



REQUEST FOR PROPOSAL (RFP)

SOLAR PILOT PROJECT (DoE-05-06-0001)

**Solar photovoltaic (PV) rooftop system – Charlotteville
Methodist Primary School.**



**THE DEPARTMENT OF ENERGY WITHIN THE DIVISION OF FOOD SECURITY,
NATURAL RESOURCES, THE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT,
in collaboration with the
MINISTRY OF PUBLIC UTILITIES.**

MAY 6TH 2022



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1 INTRODUCTION

This is a Request for Proposals to procure a solar developer for the Charlotteville Methodist Primary School in Northeast Tobago. It is also a pilot project that involves the design and installation of a rooftop solar photovoltaic (PV) generation system at the Primary School. Bidders are requested to provide a proposal which includes design, procurement, installation, commissioning, and maintenance of the solar PV system.

The Ministry of Public Utilities (MPU) and the Department of Energy within the Division of Food Security, Natural Resources, The Environment, and Sustainable Development, Tobago House of Assembly (THA) will be the “Awarding Authorities”. This pilot project is part of the overall Energy Conservation and Energy Efficiency drive to reduce overall greenhouse gas (GHG) emissions by 15% by the year 2030 and increase renewable energy (RE) penetration in Tobago; thus, building resilience to the adverse effects of climate change, and embracing a low carbon future.

The Solar pilot project is designed to ensure the Charlotteville Methodist School can operate in the event of adverse climate induced impacts, and without fossil generated electricity. The project will reduce GHGs from the school, as well as promote knowledge about solar for electricity while meeting environmental sustainability goals.

The desired outcomes of this project are to:

- Provide clean and reliable power supply to the Charlotteville Methodist Primary School which experiences frequent power outages and low voltage issues;
- Stimulate behavioural change and a paradigm shift towards energy management, energy conservation and energy efficiency through training of Nationals; and
- Utilize this pilot, its pros, cons, and lessons learnt, to promote a large-scale penetration of RE technology across Tobago.

1.1 RFP Timeline

The timeline of this project will be based on the major milestone dates for this RFP process as shown in Table 1 below. The Awarding Authorities may adjust the schedule at its discretion.

Table 1: Major milestone dates for RFP.

EVENT	TARGET DATES
SITE VISIT	May 13 th 2022
DEADLINE FOR ENQUIRIES	May 16 th 2022
CLOSING DATE	May 20 th 2022

1.2 Site Description and Location

The Charlotteville Methodist Primary School is situated in Northeast Tobago and the school the property has an area of approximately 600m² and a roof area of 537.42m². The average annual sun hours in that particular village according to solargis.com is 1643 kWh/kWp. Table 2 provides the exact address and location of the school.

Table 2: Name, address, and location of the site.

Site Name	Address	Location
Charlotteville Methodist Primary School	Spring Street, Charlotteville.	Northeast, Tobago

2 SCOPE OF WORKS

The description of the FULL scope of works is articulated in SCHEDULE A of this RFP

2.1 Site Visit prior to submission of Proposal

- The day of the site visit will be articulated on the advertisement. All Bidders **MUST ATTEND** the site visit as **a requirement of the bidding process**. Failure to, Bidders will be denied eligibility.
- Before submitting a proposal, Bidders must ascertain the size, design, material, labour, location and fencing requirements of the solar PV system based on site visit findings.

2.2 Design Requirements and guidelines for Solar PV system

- The PV system must include solar panels, smart inverters, charge controllers, batteries, electrical conduits, an automatic transfer switch (ATS), a disconnect

- switch, weather and temperature sensors, performance and monitoring units, mounting racks and all other appurtenances necessary for a fully functional system.
- Proposals are to include two (2) designs with their corresponding cost and other technical information. One design with a lead acid or Absorbent Glass Mat (AGM) battery bank and the other design with a lithium-ion battery bank. The Lead Acid or AGM battery design should allow for a maximum Depth of Discharge (DoD) of 50%. The lithium-ion battery design should allow for a maximum DoD of 20%.
 - The battery bank (lead acid or AGM and Lithium-ion) voltage is to be 48V
 - A battery rack or enclosure that can safely store the batteries and meets NEC 2017 electrical code is to be provided and installed.
 - Bidders may choose to submit an AC coupled design as most of the activities of the school takes place during sunlight / daytime hours. Please note that an AC coupled design is not mandatory.
 - Inverter requirements are as follows:
 - Power output of 15-17 kW
 - Output voltage is 120 VAC / 240 VAC
 - Software that facilitates communication with a remote monitoring system for monitoring and acquisition of:
 - Incoming and output voltage
 - Incoming and output current
 - Incoming and output power
 - Output frequency
 - The battery system SoC
 - Operation Mode
 - Status (system error, system producing/not producing)
 - Daily Solar Radiation
 - Frequency correction to 60 Hz (wave smoothing of sinusoidal wave)
 - Voltage correction
 - The solar panels shall meet the following requirements:
 - The size of the solar generator shall be 15-17 kW;
 - Solar PV modules should be of the mono-crystalline type ONLY.
 - Panels must be rated to perform at peak efficiency for temperature ranges that are in keeping with local weather conditions;

- The panels' orientation or azimuth must be aligned to extract optimum solar energy and maximize energy production (based on roof orientation, site latitude and wind conditions);
- Panels must be edge sealed; and
- Panels must be procured from Tier 1 suppliers.
- A disconnect switch shall be placed between the PV solar array and inverter to facilitate safe maintenance activities.
- Bidders shall provide a single line diagram showing details of the solar PV system interconnected with the grid and interconnected to the school's electrical system.
- Cut sheets on the PV system's components must be provided including details of the brand, model, and country of manufacture.
- The design of the solar PV system must be modular allowing for future add-ons.
- Bidders shall provide a proposed layout of the solar PV system on the school's compound.
- If roof mounted:
 - The mounting system shall have sealed roof penetrations to prevent possible leakage and shall be fully ballasted, bolted and anchored to withstand torrential rainfall and wind speeds of 100km/h.
 - On a slanted roof, the highest part of the PV system shall not be higher than the highest part of the roof to which it is attached.
 - On a flat roof, the highest point of the PV system shall be 1.8m above the roof to which it is attached.
 - The PV system should not extend more than 450mm beyond the roof slope.
 - There shall be adequate room to facilitate servicing or maintenance of the panels. Roof access points shall be secured.
 - The mounting system design needs to meet applicable local building code requirements with respect to wind, rainfall, flood, hurricanes (category 2/3), earthquakes, salt, and sea blast factors.
- The entire system design and its individual components must comply with NEC 2020 electrical code and the local TTS 171-3:2011, Trinidad and Tobago Electrical Wiring Code – Part 3: Renewable Energy Systems and Interconnection Requirements. See Section 4 for additional information

2.3 Electrical Guidelines

The general guidelines for the solar PV system are as follows:

- The electrical wiring system must be neat and protected with trunking;
- Areas where wiring passes through ceilings, walls or other areas of the school from the electric/control panel shall be well restored, booted, sealed and returned to their original condition;
- All electrical components, source and destination wiring, PV system components including the AC disconnect (ATS) and the DC disconnect switch for the PV system must be clearly labelled; and
- Ensure all paperwork for project permitting, construction, and interconnection are in compliance with all applicable laws, regulations, ordinances, and best industry practices.

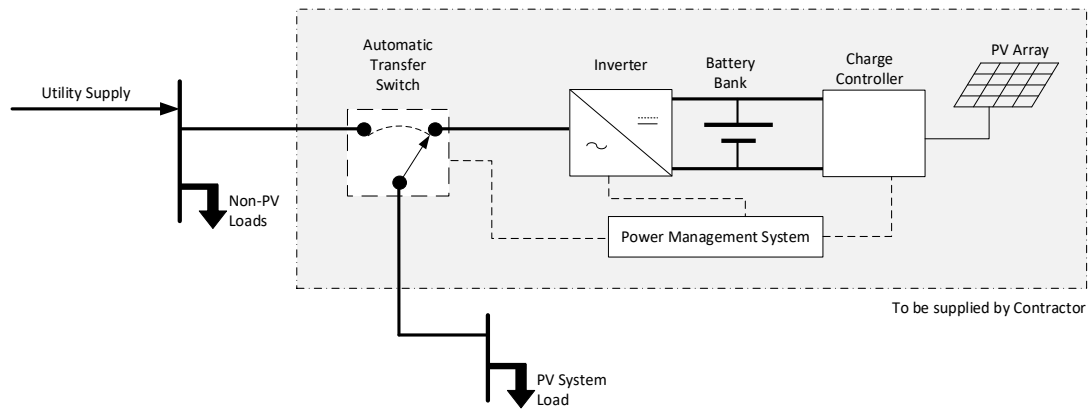
3 PROPOSED PV SYSTEM OPERATING PRINCIPLES

This section shall be read and construed with Section 2.4 and 2.5 of this document. The functional components of the system supplied by the Contractor shall include the following, or their functional equivalents:

- A PV array;
- A battery bank;
- A charge controller;
- A power inverter;
- An automatic transfer switch; and
- A power management system having supervisory control over the system.

The essential functional relationship between system components shall be as illustrated in Figure 1.

Figure 1: Functional relationship between system components.



System operating principles shall be as follows:

- The PV system shall be designed such that it will provide power to the load in Section 2.1. It shall also be functional such that it can manually transfer to the utility supply by means of the automatic transfer switch for maintenance purposes of the PV system. Additionally, it must also transfer to the utility supply when the battery system SoC is below the minimum set point.
- The power output of the PV array shall, normally, via the charge controller, power the specified PV system load and simultaneously charge the batteries. When the battery bank is fully charged, the charge controller shall maintain a float battery charging current.
- The power management system shall manage the battery state based on defined and programmed battery bank State of Charge (SoC) limits as follows:
 - Where the battery bank would otherwise be discharged below its minimum SoC limit by the PV system load and the utility supply is available, the PV system loads shall be automatically transferred to the utility power supply by means of the automatic transfer switch.
 - Where the battery bank would otherwise be discharged below its minimum SoC limit by the PV system load and the utility supply is not available, the PV system load shall be de-energized. In this state, should the utility supply become available before the battery bank becomes sufficiently charged to permit energization of the PV system load from the PV system, the PV system load shall be automatically transferred to the utility power supply by means of the automatic transfer switch.

4 CODES, STANDARDS AND PRACTICES

The solar PV system installed for the solar project at the Charlotteville Methodist School shall meet the undermentioned codes, which shall include but are not limited to:

- IEC 60364-7-712 - Electrical installations of buildings - Part 7-712: Requirements for special installations or locations - Solar photovoltaic (PV) power supply system.
- IEC 61194 - Characteristic parameters of stand-alone photovoltaic (PV) systems.
- TTS 171-3:2011 – Trinidad and Tobago Electrical Wiring Code – part 3: Renewable Energy Systems and Interconnection Requirements. Trinidad & Tobago and TTS 171: Part 1:2015: Low Voltage Installations.
- IEEE 1562-2007-IEEE: Guide for array and battery sizing in standalone photovoltaic (PV) systems.
- NFPA 70 – National Electric Code and NFPA 1 – Fire Code.
- Wind – SEI/ASCE 7.

5 LICENCE AND INSPECTION

The following are required for the commissioning of the PV system:

1. An inspection certificate from the Government Electrical Inspectorate at the Division of Infrastructure, Quarries, and the Environment (DIQE) which must be obtained by the Bidder on behalf of the school.
2. A RE licence obtained from the Ministry of Public Utilities. The Charlotteville Methodist Primary School shall apply for the RE licence and pay all requisite licence fees.

6 MAINTENANCE

The successful Bidder will provide operation and maintenance (O&M) services once every three (3) months for the period of two (2) years. Maintenance activities shall include:

- Management of grass and weeds that may grow on, under or around the solar panels;
- Regular cleaning of the Solar Panel Array; and

- Any activity including fixing, replacing or upgrading of system components that would ensure the solar PV system continues to function according to design specifications and power output.

Note: After the initial period of 2 years maintenance by the successful bidder, the Awarding Authorities reserve the right to enter into a separate O&M service contract for extended service.

7 INSURANCE

The Bidder shall provide proof of worker's compensation insurance for employees involved in the project. The successful Bidder shall also ensure all materials are adequately insured against loss theft or damage during transportation and delivery of equipment.

8 WARRANTIES

The successful Bidder's standard system warranty coverage should cover solar panels, inverter, and workmanship.

- The successful Bidder/installer shall warranty the PV system for two (2) years workmanship which shall include material and labour.
- A manufacturer's warranty of two (2) years must be obtained for the solar panels, inverters, charge controllers, batteries, automatic transfer switch, weather and temperature sensors, and the performance and monitoring units. Supporting documents must be provided to the Awarding Authorities.
- Solar panels must have a 25-year limited warranty that guarantees a minimum performance, under standard test conditions (STC), of no less than 80% of the original power and rated output for a minimum of twenty-five (25) years. Solar PV panels that do not satisfy the warranty condition must be replaced.

9 PERFORMANCE PERIOD

- The performance period for this project shall last until thirty (30) days following the handover of the solar PV system. Within this time period the contractor **MUST** make themselves available for any operational issues encountered with the solar PV system.

10 DEFECTS LIABILITY

- The Defects Liability Period for this project shall be for eighteen (18) months after the PV system has been completed and installed. Five percent (5%) of the bid cost shall be withheld until the end of this period.
- The Bidder shall be responsible for making good any defect in, or damage to, any part of the PV system which may appear or occur during the defects liability period and which:
 - Results from the use of defective equipment or materials or faulty workmanship or design of the PV system by the Bidder;
 - Results from any act or omission of the Bidder during the defects liability period; or
 - Is reported during an inspection made by, or on behalf of, the Awarding Authority.
- Failure to remedy a defect or damage within the time limit stipulated in the notification from the Awarding Authority during the defects liability period may result in:
 - Employment of another contractor to complete the works at the Bidder's risk and cost, in which case the costs incurred by the Awarding Authority shall be deducted from monies due to or from guarantees held against the Bidder or from both; or
 - Termination of the contract.

11 COMMERCIAL TERMS

The disbursement of funds will be phased as shown in Table 3.

Table 3: Terms of Payment

Description	Required Documents for disbursement and time	Time	Percentage of funds disbursed %
Mobilisation	<ul style="list-style-type: none"> ● Mobilisation Plan, ● Bill of Quantities (BOQ) 	3 weeks	10
Design	Detailed design of the solar PV system inclusive of the single line diagram.	4 weeks	15

Procurement of material and equipment	<ul style="list-style-type: none"> • Bills of materials and equipment purchased • Proof of insurance coverage for all employees. 	8 weeks	40
Installation	<p>List of:</p> <ul style="list-style-type: none"> • All installed components; • Timesheets; and • Proof of compensation for employees. 	4 weeks	10
Testing and Commissioning	All signed check lists ensuring correct operation of Solar PV system.	3 weeks	5
Handover of Solar PV System	<ul style="list-style-type: none"> • All documentation for the Solar PV System inclusive of specifications and warranties. • Report of completed works signed by school. 	1 week	5
Defects Liability	Replacement of any defective equipment within this period following completion of solar PV system.	18 months	5
Maintenance	Maintenance schedule for periodic checks on system over the two-year period submitted and signed by school.	2 years	10

12 INSTRUCTIONS TO BIDDERS

- Provide a proposal that includes:
 - Bank Statement or letter from the Company's financial institution verifying that the proposer/partner has accessible finances in the upper six-digit range to facilitate the capital cost of the entire project.
 - Proof of all required business certifications (business registration certificate, VAT number, BIR number), qualification of employees, Company experience (references, letter(s) of award) and contractor certifications in accordance with

the equipment, construction and insurance requirements included in Section 4 of this RFP.

- Excel spreadsheets with calculations of energy output of the PV system and all the factors taken into account (e.g., efficiency, irradiance, temperature etc.)
- Details of the Warranty Period of all PV system components.
- All costs whether directly or indirectly related to the preparation of a proposal in response to this RFP shall be borne by the bidder(s). The Bidder accepts all risks and costs incurred in the completion and submission of the proposal and/or in negotiating an agreement as a consequence of this proposal, without financial guarantee.
- Failure to ascertain material, labour and overall capacity needs required to fulfil the project through a site visit, will not absolve a successful Bidder from the contractual obligations to execute requisite duties of the Solar Project.
- Bidders will submit proposals in alignment with the two envelope system; such that Envelope 1 shall contain the original and six copies of the technical proposal, and Envelope 2 shall contain the original and two copies of the commercial proposal. The two envelopes must then be placed in one single envelope for submission.
- The tender in question follows the two envelope system; and hence, there would be no tender opening.
- A justification for each component of the design criteria must be made available

13 FORMAT OF PROPOSAL

13.1 Cover Page

The cover page of the submitted proposal shall include the “[Company’s /Sole Trader’s name] Solar Proposal Response,” primary address, communication liaison’s name, contact information (email, phone number, postal address), and on the bottom left, the tender designation number **DoE-02-22-0001**. Thereafter, a table of contents as stipulated below must be presented.

13.2 Company’s Background and Qualifications

The prospective bidder will in no more than three (3) pages provide a summary of the company’s background in this section. This must be followed by a summary of:

1. The Bidder’s competencies in executing this Solar Project.
2. The Bidder’s Background and experience in completed solar projects.
3. Qualifications and experience of key team members who would be involved in the Solar Project, whether technical and/or under business development as it relates to agreements to be fulfilled under this RFP.
4. Two (2) examples, at minimum, of renewable energy technology projects undertaken having similar capacity to that of the Solar Project with references (inclusive of pictures) and contact information (where necessary). References shall consist of at least one solar installation less than 5 years (<5 years) and one installation greater than 5 years (>5 years).
5. Experience in solar installations (both solar photovoltaic and/or solar water heaters).

13.3 Execution Plan

Bidders shall submit:

1. A PV system design in accordance with sections 2.4, 2.5 and 3.
2. Details of the execution and scheduling plans (how, when and by whom deliverables are to be achieved, key performance indicators and plans for contingencies and emergencies) to complete the project within a favourable timeline.

3. A management plan that specifies the initiation, planning, execution, monitoring and control and commissioning phases of the project.
4. Details of plans to reasonably and prudently maximize the installed capacity of the PV system.

13.4 Bill of Quantities/Cost Proposal

Bidders shall submit all costs, in accordance with commercial terms in section 11, giving details following the Bill of Quantities table (See Appendix) associated with the Solar PV project. The cost proposal (Table 4) must give details as listed below:

Table 4: Template of Cost Proposal.

Description	Cost Per Unit	Total
Mobilisation		
Design		
Procurement of material and equipment		
Installation (Labour)		
30- day Performance Period		
Defects Liability		
Maintenance		
	Subtotal	
	VAT	
	Total	

Bidders can include the following optional PV system components in the cost proposal:

- A monitoring system for the solar panel array, composed of temperature and irradiance sensors, to facilitate data acquisition and troubleshooting, and.
- A Smart Metering system which records and facilitates communication of the current, voltage and power output of the PV system to T&TEC when connected to the grid.

The Awarding Authority will determine whether the optional components can be included based on the proposed cost by the Bidder.

14 EVALUATION CRITERIA

The Awarding Authorities based on the requirements of this RFP have designated the following items in Table 5 below to weigh heavily on the selection criteria for the prospective Awardee.

Table 5: Selection criteria for the prospective Awardee.

Evaluation Criteria		Maximum Score
1.	<p>Tenderer Experience</p> <p>a. General Experience</p> <p>b. Similar Experience:</p> <p> i. Two successfully completed commercial solar projects of similar scope to RFP.</p> <p> ii. Local / Regional Content</p> <p>c. Reference Feedback</p>	<p><u>15</u></p> <p>3</p> <p>7</p> <p>3</p> <p>2</p>
2.	<p>Project Team/ Key Personnel</p> <p>a. Project Team Organisation Chart and Listing</p> <p>b. Project Team Members' Qualifications/Resume</p>	<p><u>8</u></p> <p>3</p> <p>5</p>
3.	<p>Suitability of Proposed Design</p> <p>a. Concept Design – Civil/Structural works</p> <p>b. Concept Design – Electrical works</p> <p>c. Concept Design - Drainage with storm water analysis</p> <p>d. Technical /Single Line Drawings</p> <p>e. Proposed equipment based on design</p>	<p><u>30</u></p> <p>10</p> <p>10</p> <p>3</p> <p>3</p> <p>4</p>
4.	<p>Methodology</p> <p>a. Approach for the various phases of the works</p>	<p><u>20</u></p> <p>2</p>

	b. Project Schedule & Gantt Chart c. Quality Management and Assurance Plan d. Site Management and Site Restoration plan e. Commissioning Plan f. Operations and Maintenance (“O&M”) Plan g. Contingency Plan	3 3 3 2 4 3
5.	Commercial	<u>15</u>
	a. Letter from Financial Institution verifying availability of capital expenditure b. Cost/Price Proposal to the Awarding Authorities c. Confirmation that price proposed not subject to change	3 8 4
6.	Health and Safety	<u>4</u>
	a. Safety Procedure/Plan for the project from mobilisation to electrification. b. Observation of COVID-19 Protocols	3 1
7.	Training	<u>8</u>
	a. Installation Training Plan b. Maintaining Training plan and schedule	4 4

15 SCHEDULE A

15.1 Load to be powered by Solar System

The school’s electrical system comprises one main panel and three sub electrical panels to distribute electricity to all areas of the compound. The solar project is intended to supply electricity to some selected loads as shown below:

Devices and equipment to be powered by the PV system include:

- 5 Standing Fans

- 100 CFL Bulbs
- 1 Printer
- 2 Computers
- 1 Air Condition
- 1 Water Pump
- 2 Refrigerators
- 1 Microwave

The load to be accommodated on the system is estimated to be 91.1 kWh per day.

15.2 Works to be accomplished

The Scope of the project is as follows:

- Provide a fully functional “turnkey” solar PV system.
- Size, design, procure, install, commission and maintain a stand-alone solar PV system at the Charlotteville Methodist School to power the loads as indicated in Section 2.1.
- Include a battery storage system in the design. The battery system must be (deep cycle batteries) sized to power 50% of the load and provide power for a minimum of 6 continuous hours.
- Incorporate a power management system to monitor and control:
 - The input to the inverter, from the battery and solar panel array, which must be maintained at 15-17 kW;
 - Overvoltage that can affect the inverter, load and battery system by including surge protection devices;
 - The inverter’s output for grid integration with T&TEC’s national grid;
 - The State of Charge (SoC) of the battery storage system; and
 - When the load switches to the PV system or Utility system.
- Identify a secure area for the battery storage system with suitable ventilation away from thoroughfare.
- Install anti-theft mechanisms for all components of the system.
- Apply corrosion resistant coating to the PV system’s supporting structures.
- Supply and install a thermosiphon 40 gallon solar water heater at the school.
- Provide operation and maintenance manuals for the entire system inclusive of each individual component.

- Provide training for six Tobago technicians, who shall shadow the installation process, for the purpose of capacity building and transfer of green energy knowledge and skills to locals on the island. Training must also encompass maintenance of the solar PV system

16 TENDER ENQUIRIES

All questions/inquiries relating to this RFP can be communicated via the email sustainabletobago@gov.tt with the caption: “**Charlotteville Solar RFP.**”

17 ELIGIBILITY TO TEND

- a. Bidders have the legal capacity to enter into the procurement contract;
- b. Bidders are not insolvent, in receivership, bankrupt or being wound up, their affairs are not being administered by a court or a judicial officer, their business activities have not been suspended and they are not the subject of legal proceedings for any of the foregoing;
- c. Bidders have not, and their directors or officers have not, been convicted of any criminal offence;
- d. Bidders must be a part of the list of pre-qualified contractors for the THA or have initiated the pre-qualification process. Should Bidders not be prequalified with the THA, please apply to the Procurement Control Office (PCO) by downloading and completing the relevant documents from the PCO’s website: www.pco.tha.gov.tt, or contact the procurement control office at 6393421 ext. 1021; and,
- e. This RFP is opened to Bidders in both Tobago and Trinidad.

18 CONFIDENTIALITY AND RESERVED RIGHTS

This RFP is not an offer of contract and should not be construed as intent, commitment, or promise to acquire products or services presented by any Bidder.

All proposals shall become the property of the Awarding Authorities. The Awarding Authorities will not disclose information contained in any proposal that is clearly labelled as “CONFIDENTIAL” to third parties unless such disclosures are required by

law or by order of a court or government agency having appropriate jurisdiction. The Awarding Authorities reserve the right to disclose proposals to legal and/or engineering consultants for the purpose of assisting in evaluating proposals but will mandate the confidentiality of the document be maintained. This RFP is an invitation to submit proposals. The Awarding Authorities reserve the right to:

- Reject any and all proposals received in response to this RFP for any reason.
- Waive any requirement in this RFP.
- Negotiate solar PV system arrangements with more than one bidder simultaneously.
- Terminate negotiations.
- Not select the proposal with the lowest price.
- Request clarifications from Bidders at any time; and,
- Negotiate with the next highest ranked Bidders if the successful select is unable and/or unwilling to execute the Contract.

The Awarding Authorities also reserve the right to, at its sole discretion, accept a response that does not satisfy all requirements, but which adequately establishes the ability to size, design and install the solar PV rooftop system that is able to satisfy the major requirements set forth in this RFP.

The Awarding Authorities intent is to award the Project to one Bidder; however, rights are retained to award one or more separate contracts to one or more Bidders.

19 SUBMISSION DEADLINE AND DETAILS

Responses to this RFP for the Solar photovoltaic (PV) rooftop system at the Charlotteville Methodist Primary School shall be addressed to the **Secretary of the Tendering Committee** and dropped off at the **Procurement Unit** located on the 2nd Floor of ***The Division of Food Security, Natural Resources, The Environment, and Sustainable Development, Milshiry Administrative Complex, Corner of Milford and Shirvan Road, Tobago***, no later than **2:00 p.m. on Friday 20th May 2022**. Non-compliance with the two-envelope system and late responses will not be considered.



20 APPENDIX

20.1 FORM OF TENDER

(NOTE: THE APPENDIX HEREIN FORMS PART OF THE TENDER)

Tender for:

To: **“SECRETARY OF THE TENDERS COMMITTEE”**

Sir/Madam,

Having examined the Tender Document issued by the “Awarding Authorities” and having also visited the site, I do hereby, offer to execute and complete the whole of the said works described and referred to therein for the sums herein proposed:

NAME OF SCHOOL:

Proposed Price

(Words).....
.....
.....
..... Trinidad and Tobago Dollars.
(TT\$.....(Figures)) exclusive of VAT.

VAT:
(Words).....
.....Trinidad and Tobago Dollars (TT\$.....(Figures)).

Statement of truth

I declare that to the best of my knowledge the answers submitted to these questions are correct. I understand that the information will be used in the selection process to assess my organisation’s suitability to be selected for this tender. I also acknowledge that the Awarding Authorities’ authorised representative shall make any enquiries concerning the particulars of my submissions.

I understand that the Awarding Authorities may reject my submission if there is a failure to answer all relevant questions fully or if I provide false/misleading information. I understand further that any discrepancies in the answers provided, and the evidence demonstrated may result in automatic disqualification.

Dated this..... day of.....2019



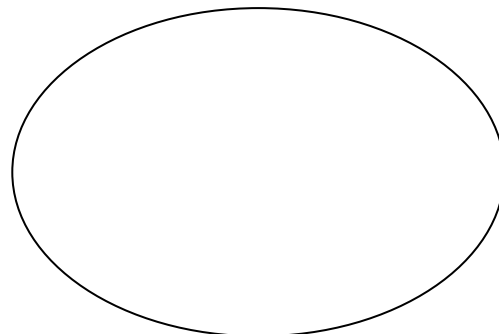
.....
Authorized Representative Signature

In the capacity of

Duly authorized to sign Tender for and on behalf of

.....

.....



Stamp

Tender Designation No:

20.2 BILL OF QUANTITIES

No.	Description	Brand	Qty.	Unit Cost (TTD)	Total Cost (TTD)
	Supply the requisite materials, skilled labour, equipment, and tools to install a solar Photovoltaic stand-alone power system of production capacity 15kW. The System should not only have the capacity to generate electricity from solar with stored energy from batteries, but also have the inherent ability to utilize TTEC electricity via an automatic transfer switch.				
1	a. Supply Solar Panel, polycrystalline PV Solar Modules internationally certified with required certificates.				
	b. Install Solar Panel, polycrystalline PV Solar Modules internationally certified with required certificates.				
2	a. Supply an Inverter with the following outputs: 60Hz, 120/240 Vac, and 15 - 17kW				
	b. Install an Inverter with the following outputs: 60Hz, 120/240 Vac, and 15 - 17kW				
3(i)	a. Supply charge controller				
	b. Install charge controller OR				
3(ii)	a. Supply integrated inverter and charge controller				
	b. Install integrated inverter and charge controller				
4(i)	a. Supply gel type lead acid maintenance free battery				
	b. Install gel type lead acid maintenance free				

	battery OR				
4(i)	a. Supply lithium batteries				
	b. Install lithium batteries				
5	a. Supply smart metering system				
	b. Install smart metering system				
6	a. Supply Secure Battery Storage Rack				
	b. Install Secure Battery Storage Rack				
7	a. Supply Combiner box, Solar AC Fuses				
	b. Install Combiner box, Solar AC Fuses				
8	a. Supply Solar DC Fuses				
	b. Install Solar DC Fuses				
9	a. Supply Cable Channels				
	b. Install Cable Channels				
10	a. supply correctly sized cable				
	b. install correctly sized cable				
11	a. Supply aluminium module support structure for Solar Panels with vandal proofing.				
	b. Install aluminium module support structure for Solar Panels with vandal proofing.				
12	a. Supply all required types & sizes of Electrical Cables with all connections between Solar Panels, Inverter, charge controller, and batteries. Terminal Electrical Boxes. Copper Earth Cables with all required accessories				
	b. Install all required types & sizes of Electrical Cables with all connections between Solar Panels, Inverter, charge controller, and batteries. Terminal				

	Electrical Boxes. Copper Earth Cables with all required accessories				
13	a. Supply AC protection panel, automatic transfer switch, & AC Cables from system cupboard to main panel				
	b. Install AC protection panel, automatic transfer switch, & AC Cables from system cupboard to main panel				
14	a. Supply a 40-gallon thermosiphon water heater solar water heater				
	b. Install a 40-gallon thermosiphon water heater solar water heater				
15	a. Installation, Testing, and Commissioning of the solar PV system.				
	b. Training of 6 Tobagonians on the operation and maintenance of the solar PV system for a minimum of 3 days				
16	TOTAL PROJECT COST				