

LED Street Lighting Options Appendix

Dimming

With regard to the overnight dimming of street lights, initially 3 different options were considered as outlined below.

Option 1 – LED upgrade only

This option offers significant energy and maintenance savings through the energy efficient lanterns. This option is marginally cheaper than to purchase dimmable LED's, however there is no provision for additional energy and cost savings saving by dimming.

Option 2 – LED upgrade and pre-set dimming

This option offers the opportunity to include a pre-set dimming regime on the new LED lanterns, offering additional cost and energy savings.

Here the suggested dimming regime would be

- Dimming to 80% power between approximately 10pm to 12am
- Dimming to 50% power between approximately 12am and 5.30am
- Returning to 100% power thereafter.

Whilst there are some additional costs for the dimming, the costs saved in energy by far outweigh this. Dimming times are approximate as the lanterns are programmed to work around the mid-point of the hours of darkness.

The dimming relates to the power used and the difference in light levels with the new LED lights is barely noticeable to the human eye at 80% of full power.

Option 3 – LED upgrade and flexible, remote dimming (CMS)

This option includes a Central Management System (CMS) to remotely control and monitor the

street lights.

This has the advantage of both replacing the lanterns with LED, having lights dimmed overnight and also flexibility to control the dimming. A CMS would offer a remote way of controlling each lantern, enabling complete flexibility. For example, with the CMS in the future we could look at further dimming or even switching off of some lanterns further increasing the savings being made. Additionally where it was deemed necessary lanterns could be put back to full power, for example due to incidents/accidents.

A total of 14 CMS units would be necessary to reach 97% of the county, but would only control the new LED's installed as part of this project, approximately 66% of all street lights.

This option has a larger capital outlay and increased maintenance costs in comparison with option 2.

Option 4 – LED upgrade with hybrid solution of CMS in Hereford City and pre-set dimming in the county

Due to the high number of CMS unit required to cover the County, a fourth option was considered to include CMS in Hereford City, with pre-set dimming for the remaining street lights.

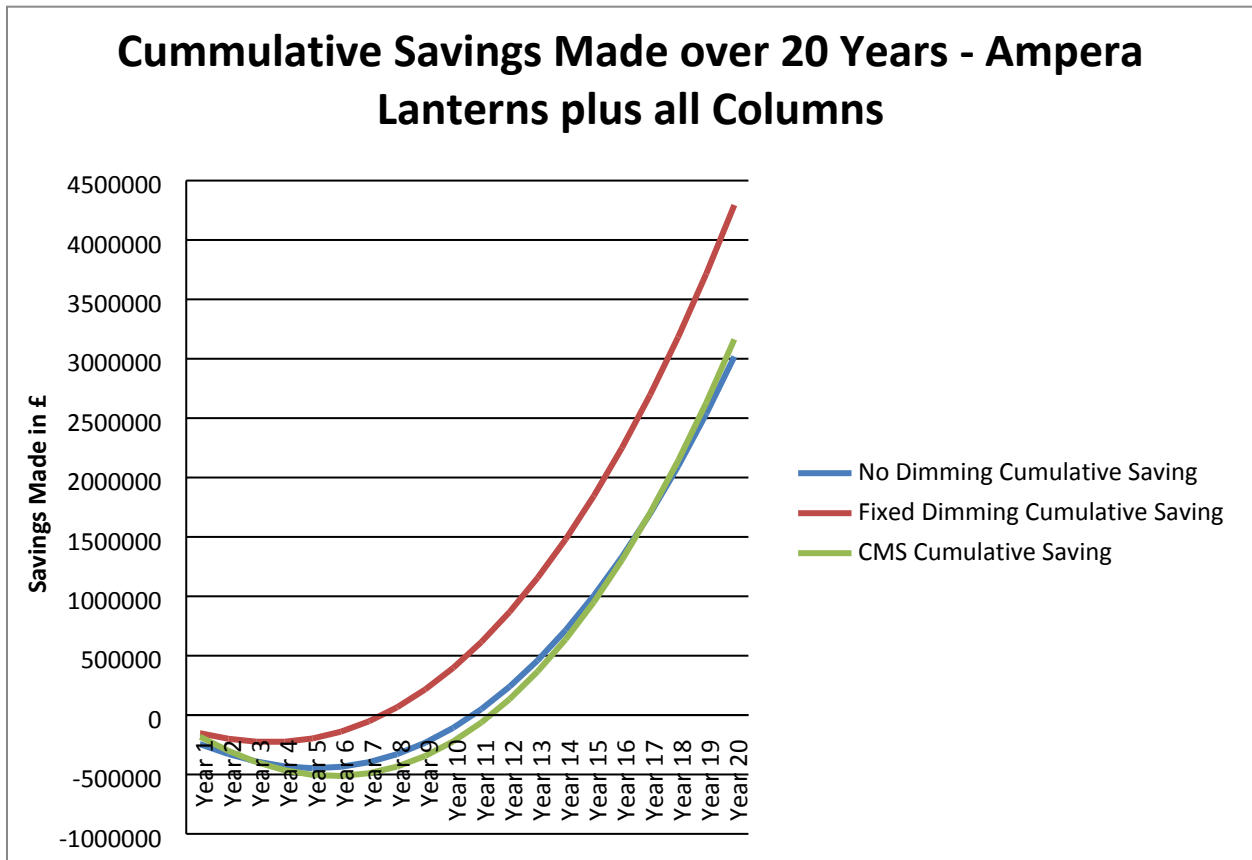
This has the advantages of option 3, for Hereford City whilst reducing the required number of CMS units to just 2.

The costs shown for this option below are for a different, slightly more expensive lantern type. As this option was ruled out early on, we have not asked for costs for this option with the Ampera lantern.

Cost and Savings Including Column Replacements							
	Initial cost	Savings year 1	Savings year 2	Savings year 3	Savings year 10	Savings year 20	Cummulative Savings after 20 years

Option 1	£5,372,461	-£246,110	-£81,696	-£63,171	£126,162	£481,925	£3,018,222
Option 2	£5,516,646	-£153,342	-£45,964	-£24,827	£182,460	£578,617	£4,293,952
Option 3	£6,293,545	-£183,564	-£117,484	-£94,836	£123,029	£534,298	£3,163,263
Option 4	£6,099,957	-£192,730	-£117,793	-£95,980	£74,058	£460,447	£2,302,679

Based on the above figures, we recommend option 2 with fixed dimming.



Option of Decommissioning Street Lights

In addition to dimming, consideration was also given to decommissioning and removing street lights where new columns were required.

The cost of decommissioning a single street light is a one off cost of £268.

Here all street lights were mapped on GIS and assessed against the following criteria to assess potential suitability:

- Street lights were only considered if the columns have been identified as in need of replacement,
- Any street lights within 1mile of any school were excluded as these were deemed essential for children traveling to/from school

As the majority of street lighting is within the city, market towns and villages this only identified 24 individual street lights. Of these, 10 were located close to social/sheltered housing and were therefore considered unsuitable for decommissioning.

This left 14 potential street lights, of which 7 have since been decommissioned.

As such this option was discounted.

Lantern Types

3 different lantern types were considered.

1. Luma – considered to be the best quality lantern, giving a good light quality and likely to need minimal maintenance and last a long time. However this lantern was the most expensive.
2. Phillips Eco – the cheapest option, but would use more electricity, need more maintenance and would be likely to need replacing before the end of the 20 year project.

3. Urbis Ampera – the type recommended to us as the best compromise. Mid-range price, provides a good quality light, gives good energy savings, likely to be long lasting and is particularly easy to maintain.

We have chosen to opt for the Urbis Ampera as recommended to us. The use of this means that we are just using one supplier, thus saving time in the supply of lanterns.

More information on the Ampera Lantern

- The Ampera luminaire is equipped with second generation LensoFlex®2 photometric engines that have been specifically developed for lighting spaces where the well-being and safety of people using the environments are essential.
- The Ampera is future-proof. Both the LED engine and the electronic assembly can be replaced, without any tools, to take advantage of future technological developments. This saves time and money in terms of maintenance.