

TERMS OF REFERENCE

CONSULTING SERVICES FOR THE TECHNICAL STUDY ON THE WATER RESOURCES INFRASTRUCTURE SECTOR (IRRIGATION SUB-SECTOR) UNIT COST

I. Background and Rationale

An *Infrastructure Sector Unit Cost Database* is proposed to be established under the National Economic and Development Authority (NEDA) in response to the need of instituting a relevant reference of standard unit costs for each of the infrastructure subsectors for use in the technical review/appraisal of projects presented to the Investment Coordination Committee (ICC), among others. This is supportive of the Government's thrust of optimizing resources and investments in infrastructure development under the 2011-2016 Philippine Development Plan (PDP). The standard unit costs shall be used as benchmark reference for ensuring that the costs of programs/projects are based on appropriate market prices and conditions. This is to also analyze and examine areas for possible cost reduction, with the ultimate goal of generating greater value and savings, without sacrificing the quality of a project and its intended objective/s and outcome/s.

Specifically, *the study aims to establish standard infrastructure unit cost estimates based on typical Bill of Materials (BOM) of infrastructure projects using current prices.* This will aid the NEDA Secretariat in the evaluation of cost efficiency and cost effectiveness of projects proposed for local financing, Official Development Assistance (ODA), or Public-Private Partnership (PPP). It should be noted that cost efficiency parameters are part of the Value Engineering/Value Analysis (VE/VA) methodology, specifically under the Functional Analysis Phase, wherein the proposed costs of a project and its components are compared with their worth, i.e., the most inexpensive option of performing the function (Value=Worth/Cost). A value of less than one (1) indicates that the proposed cost for a project component is higher than its worth, thus, may have the potential for possible revision and cost reduction to attain maximum value¹.

The study shall focus on the Water Resources subsector, particularly on the irrigation subsector, which has a 6.04% investment share or about PhP155.90 billion of the total infrastructure investment for the period 2011-2016, based on the Public Investment Program (PIP)².

For the implementation of the study, the NEDA Secretariat deems it necessary to procure consulting services given the need for specialized technical considerations pertinent to the undertaking as well as the amount of information gathering necessary.

¹ This is based on NEDA's Value Analysis Handbook for the conduct of VE/VA. The methodology in said handbook is based on the six (6)-phase VE/VA job plan consistent with the standards of the Society of American Value Engineers (SAVE) International. The 6-phase job plan consists of (a) Information Phase; (b) Function Analysis Phase; (c) Creative Phase; (d) Evaluation Phase; (e) Development Phase; and (f) Presentation Phase.

² PIP as of 09 November 2012. Note that the PIP is currently being updated, hence, the figures cited are expected to change.

II. Scope of Services and Deliverables

The Consulting Firm to be engaged for the study is expected to prepare and deliver Unit Costs for both Construction and Operation & Maintenance (O&M) of irrigation infrastructure *based on standard sets of BOQs and cost estimates and not on contract costs of existing or completed projects*, as follows:

A. Range of construction costs of the following (in 2015/current prices):

- **Large Dams**, using the technical standards and specifications of the Department of Agriculture / National Irrigation Administration (DA/NIA) and *taking into consideration technical parameters, such as: topography, regional/local variations in rainfall and hydrology, location of inputs such as quarry materials and their distance to the dam site as it affects transport/hauling cost, geotechnical and geological conditions of the dam site, height and width of dam, among others*
 - Dam
 - *Embankment Dam*
 - Rockfill Dam
 - Earthfill Dam
 - *Concrete / Masonry Dam*
 - Buttress Dam
 - Arch Dam
 - Gravity Dam
 - Rubble / Masonry
 - Concrete
 - Barrage Dam
 - Terrovia Dam
 - *Arch Dam*
 - *Buttress Dam*
 - *Roller-Compacted Concrete Dam*
 - Hardfill Dam
 - Other Components which may be integrated in the costs of the dams (e.g., for multipurpose dams) or treated as separate components, as appropriate
 - Turbines
 - Reservoirs
 - Other appurtenances (e.g., spillway, dam instrumentation, outlet works, intake towers, diversion channels, etc.)
- **Small Reservoir Facilities** using the technical standards and specifications of DA/NIA and *taking into consideration technical parameters, such as: topography, regional/local variations in rainfall and hydrology, location of inputs such as quarry*

materials and their distance to the dam site as it affects transport/hauling cost, geotechnical and geological conditions of the dam site, height and width of dam, among others

- **Other Small Scale Irrigation Technologies** using the technical standards and specifications of DA/NIA and *taking into consideration technical parameters, such as: topography, regional/local variations in rainfall and hydrology, location of inputs such as quarry materials and their distance to the dam site as it affects transport/hauling cost, geotechnical and geological conditions of the dam site, height and width of dam, among others*
 - Diversion Dam
 - Shallow Tubewell (STW)
 - Small Farm Reservoir (SFR)

B. Unit costs of the following (in 2015/current prices):

- **Irrigation Facilities** using the technical standards and specifications of DA/NIA for National Irrigation System (NIS), Communal Irrigation System (CIS), and Pump Irrigation System (PIS)
 - *Main Canal* (per lineal meter of lining materials, e.g., concrete, stone, masonry, sand, cement, compact clay)
 - *Lateral Canal* (per lineal meter of lining materials, e.g., concrete, stone, masonry, sand, cement, compact clay)
 - *Sub-Lateral Canal* (per lineal meter lining materials, e.g., concrete, stone, masonry, sand, cement, compact clay)
- **Drainage facilities** using the technical standards and specifications of DA/NIA
 - Main Drains
 - Lateral Drains
 - Service Road and Structure
 - Protection Dike
- **Small Water Impounding Project** using the technical standards and specifications of DA/NIA and *taking into consideration technical parameters, such as: topography, regional/local variations in rainfall and hydrology, location of inputs such as quarry materials and their distance to the dam site as it affects transport/hauling cost, geotechnical and geological conditions of the dam site, height and width of dam, among others*
 - Reservoir
 - Embankment
 - Spillway
 - Irrigation Distribution Facilities (Intake Control Structure, Outlet Structure, Lined Canal Structure, and Earth Canal Structure)

C. Operation and Maintenance (O&M) of Facilities including the Dam Operation, Dam Maintenance (Routine Works³, Periodic Works⁴, and Emergency Repairs⁵), and Irrigation and Drainage Facilities (Main Canal, Lateral Canal and Sub-lateral Canal)

The above unit costs shall be integrated into a single database, which shall be posted in the NEDA website for the information and reference of stakeholders.

Henceforth, the Consultant shall devise a formula to enable NEDA to update the unit costs at least on an annual basis. Unit Costs shall include a formula/factor in adjusting the figures for the different Regions to take into account regional variations in prices as well as inflation/deflation and other factors which may be deemed appropriate for inclusion.

III. Qualification Requirements

The Consultant for the study shall be a Consulting Firm, which shall field in four (4) key personnel, i.e., a Team Leader, one (1) Construction Engineer, one (1) Irrigation Specialist, and one (1) Economist for the study with the following qualifications:

A. Team Leader

- At least ten (10) years of experience in the water resources sector, preferably with experience in the Irrigation subsector (planning, project development, design, construction, operations, etc.);
- Must be a licensed Civil Engineer;
- With work experience pertaining to quantity surveying/cost estimation;
- Well versed in engineering terms and able to expertly interpret and understand engineering plans; and
- Highly knowledgeable on construction materials and methods and able to evaluate the data on hand in order to deliver accurate project estimation.

B. Construction Engineer

- At least six (6) years of experience in the water resources sector, preferably with experience in the irrigation subsector (planning, project development, design, construction, operations, etc.);
- Must be a licensed Civil Engineer; and
- With work experience pertaining to quantity surveying/cost estimation.

³ Routine Works include inspection of the dam, its appurtenant structures and vicinities to observe leakage, seepage, and shrinkage or deformation of the dam body and to record the data gathered from the dam instrumentation and seepage weir.

⁴ Works include the removal of floating obstacles around the inlet of the spillway and the intake of the outlet works, greasing of the gears of the control gates/valves, repair and refilling of undulation of dam crest and slopes and the mowing or cutting of shrubs and grasses on dam slopes.

⁵ These are the repairs needed to restore damaged facilities and structures caused by unusual weather or geological disturbances like very strong rain, big flood or devastating earthquake.

C. Irrigation Specialist

- At least six (6) years of experience in the irrigation subsector (planning, project development, design, construction, operations, etc.);
- Must be a licensed Agriculture/Civil Engineer; and
- Preferably with work experience pertaining to quantity surveying/cost estimation.

D. Economist

- At least six (6) years of experience in the water resources sector, preferably including experience in the irrigation subsector (e.g., studying data and statistics in order to spot trends in economic activity, economic confidence levels and consumer attitudes in line with costing/pricing of the dams and irrigation-related construction and O & M activities);
- Must be an Economics graduate; and
- With work experience in establishing parametric cost/price formula using indices such as price indices, trends, etc.

IV. Selection Criteria

Prospective Consultancy Firms must have at least 5 years of experience related to this TOR and will be rated based on the criteria shown in **Annex A** (“Criteria for Shortlisting”). Prospective bidders are required to submit the following:

- a. Copies of *Certificate of Project Completion and Acceptance* or equivalent Certification from their previous related studies/projects within the past 10 years;
- b. Company profile; and
- c. Curriculum Vitae (CV) of Key/Organic Personnel, who may be assigned to the conduct of the Study, highlighting their relevant work experience.

Note: Related experience/studies include conduct of pre-feasibility study (F/S) and/or F/S and relevant work. The Key/Organic Personnel are requested to indicate:(1) their role in a specific project;(2) the exact duration that they have worked on the project; and (3) a brief description of the tasks that they have carried out (such as experience in the conduct of VE/VA).

The Consulting Firms will be evaluated using the Quality-Cost Based Evaluation/Selection QCBE/QCBS) procedure under Republic Act (RA) 9184 (Government Procurement Reform Act) and its Revised Implementing Rules and Regulations (IRR) at 80% for the Technical Proposal and 20% for the Financial Proposal. The prospective Consulting Firms shall follow the guidelines in the preparation of eligibility requirements pursuant to Section 24.1 and Section 24.2 of the Revised IRR of the GPRA.

V. Duration of Services and Implementation Arrangement

The consulting services will be undertaken over a six (6)-month period inclusive of presentations to the INFRACOM as shown in the Indicative Timeline below:

Indicative Timeline for the Conduct of the Study

Activity	Month 1				Month 2				Month 3			
Issuance of Notice to proceed/commence												
Orientation/ Levelling off												
Preparation and Submission of work Plan												
1st presentation												
NEDA approval of Work Plan												
Conduct of the Study												
Preparation and Submission of Preliminary report/database												

Activity	Month 4				Month 5				Month 6			
Conduct of the Study												
Preparation and Submission of Preliminary report/database												
2nd presentation												
NEDA Review of the Preliminary report/database												
Preparation and Submission of Draft Final report												
3rd presentation												
NEDA review/approval of Draft Final Report												
Incorporation of NEDA comments by Consultants and final presentation												
Finalization/Incorporation of additional NEDA comments, if any												
Submission of Final Study Report												

VI. Reports

The Consultant shall submit the following reports in electronic copy (in PDF, .doc/x, .xls/x, and other related format, if necessary) and five (5) hard copies to NEDA:

- a. *Inception Report* indicating the work plan and methodology/approach to be adopted in the conduct of the Study;
- b. *Interim Report* to include preliminary output/database;
- c. *Draft Final Report* indicating draft final output of the study including the derivation of the unit costs; and
- d. *Final Report* to include comments of the NEDA Board-Committee on Infrastructure (INFRACOM) and its Sub-Committee on Water Resources (SCWR).

The Consultant is expected to provide orientation/briefing on each of the output reports mentioned above to the concerned personnel of the NEDA-Infrastructure Staff (IS) and to the abovementioned Committees, as needed.

The *Draft Final Report* and *Final Report* shall be presented by the Consultant to the INFRACOM and SCWR for discussion and approval/subsequent adoption.

VII. Responsibilities of NEDA

NEDA is the Executing Agency for the consultancy service. The NEDA-IS shall be responsible for the overall coordination during the conduct of the study.

During the conduct of the study, NEDA – IS shall coordinate with concerned water resources agencies, which shall be consulted or requested to provide comments and recommendations in all deliverables submitted/presented by the Consultant through the INFRACOM and SCWR.

NEDA-IS shall also facilitate the presentation to the INFRACOM and SCWR, as necessary.

VIII. Approved Budget of Contract (ABC)

The ABC for the procurement under this TOR is PhP 4,200,000.00, inclusive of all applicable government taxes and charges, professional fees, and other incidental and administrative costs (i.e., transportation/travel expenses, printing, reproduction and packaging of hard and soft copies of reports, expenses for meetings, etc.).

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.

IX. Milestone/Deliverables and Schedule of Payment

The following are the milestones in relation to the consultancy services, which specify the Report to be submitted, including the target date completion for each activity and the payment scheme based thereon:

Milestone		Target Date of Completion	Payment Schedule
1	<i>Draft Inception Report</i>	1 month from date of Notice to Proceed (NTP)	10% of the contract amount upon acceptance of the report by NEDA
2	<i>Revised/Final Inception Report</i>	15 working days after receiving comments from NEDA	
3	<i>Interim Report</i>	2-4 months upon effectivity of consultancy service	30% of the contract amount upon acceptance of the report by NEDA
4	<i>Draft Final Report</i>	5 months upon effectivity of consultancy service	30% of the contract amount upon acceptance by NEDA of the report, following presentation to the INFRACOM
5	<i>Final Report</i>	6 months upon effectivity of consultancy service	30% of the contract amount following NEDA acceptance of the report as revised based on INFRACOM/SCWR and NEDA comments, and NEDA issuance of Certificate of Satisfactory Service

X. Retention Payment⁶

A retention payment of ten percent (10%) shall be made by the Consultant. It shall be based on the total amount due to the Consultant 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 Consultant 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.

⁶ As per Annex "E" of the Revised IRR of R.A. 9184

XI. Liquidated Damages⁷

Where the contractor 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 contractor 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.

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 contractor under the contract and/or collect such liquidated damages from the retention money or other securities posted by the contractor whichever is convenient to NEDA.

⁷ As per Annex “E” of the Revised IRR of R.A. 9184

Annex A

CRITERIA FOR SHORTLISTING

	RATING FACTOR		POINTS/WEIGHT
I	Experience and Capability of the Firm <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 related to the job under consideration ▪ Known cases of prior performance, including quality of work conforming to obligations and cost of services 	Subtotal	30
II	Job Capacity <ul style="list-style-type: none"> ▪ Absorptive capacity to do additional works other than those currently being undertaken 	Subtotal	20
III	Qualifications of Key/Organic Personnel Who May Be Assigned to the Project	Subtotal	50
	Total		100

