

# MAKING THE SWITCH: ENERGY-EFFICIENT STREET LIGHTING

Street lighting is a critical national service that facilitates both citizen and transportation security. Typically, street lighting networks are largely comprised of high pressure sodium (HPS) lamps – **high energy users.**

## WHAT YOU SHOULD KNOW

- The annual electricity consumed by one HPS lamp is equal to the average Caribbean household electricity consumption for two months
- HPS lamps also have higher lifetime costs due to frequent maintenance required
- High-energy street lighting networks account for
  - up to 5% of total electricity consumption nationally, and
  - more than 20% of government expenditure for electricity.

# LED TECHNOLOGY

Street lamps that use Light Emitting Diodes (LEDs) have emerged as a smart choice with proven results. Many countries in the Caribbean have embarked on street light retrofit projects using LEDs.

## FEATURES

- lower wattage with higher or similar illumination levels;
- improved lighting quality – visibility and light distribution;
- mature technology with long, nominal lifetime up to 100,000 hours.

## BENEFITS

- LEDs reduce energy consumption by more than 50%, resulting in:
  - savings in energy costs;
  - reduced reliance on fuel imports increasing national energy security;
  - less greenhouse gas (GHG) emissions, which supports climate change mitigation; and
  - reduced maintenance and replacement costs – supplier guarantees and higher durability.

## PLANNING

Appropriate design is key for street light retrofit projects to:

- maximise energy savings at the least cost, over the lifetime of the lights;
- maintain adequate lighting coverage;
- utilise existing infrastructure of poles and electric wiring; and
- select the right technology and layout to leverage additional benefits and avoid negative social or safety risks.

## HOW CDB CAN HELP

The Caribbean Development Bank (CDB) provides support for energy-efficient street lighting initiatives in a number of ways.

- scoping and designing the retrofit project;
- determining appropriate technology and equipment specifications;
- completing assessments to determine optimal solutions and alternatives; for example, solar-powered street lights; and
- providing concessionary financing for energy efficiency from climate-action resources allocated to mitigation.

## PROJECT STORY: ANTIGUA AND BARBUDA

The reported results of recent pilots conducted by electric utilities encouraged the Government of Antigua and Barbuda to embark on the development of a street light retrofit project with CDB in 2016. Drawing on the lessons learnt from previous similar interventions, an assessment confirmed that energy savings of approximately 50% could be realized by replacing existing HPS lamps. This reflects significant cost savings in a country where the Government's street lighting bill is USD3.6 million (mn) annually to provide street lighting.

As of October 2018, the procurement of 13,734 LED fixtures has been completed and approximately 3,300 LED lights have been installed so far across the island of Antigua. The installation rate is expected to increase after the end of the 2018 Atlantic Hurricane Season. CDB is pleased to be a partner in helping the Government of Antigua and Barbuda meet its priorities of deploying clean and sustainable energy technologies, lowering the carbon intensity of the economy, and contributing to climate change mitigation.

### AT A GLANCE: CDB STREET LIGHTING PROJECTS

Country	Number of Lights	Energy Savings [MWh/yr]	Emission savings [tonnes of CO <sub>2</sub> ]	Annual Savings	CDB Contribution to Investment
Jamaica	105,000	44,835	57,523	13.4 mn	25.0 mn
Antigua and Barbuda	14,365	4,989	3,200	5.2 mn	5.9 mn
St. Vincent and the Grenadines	7,200	1,430	1,052	1.2 mn	3.3 mn
St. Kitts and Nevis	10,650	2,312	3,606	2.2 mn	5.1 mn
Suriname	40,324	15,038	10,748	4.8 mn	20.0 mn
<b>Total</b>	<b>177,539</b>	<b>68,604</b>	<b>76,129</b>	<b>26.7 mn</b>	<b>59.3 mn</b>



## PROJECT STORY: JAMAICA

Street lighting is the second largest consumer of electricity for the public sector in Jamaica, representing 15% of total public sector consumption. This makes street lighting a substantial contributor to greenhouse gas emissions and climate change impacts, given Jamaica's reliance on fossil fuels for electricity generation. In July 2017, CDB approved USD25 million (mn) to fund the replacement of Jamaica's approximately 105,000 high-pressure sodium and mercury vapour streetlights, with high-efficiency LED lights fitted with smart controllers. The new smart system will allow the Jamaica Public Service Company Limited (JPSCo) to control individual street lights remotely and also measure the consumption of street lights with much greater accuracy.

As of October 2018, around 41,000 street lights were successfully replaced with LED lights. The project is scheduled to be completed in 2019, at which point it will be saving the Government of Jamaica approximately USD13.9mn per annum as well as significantly reducing electricity consumption and greenhouse gas emissions for Jamaica.



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### **ABOUT CDB**

CDB is a regional financial institution established for the purpose of contributing to the harmonious economic growth and development of its 19 Borrowing Member Countries. CDB promotes economic cooperation and integration among these countries, having special and urgent regard to the less developed members of the Region.



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