



TERMS OF REFERENCE

**Site Engineer to Conduct Due Diligence on the
Installation of a 155 KW Solar PV Array
System for the Argyle International Airport in
St. Vincent and the Grenadines**

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BACKGROUND INFORMATION

Beneficiary Country

St. Vincent and the Grenadines

Contracting Authority

GEF/UNDP

Relevant Country Background

St. Vincent and the Grenadines (SVG) is a multi-island state comprising of the main island of St. Vincent and seven smaller inhabited islands as well as about 30 uninhabited islets constituting the Grenadines. The islands are home to a population of 110,000 people and cover a land area of 389 square kilometres. Apart from the main island of St. Vincent, other Grenadine islands with significant energy demands include, Bequia, Union Island and Canouan. The country is almost completely dependent on imported petroleum products such as diesel (for transport and electricity generation), gasoline (for transport), kerosene (for cooking) and butane/LPG (for cooking and water heating).

Current State of Affairs in the Relevant Sector

From 2014 to the present (2016) there has been a downward trend in the cost of oil, with prices remaining below USD 50 per barrel the first and second quarters of 2016. In the Caribbean most electricity companies are allowed to pass on fluctuating cost to consumers in the form of a fuel surcharge. The import value of petroleum products and related products into SVG rose to over USD 68 million (EC\$ 186 million) in 2014, this represents an increase in expenditure of over USD 26 million (EC\$71 million) between 2010 and 2014. Despite the increased national expenditure on the importation of petroleum products consumers have been able to enjoy a decrease in prices at the pump which coincides with the decline in global oil prices. Gas prices at the pump fell from USD 5.09 (EC 13.81) in December of 2014 to USD 3.80 (EC \$10.30) in December 2015.

Notwithstanding global reductions in the cost of petroleum based products, fuel costs in SVG remains relatively high. This may be due contributed to factors such as a high dependence on imported fossil fuels, 80 per cent of SVG's installed generation capacity is based on diesel with the other 20 percent generated from hydro. Renewable Energy technologies present a viable alternative to reducing the dependence on imported petroleum products but they are however being underutilised.

SVG has a global horizontal irradiance (GHI) that averages 5.8 kWh/m²/day throughout its low-lying areas. This is sufficient solar resource for flat-panel PV and solar hot water systems. Despite this viable resource, SVG has only developed initiatives utilizing solar energy since 2011. These solar initiatives were designed by the Government of St. Vincent and the Grenadines (GoSVG) using grant funds to demonstrate that solar energy can be used in the country to offset fossil-fuel based electricity generation.

Progress made in Reducing Barriers

To improve the energy security of SVG, the GoSVG has also issued its National Energy Action

Plan (NEAP) in 2010 that identifies specific strategies in Section 4.3 to develop renewable energy as a means to reduce the country's dependence on imported fossil fuels for electricity generation. This includes actions to scale-up development of geothermal, hydropower, wind energy, biomass and waste-to-energy, solar electricity and solar thermal. In addition, NEAP also identifies actions to be taken to deploy de-centralized renewable energy applications for the Grenadine Islands as well as buildings and households that have costly connections to the grid.

Project Background

The government of St Vincent and the Grenadines has received funding from the Global Environmental Facility (GEF) to support its climate change mitigation thrust. The UNDP is implementing a medium size project entitled "Promoting Access to Clean Energy Services in St. Vincent and the Grenadines (PACES)" on behalf of the government.

The Project will seek to reduce GHG emissions from fossil fuel-based power generation by exploiting the renewable energy resources for electricity generation in St. Vincent and the Grenadines (SVG). It will promote clean energy decentralized electricity solutions in SVG, from unutilised Renewable Energy (RE) resources including inter alia, hydropower, wind, and solar. It is envisaged that through the project activities there will be a greater share of RE in the islands' energy mix by (i) the strengthening of the country's clean energy policy framework including the streamlining of processes for RE investment approvals; (ii) increasing the capacities of appropriate institutions and individuals to support clean energy developments in SVG; and (iii) mobilizing investments for RE demonstration projects utilizing solar resources for electricity generation.

PURPOSE, OBJECTIVES AND EXPECTED RESULT

General Objectives

Under the component of RE demonstration projects, the PACES project has embarked on the installation of a 155kW ground mounted, grid tied solar PV system, at the Argyle International Airport. This initiative is geared towards reducing the cost of electricity to the government.

The main objective of proposed consultancy will be to conduct technical due diligence on the installation of this ground mounted, grid connected 155kW PV system at the Argyle International Airport, and to make interventions where necessary to ensure system compliance.

Deliverables to be achieved by the Consultant

The Consultant will be responsible for the following outputs:

- Final report to be submitted no later two (2) weeks after the completion of the project. The report must include compliance with the manufacturer's equipment specifications, VINLEC guidelines for grid connection, approved installation plans and the specifications outlined in the Project's Terms of Reference.

ASSUMPTIONS & RISKS

Assumptions underlying the project intervention

- The quality of materials used are compatible with industry standards and best practices
- The system meets all of VINLEC requirements for grid tied installations

SCOPE OF THE WORK

The Site Engineer will work within the framework of the objectives to be achieved. The activities that are established as part of the work programme and the deliverables must be accomplished.

Specific Activities

The Site Engineer will be required to undertake the following activities to fulfil his/her obligations under the contract:

- Participate in a briefing meeting with the PACES project team.
- Engage the Contractor in discussions on all matters relating to the scope of his work, all technical matters with regard to schedule of activities, equipment, standards and quality, system compliance and performance, system connectivity, etc.
- Review Terms of Reference for the Argyle International Airport solar PV installation projects for clarity in the execution of the assignment.
- Conduct a minimum of four (4) site visits to the Argyle International Airport in fulfilment of the terms and conditions of this assignment.
- The first visit must be a preliminary visit to inspect all materials, subassembly parts and components with regards to technical specifications as outlined in the tender document for compliance.
- Interface with the Project Officer and the on matters relating to the progress of the installation and adherence to specific guidelines including, compliance with manufacturer's equipment specifications, and VINLEC's guidelines for grid connection and any other relevant industry guidelines.
- Bring to the attention of the Contractor any activity or equipment that is not in compliance with applicable codes, guidelines and contract documents.
- Make recommendations relating to the installation when and where necessary to improve the quality and lifespan of the installed system. Ensure that system output is equivalent to 155kW.
- Ensure that the system is performing to the full satisfaction of the client and that the Contractor conducts relevant system operation and maintenance training is conducted in accordance with the terms of reference.

RESPONSIBLE BODY

The Site Engineer shall report to the Project Officer of the PACES project within the Energy Unit of the Ministry of National Security, Air and Sea Port Development.

LOGISTICS AND TIMING

Location

The Site Engineer will be located at the usual place where he/she conducts business. He/She will be required to conduct site visits to the Argyle International Airport at set intervals to monitor and interface with the Contractor. He/She will also be required to visit the office of the Energy Unit to report on matters relating to the installation of the system to the Project Officer.

Commencement Date & Period of Implementation

The Site Engineer will be contracted during the period November 1, 2016 to December 31, 2016.

PERSONNEL REQUIREMENTS

Qualifications and Experience

Site Engineer

Candidate must possess at least a:

- Bachelor Degree in Electrical Engineering or a related field from a recognised University.
- Candidate must have at least five years of experience in solar PV installation and electrical installation
- Candidates should be fluent in the English Language with excellent analytical and communication skills. He/she must be computer proficient in MS Office Suite and a digital project management tool such as MS Project.
- Experience working with donor and governmental agencies within the Caribbean Region would be an asset

Other experts

CVs for experts other than the key experts should not be submitted in the tender. The Site Engineer shall select and hire other experts as required according to his needs. The selection procedures used by the Site Engineer to select these other experts shall be transparent, and shall be based on pre-defined criteria, including professional qualifications, language skills and work experience.

FACILITIES TO BE PROVIDED BY THE SITE ENGINEER

Site Engineer shall provide all the facilities that he requires to discharge his work.

EQUIPMENT

No equipment is to be purchased on behalf of the Contracting Authority / beneficiary country as part of this service contract or transferred to the Contracting Authority / beneficiary country at the end of this contract.

REPORTS

Reporting Requirements

The Site Engineer shall submit to the Project Officer, one original report and one other copy along with an electronic file copy of all reports generated from this consultancy, including but not limited to, Inception Report, Final report. The Project Officer will be responsible for the approval of these documents.

APPROVAL OF PROGRESS REPORTS

- i. The Site Engineer shall submit to the Client any additional report(s) that may be reasonably requested in connection with the progress of the elements of the Project for which the Site Engineer has responsibility as outlined in the Terms of Reference and the Work Plan which shall be appended.
- ii. All reports shall be deemed to be accepted by the Client if the Client does not provide the Site Engineer within 10 days from the date of receipt of reports, with written notice specifying in detail, recommended changes or corrections or deficiencies in the quality of the report. The Site Engineer, on receipt of such written notice, shall thereupon promptly make any necessary corrections, amendments and/or adjustments to the reports which, shall be resubmitted to the Executing Agency for its approval.

MONITORING AND EVALUATION

Definition of Indicators

The indicators against which the Site Engineer will be evaluated on with respect to his/her performance include:

- i. Compliance with the schedule for the submission of reports on the outputs of the project.
- ii. Adherence to established professional standards in clarity of thought, knowledge of the subject, vision, etc.

For further information contact the **Energy Unit of the Government of St. Vincent and the Grenadines at the Corner of Higginson and Lower Middle Street, Kingstown, St. Vincent Telephone: 1 784 451-2338. Email: energyunit@vincysurf.com**

Proposals are to be submitted electronically to: leshan.monrose@undp.org and dandre.jackson@undp.org

This position is open to nationals of St. Vincent and the Grenadines only

Deadline for the submission of proposals: October 3, 2016 at 5:00 pm

