

# AMBITIOUS CITY PROMISES

Engaging citizens. Driving climate action.

## ● Terms of Reference for Solar Photovoltaic Service Provider: 20 kWp Rooftop Solar Photovoltaic System (Vietnam)

**IKI Ambitious City Promises project**

As of 24 July 2020

### 1. About the Ambitious City Promises project

The Ambitious City Promises: Commitments for low-carbon urban development in Southeast Asian large cities is a 3.5-year international project being implemented by ICLEI – Local Governments for Sustainability with support from the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU).

The project aims to support selected large cities in Indonesia, the Philippines and Vietnam to establish strong greenhouse gas (GHG) reduction commitments, local climate action plans directed by concrete targets, enhanced multi-stakeholder engagement and integrated strategies. “City Promises” (city’s Local Climate Change Action Plan) shall be developed in three model cities and their implementation shall be outlined and initiated. Throughout the project period, each local government will design locally-appropriate targets and action plans on the basis of their development framework and priorities.

Taking into consideration the results of project activities, a small-scale infrastructure pilot demonstration project shall be implemented by the ACP project in Hanoi. The pilot project shall establish a cooperation and awareness-raising center on climate actions and environmental protection for local communities. The predetermined pilot project site shall be upgraded through a co-designing approach with the local community. It will serve as a space for learning about different low emission development solutions which will be demonstrated by the installation of infrastructure measures such as playground built with recycled materials, rooftop solar panels, and waste segregation system, among others. Therefore, the project seeks to hire a qualified **local service provider of solar photovoltaic technologies** to support the overall implementation of the pilot project.

The proposed pilot project site for the solar panel installation is the rooftop of the Nghia Tan Ward office building (address: No 45 Nghia Tan, Nghia Tan Ward – Cau Giay District - Ha Noi) with a 300-square meter rooftop area. The ward office also functions as a community center, including a football field and green area, a part of which is used as a small playground, located in front of the community cultural center where a low-carbon playground will also be installed through the project.

## 2. Terms of Reference (ToR) for the Service Provider

The project requires the services of a solar photovoltaic technology service provider to undertake detailed engineering design, structural safety assessment, procurement of unit components and other materials, logistics, set up and installation, civil works to mount frames structure for the PV panels, erection, testing and commissioning of **a 20 kWp rooftop solar photovoltaic system connected and interacting with the conventional electrical grid with a bi-directional metering facility**, and capacity building training for personnel in charge of operations and maintenance of the ward. In addition, the service provider should have consultations with relevant local stakeholders (e.g. building manager, city government representatives, ward representatives). **Note: The 20 kWp is the maximum energy generation reference for the aforementioned rooftop area.**

### 2.1 Scope of Work

The following activities will need to be undertaken in order to help meet the objectives of the project.

<p><b>Detailed engineering design and structural safety assessment</b></p>	<ul style="list-style-type: none"> <li>● On-site assessment of the following: <ul style="list-style-type: none"> <li>■ Civil structure of the building and rooftop</li> <li>■ GHI/sun path tracking/shading analysis</li> <li>■ Energy modelling and simulation of the 20 kWp Solar PV system.</li> <li>■ Assessment of the grid infrastructure and building connection with net- metering system</li> </ul> </li> <li>● Recommend solutions suitable to the current conditions with due consideration on high system efficiency and stability of connection to the grid.</li> <li>● Refer to Annex II for more details</li> <li>● Submit detailed engineering design for the 20 kWp Solar PV based on the results of the assessment for review and approval by ICLEI.</li> </ul>
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<p><b>Procurement of unit components and other materials</b></p>	<ul style="list-style-type: none"> <li>● Procurement of solar equipment for the capacity of 20 kWp not limited to the following: <ul style="list-style-type: none"> <li>○ Solar panels</li> <li>○ Inverters</li> <li>○ AC-DC or DC-DC converters</li> <li>○ Charge and control boxes</li> <li>○ Balance of the System (BOS) (panel frame structure, nuts and bolts, cables and wires)</li> <li>○ Security measures (anti-theft bolts)</li> <li>○ Iron frame</li> <li>○ Wires, smart devices, and connections to the national electricity network.</li> <li>○ Any other relevant components that is needed</li> </ul> </li> </ul>
<p><b>Set up and installation</b></p>	<ul style="list-style-type: none"> <li>● Construction of frames and brackets. Installation of solar photovoltaic system, based on the final and approved design.</li> <li>● Integrate intelligent monitoring system</li> </ul>
<p><b>Testing and commissioning (including warranty period)</b></p>	<ul style="list-style-type: none"> <li>● 24/7 monitoring and regular maintenance for the first 7 working days after completion</li> <li>● The contractor will assume full liability for a 25-year performance guarantee. Contractor also assumes liability for the manufacturer warranties of the respective system components/parts which shall have no less than a minimum warranty period of 5 years for each component except for the solar panels which shall have a minimum warranty period of 10 years.</li> </ul>

<p><b>Capacity building training for personnel in charge</b></p>	<ul style="list-style-type: none"> <li>• Conduct capacity building training for personnel (ward officers) in charge of maintenance of buildings and facilities on proper use and maintenance of the technology to ensure optimum efficiency.</li> <li>• Develop and handover operations manual for personnel in charge.</li> <li>• Establish coordination mechanisms (i.e. focal persons) to facilitate on-site and remote assistance in the operation and troubleshooting of the technology after installation and testing period.</li> </ul>
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## 2.2 Deliverables and Time Frames

A maximum of **six (6) months** is estimated to complete the deliverables as stated below. The following table lists the deliverables and their respective delivery date. The contractor will assume full liability for a **25-year performance guarantee (at a minimum 80% nominal power generation)**, which shall cover removal, replacement, and/or repair of rooftop solar photovoltaic system components. The system components will have their own respective manufacturer warranties which shall maintain a minimum warranty period of 5 years and with a minimum warranty period of 10 years specifically for the solar panels.

Deliverables	Indicative Timeline
Detailed engineering design and structural safety assessment	September 2020
Procurement of unit components and other materials	September to October 2020
Construction of frames and brackets	October 2020
Set up and installation	October to November 2020
Testing and commissioning	December 2020 to February 2021
Development and handover of operations manual and delivery of capacity building training for personnel-in-charge of playground operations and maintenance	November 2020

### 3. Service Provider Eligibility

The successful service provider must provide evidence of:

- Eligible solar photovoltaic (SPV) system service provider, in conformation to relevant national/international standards and regulations;
- Necessary documentation of accreditation from relevant government authorities for the installation of SPV system in Vietnam;
- Prior experience in completed supply, installation, testing, commissioning, and handing over of at least 20 kWp solar PV system in a single order and operational for at least 2 years till the date of application for this project;
- Use of environment-friendly, cost-effective, and genuine equipment and materials from reputable equipment/component suppliers that conform with available and appropriate national and international standards;
- Safety construction solutions and overall aesthetics consideration in the design and implementation.

Additionally, advantageous criteria for prospective service providers include:

- Prior work experience in Hanoi City;
- Flexibility and a shared vision for the project outcome are essential, since the work will be undertaken in close cooperation with project team members;
- Translation/annotation of submitted prequalification documents in English, if such documents are strictly in *Tiếng Việt*;
- Appointed representative who shall communicate with ICLEI in English

### 4. Proposal Requirements, General Conditions and Procurement Process

#### 4.1 Prequalification Documents

The following information must be provided together with the Letter of Interest:

- Certified copy of valid business registration certificate with respective competency required for solar PV system design and installation;
- Certified copy of respective Value-added tax (VAT) registration certificate, and other relevant financial and registration documents required for the organization to operate in Vietnam;
- A portfolio of similar projects previously undertaken including information on the Beneficiary, Capacity of Installation, Contract Value, Date of Commencement, Date of Commissioning, Contact Details.
- Details of tools, tackles, machinery available to perform the work.
- Testing certificates for system components to showcase conformance to applicable international and national standards (VSQI or MOIT).
- A detailed CV and proof of certification (i.e. certified technician) of technical personnel to be engaged for this project.
- The bidder shall produce original documents for cross verification as and when requested by ICLEI Southeast Asia.

## 4.2 General Conditions

The following conditions shall apply to this project contract:

- The service provider is not allowed to subcontract other firm(s) to carry out the project.
- The quotation shall be inclusive of all costs including taxes associated with the project. For the purposes of evaluation, the financial bid should be prepared in Vietnamese Dong (VND). Furthermore, the service provider shall adhere to the following requirements:
  - The price quoted shall be fixed and firm and not subjected to any escalation or variation. The price should be inclusive of all transportation, communications, per diem, and installation charges including all required material to successfully complete tasks, duties & taxes, and insurance.
  - Bill of materials for the solar PV systems as indicated should be provided along with the price bid.
  - ICLEI Southeast Asia reserves the right to add/delete to the final size and components of the SPV systems at the unit rate quoted by the bidder.
  - All or any accessories/consumables/items required for satisfactory commissioning of work shall be deemed to be included in the contract and shall be provided by the bidder without extra charges.
- It should be noted that the project is being implemented by ICLEI in partnership with the City Government of Hanoi. Hence instructions to bidders will be given by ICLEI Southeast Asia in consultation with officials of the City Government of Hanoi. This also applies in the conduct of electrical and structural safety inspection before, during, and after construction.
- Once the system is installed, commissioned and operated successfully for 3 months, this will be handed over to the Cau Giay District of Hanoi City as the beneficiary of the system.
- Bidders shall submit bids that satisfy every condition outlined in this Terms of Reference (ToR), failure to do so will make the tender liable to be rejected.

## 4.3 Procurement Process

The following information shall serve as guidance for prospective bidders:

- Based on the prequalification documents listed in 4.1, prospective bidders will be shortlisted and will be requested by ICLEI to visit the site after which they shall submit the following documents within seven (7) days from aforementioned site visit:
  - A detailed system design technical proposal taking into consideration the minimum requirements outlined in this Terms of Reference (ToR)
  - A work plan with corresponding timeline and financial proposal/bid duly signed by the bidder.
- The shortlisted bidders are expected to study the existing loads and carry out a concise energy audit to arrive at a recommended capacity of PV system and submit an initial design report which will ensure appropriate system sizing and selection of system components such as solar panels, BMS, inverters, etc. The decision on the capacity of system to be installed will be taken in consultation with City Government of Hanoi Officials, Cau Giay District Officials, and ICLEI. The ICLEI project team in Hanoi will assist in necessary permissions and access to the sites.

- The submitted system design proposal, work plan and financial bid, together with the prequalification documents, shall be the basis for the overall evaluation of proposals and bids and subsequently the selection of the preferred/winning bidder.
- The selected bidder shall submit a revised detailed work plan (if necessary) while submitting the initial system design report which gives details about the procurement of system components and the installation.

## 5. Closing Date for Submission of Proposals

Kindly submit your system design proposal, work plan and financial bid **in English**. As much as can be provided, certifications and other supporting documents should likewise be submitted in English. Submissions should be made via e-mail to **Mr. Alfredo Bernarte Jr. <[al.bernarte@iclei.org](mailto:al.bernarte@iclei.org)>** and **Ms. Hoang Thi Huong Giang <[giang.hoang@iclei.org](mailto:giang.hoang@iclei.org)>** before **04:00 PM (Vietnamese hours) on 21 August 2020**. For any queries related to submission, please contact via the e-mail address above or ICLEI Southeast Asia Secretariat at **+843 99 033 866**. The consultant is expected to commence work in **07 September 2020**.

## Annex I: Site Details

The project site for the on-grid rooftop SPV system installation is the Nghia Tan Ward office building located in **No. 45 Nghia Tan, Nghia Tan Ward, Cau Giay District, Hanoi, Vietnam**. The office building serves as a community center. Please note that only shortlisted bidders will be requested by ICLEI to visit the site and submit a system design proposal. The submitted proposals will be evaluated and one (1) bidder will be selected to undertake the tasks outlined in the Scope of Work.

Attributes	Details
Building age	16 years
Number of floors	2
Rooftop area	300 square meters
Usable area for solar PV system	300 square meters
Monthly average electricity consumption (of the cultural building, from the electricity grid)	2,200 kWh/month
Working hours	24 hours/day



## Annex II: Scope of Work

- Design, detailed engineering, testing, supply, erection and commissioning of 20 kWp grid-connected rooftops SPV system<sup>1</sup> at identified building under the jurisdiction of Cau Giay District, Hanoi. The SPV system should be designed, installed and commissioned in conformance with applicable international and national standards which ensure quality performance.
- Supply of SPV modules of equivalent unit capacity of 370 Wp with high area efficiency more than 18.6% and erecting on a suitable and weather proof mounting structure designed for year-round performance.
- Civil work with respect to grouting, fixing the panels, and mounting structure on the rooftop of the identified building. The new rooftop solar PV system must not cause any damage to existing rooftop structure of the building.
- By considering the heights of the identified buildings, the mounting structure of the rooftop solar PV system should be designed to withstand all short-term and long-term extreme weather events that may happen in the area.
- The mounting structure to be erected should be leak-proof to prevent leakages and damages to the building.
- Rooftop solar panel mounting structure height should be considered as 2.5 to 3 meters from the roof with standard panel inclination to achieve highest energy yield during sunny hours.
- Standard electrical system design with suitable balance of system components be considered such as AC/DC cables, solar panel connectors, junction boxes, disconnects, certified with IP65 and suitable for all weather types and outdoor installations.
- Supply and installation of appropriate size cables including interconnecting cables and cables from array to junction box, junction box to inverters, DC distribution box, AC distribution box, LT panel and all required accessories e.g. lugs, jointing material, bolts, screws, clamps and cable trays.
- Supply, installation and commissioning of all earthing and lightning protection equipment in accordance with new electrical safety code of Vietnam (Type II).
- Successful commissioning of the system and providing 3 months of successful operation report to ICLEI Southeast Asia.
- Regular submissions of a performance report to Cau Giay District and the City Government starting the first year.
- Provide necessary manpower for initial operation and maintenance as well as training of personnel in-charge of Cau Giay District Ward Office for initial period of 3 months.
- All necessary, statutory permissions required for installation of grid interactive connection system, required from any government or concerned agency should be sought by contractor.
- Operation of PV system to generate optimal power from the system for 25 years with monthly performance report generation.

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<sup>1</sup> Note: The 20 kWp is the maximum energy generation reference for the aforementioned rooftop area

- Labels shall be clearly visible, placed to remind the operator that the device should be accessed with caution.
- The bidder shall submit all relevant system single line diagrams (SLD), drawings, SPV system performance certificates, etc. to ICLEI, Cau Giay District, and City Government of Hanoi.
- Comprehensive Maintenance of System for a period of 5 years from the date of commissioning in consultation with ICLEI, Cau Giay District, and City Government of Hanoi.
- Strictly comply with the rooftop SPV policy of the Government of Vietnam:
  - Gross-metering arrangement: Ensure proper selection, procurement, installation and functioning of other requisite interconnection components adhering to State guidelines, as applicable, to ensure success of gross-metering arrangement.
  - Approval from all concerned government agencies for seeking permission for operation of described rooftop SPV systems in the identified building as described in the gross-metering guidelines of the central government.
  - Support in performing relevant procedures for signing of rooftop SPV power purchase agreement with Cau Giay Power Company, testing of bi-directional energy meters, certifying meter readings, etc.