## TERMS OF REFERENCE

### DESIGN OF A 200 kW GRID TIED PHOTOVOLTAIC SYSTEM FOR CARRIACOU, GRENADA

<table>
<thead>
<tr>
<th>Country</th>
<th>Grenada</th>
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</thead>
<tbody>
<tr>
<td>Donor</td>
<td>Government of Italy</td>
</tr>
<tr>
<td>Project:</td>
<td>Cooperation on Climate Change Vulnerability, Adaptation, and Mitigation – Italy Programme of Support to the Caribbean Community Member States</td>
</tr>
<tr>
<td>Contract Title</td>
<td>System Design of 200 kW Photovoltaic System for Carriacou, Grenada</td>
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<tr>
<td>Contract #</td>
<td>Contract# 72/2020/Italian/Grenada/CCCCC</td>
</tr>
<tr>
<td>Type of Contract</td>
<td>Fixed budget</td>
</tr>
<tr>
<td>Contract duration</td>
<td>3 months</td>
</tr>
<tr>
<td>Expected Start Date</td>
<td>October 2020</td>
</tr>
<tr>
<td>Deadline for Submission</td>
<td>before 2:00pm (GMT-6) Friday 2 October 2020</td>
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### A. BACKGROUND

1. A sustainable water supply plays a crucial role in the development of a nation, but until 2016, Carriacou was without a consistent supply of potable water to suffice domestic and developmental needs. The residents depended primarily on rainwater harvesting to meet this essential need. There are no permanent lakes or streams that provide a reliable or significant quantity of fresh surface water to meet potable water demands. In 2016 the Caribbean Community Climate Change Centre (CCCCC) completed the installation of a SWRO desalination plant provided with supplemental power by Photo Voltaic Renewable Energy System that provides potable water to Hillsborough and surrounding areas.

2. The CCCCC has received grant funding from the Government of Italy under the Italy-CARICOM project that will support an extension of the water supply and distribution system to the remaining rural areas of Carriacou, Grenada.
3. This project includes the installation of a PV system that will provide the power needed for National Water and Sewerage Authority’s (NAWASA) operations while providing back-up power in the event of a disruption in the national grid supply.

A. **THE OBJECTIVE AND GENERAL TASK**

The Italy-CARICOM Project will work collaboratively with the Government of Grenada through NAWASA to install a 200kW grid-tied photovoltaic system at Windward in the parish of Carriacou.

The CCCCC wishes to engage the services of a consultant engineer with proven capabilities in the design of PV systems to undertake the tasks outlined below.

The selected consultant must demonstrate a thorough understanding of and familiarity with the subject matter, and practical experience in the field including preparation of technical and financial assessment of electrical energy of such installations.

B. **SPECIFIC TASKS**

**Task 1: Site Visit and Data Collection**

The Consultant shall conduct a site visit to Carriacou, Grenada. During the site visit, the Consultant shall *inter alia*:

1. Interview key facility personnel to determine location for components of the PV system, establish operating characteristics of the facilities, operating and maintenance procedures, unusual operating constraints, and anticipated future expansions or changes to the facility.

2. Inspect and observe the facility in order to map energy use flows and operations;

3. Review all available documentation, including all architectural, mechanical and electrical drawings; and

4. Make necessary field measurements of the following;
   a. Whole facility electricity profile measurement:
      i. Electricity demand measurement for electrical profile at facility electricity service entrance to capture kilo-watt, kilo-Volt-Ampere, Kilo-VaR and power factor at 15 minutes interval;
      ii. Electrical energy use for the entire period of measurement.
   b. Profile measurements of all equipment, air-conditioning and lighting circuits to establish operating times and share in the energy and demand distribution;
   c. Conduct electrical spot measurements at other important points within the facilities to
establish share of demand and energy use for various floors or sections of the building.
d. Perform power quality measurement of GRENLEC supply within proximity to the point of
entry to the facility.

**Task 2: Preparation of System Design**

The Consultant shall prepare a System Design (Specification) Report that shall include, but not
limited to the following:-

- An estimate of the yearly energy yield of the system.
- Total number of PV modules
- Estimate of the PV peak power
- Number and size of Inverters
- Nominal AC Power
- Active Power Ratio
- Energy Usability Factor
- Performance ratio
- Spec. energy yield Estimated cost of the PV system.
- Array configuration
- Line losses (% of PV energy)
- Unbalanced Load
- Self-consumption
- Self-consumption quota
- Maximum losses due to shading
- Estimated costs and the required expertise to install the PV systems.
- Recommended warranty information relating to each of the items of equipment.
- Identification of building and electric code requirements.

**Task 3: Preparation of Final Design**

The Consultant will be required to present design for review and acceptance to a team of
personnel from the CCCCC and NAWASA by virtual means and make any necessary revisions.

**D. OUTPUTS AND DELIVERABLES**

1. The activities undertaken by the consultant will result in the following outputs and
deliverables:
2. **Initial Report** on the site visit and consultative meeting with officials from NAWASA
   and other stakeholders including government officials, the GRENLEC, regulators, etc.
3. **Draft System Design Presentation** (including recommendations for location of the
equipment).
4. **Final Design**
E. REQUIRED QUALIFICATIONS AND EXPERIENCE

1. A qualified/registered engineer with related minimum qualification at the level of Bachelor’s degree;
2. 5 years’ proven experience in PV design and installation;
3. Proven track record in at least three (3) similar PV design projects within the last five years (name and contact information of referee for each previous project must be provided);
4. Demonstrated Experience in energy efficiency assessment;

F. DURATION AND PLACE FOR PERFORMING SERVICES

i. It is expected that this activity will commence on or about 1st September 2020, and end on or about 30 November 2020 and will not exceed fourteen (14) person days.

ii. The Consultant will be required to make site trips to perform Task 1. Tasks 2 and 3 will be performed from the Consultant’s Home Base.

G. EVALUATION AND SELECTION CRITERIA

Candidates applying for this consultancy shall meet a minimum score of 80 points on the evaluation scale below.

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A qualified/registered engineer with related minimum qualification at the level of Bachelor’s degree</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>5 years’ proven experience in PV design and installation</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Proven track record in at least three (3) similar PV design projects within the last five years (name and contact information of referee for each previous project must be provided);</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>Demonstrated Experience in energy efficiency assessment</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>National of a CARICOM Country</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100</td>
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H. APPLICATION DOCUMENTS

Interested Consultant are required to submit the following documents:

a. Company/Firm overview demonstrating experience, skills, qualifications and professional networks fit with the required job description OR
b. Curriculum vitae or Résumé with full details of experience, achievements, qualifications

c. Contact details of three (3) references

d. Detailed Work Plan with key milestones

e. Detailed Budget for the execution of the services

f. Demonstrate that you are a national of one of the CARICOM Member States

I. APPLICATION PROCESS AND DEADLINE

The Centre’s electronic-procurement system shall be used to manage the submission, withdrawal, substitution, or modification of EOI’s.

Consultants must first register by creating a Username, profile and password before accessing the bid submission form at the URL: www.caribbeanclimate.bz/bid-submission.

1. Prior to EOI Submission, Consultants will be required to complete the submission form with fields that include:
   i. Name of Consultant (Company)
   ii. Contract Reference
   iii Contract Title
   iv Name and Email address of uploader

2. Consultants can upload no more than 3 files maximum in one submission with maximum file size of 60 MB per file. The following types of files are currently allowed: JPEG, PNG, JPG, GIF, PDF, DOC, DOCX, PPT, PPTX, EXCEL and ZIP.

3. An automatic receipt time stamped email will be sent to the uploader’s email account as a receipt and proof of submission.

4. Each submission will be given a confirmation number.

**Submissions of EOI**

(i) EOI must be uploaded as files to http://www.caribbeanclimate.bz/bid-submission/

(ii) The subject matter of the submission must read: Consultancy for **System Design of 200 kWp Photovoltaic System for Carriacou, Grenada”**

**DEADLINE for submission of EOI:** on or before 2:00pm (GMT-6) Friday 2 October 2020

The Caribbean Community Climate Change Centre reserves the right to accept or reject any submission and to annul the process and reject all submissions at any time prior to the contract signature without thereby incurring any liability.