



## Case Study: City of Harare, Zimbabwe



### Introduction

Zimbabwe is a south African country known for its dramatic landscape and diverse wildlife, much of it within parks, reserves and safari areas. Harare, located in the northeast part of the country, is the capital and most populous city of Zimbabwe.

Churchill Road is a busy road in the city. While there were grid-connected light poles along the road, the lights were no longer working due to very old infrastructure, vandalism and degraded components. Lack of lighting made it difficult for both drivers and pedestrians at night. Unfortunately this is not uncommon in Zimbabwe, and a new approach was needed that would provide reliable lighting at a time when government funding sources were not available.

### An Innovative Business Model

The solution was an innovative public-private partnership idea devised by Barbara Rwodzi, a woman entrepreneur in Zimbabwe with a solar systems company called MED Lighting. She approached the Harare City Council with a proposal that MED Lighting would find investors to do the streetlighting project as a public-private partnership, and in return for the investment the City Council would give MED Lighting advertising space on the streetlight poles for a period of 20 years. After 2 years of negotiations an agreement was signed and the project began.

With this innovative business model the government of Harare and Zimbabwe were able to secure a mission critical infrastructure service without the need for any public sector funding.

The key to making this business proposition work was dependent upon two key things:

- A financial/business model that would work
- The ability to deliver a high quality, reliable lighting service with near 100% uptime, over a 20 year period

MED Lighting reviewed a number of alternatives and was able to identify that solar powered lighting would provide a cost effective solution because it eliminated the need for costly cabling and trenching and the need to pay expensive electricity fees. Also, if managed correctly, solar power could provide a more reliable solution with higher uptime than the electricity grid.

## An Innovative Technological Solution

Once it was decided to go with off-grid, solar powered lights, the next challenge was:

- How do we install these systems in a way to ensure high quality and 100% success in the install without a lot of problems?
- How do we manage these systems as a group without having to have highly trained labor crews going to each pole every few weeks or months to perform maintenance and check to see how they are working? With 6,000 systems planned for the project, managing and maintaining each system, pole by pole, in person physically at the pole, with low skilled technicians, was not viable.
- How do we ensure maximum reliability and uptime to our advertising partners so that we can obtain the maximum revenue and service fees in order for our business plan to be successful?

MED Lighting began a few pilot projects of solar lighting. They encountered huge problems with the design, the installation and the ongoing operation of these systems. As a result, M.E.D. Lighting, through their partner UGE International, turned to Clear Blue / Illumient Smart Off-Grid™ solutions.

With our Smart Off-Grid technology the lights were easy to install and did not require repeated visits to the poles. Ongoing monitoring and remote management is provided by Clear Blue's Illumience™ management, control and servicing system that can manage any system anywhere in the world, in real-time through its cloud software and built in telecommunications network.



Phase 1 of the project called for the installation of 102 Illumient Smart Off-Grid lights on Churchill Road in Harare and in Victoria Falls. The additional 6,000 systems will be rolled out at a rate of 500 per month over 2016 and 2017.

The Smart Off-Grid lights are monitored, controlled and serviced over the Internet. Illumience cloud software ensures that the lights will deliver the performance needed despite any adverse weather conditions or installation and operational issues. For Zimbabwe, each light has either one or two 90-watt luminaires and a number of 260 cell solar panels. Batteries are buried in the ground to prevent vandalism and ensure long life with Illumience providing remote monitoring and maintenance of the batteries without the need to dig them up.

## Illumient Smart Off-Grid streetlights newly installed in Harare, Zimbabwe



## The Green Way – Reduce, Reuse, Recycle

The partnership between MED Lighting and Clear Blue / Illumient for Zimbabwe has brought together enabling technology and services to deliver the mission critical infrastructure that is so needed.

The innovative business model between MED Lighting and the government of Harare provides the means by which the country can afford the new lighting infrastructure in a way that is not only viable under severe economic constraints, but also contributes to the environment.

One of the biggest cost components of electricity grids is the cost of distribution. Distribution also has a very NEGATIVE impact on the environment:

- Kilometers of disruption to the environment through the installation of cabling, distribution, transformers, connection panels, etc. Distributed energy generation eliminates this environmentally costly component.
- Solar energy as an alternative to non-green centralized energy sources is a much more green way to generate energy.
- Resiliency. A single centralized electricity grid as a source for street-lighting means that when the grid goes down all the lights go off, potentially creating a security issue. Through the use of distributed solar, Smart Off-Grid, no single point of failure exists in the system. And yet, because of the Smart Off-Grid technology, the entire network can be managed and controlled from any computer anywhere.

In summary, the Zimbabwe partnership between MED Lighting and Clear Blue /Illumient has brought together enabling technology and a funding model with the government of Harare that makes this work. In so doing, the country has found away to deliver mission critical infrastructure that is critically needed, in a way that is not only viable under severe economic constraints, but in a manner that contributes to the environment.

