



TERMS OF REFERENCE

ENERGY ASSESSMENTS, DEVELOPMENT OF BASIC ENGINEERING DESIGNS AND FEASIBILITY STUDIES FOR THE CENTRO ADMINISTRATIVO DISTRITAL (“CAD”) AND OPERACION ESTRATEGICA DEL RIO (“OER”) ENERGY DISTRICTS IN BARRANQUILLA – COLOMBIA

PROJECT

Energy Districts in Colombia– Phase II (190085)

1 INTRODUCTION

The United Nations Industrial Development Organization (UNIDO) is the specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalization, and environmental sustainability. The mission of UNIDO, as described in the *Lima Declaration* adopted at the fifteenth session of the UNIDO General Conference in 2013, is to promote and accelerate [inclusive and sustainable industrial development](#) (ISID) in Member States. The relevance of ISID as an integrated approach to all three pillars of sustainable development is recognized by the 2030 Agenda for Sustainable Development and the related Sustainable Development Goals (SDGs), which will frame United Nations and country efforts towards sustainable development in the next fifteen years. [UNIDO’s mandate is fully recognized in SDG-9](#), which calls to “Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation”. The relevance of ISID, however, applies in greater or lesser extent to all SDGs. Accordingly, the Organization’s programmatic focus is structured in four strategic priorities: [Creating shared prosperity](#); [Advancing economic competitiveness](#); [Safeguarding the environment](#); and [Strengthening knowledge and institutions](#).

Each of these programmatic fields of activity contains several individual programs, which are implemented in a holistic manner to achieve effective outcomes and impacts through UNIDO’s four enabling functions: (i) technical cooperation; (ii) analytical and research functions and policy advisory services; (iii) normative functions and standards and quality-related activities; and (iv) convening and partnerships for knowledge transfer, networking, and industrial cooperation. Such core functions are carried out in Departments/Offices in its Headquarters, Regional Offices and Hubs and Country Offices.

The purpose of these Terms of Reference (ToR) is to explicitly define the scope of work and schedule of deliverables to be produced by the Contractor as part of its consulting services/studies for the execution of the UNIDO project “Energy Districts in Colombia – Phase II”, ID 190085 (hereinafter simply referred to as UNIDO-ED2).

The cost breakdown for the requested services shall be included in the Contractor's proposal, including both service fees and logistics/transportation related costs.

The Contractor shall prepare a binding offer acknowledging the scope of work, quoting, and breaking down the price of completing the work and specified delivery plan.

These ToR include the following sections:

1. Introduction
2. Aim of UNIDO-ED2 Project
 - 2.1. Barranquilla City in UNIDO-ED2 Project
 - 2.2. Barranquilla CAD & OER Energy District Projects
3. Scope of Services
4. Budget
5. Work Location
6. General Time Schedule
7. Contractor's Personnel
8. Language Requirements
9. Qualification and Evaluation Criteria
10. Preparation and Presentation of Proposals
11. UNIDO Payment Conditions
12. Reference Documents
13. Annexes

2 AIM OF UNIDO-ED2 PROJECT

The objective of the **Energy Districts in Colombia – Phase II** project (hereinafter referred to as **UNIDO-ED2**) is to foster and promote energy efficiency and sustainable urban development by further promoting the development of Energy Districts in Colombian cities. The project aims to improve energy efficiency and reduce emissions of greenhouse gases (GHG) and ozone-depleting substances (ODS) from cooling and heating systems in buildings and utilities infrastructure in Colombian cities.

The first phase of "Energy Districts in Colombia" (UNIDO-ED1) was implemented in 2013-2019 by the Switzerland State Secretariat for Economic Affairs (SECO) in cooperation with the Ministry of Environment and Sustainable Development (MinAmbiente) and the Public Utility company of Medellin (Empresas Públicas de Medellín – EPM), and has successfully contributed to creating enabling conditions at institutional and market levels and has achieved initial results in boosting Energy Districts (ED) infrastructure in Colombian cities.

The purpose of the "Energy Districts in Colombia – Phase II" (UNIDO-ED2) project is to consolidate and scale up the results achieved in the first phase and further accelerate the diffusion of Energy Districts in Colombia. Interventions will be structured around three project components: a) Institutional Support, to improve and implement the regulatory framework at national and city level to promote further development of Energy Districts; b) Knowledge and capacity development, to reinforce knowledge and capacities for Energy Districts of all market players and facilitate collaboration among relevant actors; and c) Market development, to technically assist 7-10 selected cities to include Energy Districts into their territorial/urban planning and support the realization of 2-3 near-future mature projects.

Components are interlinked and expected to feed into each other. In this way, the project will provide an essential push to the diffusion of Energy Districts as an innovative and efficient infrastructure solution for utility services in Colombian cities.

From a city government perspective, it has been explained to local authorities how Energy Districts contribute to environmental goals, social and economic development KPI's, as well as their contribution to the NDC which has already been validated by MinAmbiente as a GHG-emission mitigation action.

2.1 BARRANQUILLA CITY IN UNIDO-ED2 PROJECT

The first phase of the project (UNIDO-ED1) established working groups in several cities in Colombia, namely Bogota, Medellin, Cali, Cartagena, Bucaramanga, Villavicencio, and Monteria. At the end of this phase UNIDO-ED1 invited different universities to participate in a contest to conceptualize an Energy District with the capacity to supply the cooling demand of the population impacted by works for the Gran Malecon Functional unit 1, resulting in different conceptual proposals for the future development of this area of the city.

UNIDO-ED2 has been able to re-start the work of the local city-level working groups at each of the following cities: Bogota, Medellin, Cali, Cartagena, Bucaramanga, Villavicencio, and Monteria. These working groups have been acknowledged and given authorization by local administration officials to develop an administrative, legal, and technical agenda so that energy districts become a feasible and sustainable solution to the cities' upcoming urban development. In addition to the above-mentioned cities, activities for local city-level working groups have also begun in three other cities: Barranquilla, Cucuta, and Neiva. All ten local ED steering committees discuss how to develop and coordinate efforts from all stakeholders so that intramural and/or urban-level Energy Districts be built in the most convenient locations at each city in the near future.

UNIDO-ED2 began work in Barranquilla with the designation of the ED City Coordinator, who has strengthened the three main components of the project: Institutional Support, Knowledge and Capacity Development, and Market Development. This work has achieved some relevant goals such as the identification of both existing and future potential users.

To date, the local Energy District steering committee in Barranquilla (CDDT-Barranquilla) has carried out two official meetings led by the Secretary of Development and the Public Services Manager, and both public and private urban development local stakeholders were also invited to participate either as active members of the committee or as observers. In the first meeting carried out on 02 October 2020, the committee recognized and ratified the importance of energy districts in the city, and approved the work plan of the UNIDO-ED2 local coordinator. During the second meeting carried out on 12 December 2021, the local ED City Coordinator presented four potential projects for the implementation of energy districts identified to date in the city and metropolitan area. During this session, CDDT-Barranquilla members proceeded to vote in favor of two initiatives which are the District Administrative Center ("Centro Administrativo Distrital – CAD") and the Strategic River Operation ("Operación Estratégica del Río – OER") and has formally requested UNIDO-ED2 to conduct ED feasibility studies and energy characterization of potential users in these two areas.

2.2 BARRANQUILLA CAD & OER ENERGY DISTRICT PROJECTS

The CAD Energy District project is located in the downtown area of the city of Barranquilla, in the Norte Centro Histórico neighborhood. This area comprehends many commercial and public buildings that host shopping centers, banks, universities, and public offices, which have a high energy demand and, in most cases, obsolete air-conditioning equipment. Because of its historical value, the CAD sector is the target of a public space recovery and renovation plan, which should guarantee the long-term sustainability of existing and future buildings.

Figure 1 shows the CAD ED project polygon, where three main zones are clearly identified: i) the CAD zone (e.g. the national and city level public offices), ii) the Plaza de la Paz zone, where the Portal del Prado shopping center, the Olímpica supermarket chain headquarters, one Homecenter hardware store and the Banco de la República

local offices are located; and, iii) the Universities area, where higher education institutions such as the Universidad de la Costa, the Simón Bolívar University and the iconic Amira de la Rosa municipal theater are located. The expected outcome of the aforementioned renovation plan, led by the Barranquilla’s “Gerencia de Servicios Públicos” (Public utilities Management office), is that new private, public and public-private business be developed in this area and, furthermore, that the resulting energy demand requirements be supplied by an district energy solution.

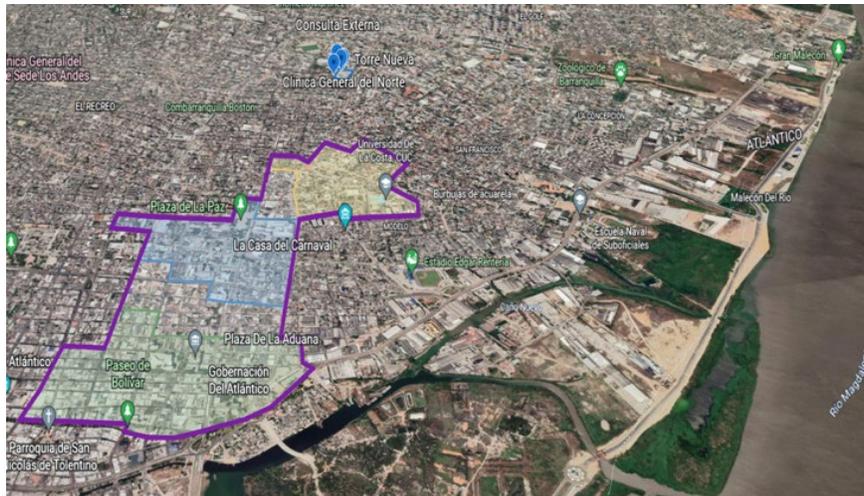


FIGURE 1. Location of proposed “CAD ED” in the city of Barranquilla

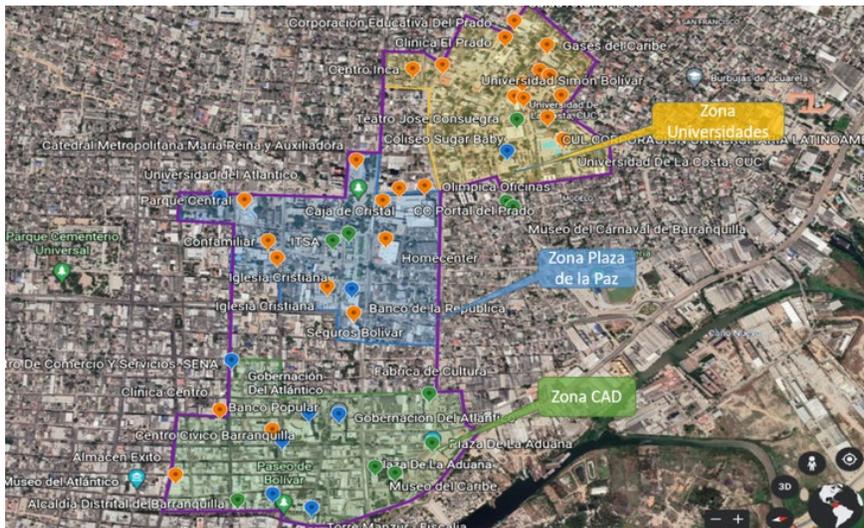


FIGURE 2. Zones of the “CAD ED” in the city of Barranquilla

From the above analysis, the following buildings were identified as potential users with installed capacities of considerable size for HVAC-R equipment/systems:

1. Banking sector: Banco de la República, Davivienda, Banco Popular, Seguros Bolívar.
2. Public sector: City Hall, Governor's Building, Departmental Assembly, Council of Barranquilla, Justice Palace

Building.

3. Health sector: Center Clinic.

4. Education sector: Universidad de la Costa, Simón Bolívar University.

5. Commerce sector: Homecenter, Portal del Prado Mall.

Therefore, the need to optimize cooling systems in a consolidated sector with a high demand for thermal energy is evident.

On the other hand, The “Operación Estrategica Ribera y Planes de Ordenamiento Zonal”, a.k.a. Operación Estrategica del Rio (“OER”) District Energy project target the area located in the Norte Centro Histórico neighborhood, downtown Barranquilla. The OER area is the most ambitious urban renovation project in Barranquilla. This project intends that the city economic and cultural activities return to the Magdalena river bank. Such a plan would affect an urban area of approximately 1,255 ha of extension. Figures 4 and 5 show the OER polygon limits.



Figure 3. OER Development Areas

From an urban planning and cadastral perspective, the OER comprehends several POZ’s (Zoning and use-of-land plans) including great industrial cluster such as the “via 40” 40th-Street industrial boulevard, where large pharmaceutical, chemical and metalworking manufacturing facilities currently operate. However, it is intended that the economic activity diversify in the short term in order to include new Residential, Commercial and Hotel projects. For example, the Arena del Rio Convention Center and the Vive Rio residential apartments project, currently in design phase, could potentially become frontline clients of the proposed OER District Energy project.

Among the existing potential users, the Puerta de Oro Convention Center, located in the northern bound of the polygon, is perhaps the current largest single air-conditioning load in the area and could therefore become a frontline/anchor client of the proposed OER district energy project. Even more, because of the current Puerta de Oro cooling plant oversized and underused excess cooling capacity, this existing cooling plant could be the nuclei of the larger OER district cooling project. Other potential users are the Caimán del Rio food square, the Crystal Pavilion and Procaps pharmaceutical manufacturing facility.



Figure 4. OER Polygon Location in Barranquilla



Figure 5. OER Polygon

To date, the OER and CAD polygons have been preliminary analyzed by different stakeholders, and some district-cooling potential users have been identified. However, the challenge remains in assessing the true technical and financial potential of these prospective clients in order to justify the necessary investments and expenses to reliably build and operate a district cooling plant.

3 SCOPE OF SERVICES

The Contractor shall provide the expertise and services required to carry out the following activities, based on the list of activities and deliverables set forth in Annex 1:



1. EVALUATION OF POTENTIAL AREAS FOR DEVELOPMENT OF THE PROPOSED CAD & OER ENERGY DISTRICT PROJECTS

Data collection and review of available information of both existing buildings and new expansion projects that are in the planning and maturity stages in the CAD & OER polygons. Review of city development plans. Review of the POT of the city and partial plans of the referenced areas. Meetings with local authorities and potential users. Review of city energy use information and energy sources in the study areas. Evaluate potential locations for the all-new energy district cooling plants.

2. ENERGY ASSESSMENT AND DATA COLLECTION OF CAD & OER DISTRICT ENERGY PROSPECTIVE CLIENTS

Data collection, energy assessment and baseline analysis for four (4) frontline potential clients within the CAD area and four (4) frontline potential clients within the OER area. The current cost per unit of cooling energy produced on-site by each client is calculated (\$/TRh).

PLEASE NOTE: To date, the commitment by the four frontline clients to share information and provide access to their facilities is yet to be confirmed. Such confirmation will be produced by UNIDO-ED2 before the contract signature.

3. ENERGY DISTRICT SYSTEMS ENGINEERING AND SCENARIO EVALUATION

Based on the energy assessment and baseline analysis from 2, concept engineering design of the cooling plant(s) and chilled water distribution pipelines for the Energy Districts and analysis of alternatives, scenarios, impacts, and benefits for the city. The future cost per unit of cooling energy remotely produced by the CAD and OER ED cooling plants and delivered to each client is calculated (\$ and \$/TRh).

4. FINANCIAL ANALYSIS

Financial analysis that allows for the evaluation from an economic point of view of whether the CAD and OER Energy Districts are financially feasible for any future cooling district stakeholder. Development and discussion of tariff structure modeling, lifetime costs, and business model analysis.

5. MONITORING & REPORTING

Report and socialization of the project to UNIDO-ED2 and Barranquilla stakeholders.

PLEASE NOTE: The structure and format of all the design package documents and reports must be agreed upon with UNIDO in order to meet Barranquilla-city officers requirements.

Please refer to ***Annex 1 – TECHNICAL SCOPE OF ACTIVITIES AND DELIVERABLES*** for a complete and detailed description of the full scope of work required (activities and deliverables). It is important to note that the scope of activities described in these Terms of Reference and related Annexes is not meant to be exhaustive, and it shall be the Contractor's responsibility to adjust and complete where required in order to produce the expected deliverables and results.

4 BUDGET

A budget of 30,000 USD or the equivalent in COP has been allocated for the scope of services and deliverables required by the present terms of reference.

5 WORK LOCATION

The work location of the Contractor staff will be at the Contractor’s premises, combined with virtual and/or face-to-face meetings and field presence and/or trips to the project site in Barranquilla, as required to complete the schedule of deliverables set forth in **Annex 1 – TECHNICAL SCOPE OF ACTIVITIES AND DELIVERABLES**.

6 GENERAL TIME SCHEDULE

UNIDO is expecting to issue the contract by October 30th, 2022. The contract activities and deliverables are then to be completed within **Twenty (20) WEEKS** from the date of the contract signature.

7 CONTRACTOR’S PERSONNEL

The Contractor must guarantee all the administrative, technical, and general work force necessary to carry out the contracted services. In line with SECO and UNIDO policies on Gender Equity, bidders are strongly encouraged to ensure that their Teams are gender balanced.

The Contractor is expected to provide a team with the following combined minimum set of competencies:

- Demonstrated experience in working on technical, engineering, design, construction, operational, financial/investment, contractual, regulatory, business, and managerial aspects of actual cooling and heating, energy efficiency, and reduction of environmental impacts projects development and implementation.
- Analytical thinking, planning, organizing and problem-solving abilities.
- Good interpersonal skills.
- Experience in working with a multinational workforce is desirable but not mandatory.
- Previous experience working with UN is an asset.
- At least the Project Manager, the Lead Design Engineer and the Financial Consultant must be fluent in written and spoken English and Spanish.

The minimum requirements for each position of the suggested Consulting Team are shown in Table 1. CVs for the proposed Consulting Team members must be attached to the proposal.

TABLE 2. Suggested Composition of the Contractor Team for the project

ROLE	QUALIFICATION AND SKILLS
PROJECT MANAGER	<p>Education:</p> <ul style="list-style-type: none"> - University degree (5 years program) in mechanical, chemical, electric, electronic, environmental, sanitary engineering or natural, exact sciences, and any other field related to environmental sustainability management. - Master’s degree or equivalent, in subjects related to engineering, sciences or any other field related to environmental sustainability management or energy efficiency is required. - ASHRAE Certifications is an asset.
	<p>Experience: Ten (10) years of experience in three or more of the following areas:</p> <ul style="list-style-type: none"> - HVAC System and application design. - Energetic and/or Environmental consultancy jobs and energy and/or environmental Assessments. - Energy and/or Environmental projects with/for international organizations or national government agencies.



ROLE	QUALIFICATION AND SKILLS
	<ul style="list-style-type: none"> - National or regional GHG emissions inventory projects. - National or regional chemical substances inventory projects. - National or regional inventory of import/export and national manufacturing of HVAC-R systems. - Energy efficiency Assessments.
LEAD DESIGN ENGINEER	Education: <ul style="list-style-type: none"> - University degree (5 years program) in mechanical, chemical, electric, electronic, environmental, sanitary engineering or natural, exact sciences, and any other field related to environmental sustainability management. - Master’s degree or equivalent, in subjects related to engineering, sciences or any other field related to environmental sustainability management or energy efficiency is desirable. - ASHRAE Certifications is an asset.
	Experience: Eight (8) years of experience in two or more of the following areas: <ul style="list-style-type: none"> - HVAC System and application design. - Energetic and/or Environmental consultancy jobs and energy and/or environmental Assessments. - Energy efficiency Assessments.
FIELD ENGINEERING SUPPORT STAFF	Education: <ul style="list-style-type: none"> - To be determined by Contractor, according to project specifications.
	Experience: <ul style="list-style-type: none"> - To be determined by Contractor, according to project specifications.
FINANCIAL CONSULTANT	Education: <ul style="list-style-type: none"> - University degree (5 years program) in Engineering, Finance or Business. - MBA or equivalent is required.
	Experience: Eight (8) years of experience in two or more of the following areas: <ul style="list-style-type: none"> - Financial Modeling. - Project feasibility. - Business valuation.
URBAN PLANNING CONSULTANT	Education: <ul style="list-style-type: none"> - University degree in Architecture, Cadastral Engineering - Advanced degree in urban planning.
	Experience: Eight (5) years of experience in two or more of the following areas: <ul style="list-style-type: none"> - Urban development projects. - Urban planning.

Bidders can propose a composition for the Consulting Team different from that of Table 1. In that case, any difference shall be briefly explained. Please note that any proposed Contractor Core Team will have to cover/meet the education and experience requirements described in Table 1.

8 LANGUAGE REQUIREMENTS

The vast majority of technical, engineering, regulatory, and contractual documents to be reviewed and commented by the Contractor team will be in Spanish and feedback will have to be provided in Spanish. Final report to UNIDO-ED2 shall be provided both in Spanish and in English.

The Project Manager, Lead Design Engineer and Financial Consultant must be fluent in written and spoken English and Spanish.

All reports and deliverables will be produced in Spanish but must include an English version of the executive

summary (except Final report to UNIDO-ED2, which shall be provided both in Spanish and in English, as specified above).

9 QUALIFICATION AND EVALUATION CRITERIA

Eligibility criteria - Bidders must present the following information:

- Certificate of Incorporation/Registration;
- Number of years in business (5 years minimum)
- Confirmation of no conflict of interest (e.g., none of the bidder's key personnel is associated - financial, family, employment wise - with concerned UNIDO officials, UNIDO experts/consultants recruited under the relevant project or with UNIDO's Counterpart);
- Confirmation that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the offer, have been given, received, or promised in connection with the selection process or in contract execution;
- Confirmation of readiness and available operational capacity by the consulting firm and the proposed consulting team to deliver required services within required timelines.
- Confirmation of satisfactory past performance and that the bidder is not debarred from business with the United Nations and other organizations;
- Confirmation that the bidder did not participate in the preparation of the concerned procurement process or the bidding documents, including, but not limited to, the technical specifications, terms of reference, and the scope of works, being subsequently used by UNIDO;
- Confirmation of no conflict of interest between or among bidders. A bidder may be considered to have a conflict of interest if the bidder:
 - directly or indirectly controls, is controlled by or is under common control with another bidder;
 - receives or has received any direct or indirect subsidy from another bidder;
 - has the same legal representative as another bidder;
 - has a relationship with another bidder, directly or through common third parties, that puts it in a position to influence the bid of another bidder, or influence the decisions of UNIDO regarding the bidding process;
 - submits more than one bid in the bidding process, for example, on its own and separately as a joint venture partner with another bidder. A bidder's submission of more than one bid will result in the disqualification of all bids in which such bidder is involved;
- Any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the bid.

Evaluation criteria

Technical proposals will be evaluated against the following evaluation criteria:

TABLE 3

Evaluation Criteria of technical proposals	Weight
1. Company's profile and references <ul style="list-style-type: none"> ▪ Relevance of areas in which the bidder provides its services ▪ Demonstrated experience in executing similar assignments/activities/programs ▪ Proprietary knowledge relevant to the assignment, if any 	20%
2. Approach and methodology <ul style="list-style-type: none"> ▪ Proposed approach/methodology to achieve/deliver the required results <p>Bidders will have to provide a sufficiently detailed description of their proposed methodology, including the means, resources and methods to be deployed for producing the required deliverables and outputs</p> <ul style="list-style-type: none"> ▪ Working days allocated to carry out the various required activities 	45%
3. Qualification, expertise and experience of contractor team members <ul style="list-style-type: none"> ▪ Education background and academic degree ▪ Expertise, competence and years of relevant working experience ▪ Direct experience in the specifically required assignment area ▪ Relevant training and professional qualification programmes attended, if any <p>Please note that a short English interview may be held for the proposed Project Manager role before awarding the contract.</p>	35%
Total	100%

10 PREPARATION and PRESENTATION OF PROPOSALS

Bidders are requested to ensure that their proposals and submissions provide the following information:

10.1 COMPANY PRESENTATION

- Company profile;
- Company organizational structure including the number of total employees and the number of consultants with respective expertise;
- Number of years of experience in providing tailored expert services;
- Proof of capacity of operations demonstrating an ability to provide and manage team experts and members;
- List of three similar ongoing and/or previous contracts during the past five (5) years with proper references including reference contact name, telephone number and email address

TABLE 4

References	Contact Name	Contact email and telephone number
#1 Entity Name and Name of project	First Name – Last Name	Email address – telephone number
#2 Entity Name and Name of project	First Name – Last Name	Email address – telephone number
#3 Entity Name and Name of project	First Name – Last Name	Email address – telephone number

- Acceptance of UNIDO’s General Terms and Conditions.

10.2 TECHNICAL PROPOSAL

Bidders’ technical proposal shall include:

- Description of the methodology and approach to be used for the assignment execution, so that the full scope of activities and deliverables is met in a timely manner.
- Proposed approach/methodology for engagement with potential energy district users and collection of data, data analysis, etc.
- Proposed methodology and deployed equipment to complete energy measurements and data collection.
- Short description of tools and/or other resources planned to be used for data/information collection, develop of work plans, etc.
- Proposed work plan schedule, GANTT charts, or similar.
- Any other methodology and/or activity required to complete the scope of activities and products as specified in Annex 1 of these ToR.
- Short description/justification of each member of the proposed Contractor core team.

10.3 COMMERCIAL OFFER

Bidders’ commercial offer shall include the following information:

- Acknowledgement and acceptance of the UNIDO-ED2 Terms of Reference and related Annexes, and its listed activities and deliverables.
- **All-inclusive price breakdown in Colombian Pesos (COP)** for the completion of the scope and activities and deliverables, work plan and reports as described in Annex 1. The all-inclusive price in COP shall include all overhead fees, administration fees, project management fees, travel costs, etc. in the activities as described in these Terms of Reference.
- ACKNOWLEDGEMENT AND ACCEPTANCE OF UNIDO GENERAL TERMS AND CONDITIONS (please refer to

Annex A – UNIDO General Terms & Conditions).

11 UNIDO PAYMENT CONDITIONS

- Payments in Colombian Pesos (COP) from UNIDO to the contractor will be released within sixty (60) days after receipt and approval of the invoice issued to UNIDO by the contractor.
- Funds will be transferred via international bank transfer to the bank account in Colombia enabled by the contractor to receive the payments. No payments to off-shore bank accounts outside Colombia will be made.
- UNIDO-ED2 project is exempt of VAT/IVA tax obligation in Colombia. A copy of the VAT exemption, issued by the Colombian competent authority, will be produced upon request.

TABLE 5 Payment structure

Payment and Deliverables
Payment # 1, upon signature of the contract, kick-off meeting and receipt and acceptance by UNIDO of detailed work plan
Payment # 2 upon receipt and acceptance by UNIDO of deliverables 1.1, 1.2 and 5.1
Payment # 3 upon receipt and acceptance by UNIDO of deliverables 2.1, 2.2 and 2.3
Payment # 4 upon receipt and acceptance by UNIDO of deliverables 3.1, 3.2, 3.3, 3.4, 3.5, and 3.6
Payment # 5 upon receipt and acceptance by UNIDO of deliverables 4.1, 4.2, 4.3, 5.2, 5.3, and 5.4

PLEASE NOTE: The Contractor shall revise the draft reports/deliverables according to UNIDO review comments. Draft reports will not be accepted by UNIDO for payment release.

To ensure consideration, your complete proposal must be submitted via the [UNIDO e-Procurement Portal \(https://procurement.unido.org\)](https://procurement.unido.org) by 08 November 2022, 17:00, Vienna, Austria time zone.

Please register as a bidder using the link above. After registration (1-3 business days), you will be given access to the rest of the documents related to this RFP and be able to submit your proposal online. If you are not able to access the system, please send an e-mail to procurement@unido.org for assistance.

Link to the [UNIDO Procurement Notices](http://www.unido.org/procurement/notices.html) page: <http://www.unido.org/procurement/notices.html>.

Please note that this RFP was also published on United Nations Global Marketplace (UNGM) at www.ungm.org.

DISCLAIMER: All information, figures and data presented in these Terms of Reference are the property of UNIDO and protected by copyrights. No part or parts of this document shall be used for purposes other than preparing the proposal.

Note: A **circular economy** is an economic system that tackles global environmental challenges like climate change, biodiversity loss, waste, and pollution. It is a framework of four principles, driven by design: eliminate waste and pollution, keep products and materials in use, regenerate natural ecosystems and use of renewable energy. **Bidders are encouraged** to display the products’ circularity and sustainability compliance with the



Economic, Social and Governance principles under the UN Compact (<https://www.unglobalcompact.org/take-action/leadership/integrate-sustainability/roadmap/supply-chain>).

12 REFERENCE DOCUMENTS

In case of discrepancy in the interpretation of technical terms and definitions used in these ToR, the following documents may be used as reference:

- ASME EA-2-2009 “Energy Assessment for Pumping Systems”
- ISO 50002:2014 “Energy audits – Requirements with guidance for use”
- ASHRAE Standard 211-2018 “Standard for Commercial Building Energy Audits”
- ASHRAE Standard 30-2019 “Method of Testing Liquid Chillers”
- ASHRAE Standard 202-2018 “Commissioning Process for Buildings and Systems”
- ASHRAE Guideline 22-2012 “Instrumentation for Monitoring Central Chilled-Water Plant Efficiency”
- ASHRAE Standard 90.1-2019 “Energy Standard for Buildings Except Low-Rise Residential Buildings”
- ASHRAE Standard 15 “Safety Standard for Refrigeration Systems”
- ASHRAE Standard 169-2013 “Climatic Data for Building Design Standards”
- ASHRAE District Cooling Guide, Second Edition, 2019

13 ANNEXES

- ANNEX 1 – TECHNICAL SCOPE OF ACTIVITIES AND DELIVERABLES