

Appendix 1

Current Progress on Energy Reduction Options in Herefordshire

The progress that has been made by the Street Lighting Team is summarised in the table below:

Action planned	Predicted CO2 reductions per year in tonnes of CO2	Predicted Annual energy savings	Cost of proposed action	Progress to date and summary of any £ savings based on 0.082p kW/hr
<p>Light emitting Diodes(LED) - Signs / bollards Replace Illuminated bollards & street signage with a more efficient replacement (LED unit) rather than the 2 x 11w lights and a mechanical switch.</p> <p>LED - Luminaires Trials have been set up with up to 50 No LED luminaires being utilised at select sites.</p>	<p>Based on 0.537 kg/kWhr ongoing replacements Potential future saving if remaining total asset of approx 350units replaced further saving of = 44tonnes</p> <p>Replacing existing Low Pressure Sodium SOX= Low pressure Sodium lamp with a distinctive deep yellow/orange lighting appearance with a poor colour rendering,& virtually monochromatic. Can take up to 7 mins to warm up to full light output.</p> <p>(SOX) with LED with benefit of illuminance to achieve relevant standard approx 1 Tonne savings to be made on initial trials.</p>	<p>Ongoing studies with LED technology & whole life costs.(25 yrs)</p> <p>Based on 8.2p rate Up to 40w per unit saved 50 units = £700.00 savings</p>	<p>Other lighting priorities on strategic routes therefore require more funding for LED installations.</p>	<p>LED Street Lights Installations have been completed on selected footpaths in & around Hereford. More are planned once the budgets have been agreed for this type of upgrade. Energy savings of 40% + TBC after suitable trial period.</p>
<p>ELECTRONIC CONTROL GEAR (& *CMS ref Gen Notes)- Reduced electricity use from the service's 14000</p>	<p>The savings on electronic gear on actual schemes to date = 10w approx per unit to date over 500 installed = 21.9kg per unit. Total = 11 tonnes</p>	<p>Assessments of this option has identified a luminaire / ballast 'retrofit' solutions which when linked with CMS, the benefits can be studied accurately</p>	<p>The full cost has yet to be established, indications are that this could be £150.00 per unit for CMS. Our</p>	<p>Our investigations still indicate that 'Quick Fix' one for one replacement can lead to non compliance to latest highway lighting standards</p>

<p>lighting units. Inventory near completion will form the basis for a rolling replacement programme and allow this reduction to be quantified. We will be installing all new lights with more efficient electronic control gear where the lighting levels can be reduced. At some sites we will convert existing control gear to electronic, and will retrofit on existing columns that are deemed to comply.</p>		<p>with ref to payback & actual energy consumed. Further investigations of this option are being carried out.</p>	<p>investigations are ongoing.</p>	<p>and poor colour rendering.</p> <p>To date we have introduced this solution in schemes carried out on the Hillside / Newtown Farm/ Redhill estates</p> <p>Whole life cost studies - ongoing evaluation with site trials (CMS will benefit monitoring this)</p> <p>Over 10 Tonnes saved & up to 30% energy saving p/a</p>
<p>Part Night - DIMMING 150w High Pressure Sodium SON = Golden yellow colour appearance. Cosmopolis = (electronic ballast control) giving a whiter appearance with good energy to light output ratio.</p>	<p>TBA ongoing trials</p>	<p>Studies have shown that approx £10.00 p/a per unit can be saved also extended lamp life - reduced maintenance costs.</p>	<p>£118 k + disconnection & new electrical connection charges.</p>	<p>Strategic routes have been started including Three Elms / Green lanes - Whitecross. & First parish upgrade in Pembridge. Other parishes to be evaluated depending on available budgets. One for one Approx 15% energy savings.</p>
<p>Part Night - Dimming Cosmopolis (white light) lamps / electronic gear</p>	<p>60w - 45w 00.00 - 0600hrs = 18kg per unit Compared to standard 70watt luminaires studies show 55kg annual savings per unit.</p>	<p>Further data to be evaluated from manufacturers. Potential energy savings of over £12.00 each for some types of replacements.</p>	<p>£15k Connections may not be required depending on additional areas that can be included in scheme to relevant standard.</p>	<p>Trial being implemented in Ledbury Rd and trial still being considered on the Hinton estate as type of equipment used is compatible with luminaires. Approx 15 % energy savings</p>

Part Night - Switch off	If used on 70watts per asset = 90 x 2268 x 0537 = 85kg per unit saving	2268 x 204kW = saving of 109 kg each x 500 = 54 Tonnes saving	TBC through trial.	Identification of potential sites has commenced & trials now in place, including Dorstone
De-Illumination of signs In accordance with relevant standards (ie: CSS SL5/2007TRL/D ft & TSRGD 2002)	TBA	TBA	TBA	New inventory system being implemented April 2010.
Trimming	TBA	There is not much incentive at moment to change from the standard control unit as the annual burning hours assumed in the energy cost calculations are very similar.	£25k +	Initial investigations being carried out & trials now set up which are being evaluated. Approx 3% energy savings.

GENERAL NOTES – ‘SOX’ lamps are most common type used in Herefordshire on residential & some main roads – ie: Shobdon.

‘SON’ used on main roads Three Elms / Grandstand Roads.

‘Cosmo’ used on residential estates Hinton / Redhill.

LED used on footways – Churchill Gardens etc

More trials have been undertaken & studied to date, that the option of Electronic gear with dimming facility SON/White light seems to be a sensible way forward. Maintenance periods can actually be extended & this is being considered for new policy. Warranty periods with manufacturers have been extended where possible. The latest indications are that the normal 12 month warranty can be improved to up to 8 yrs depending on type of equipment. Also a *Central Monitoring System (CMS) still could be worth consideration for future control of asset as mentioned in tabulated report. Solar energy being used on Traffic schemes – Speed Indicator Display.