Case Study: Swansea Street Lighting

As part of a multi-million pound investment over the next three years, street-lighting and traffic signals are being upgraded in Swansea.

Summary

The investment needed to replace Swansea's street lights with energy efficient models was made available by the Welsh Government as an "invest to save" project. The majority of existing street lighting lanterns need replacing: Residential LED lanterns are marginally more expensive than traditional Low & High-pressure Sodium lanterns but the whole life costs of the lighting will enable a payback on residential roads over 4 years. An estimated energy reduction of up to 60% is predicted. Main Road LED lanterns are a lot more expensive than traditional Low & High-pressure Sodium lanterns but improvements in manufacturing and LED technology is lowering the cost of lanterns and the energy consumed. At present, the most cost-effective method of lighting main roads is by using High Pressure Son-T dimming lanterns. This will reduce energy consumption by approximately 30%. As well as the substantial financial gains the environmental benefit was of the utmost importance and has an additional outcome of improving the security of the city's residents and making Swansea a better place to live. The key actions taken and benefits could be replicated across many organisations and are summarised below:

Key Actions:

- Identify the need (review of all requirements)
- Benchmark current performance (cost / environmental impact)
- Understand what the market is able to offer
- Review procurement options
- Trial the proposed solution
- Capture and report performance against benchmark

Key Benefits:

- Realise cost savings
- Reduced carbon impact
- Reduced energy consumption
- Safer environments

"The street lighting scheme should enable the Council to provide modern lighting for communities throughout the city.

Using energy efficient equipment should also give us the opportunity to save around £400,000 in electricity costs at the current prices and ensure that we reduce our carbon footprint."

June Burtonshaw,
Cabinet Member for Place

Background

The Council for the City and County of Swansea (CCS) have a strategic vision to be a sustainable and distinctive European City and to create greener, safer and more prosperous communities.

There are currently 28,000 street lights in the Swansea area with 2,100 having been turned off to conserve energy and a further 800 removed for safety reasons, so there is a significant requirement for investment to be made in new low-energy lighting.

CCS has commenced a 3-year programme for street lighting improvements.

The plan is to:

- Replace all low & high-pressure sodium lamps on residential roads with light emitting diodes (LED).

- Replace all low-pressure sodium lamps on main roads with light-emitting diodes (LED) and high-pressure sodium lamps.

- Dim most lights by 30% between 8pm and 6am to save energy consumption.

Work started in 2012, replacing a number of lighting columns after existing columns were found to be structurally failed. The Authority aims to replace most of the 28,000 lanterns within the city with LED lighting and use other energy saving measures to help lower energy bills and save around £400,000 per annum once the project is complete. This will also reduce CO2 emissions significantly with consequential carbon tax reductions.

Energy Efficiency

The new lights use less energy and have a longer life span than the existing street lights. They require less maintenance, and the units can also be recycled. This programme has required a significant upfront investment, funded via the Welsh Government prudential borrowing initiative and the City and County of Swansea has approved plans to borrow over a three-year period.

"Our long-term plans have always been to develop a modern street lighting network that uses energy saving technology.

This extra investment will help us to implement a street lighting energy reduction programme. It will also assist the community by significantly reducing light pollution and carbon emissions."

Carl Humphrey
Head of Streetscene,
Swansea Council

The Procurement Process

The procurement was carried out by use of a further ("mini") competition under the AllWales framework arranged by Denbighshire County Council. It was recognised early on that lighting is a constantly developing technology. To ensure flexibility within the programme, a short-term contract has been put in place for residential lighting but this will be followed by further contracts as time goes on and technology develops.

CCS undertook in-depth market research and came to the decision that LED technology was the only option to meet the need. This was further demonstrated through extensive trials.

The responses from residents in Russell Street showed that 60% thought the new lighting was very good, 74% believed the new lighting was better, whilst 93% would support an improvement across the City and County of Swansea.

The Outcomes

With an estimated reduction in energy use on residential roads of up to 60%, the payback period will be approximately four years.

In addition to the energy, carbon and financial savings, this project has also led to the creation of an apprenticeship opportunity and a three-year contract for an additional electrician.