PROJECT PROPOSAL FOR THE ESTABLISHMENT OF A

SOLAR CARPORT AND ELECTRIC VEHICLE CHARGING STATION

Prepared and Submitted by the

Department of Sustainable Development
of the
MINISTRY OF EDUCATION, INNOVATION, GENDER RELATIONS AND SUSTAINABLE DEVELOPMENT

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1. Background
Saint Lucia is a Small Island Developing State (SIDS) located in the Eastern Caribbean. The island, which is largely volcanic in origin, is 616 sq. km. in area and has a rugged, mountainous topography cut by many fast-flowing streams.

Saint Lucia, at 14 degrees north and 61 degrees west, lies within the tropical belt. Its climate is characterised by a distinct wet season (July-November); a dry season (February-June) and a transitional season (December-January).

Saint Lucia has a population of about 185,000 (United Nations, Department of Economic and Social Affairs, Population Division 2015) with a Gross Domestic Product per capita of approximately US$ 8,212.8 (Economic and Social Review 2015, Statistics Department). The island has a small, open, tourism-based economy with agriculture being the secondary income generator. This therefore makes the country highly vulnerable to exogenous shocks such as high energy prices.

At present, Saint Lucia relies heavily on imported fossil fuels for electricity generation. Given its geographical location, the country receives an abundance of sunshine and is therefore in position to generate electricity using photovoltaic (PV) technology.

1.1 Current state of affairs in the Energy sector
The energy sector in Saint Lucia is largely dominated by the electricity and transportation sectors. Saint Lucia’s electricity supply is generated by a single entity, the Saint. Lucia Electricity Company Limited (LUCELEC). LUCELEC has an installed capacity of approximately 88.6 MW of electricity with a peak demand of 58.9 MW in 2015.

In 1999, at the 5th Conference of Parties (COP5) to the United Nations Framework Convention on Climate Change (UNFCCC), Saint Lucia announced its intention to become a Sustainable Energy Demonstration Country.

In 2001, a Sustainable Energy Plan (SEP) was developed and approved by the Cabinet of Ministers to achieve this goal. The plan outlines a number of renewable energy targets to be achieved by 2012. The targets were revised in 2010 in the Cabinet-endorsed National Energy Policy (NEP). Achieving the targets set out in both the SEP and the NEP have proved to be a challenge due to a number of factors including appropriate legislation and financing.

The Government of Saint Lucia has been working towards successfully implementing the NEP and addressing the barriers associated with its implementation. In 2012, a more recent set of energy targets was announced, as part of the “Barbados Declaration on Achieving Sustainable Energy for All (SE4ALL) in Small Island Developing States (SIDS)”. Under this declaration the Government of Saint Lucia made the following commitment:
“Increase the contribution of renewable energy to the national energy supply by 20% by 2020 and support the development of indigenous energy sources.”

Given the high cost of electricity in Saint Lucia, there is growing concern about overall energy security and sustainability. A significant percentage of the country’s revenue is spent on imported energy. The emergence of more sustainable energy companies has prompted greater interest in the installation of renewable energy systems on residential and commercial buildings.

In November 2015, Saint Lucia submitted what is now its Nationally Determined Contribution (NDC) in fulfilment of commitments under the United Nations Framework Convention on Climate Change (UNFCCC), through the efforts of the then Ministry of Sustainable Development, Energy, Science and Technology, working in collaboration with relevant stakeholders. In the NDC, the country communicates its intention to implement mitigation interventions, at the domestic level, in:

**Energy**
- Energy-Efficient Buildings
- Energy-Efficient Appliances
- Water Distribution and Network Efficiency
- Electricity Generation and Transport

**Electricity Generation**
- 35% Renewable Energy Target by 2025 and 50% by 2030, based on a mix of geothermal, wind and solar energy sources.
- Improvements to Grid Distribution and Transmission Efficiency

**Transport**
- Efficient Vehicles
- Improved and Expanded Public Transit

2. Motivation
The National Energy Policy (NEP) of 2010 provided the appropriate policy and legislative environment to utilize greater renewable energy, to the extent possible, in order to lower the cost and price volatility of electricity and to reduce Saint Lucia’s dependence on imported oil. The NEP establishes renewable energy targets of 5% of the electricity generated via renewable sources by 2013, 15 percent by 2015, and 30 percent by 2020; and proposes to also allow small scale renewable energy development and distributed generation.

In 2012, the GOSL announced refined targets in line with the Barbados Declaration on Sustainable Energy for All, which included a renewable energy target of 20% by 2020 and an energy efficiency target of 20 percent reduction in consumption in the public sector, by 2020. This target for renewable energy production was increased to 35 percent by the year 2020 in 2013 by the former Prime Minister.

Like most SIDS, Saint Lucia is a net importer of energy and currently imports about 98% of its overall energy supply. Final Consumption is dominated by the Electricity and Transport sectors.
High dependency on fossil fuels imports make the country vulnerable to external factors such as fluctuations in the world oil market. As outlined in the Saint Lucia energy Balance 2010-2012 published in 2014, the transportation sector accounted for 63% of total country energy consumption.

Various initiatives are being undertaken to reduce Saint Lucia’s reliance on fossil fuels in the country’s electricity sector. However, there have been few interventions seeking to reduce the country’s reliance on fossil fuels in the transportation sector. This project seeks to serve as a catalyst to the adoption of electric mobility as a means of reducing Saint Lucia’s transport sector’s exclusive reliance on fossil fuels. This will enhance the energy security of the local transport sector, while contributing to national climate change mitigation efforts.

3. Aims of the Project

In 2014 The Government of Saint Lucia (GOSL), through a Cabinet Conclusion, granted a reduction of import duties on electric vehicles: “Duties and taxes on hybrid vehicles and vehicles that allow operation on Sustainable fuels”. This provided an incentive for the use of sustainably-fueled vehicles on island.

Approximately two thousand (2,000) new vehicles are registered in Saint Lucia annually (Saint Lucia Statistical Digest, 2012). Although a small number of hybrid and electric vehicles have been imported since the Cabinet concession, the majority of the vehicles entering the country since then have been conventional internal-combustion-engine (ICE) vehicles.

Public consultation has indicated that one of the reasons for the low rate of importation of sustainably-fueled vehicles is the lack of supporting infrastructure on island. Although studies such as the “GIZ-REETA CARICOM Electric Mobility Report” indicate that electric vehicles (EV) can perform most daily driving tasks without needing to be recharged, the presence of the requisite Electric Vehicle charging infrastructure would provide peace of mind to potential EV owners.

The project aims to support and contribute to Saint Lucia’s transition to a sustainable energy future by facilitating a shift to sustainably-fueled transportation. In doing so, it expects to:

- Significantly reduce the energy cost to a public building, resulting in savings to the GOSL
- Contribute to the wider penetration of renewable energy (RE) on island
- Contribute to achievement of NDC commitments
- Build greater public awareness of the benefits of PV systems and promote the diversification of its use
- Promote the use of EV

4. Technical Description

In 2015, the Government of Saint Lucia, in collaboration with LUCELEC and a consortium of development partners namely, Carbon War Room, Clinton Climate Initiative and the Rocky Mountain Institute, embarked upon the development of an Integrated Resource Plan (IRP) and a National Energy Transition Strategy (NETS).
The purpose of this strategy is to guide key stakeholders through the process of transitioning from a historically fossil-fuel-based energy sector with a single power producer into the era of renewable energy, decentralised generation and the mainstream use of electricity in new ways such as to fuel electric mobility.

Two key deliverables from this study were;
- Solar Resource Assessment
- Grid Integration Study.

The solar resource assessment identified several parking areas on island with potential for development into solar car ports. Solar car ports are covered structures, which provides protection from the elements to motor vehicles whilst generating clean energy that can be used to offset utility cost or fuel electric vehicles.

![Figure 1: Example of a multi-unit car port](image)

The car park on the office compound which houses the Ministry of Infrastructure was one of the many sites identified.

![Figure 2: Proposed site of solar car port](image)

This site was chosen as the preferred site for the following reasons:
- The site is/will be government owned, therefore reducing the burdensome task of land price negotiations. The Ministry has a fairly large fleet of vehicles and also houses the Department of Transport.
The parking lot is frequently accessed by motor vehicle owners, learner-drivers and licensed drivers, as well as the general public for other utility-related transactions. It is also the hub for learner-driver testing.

The building consumes approximately 40,000 kWh per month. Energy generated from the solar carport may offset some of the energy costs of the facility.

The building houses the Electrical Department of the Government of Saint Lucia and would thus facilitate the ease of monitoring and maintenance of the carport PV system.

The major activities in this project will be the design, construction and commissioning of a solar carport at the site identified above, in compliance with all relevant local and international standards. The carpark currently accommodates approximately 70 parking spaces, of which 50 are targeted for this project. The targeted spaces are not static parking spaces as the compound is accessed by the general public conducting transactions on a daily basis. Therefore, on an average at least 2 motor vehicles are expected to use one of these spots on a daily basis.

5. Work Programme

5.1 Work Package Description and Objectives

The project proposes the construction of a solar carport with charging infrastructure for charging up to four (4) electric vehicles simultaneously and the acquisition of two (2) electric vehicles.

Objectives

- To promote Electric mobility through the implementation of supporting infrastructure.
- To explore the sustainability of Electric vehicles fueled by a renewable source.
- To demonstrate the capabilities of Electric Vehicles through extensive testing of a current model and public interaction.
- To increase the penetration of renewable energy on the grid.
- To create awareness for other forms of solar resource exploitation.
- To provide a means of charging for EV owners.
- To introduce and promote EV charging stations on the island.

5.2 Deliverables List

- Pre-site visit and estimation of kW size of solar Carport
- Tender document preparation for advertising
- Bids Receipt and Evaluation
- Negotiation of contract with the winning bidder
- Construction of Solar Carport connected to building housing the Ministry of Infrastructure
- Installation of Electric Vehicle (EV) Charging stations to charge up to 4 EVs simultaneously.
- Inspections and certification of Solar Carport and charging stations
- Interconnection of system to the National Grid

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1 In keeping with GOSL procurement guidelines and any other as determined by requirements of standing MOU
● Training of personnel including Ministry of Infrastructure staff on maintenance of solar carport electrical systems.
● Training of personnel in Ministry of Infrastructure (Electrical department) and Department of Transport on maintenance and use of charging stations.
● Acquisition of two (2) Electric vehicles to be branded as demonstrative vehicles for the public and promote the use of electric vehicles on island
● Training and certification of Transport Department and Sir Arthur Lewis Community college mechanics on maintenance of Electric vehicles
● Designation of selected government certified garages for inspection of EV

5.3 Milestones List
● Opening of Request for Proposals (RFP)
● Closing of RFP
● Evaluation and awarding of Tender
● Contract signed
● Final designs approved
● Construction phase
● Site Commissioned
● Electric vehicles branded and operating
● System commence functioning

6. Economic and social impact
Renewable Energy and Electric Mobility are ever-expanding fields and have significantly transformed over the past few years. With the continuous search by small islands for energy security, these has become some of the most important areas for Small Island Developing States (SIDS). In an island such as Saint Lucia with a high fiscal deficit and increasing vulnerability to the effects of climate change, it is important that efforts are made not only to adapt to climate change but also to mitigate against the impacts of climate change.

An important area of mitigation is the advancement of renewable energy technology and energy efficiency in the transport sector. The introduction of renewable energy resources to the Ministry of Infrastructure will not only assist with the reduction of the electricity cost of the building but will also assist in the diminution of greenhouse gas emissions into the atmosphere. This system will be a step in attaining energy security since Saint. Lucia’s transportation and electricity sectors are almost exclusively reliant on imported fossil fuels. The improved efficiency of electric vehicles and the increased use of indigenous energy sources such as solar PV will reduce the national fossil fuel importation bill, which will allow the Government of Saint. Lucia to divert funding to finance other critical aspects relevant to the nation’s sustainable development.

The availability of charging stations for electric vehicles is important in the removal of fear (of absence of relevant support infrastructure) and stigma of this ever increasing industry. The installation of electric vehicle charging ports in an area of such importance to drivers and motor
vehicle owners all over the island is also very essential. The building housing the Ministry of Infrastructure also houses the Department of transport. At this building, most Saint Lucians who seek to acquire or renew a driver’s licence or to register a motor vehicle are expected to walk through these doors. Enhanced awareness of the possible uses of EV on island and other benefits can be achieved if a solar car port is located in this area as the Ministry of Infrastructure carpark the is ideally suited for impacting social behaviour through demonstration.

7. Sustainability
Monitoring and reporting on the output of the solar carport will be done jointly by the Division of Renewable Energy, the Department of Transport and the Ministry of Infrastructure. Information on charging patterns and duration of charge will be extracted from charging stations in order to assess the usage of the units for possible upscaling and replication. Electric vehicles will be used for extensive testing to determine a method for the transitioning of the government fleet to sustainably fueled vehicles. The EVs obtained will be included for use as part of the fleet of vehicles assigned to the Departments of Sustainable Development, Public Service and Transport. and their use will enhance public awareness as well as demonstrate Government’s commitment to transitioning to sustainably-fuelled vehicles.

8. Description of the Participants

<table>
<thead>
<tr>
<th>Participant (full legal name)</th>
<th>Acronym</th>
<th>Legal status</th>
<th>Experience of similar actions</th>
<th>WP/Task</th>
<th>Legal Representative /Contact person (telephone number and e-mail address)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Kurt Inglis</td>
<td></td>
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<td></td>
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<tr>
<td>2 Christoph er Williams</td>
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<td>3 Benise Joseph</td>
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<tr>
<td>4 Representative from Infrastra ture</td>
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<td>5 Contractor</td>
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9. Coordination
The project will be guided by a Project Steering Committee (PSC) to be appointed by the Permanent Secretary of the Department of Sustainable Development with a designated chairperson. The Committee will comprise:
• 3 Representatives from Renewable Energy Division
• 2 Representatives of the Ministry of Infrastructure
• 1 Representative of the Department of Transport
• 1 Representative of the Sustainable Development & Environment Division
• Finance Resource person (Accountant)

Decisions shall be made by consensus of the PSC. Discussions and decisions taken shall be recorded in the minutes of meetings. Relevant information on the project shall be disseminated to the public through the Government Information Service. The PSC will be supported by an Administrative Clerk.

10. Funding

Table 1: Funding for participants – N/A

<table>
<thead>
<tr>
<th>Participant</th>
<th>Requested funding (USD)</th>
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<tbody>
<tr>
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<td></td>
<td></td>
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<tr>
<td>TOTAL</td>
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Table 2: Cost for participants and headline – N/A

<table>
<thead>
<tr>
<th>Participant</th>
<th>Personnel</th>
<th>Travel</th>
<th>Consumable</th>
<th>Durable Equipment</th>
<th>Other costs, services</th>
<th>TOTAL</th>
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11. Budget of the project.
Refer to Appendix 1

12. Strategy for international support and identification of possible co-funders
Opportunities exist to obtain additional support and funding as this project ties in with other ongoing initiatives by GOSL. UNECLAC has embarked on a feasibility study to explore the use of electric vehicles within the government fleet. The findings of this study will be used to determine the number of electric vehicles required by GOSL as well as the requirements in terms of supporting infrastructure.
Proposals can be submitted to regional and international partners for:

- Installation of additional solar car ports and charging infrastructure at other locations in Saint Lucia
- Procurement of additional electric vehicles for GOSL fleet.
- Assessment of other opportunities for reducing fossil fuel consumption within the energy sector of St. Lucia.

In seeking to implement its NDC, Saint Lucia, when interfacing with potential partners, will, as appropriate, seek to leverage support for complementary initiatives.

13. Project Review

The progress of the project will be reported on by an in-house project monitoring team (PMT) headed by the designated coordinator within the Renewable Energy Division. The PMT will be selected from the PSC. Progress reports\(^2\) of project implementation inclusive of Financial/expenditure details shall be prepared and submitted on a quarterly basis. However, depending on the rate of implementation and the need to access project funding, if required, more frequent reports will be submitted as per completion of corresponding activities/work plan for the respective tranches. In order to reduce project management costs the role of project coordinator shall be assigned to an existing energy officer.

14. Work Plan

Example of Work Plan for 1 year:

<table>
<thead>
<tr>
<th>WP and Tasks</th>
<th>Activities</th>
<th>Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>WP1:</td>
<td>RFP and Inception work</td>
<td></td>
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<tr>
<td></td>
<td>RFP</td>
<td></td>
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<tr>
<td></td>
<td>Contract award and approval of final design</td>
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<tr>
<td></td>
<td>Permitting</td>
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<tr>
<td></td>
<td>Procurement</td>
<td></td>
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<tr>
<td>WP2:</td>
<td>Construction &amp; Installation</td>
<td></td>
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<tr>
<td></td>
<td>Construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Installation of charging stations</td>
<td></td>
</tr>
</tbody>
</table>

\(^2\) Approved format to be determined/communicated
<table>
<thead>
<tr>
<th>WP and Tasks</th>
<th>Activities</th>
<th>Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Electrical Testing and interconnection</td>
<td></td>
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<tr>
<td>WP3:</td>
<td>Commissioning and Training</td>
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<tr>
<td></td>
<td>Commissioning of carport</td>
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<td></td>
<td>Training of staff and mechanics</td>
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<tr>
<td>WP4:</td>
<td>Project closing ceremony and Public Awareness</td>
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<tr>
<td></td>
<td>Unveiling of carport and handing over of electric vehicles.</td>
<td></td>
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<tr>
<td></td>
<td>Public Awareness</td>
<td></td>
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</tbody>
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