

# EAST AYRSHIRE COUNCIL

## DEVELOPMENT SERVICES COMMITTEE – 28 JUNE 2005

### WHITER STREET LIGHTING

#### Report by the Executive Director of Development and Property Services

#### 1. PURPOSE OF REPORT

##### 1.1 The purpose of this report is:-

To seek committee approval to use whiter light lamps such as High Pressure Sodium (SON), Metal Halide (CDMT) and other whiter light lamps as the preferred lamp type for street lighting.

#### 2. BACKGROUND

2.1 In common with most local authorities, East Ayrshire Council has used Low Pressure Sodium (SOX) lamps as its preferred lamp type for street lighting in the majority of installations. The lamp has the advantage of having the lowest running and maintenance costs of all the lamps available for street lighting, but has the disadvantage of having poor colour rendering being a near monochromatic (yellow) light output.

2.2 In street lighting where the lighting levels were traditionally low this was not perceived to be a major disadvantage as the human eye sees light at very low levels best under yellow light and cannot detect colours at low light levels. The trend however in recent decades has been to significantly increase lighting levels for road safety and environmental purposes and there is now a much greater need to perceive colour.

2.3 Glasgow City Council carried out trials a number of years ago into different types of whiter lamp and the recommendation of Glasgow City Council's Lighting Engineers was to migrate from the use of low pressure sodium lamps as their preferred lamp type to High Pressure Sodium on all routes except the city centre and areas of civic importance which would be Metal Halide.

2.4 Against the recommendation of its own Lighting Engineers Glasgow City Council's Elected Members have decided to go for the use of the whiter compact fluorescent lamps for their residential, subsidiary roads and footpaths, but accepted their recommendations for the use of High Pressure Sodium on main roads and metal halide for the city centre.

2.5 East Ayrshire Council has in recent years been trialling the use of High Pressure Sodium Lamps in all lighting renewal projects. Feedback from residents and Elected Members has been extremely favourable particularly in the Better Neighbourhood Services Fund areas.

### 3. ADVANTAGES AND DISADVANTAGES OF DIFFERENT LAMP TYPES

- 3.1 Low Pressure Sodium (SOX):-** Orange/yellow in colour, this has been the preferred lamp for street lighting for the last 50 years. It has a very long lamp life (5 years is not uncommon) and very low running costs.

Its disadvantages are that it has very poor colour rendering and light control contributing significantly to sky glow and light trespass even with modern lanterns.

- 3.2 Compact fluorescent (CFL):-** Near pure white in colour, this is basically a similar technology to the 'power saver' lamps found in the home. Whilst these lamps are marketed as being energy efficient when compared to a 'domestic bulbs', their efficiency is still poor when compared to other lamp types used in street lighting such as the High Pressure Sodium (SON) types.

Available only in lamp sizes suitable for residential areas, subsidiary roads and footpaths, lighting levels achieved are often significantly lower than those traditionally used in East Ayrshire. Some manufacturers claim that this is not an issue as the human eye can see at lower lighting levels when illuminated with white light, but little or no supporting evidence has been published in the lighting journals to support this claim. Design spacing for lighting columns have to be much closer to compensate for the lower lamp output and poorer uniformity significantly increasing costs. Light control is good with no major light pollution issues.

Compact fluorescent lanterns cannot generally be retrofitted to existing installations due to poor lighting uniformity.

- 3.3 High Pressure Sodium (SON):-** Off white in colour with a pink or peach tinge, this lamp is available in a range of lamp sizes suitable for all road types. Running costs are higher than that of a low pressure sodium lamp, but much lower than Compact Fluorescent or Metal Halide lamps.

Light control is good to excellent with minimal sky glow and light trespass. The flat glass versions of SON lanterns are the preferred lantern type recommended by the Dark Skies Society and British Astronomical Society.

Its disadvantages are that it is not a true white lamp type and running cost are higher, typically 21% for conventional control gear and 12% for electronic control gear for the most lamp types. Additional running costs the SON lantern can be partially offset by the lower cost of lamp replacement and recycling and in some new lighting designs by making use of the greater column spacing available due to better light control. Good light control has resulted in some complaints of poorer lighting because it does not spill over gardens and buildings to the rear of the lanterns.

High Pressure Sodium lanterns can be successfully retrofitted to many existing installations providing the cable network is robust enough and the existing lanterns are not of the top entry type.

- 3.4 Metal Halide (CDMT):-** Near pure white light type with either a slight green or blue cast, this lantern is often used to light areas of civic importance. Lamp life and efficiency are not as good as the High Pressure Sodium lamp resulting in higher running costs.

Glare can be a major problem with this lamp particularly at low mounting heights and as such is generally only used on taller lighting columns (8m and higher) in areas where good colour rendering is considered more important than the higher running and maintenance costs.

## **4 PROPOSALS**

- 4.1** Adopting a white light policy similar to Glasgow City Council (mostly compact fluorescent) would result in a 25% (approximately) increase in the average number of lighting columns required to be installed compared to that of a High Pressure Sodium installation with subsequent increases in energy and maintenance costs. About 82% of East Ayrshire Council's existing lighting stock would eventually be affected by this policy.
- 4.2** It is proposed that East Ayrshire Council should adopt a policy of using High Pressure Sodium as its preferred lamp type for road and footpath lighting. In conservation and other areas of civil importance, the choice of Metal Halide or other lamp types may be considered on a project by project basis after consultation with relevant parties.

## **5. FINANCIAL IMPLICATIONS**

- 5.1** The additional costs of adopting High Pressure Sodium as the preferred lamp type can be met from current capital allocation for street lighting (1 to 2%).
- 5.2** The proposed change to High Pressure Sodium lighting will add less than 1%, year on year (at current rates of column replacement), to the unmetered electricity budget on top of any other budget pressures. This can currently be absorbed into the department's overall budget, but may require to be reviewed in the future.

## **6. RECOMMENDATIONS**

- 6.1** It is recommended that:
- (i) The committee approves the use of High Pressure Sodium as its preferred lamp type for road and footpath lighting.
  - (ii) The committee approves the use of other lamp types in conservation and areas of civil importance on a project by project basis after consultation with relevant parties.

**James Lavery**  
**Executive Director of Development and Property Services**

**LJP/YK**  
**13 June 2005**

**LIST OF BACKGROUND PAPERS**

**Nil**

**Implementing Officer - Len Paget (01563 576310)**