualification of Key/Organic Personnel who may be Assigned to the Project; and
- Job Capacity.

6.3.2 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:

- | | | | |
|-----|--------------------|---|-----|
| i. | Technical Proposal | : | 80% |
| ii. | Financial Proposal | : | 20% |

Note: Similar contracts are those for the conduct of pre-F/S, F/S for accelerator projects under the accelerator sub-sector. Relevant contracts, on the other hand, are those for the conduct of pre-F/S or F/S for projects of a different nature/type but under the accelerator sector. Detailed engineering, consultancy services, project management, advisory services and/or other kinds of study outside of a pre-F/S or F/S, for the same nature/type of project under the same sector, are also considered “relevant”.

7 SOURCE OF FUNDS

Funds for the conduct of this F/S shall be sourced from the NEDA-administered F/S Fund.

8 INSTITUTIONAL SET-UP/RESPONSIBILITIES

8.1 Executing Agency/NEDA

- 8.1.1 Shall be the Executing Agency (i.e., representative of the Government in the Contract Agreement with the Consulting Firm);
- 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 RA No. 9184 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 accordance with DOST-PNRI, all request for payments/billings and determine the acceptability/correctness of the same;
- 8.1.6 Shall have the option to detail 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/DOST-PNRI

- 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, the Implementing Agency 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.
- 8.2.3 Shall provide assistance in coordination with other agencies related to the study;
- 8.2.4 Shall provide the Consulting Firm the necessary/available information/data and also, if available, copies of previous relevant studies as well as necessary counterpart staff to assist project consultants in conducting the services, subject to the execution of the Non-Disclosure Agreement, if necessary;
- 8.2.5 Shall evaluate all requests for payments/billings and endorse to NEDA upon determination of the acceptability/correctness of the same;
- 8.2.6 Shall report to NEDA the progress (physical and financial) of the Study on a quarterly basis for monitoring purposes;
- 8.2.7 Shall detail counterpart technical personnel to the Study for the purpose of on-the-job capacity-building and technology transfer; and
- 8.2.8 Shall evaluate and endorse to NEDA the acceptability and correctness of the deliverables and request for payment/billing statements, within seven (7) calendar days from the receipt thereof, for the purposes of fund release/payment to the Consulting Firm.

8.3 Consultants

- 8.3.1 Shall be responsible for the conduct of the Study and the timely delivery of results/outputs as indicated in this TOR;
- 8.3.2 Shall be responsible for the provision of the necessary office space including the necessary office equipment (i.e., computers, printers, office supplies, etc.) for the conduct of the Study
- 8.3.3 Shall shoulder all expenses required in the conduct of the study, including, among others, the 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 consultancy

services to be performed under this TOR for which the Consulting Firm is liable to NEDA, (c) perform the works required in an efficient and diligent manner and shall use its best effort to keep reimbursable costs down to the possible minimum without impairing the quality of services rendered; and (d) comply with, and strictly observe any law 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 prohibit full-time foreign staff during his/her 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;
- 8.3.7 Shall not, at any time, communicate to any person or entity any information disclosed to the Consulting Firm 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 NEDA;
- 8.3.8 Shall agree that nothing contained herein shall be construed as establishing or creating between the 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; and
- 8.3.9 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 staffs in the performance of the services, including the use of, or violation of any copyrighted materials, patented invention, article or appliance.

9 MODE OF PROCUREMENT AND APPROVED BUDGET FOR THE CONTRACT (ABC)

The procurement of the consulting services for the F/S updating shall be through competitive public bidding. The ABC for the proposed Study is *Ten Million Eight Hundred Thirty Three Thousand and Twenty Five Pesos (PhP10,833,025.00)*, 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 ABC.

Please 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.

All equipment, materials, etc., acquired for the study shall be turned over to NEDA at the conclusion of the study.

10 PAYMENT SCHEME/SCHEDULE

10.1 Billing for reimbursable items shall be on a monthly basis, based on the actual expenses incurred and supported by official receipts/documents or certification of actual expenditures made under oath, including the monthly progress reports.

10.2 Billing for non-reimbursable items, including professional fees, shall be in accordance with the following delivery schedule, subject to the usual government accounting and auditing requirements.

Output	Payment Schedule
Upon acceptance of Inception Report	10%
Upon acceptance of the Interim Report	30%
Upon acceptance of Draft Final Report	30%
Upon acceptance of the Final Report	30%
Total	100%

10.3 An advance payment shall be made to cover mobilization costs, but shall not exceed 15 percent 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 made only upon the submission to and acceptance by the Procuring Entity of an irrevocable standby letter of credit of equivalent value from a commercial bank, a bank guarantee or a surety bond callable upon demand, issued by a duly licensed surety or insurance company and confirmed by the Procuring Entity.

10.4 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.

10.5 Since all of these payments shall be subject to the usual government accounting and auditing requirements, the Consulting Firm is expected to be familiar with the Government Accounting and Auditing Manual (GAMM).

11 RETENTION PAYMENT

- 11.1 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, is 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.
- 11.2 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 percent (1%) of the cost of the unperformed portion of the works for every day of delay. Should the amount of liquidated damages reaches fifteen percent (15%) 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

Conduct of Feasibility Study (F/S) for the Establishment of an Accelerator Facility

The Consulting Services shall be undertaken over a period of six (6) months as shown below:

Activities	M1	M2	M3	M4	M5	M6
Work and Financial Plan (WFP)						
Inception Report						
Monthly Progress Report						
Interim report						
Draft Final Report (Draft Final PPAR)						
Final Report (Final PPAR)						

Experts	M1	M2	M3	M4	M5	M6
Project Manager (Team Leader)						
Nuclear Engineer/Physicist/Accelerator Specialist						
Financial Analyst/Specialist						
Economic Analyst/Specialist						
Mechanical/Chemical Engineer						
Legal/Regulations Specialist						

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

Conduct of Feasibility Study (F/S) for the Establishment of an Accelerator Facility

Criteria for Shortlisting of Consulting Firms

CRITERIA	Weight	Consulting Firm # 1	Consulting Firm # 2	Consulting Firm # 3	Consulting Firm # 4	Consulting Firm # 5
APPLICABLE EXPERIENCE <ul style="list-style-type: none"> Completed consulting services of size, complexity and technical specialty comparable to job under consideration, including quality of performance Other completed consulting services relevant to the job under consideration Known cases of prior performance, including quality of work conforming to obligations and cost of services 	30%					
QUALIFICATION OF PERSONNEL <ul style="list-style-type: none"> Qualification of key personnel that may be assigned to the job 	50%					
JOB CAPACITY <ul style="list-style-type: none"> Absorptive capacity to do additional works other than those currently being undertaken 	20%					
TOTAL SCORE	100%					
RANK						

ANNEX C

Conduct of Feasibility Study for the Establishment of an Accelerator Facility

Breakdown of the Approved Budget for the Contract (ABC)

PARTICULARS	AMOUNT (P=)
A. REMUNERATION	9,778,300.00
<i>EXPERTS</i>	
A.1 Project Manager (Team Leader)	
A.2 Nuclear Engineer/Physicist/Accelerator Specialist	
A.3 Financial Analyst/Specialist	
A.4 Economic Analyst/Specialist	
A.5 Mechanical/Chemical Engineer	
A.6 Legal/Regulations Specialist	
<i>SUPPORT STAFF</i>	
A.7 Engineering Staff (1L)	
A.8 Data Encoder (1L)	
B. REIMBURSABLE EXPENSES	1,004,500.00
B.1 Field per diems (room costs, subsistence allowance and other similar field expenses)	
B.2 Field travel expenses (airplane fare, vehicle rental, airport fees and taxi fares)	
B.3 Other cost (office equipment and furniture, office running cost such as office supplies, sundries/communication, reproduction of documents, meetings/ representation expenses, office space and utilities)	
B.4 Socioeconomic surveys and investigations	
B.5 Contingencies	
GRAND TOTAL	10,833,025.00