

GREENING BARBADOS: SAVING MILLIONS IN FOREIGN EXCHANGE ANNUALLY 2009

By Simon Wilby

A proposal to:

- **Replace all conventional street lamps and external lighting at all Government of Barbados facilities, including all primary and secondary schools, office buildings, parks and recreational facilities with solar-powered lights.**
- **Install solar-powered street lamps in every unlit community or village in Barbados without adding to the country's annual fuel bill.**

An initiative of:

The Smart Power Inc.
Think Green. Think Solar. Think Smart!



II. Our background

The Smart Power Inc. is a Barbados headquartered company, with current satellite offices in Calgary Alberta, Canada and Las Vegas Nevada, USA. Its mission is to create

and market a range of environmentally friendly products that draw their energy from renewable sources, thus contributing to the development of a greener, healthier planet. **TSP** aims to be successful by employing strategies that support its philosophy of being “first to market” with truly innovative products. With a commitment to simplicity, affordability, dependability and profitability, TSM has adopted as its motto: **Think Green, Think Solar, Think Smart!**

TSP has teamed up with Chinese fabricators to produce a range of products for the global market, to be sold from its headquarters in Barbados. The product list includes:

- **The Sail One** — solar powered street lamp.
- **The Smart One** and **The Smart Two** — solar powered cell phones.
- **The Smart Juice** — A solar power retrofit package for laptop computers.
- **The Smart Detectors** — solar powered smoke and carbon monoxide detectors.
- **The Smart Bulb** — self-charging light bulbs.
- **The Smart Tile** — photovoltaic tiles that replace most existing roof tiles and shingles as part of a solar energy solution for homes and commercial buildings.

TSP has teamed up with Chinese manufacturers who are mandated to ensure the products conform to North American health and safety standards, resulting in lower production costs; with an assembly plant in Barbados to supply its products for the regional market. **TSP** is led by Simon Wilby, a Canadian citizen, who was born in the United Kingdom. He is a self-made entrepreneur, inventor and founder of **The Smart Power Inc.** As a details-oriented businessman, he was responsible for the invention of every product in the company’s portfolio. As part of the recognition of the need for “green” solutions and the commitment to be part of the positive change for the environment, The Smart Power Inc. was formed with the intent to service these initiatives.

III. Background and analysis of the problem to be addressed

Barbados' streets (excluding Spring Garden Highway and the ABC Highway) are lit nightly by 28,000 sodium lights — 7,000 of the 100-watt variety on major highways and 21,000 of the 50-watt variety on minor roads and in residential districts.

These are installed and maintained by Barbados Light & Power Company, which has an inventory of approximately 70,000 utility poles planted across the island.

In the case of the entire Spring Garden Highway and ABC Highway, 100-watt sodium lights are mounted on stand-alone aluminum poles, installed either by the Government Electrical Engineering Department (GEED) or private contractors and are maintained by GEED. Spring Garden is about three and a half kilometers long and ABC is approximately 18 kilometres long.

Government's street light electricity bill is approximately \$4 million per year — \$2.016 million for 50-watts lights (21,000 lights x \$8 per month) and \$1.344 million for 100-watt lamps (7,000 lights x \$16 per month), based on March 2009 calculations.

Government's bill to BL&P for electricity for each of the 71 primary, eight nursery and three special schools can be as much as \$3,000 per month, while for secondary schools it can be as much as \$10,000 per month. There are 22 secondary schools averaging 1,000 students per school. Security lighting at most schools is facilitated by high-energy-consuming 175-watt mercury vapour lights, each of which costs about \$28 per month to operate. On average, 33 of these lights are deployed at each secondary school and 16 at each primary school. This means that annually, Government spends just under \$1 million on external security lighting at schools alone. Add to that another \$50,000-plus annually for the Barbados Community College and the Samuel Jackman Prescod Polytechnic, which together operate more than 150 external security lights.

While the total numbers for Government office buildings and other facilities are more difficult to calculate given the variety of buildings, the varying sizes of the compounds in which they are housed, and the varying security needs taking into account whether they are operated for a typical eight-hour day or are 24-hour operations, it is still reasonable to

use \$28 per light per month as a base figure. It would therefore be reasonable to extrapolate that Government is spending millions more annually on electricity costs for security lighting at these buildings.

Using the above data, we can also reasonably conclude that Government's bill for lighting at parks and recreational facilities around the island such as Queen's Park, King George V Memorial Park, Farley Hill National Park, Folkestone Marine Park, River Bay and Barclays Park must also be substantial.

The Smart Power Inc. recognizes that energy costs are directly influenced by the movement of international oil prices and that figures quoted above tend to fluctuate, and therefore undertake to provide more time-sensitive, precisely calculated numbers once the two sides are able to sign a Memorandum of Understanding and a mutually satisfactory Confidentiality Agreement that provide access to more precise data for the buildings and facilities that will be covered in this alternative energy program. What we can say with certainty at this stage is that given that 65 cents in every dollar spent on electricity generation goes toward the cost of fuel, this project has the potential to save the country several million dollars in foreign exchange over the next ten years alone — based on today's prices, which are likely to rise steadily over the same ten year-span.

IV. The solution we propose –

Smart Power Inc., has spent considerable sums designing, developing and testing efficient, workable solar lighting solutions, among other green energy products, and now introduces **The Sail One**, specifically designed for the Government of Barbados. We are prepared to partner with local electric companies, given their local knowledge of the Barbadian landscape as well as the electrical requirements and standards of Barbadian authorities, and to maintain local employment to offer a total solution — supply, installation and maintenance of our product. We offer **The Sail One** as a product that will eliminate Government's recurring electricity bill for streetlamps and security lighting at all its buildings.

The Sail One - Solar Street/ Security Light

1. Description

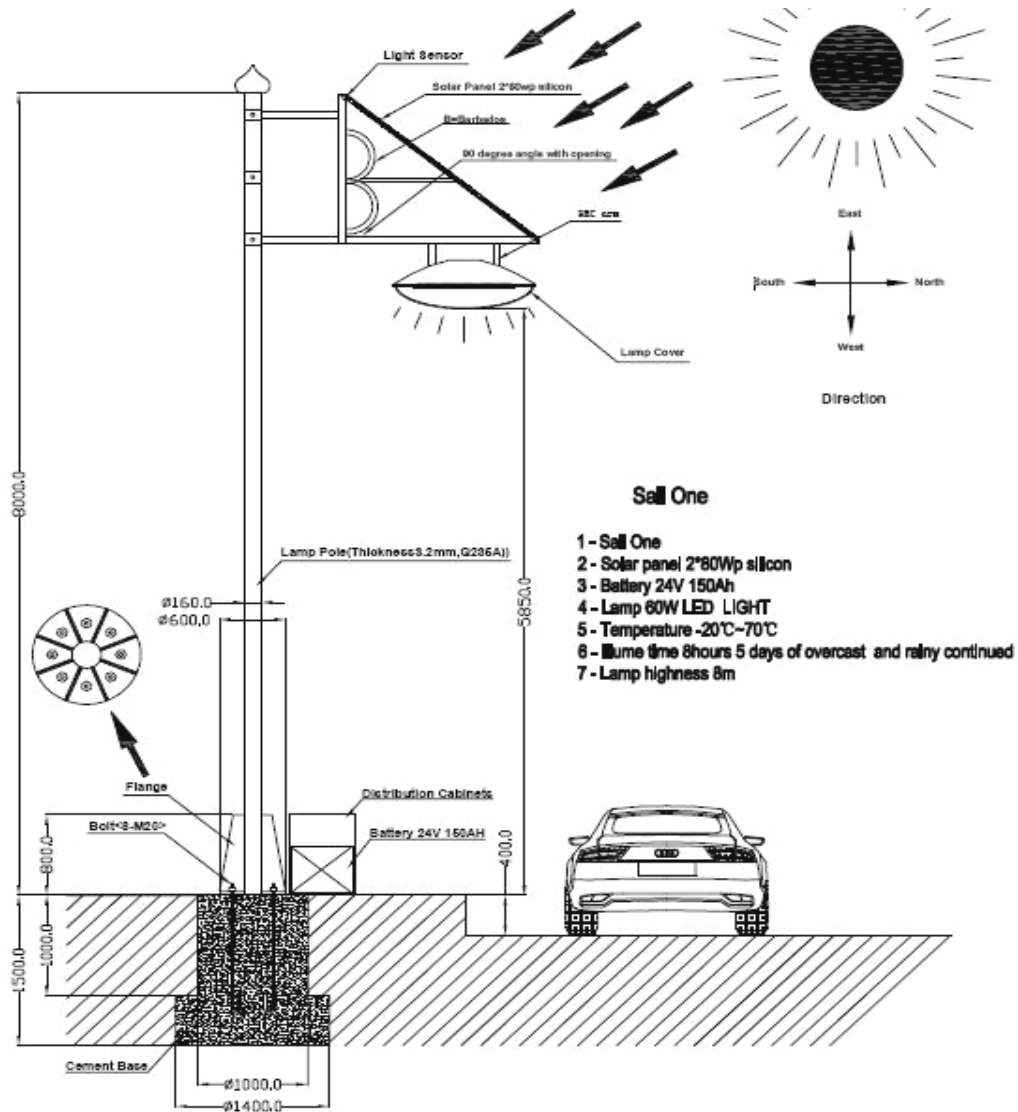
Solar Street/ Security lighting that is independent, environmentally friendly, aesthetically pleasing and installation convenient without the need for conventional cabling and the additional costs associated with such additional cabling. It can be used for the illumination of highways, secondary roads, pathways, recreation/garden areas and beachfronts which provides additional security and tourist recognition and enjoyment of the island.

2. Function and principle

Our Solar Street/ Security light consists of a solar panel, solar controller, battery, light source and pole (or can be mounted on the face of a building).

Working principle: The solar module transforms solar radiation to electrical energy in the daytime, and charges a maintenance-free battery, which provides the electric power to illuminate the bulb automatically at dusk. The intelligent controller has protective functions to prevent overcharging, accidental or unnecessary discharge while determining light-on and light-off times.

3. System plan



4. Parameter table

Num	Name	Type	Unit	Quantity	Description
1	Solar panel	CSDE80P-17	pcs	2	a. monocrystalline, unit power: 80W, 2 in parallel b. Optimum working voltage: 18.0V; c. Optimum working current :4.46A; d. short-current: 4.84A e. open-circuit voltage: 21.96V f. Dimension (mm): 1207 x 543 x 40. g. Weight (kg): 7.0;

2	Bracket	Up to panel	set	1	Anti-corrosion, anti-rust, hot-dipped galvanized spray
3	Solar controller	GS-10C	pcs	1	a. Input nominal DC voltage (V): 24 b. Input nominal PV current (A): 10 c. Protection: Anti-discharge protection at night, Over-charge, over-discharge protection and open-circuit protection for storage battery, Load over-voltage protection, Output over load protection, Output short circuit protection, Reverse polarities connection protection of solar cell, Reverse polarities connection protection of battery
4	Pole	8	m	1	a. Anti-corrosion, anti-rust, hot-dipped galvanized spray b. meets the United States national standard Q235; c. anti-wind: 12 rank
5	Battery	LCPA150-12	pcs	2	a. Maintenance-free: 12V 150AH/pcs. b. Dimension (mm): 480 x 170 x 240, c. weight (kg): 47.0;
5	Light source	LED 65W	set	1	a. LED, white light; b. Central illumination: >22 lux; c. illumination area: 25 m; d. luminous flux: 3000 lm; e. color-temp: 5000 K-7000 K; f. use temp: <55 °C;
6	Light cap	middle	set	1	a. aluminum; b. white;
7	Distributing box		pcs	1	Anti-corrosion, anti-rust, hot-dipped galvanized spray

While the diagram above shows the lamp post that comes standard with **The Sail One**, Smart Power Inc. with their strategic partner will provide the alternative bracket and supporting equipment for installation where the pole is not necessary, such as on the face of buildings or standard utility poles.

Since its current street lighting arrangement is not a source of significant profit, particularly given the high maintenance required by conventional lighting, we do not anticipate any major challenge from Barbados Light & Power (BL&P) with the installation of solar lighting on its poles and may seek participation from BL&P. In fact, we anticipate that, given the insistence of the Town and Country Planning Department that the use of utility poles be shared, BL&P will willingly negotiate a rental arrangement similar to its long-standing agreement with LIME (formerly Cable & Wireless), which has lines of 40,000 of its poles, and the more recent agreement with TeleBarbados, a telecommunications provider, for the use of its poles.

This, however, will be dependent on the final arrangement between Smart Power Inc. and the Government of Barbados.

We wish to point out here that it is not the intention of this proposal to limit the installation of street lamps to the replacement of the 28,000 now maintained by Barbados Light & Power, but to provide Government with the opportunity to provide Barbadians and their guests on the island with a level of night-time security that is limited only by the 70,000 poles BL&P now has around the country. The proposal provides Government with the wherewithal to light every community on the island as deemed important for a tool for generating new community life and commerce after sunset, while not increasing the country's annual energy bill. Barbados can become the model for the Caribbean and the rest of the developing world in the area of alternative energy.

V. PROPOSAL SUMMARY:

- 1) Replace all 28,000 existing street lamps with solar-powered LED lights.
- 2) Install a further 25,000 LED solar-powered streetlights across the island as directed by Government.
- 3) Replace all existing external security lights at all public tertiary, secondary, primary, nursery and special education facilities across the island with solar-power LED lights.
- 4) Replace all existing external security lights at all Government buildings, compounds, parks and other recreational facilities with solar-powered LED lights.
- 5) Provide any other additional external lighting solutions agreed to by both parties and numerated in any signed agreement.
- 6) Provide agreed maintenance services for any and all components of the solar lighting solutions covered in this proposal and any subsequent agreement.

VI. Execution Time-Line:

Phase 1: replacement of existing lights:

Smart Power Inc. would seek to employ two crews simultaneously, equipped with fully automated lift trucks, installing 15 lights per truck per eight-hour shift in a seven-days-per week operation. (Time required: 2.5 years)

Phase 2: installation of new (additional) streetlights:

Smart Power Inc. would employ two crews simultaneously, equipped with fully automated lift trucks, installing 15 lights per truck per eight-hour shift in a seven-days-per week operation. (Time required: 2.3 years).

Phase 3: Replacement of lights at Primary and Secondary Schools:

Smart Power Inc. would deploy crews as necessary to be able to replace lights at the rate of one school every two days. (Time required: 208 days)

An additional one week each will be required to undertake security light replacement at the Barbados Community College and the Samuel Jackman Prescod Polytechnic).

Phase 4: Replacement of lights at Government office buildings and other sites:

Precise time lines will be provided for each individual facility after signing of Memorandum of Agreement that provides access to each property to determine of scope of work to be undertaken.

VI. Provisional annual project budget:

V. Annual project budget - provided is a line item budget in US\$ with short narrative explanations for each line item, which can be footnoted to the budget. A sample budget is attached on the following page.