



REGENERATION AND ENVIRONMENT SCRUTINY COMMITTEE – 8TH DECEMBER 2015

SUBJECT: PART NIGHT LIGHTING AND FUTURE LIGHTING ENERGY SAVING PROPOSALS

REPORT BY: HIGHWAYS OPERATIONS GROUP MANAGER

1. PURPOSE OF REPORT

- 1.1 This report explains the stages required to attain the projected street lighting energy savings agreed at Cabinet (February 2015) as part of Medium Term Financial Plan (MTFP) 2015-16 & 2016-17 and what steps could be taken to make further savings in this field (beyond 2016-17). Subsequently it will then be presented to Cabinet for review and approval.
- 1.2 For Scrutiny members to note the progress made so far and to consider options for finding the savings from part-night lighting proposal 2016-17.
- 1.3 For Scrutiny members to review the future lighting energy savings proposals 2017/18 onwards and consider how this should be taken forward.

2. SUMMARY

- 2.1 Caerphilly County Borough Council (CCBC) has a current lighting stock of approximately 27,500 units, which have been subject to a number of energy saving measures (inter-urban part-night lighting, replacement of conventional bulbs with low-energy alternatives, dimming etc.).
- 2.2 The MTFP 2015-16 EN5 saving looks for an energy saving of £450k over 2015-16, 2016-17 with the combination of an investment of £980k in LED replacement technology and the equipment required to part-night light enough urban lighting units to achieve all of this saving.
- 2.3 The LED technology element of this investment is currently being installed with between 8-9,000 lighting units converted to lower energy ratings by the planned end date of March 2016, realising £100k of the total £450k saving.
- 2.4 The target saving for the Part-night lighting element of the MTFP 2015-16 EN5 (£450k) is £160k, this proposal has undergone an assessment process summarised in Section 4.4 of this report and detailed in Appendix B. The outcome being that it is achievable, but may have implementation issues as most are situated in urban areas.
- 2.5 An alternative option to the £160k part-night lighting saving is to reduce the Lighting Maintenance budget by this amount.
- 2.6 This report also covers further energy saving proposals for 2017/18 MTFP consisting of £1,000k investment (Proposal 2/ 2a) in low-energy replacements to life expired and high energy usage lighting units.

- 2.7 There is an additional proposal (3/ 3a) consisting of an investment of £2,000k for the replacement of all lighting in 'conflicted zones' (at junctions, roundabouts etc.) with the possibility of further replacement of remaining lighting stock.

3. LINKS TO STRATEGY

- 3.1 The report links directly to the Council's priority to ensure that communities are safe, green and clean places to live and to improve residents' quality of life by reviewing, renewing and installing lighting energy saving technologies.
- 3.2 The proposal also links to the Council's Strategic Equality Objectives – **Safer Caerphilly** namely SEO1 - Tackling Identity Based hate Crime and SEO3 Physical Access, as detailed further in Section 5 of this report.
- 3.3 This proposal has a contribution to make in improving sustainability with more effective lighting and the reduction in energy usage for these lighting replacements. As noted in the Single Integrated Plan - A **Greener Caerphilly** which aims to: improve local environmental quality (G01) and reduce the causes of and adapt to the effects of climate change (G02).

4. THE REPORT

4.1 Background to Street Lighting

- 4.1.1 No statutory requirement on local authorities in the United Kingdom exists to provide public lighting, the Highways Act 1980 (Sections 97 & 98 - summarised in Appendix A), empowers local authorities to light roads (Highway Authorities may provide lighting for the purposes of any Highway or proposed Highway for which they are or will be the Highway Authority), it does not place a duty to do so. Although Highway Authorities do have a duty of care to the road user, and an obligation to light obstructions on the highway, this does not imply a duty on the Highway Authority to keep all lighting operational. The Council has a statutory duty under the Highways Act to ensure the safe passage of the highway (as far as reasonably practicable) and this includes any lighting equipment placed on the highway.
- 4.1.2 The profile of street lighting has changed in recent years, with trial areas for low-energy lanterns and part-night lighting regimes taking place from 2010 onwards. As a quick energy cost comparison:

Financial Year	Number of Lighting Units	Annual Energy (KWh)	Annual Cost	Average Energy Usage per unit (Cost)
2008-09	26,872	13,866,208	£1,336,270	516kWh (£50)
2011-12	27,053	13,287,567	£1,390,438	491kWh (£51)
2014-15	27,522	13,375,432	£1,541,478	486 kWh (£56)

Table 1: CCBC lighting energy usage and costs from 2008 to 2015

The stock can be seen to increase 2.5% (650 units) over the 6 years (mainly due to new developments), giving an average of 0.4% increase per annum, increasing the energy demand and Council liability. Despite this stock increase, the decrease in the average energy usage (per unit) can clearly be seen. The rise in cost (per unit) is mainly due to the increasing cost of energy; this would have been much higher if energy saving measures (inter-urban part-night lighting, dimming etc.) had not taken place.

- 4.1.3 The first half of this report will set out the options available for part-night lighting, the second half will set out the possible deployment of lower energy lighting alternatives to conventional lighting units (high pressure sodium lighting – SON and low pressure sodium lighting – SOX). By way of explanation there are currently two leading low-energy alternatives available, these being:

- CPO (Metal Halide) Cosmopolis units – produces light through the use of metal halides, it is approximately four times brighter than halogen equivalents and uses approximately half the power of a conventional unit
- LED (light emitting diode) units – emits light when electrical currents pass through its semiconductor elements, commonly used in multiples, its power usage is approximately a fifth of a conventional unit.

These will be referred to throughout the rest of this report as CPO (Halide) and LED respectively.

- 4.1.4 To date a number of measures have taken place to reduce energy consumption in CCBC.
- 4.1.5 In 2009-10 CCBC implemented part-night lighting (switched off between mid-night and 5.30 am GMT – as agreed by the Council in 2009 for implementation in 2010 onwards) for the majority of the inter-urban roads (between towns and villages); approximately 5,000 units in total.
- 4.1.6 In 2012-14 areas were nominated for low energy lighting (CPO Halide), trialled in selected areas around the county borough; approximately 2,000 units in total.
- 4.1.7 In 2012-14, Central Management System (CMS)/ Dimming schemes were installed in trial areas, with its installation into approximately 3,000 units in total. This works by dimming the lights (via the CMS) by around 20% from 9pm (CPO Halide units) and from midnight (SON units) to 5am to realise energy savings. This is achieved by reducing the power to the light source, i.e. a 10% reduction in lamp wattage, **not** a 10% reduction in light output. The threshold for this reduction is 50%, a visible difference being perceived by the naked eye after this point; this being the case, increasing the dimming will have a limited effect. Better efficient energy savings can be attained through more recent and effective ranges of lighting technologies, such as LED replacements.
- 4.1.8 In 2015-16 a capital investment of £980k was made for replacement of approximately 9,000 lights with LED gear trays (Proposal 1). These are now being installed with a projected completion date of March 2016, realising £100k (2015-16) and an additional £190k (2016-17) of the total £450k MTFP financial savings.
- 4.1.9 There are also ancillary apparatus that include lit signs and bollards. These are of marginal cost to the annual energy budget, amounting up to £10k each; with traffic lights having a figure of £50k per annum. Though these are not seen as a priority (as more significant savings can be realised with street lighting replacements), the older/ life expired ancillary units are gradually being replaced by modern energy efficient LED versions, as finances allow.
- 4.1.10 the current lighting budget for 2015-16 is £2,028k of which £1,398k is on energy; leaving £630k for all the Routine and Non-routine Maintenance. Therefore, any savings in energy will have the largest impact on the budget for street lighting requirements.
- 4.1.11 Part of the Asset Management function of Highways Operations includes a maintenance role for all highway assets. Since the existing street lighting assets have been installed by the Council; they are recorded, monitored and maintained with a dedicated Street Lighting Budget.
- 4.1.12 An energy saving was agreed in the Medium Term Financial Plan 2015-16, EN5 - Street Lighting Energy Reduction measure, in February 2015; in summary this proposed that:

‘A combination of options will generate £450k saving in full year, including energy reduction initiatives and some part-night lighting in residential areas. An upfront investment of £980k will be required. Present indications are that £290k can be achieved via new technologies with £160k achieved via part-night lighting’

The £980k refers to the LED gear-tray replacements (Proposal 1, reference 2.8), the £290k refers to the projected annual energy savings from this investment and the £160k refers to the expected savings from a Part-night lighting exercise, which is outlined in Section 4.2.

4.2. Energy Costs and Part-Night / Switch-off Options

- 4.2.1 Energy costs are calculated by the energy provider using the updated asset register (provided on a monthly basis by CCBC Highways Operations) and the photo-cell array (currently sited on the Civic Centre) as references. The register will give the quantum and type of lighting assets CCBC currently hold and the array will give the estimated burn hours per night.
- 4.2.2 A variant in energy savings are that they subject to the market rates (11.2665 Pence/ kWh unit, as of August 2015), presently lower than the MTFP proposed rate, set October 2014 (11.5247 Pence/ kWh unit), so in 2014, £200k = 1,735,403 kWh and in 2015 £200k = 1,775,174 kWh. Market fluctuations will therefore have a bearing on the revenue savings level attributed to the LED/ CPO Halide replacement units, i.e. lower energy prices giving lower energy cost savings, even though the cost of energising the asset (from conventional Low/ High Pressure Sodium to LED/ CPO Halide) will still be lower.
- 4.2.3 The future energy prices are unlikely to stay at their current low levels, so any reduction in energy usage made now will probably appreciate as the energy costs rise, giving the Council a method of cost avoidance.
- 4.2.4 The vagaries of energy pricing to one side, in achieving the remaining energy saving (estimated at £160k), part night light or switch off options will need to be reviewed and may be required to attain the £450k target.
- 4.2.5 The switch off option is always open to the authority for an absolute energy saving, but has its own costs, due to the fact that disconnected lighting apparatus rapidly deteriorate and will need to be removed for safety. This can happen within 12 months of switching off. Due to the disproportionate cost of removal and possible replacement, this particular option has been discounted from this report; however as the financial climate dictates this may have to be revisited.

4.3 Energy Savings Status

- 4.3.1 The LED gear-tray replacements should bring an annual saving of ©£290k to CBCC's energy bill; in the MTFP Plan 2015-16, EN5 (referred to in section 2.12), this was to be split between a predicted £100k in 2015-16 with an additional £190k saving in 2016-17.
- 4.3.2 Proposal 1 - LED gear-tray replacement installation started in August 2015 with a planned completion by the close of March 2016.
- 4.3.3 To date the energy figures from this year can be compared to last year's are as follows:

April to September - £584,500 (2014), £564,000 (2015) – a saving of £20,500
September to March - £958,000 (2014), £875,000 (2015) – saving of £83,000 (projected)

Annual projected saving of£103,500 (for 2015/16)

The actual and projected figures are showing that they are currently on track to achieve the target saving of £100k for 2015-16, with the additional £190k being sourced from the annual savings from the LED gear-tray replacements over the 12 month period 2016-17.

- 4.3.4 The remaining energy saving required for 2016-17 is £160k was to be achieved through Part-night Lighting (reference 4.1.12); for this to take place an exercise must be completed to assess how this can be implemented. The summary of which is outlined below in Section 4.2.

4.4 Part-night Lighting Assessment in Urban Areas

- 4.4.1 As mentioned earlier, the existing street lighting stock in CCBC has already been subject to a Part-night lighting exercise with the majority of the inter-urban routes now being switched to part night lighting. In combination with this, there are trial areas for low energy lighting (installed 2012-14 in selected areas around the county borough to assess the effectiveness of energy savings) and the replacement of existing residential (high energy use) sodium bulb units with LED gear trays (installation 2015-16). All of the above have been excluded from consideration in this Part-night lighting review.
- 4.4.2 The remaining eligible stock for street lighting (i.e. not subject to LED/ CPO Metal Halide replacement or part-night lighting regime) numbers around 7,500 units and are located in a mixture of all of the Council's rural and urban areas. These form the basis for the assessment process, which is detailed in Appendix B.
- 4.4.3 The steps taken in this assessment further eliminate 'conflicted areas' (containing junctions, roundabouts, traffic calming etc.), as these units cannot, for safety concerns, be part-night lit.
- 4.4.4 As can be seen from this process (detailed in Appendix B) the savings of £160k can be realised from part-night lighting all the lighting outside 'conflicted' areas, though there may be issues with public appeals and subsequent local re-assessment exercises (which would need to be instigated by CCBC before this proposal was enacted – a model of which is outlined in background paper Torfaen Cabinet Item 8 – Street Lighting – Our Strategy for the Future – July 2011. There are alternates to this approach, as outlined in Section 4.5.
- 4.4.5 Part Night Lighting is estimated to cost £160k, to install the required hard-ware for all the lighting units outside the 'conflicted zones', the cost of which can be recovered (through the energy savings outlined in 4.4.4) within 12 months.
- 4.4.6 A possible part-night lighting objection from the Public could be about the detrimental effect on safety; this seems to be more of a perception rather than a reality. A recent study, led by the London School of Hygiene & Tropical Medicine in partnership with University College London (published in the Journal of Epidemiology and Community Health - July 2015) showing no increase in crime rate (from 2010 to 2013) or decrease in road safety (from 2000 to 2013) in locations where a part night lighting regime had been in place. (Briefing note for this in Appendix D). These findings can be further supported from the experience of Street Lighting Strategy in Torfaen (reference to Torfaen Cabinet Item 8 – Street Lighting – Our Strategy for the Future – July 2011).

4.5 Alternatives to Part Night Lighting in Urban Areas

- 4.5.1 The switch off option is always an alternative, though this has its own significant costs and consequences.
- 4.5.2 Another alternative is a reduction in the maintenance budget, currently totalling approximately £630,000, split into Routine Maintenance (replacement of lighting elements) and approximately £275k Non-routine Maintenance (replacing/ repairing other components such as the column, lantern, cabling etc.) approximately £355k.
- 4.5.3 The current street lighting stock amounts to approximately 27,500, with approximately 9,000 LED gear-tray conversions being in place by April 2016. The design life of conventional lamps is around 4-6 years. It is compared to around 10 to 15 years for the LED alternates and LED gear-trays replacements. Consequently this means that approximately a third of the stock is estimated to have a design life over double that of conventional lamps. With this being the case the Routine Maintenance budget could be reduced by a third giving, a saving of £100k; the remaining £60k would need to be found either by partial part-night lighting or from the Non-routine lighting maintenance budget.

- 4.5.4 Any reduction in the Lighting Maintenance budget will have an effect on the service quality and responsiveness, with the possibility of broken/unserviceable lights remaining broken /unlit for longer durations than is currently the case.
- 4.5.5 The proposed decrease in budget (£160k out of £630k) will result in a reduction in service leading to a relaxation of response times of approximately 20%, so increasing turn-around times from the existing 3 to 9 days to a response time of 5 to 12 days. This will have an effect on our performance as an Authority, for example the most recent nation-wide APSE (Association of Public Service Excellence) survey of 2013-14 scores Caerphilly with a 95% rate for restoration for working lights within 7 days of reporting (ranked 6th out of 20 peer Councils) – our average response/ repair times being 4 days, with this relaxation a fall to a 5-6 day average would see this position fall to 12-15th place. This is with the proviso that peer councils are not seeking to reduce their own service quality level, if they do make reductions then the fall may not be as great.
- 4.5.6 This proposed reduction in lighting maintenance revenue budget will lead to the need for periodic injections of capital into the existing asset stock as they deteriorate. Since historic investment(s) were usually installed over short time periods (such as the investment in residential lighting columns in the early 1970's and early 2000's) any re-investment will probably be needed in pulses, to accommodate the end of design life for a particular asset batch. Essentially this will introduce a capital funding driven approach rather than the current revenue derived mechanism.

4.6 Summary of Part-Night Lighting and Alternative Options

- 4.6.1 There are four main options to realise the 160k energy saving for 2016-17:
- A. switch off all non-conflict area lights
 - B. Part-night Light all the lighting units in non-conflict areas
 - C. Part-night Light a proportion of lighting units in non-conflict areas, and then make up the difference from the Lighting Maintenance Budget
 - D. Secure the £160k from the Lighting Maintenance Budget
 - E. Combine the savings from the reduced Lighting Maintenance Budget and Part-night Lighting of non-conflicted areas

Considering the sensitivity of the residential areas concerned and the lack of time to fully implement part-night lighting for all non-conflicted zones, it is suggested that Option D is selected, as this represents a saving from a defined source; leaving the remaining options for future consideration.

4.7 Future Savings

- 4.7.1 There are opportunities to look further into low-energy replacements for conventional units, to replace life-expired units and significantly reduce energy usage for units in 'conflicted' areas of the highway (i.e. containing junctions, roundabouts, traffic calming etc.).
- 4.7.2 The part-night lighting proposal for non-conflicted zones can form part of the MTFP 2017-18, if agreed this should give sufficient time for the implementation of a site specific assessments and an appeals process.
- 4.7.2 An initial proposal (Proposal 2) has been tabled as part of the MTFP 2017-18, this being an investment of £1,000k to replace life-expired low-pressure sodium residential lighting units (approx. 1,700 in number) and a number of large High-pressure sodium units on the main roads (approx. 650 in number) in 'conflicted' zones; with an annual saving of approximately £100k (prices correct to August 2015).

- 4.7.3 A follow on proposal is then to take the remaining lighting units in the 'conflicted' zones of the highway and convert them into low-energy technology alternatives; thus forming a third proposal (Proposal 3) for 2018-19.
- 4.7.4 Both the above proposals are detailed in Appendix C.
- 4.7.5 The salient results in Appendix C and E can be summarised as follows:
- Proposal 2a – demonstrates that the optimised CPO (Halide)/ LED option can lead to the most economical solution with the £1,000k fund, having an additional 25% of units (600) converted to low energy alternatives, when compared to a wholly LED replacement option (Proposal 2). The risk with this is that the cheaper CPO (Halide) units (about a third of the total replacement number) will require ongoing maintenance and could become obsolete in the medium term (approximately 4-7 years), subsequently leading to them being replaced with LED technology (a technology that is undergoing a fall in market pricing).
 - Proposal 3 – the £2,000k for this proposal will either replace the remaining 'Conflicted area' lighting, if the wholly LED option is taken under Proposal 2, or replace the remaining 'Conflicted area' lighting and invest a further £1,000k in converting the remaining stock (see Table 3 - below) if Proposal 2a (mixed CPO(Halide)/ LED) option is approved.
- 4.7.6 The projected payback period also forms part of Appendix C and can be summarised as follows:

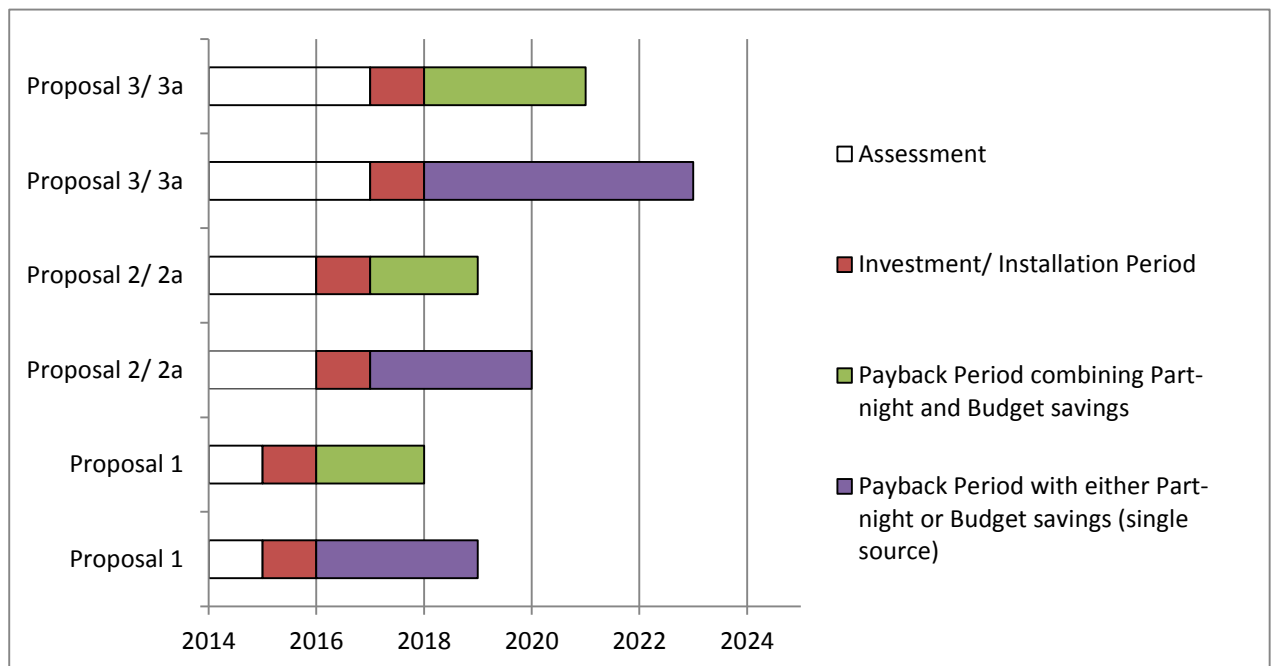


Table 2: Simplified bar-chart to demonstrate the relative durations of Pay-back periods for Proposals 1, 2, 2a, 3 & 3a (3a follows on from Proposal 2a)

In this table the results can be summarised as follows:

- Proposal 1 (LED Gear-tray replacements) due to conclude in March 2016, projected payback period is by 2018 (combined) or 2019 (single source)
 - Proposal 2 & 2a (LED & CPO (Halide)/ LED combination replacements in 2017-18), projected payback period is by 2019 (combined) or 2020 (single source)
 - Proposal 3 & 3a (LED replacements 2019-20), projected payback period is by 2021 (combined) or 2023 (single source)
- 4.7.7 The proviso to these recommendations is that LED technology will become more effective and, so their costs should reduce and the energy prices will increase from their current low position; savings should increase with each energy rate price rise.

4.7.8 At this point (April 2019) the remaining stock should read as follows:

Lighting Regimes	Stock Numbers	2017-18 Proposal 2/ 2a	2018-19 Proposal 3/ 3a	Remaining stock requiring Low Energy Replacement	LED Replacements for CPO (Halide) - post 2023
Lights currently being Part Night Lit	5,000	400		4,700	
Lights with lower energy lights (CPO Metal Halide etc.)	4,000				4,000
Lights being replaced by LED Gear Trays	9,000				
Eligible stock for Part Night Lighting	7,500	1,950	2,194	3,356*	1,000
Energy Efficient Lanterns installed during Routine Maintenance	2,000				
Total Stock	27,500			8,056	5,000

Table 3: Lighting unit numbers in lighting regime categories with remaining numbers post Proposals

* - this is a priority energy reduction area, as these units burn through the night; they have a replacement cost of approx. £2,500k (as of August 2015) – reduced to £1,500k, if Proposals 2a & 3a are approved

5. EQUALITIES IMPLICATIONS

- 5.1 Dimming or switching off of street lights could have a significantly greater negative impact on people with certain types of visual impairment compared with the majority of the population. It will also significantly affect older people for both reasons of eyesight, and potentially a number of groups such as older people, the LGBT community, lone women etc. in terms of feelings of vulnerability and an increased fear of crime.
- 5.2 Lower energy alternatives to conventional lighting can also have a greater luminance and as a result would have a significantly greater positive impact on those groups mentioned above.

6. FINANCIAL IMPLICATIONS

- 6.1 There will be a reduction in street lighting energy and street lighting maintenance expenditure and a reduction in budget provision to assist with the Council's Medium Term Financial Plan (MTFP).
- 6.2 The preferred option for Proposal 2 is 2a, this will represent an investment of £1.0 million, to replace approximately 3,000 life expired and conventional lighting in conflicted areas, giving an annual energy saving of approximately 1,000,000 kWh at an annual cost saving of £100k; projected payback period (with the energy and maintenance savings) should be completed by 2019 (combining Part-night lighting and maintenance budget savings) or 2020 (using either the part night lighting or maintenance budget saving).
- 6.3 The preferred option for Proposal 3 is 3a, this will represent an investment of £2.0 million, to replace approximately 2,500 for lighting in conflicted areas and remaining convention stock, giving an annual energy saving of approximately 1,000,000 kWh at an annual cost saving of £100k; projected payback period (with the energy and maintenance savings) should be completed by is 2021 (combining part-night lighting and maintenance budget savings) or 2023 (using either the part night lighting or the maintenance budget saving).

7. PERSONNEL IMPLICATIONS

7.1 These proposals will not have any direct impact on CCBC personnel.

8. CONSULTATIONS

8.1 All comments received have been taken into consideration and are included in the report.

8.2 A consultation process may need to be considered before the implementation of the part-night lighting proposal in 2017-18.

9. RECOMMENDATIONS

9.1 The preferred Part-night lighting proposal, as outlined in Section 4.6, is Option D - sourcing the whole saving from the Lighting Maintenance Budget.

9.2 It is proposed that part-night lighting be part of the MTFP 2017-18 savings, giving an opportunity for site-specific assessments and the setting up of an appeals process.

9.3 The preferred proposal for 2017-18 is Proposal 2a (optimised selection combining CPO (Halide) with LED replacements) for the 2017-18 MTFP, with the proviso that there will be on-going maintenance costs for the cheaper CPO (Halide) units and their possible replacement with LED technology in 5-7 years' time, should they become obsolete.

9.4 The preferred future option for 2018-19 is dependent on the decision made at Proposal 2/ 2a stage. If the preferred Proposal 2a is approved, then Proposal 3a can use £1,000k to finish LED replacement of lighting units in 'conflicted' areas with the additional £1,000k replacing up to 40% of the remaining lighting stock (in Table 3 above).

9.5 It is recommended that the above preferred Options/ Proposals are accepted, so they can then be presented to Cabinet for review and approval.

10. REASONS FOR RECOMMENDATIONS

10.1 The reason for recommending Option D for the £160k saving is due to the possible implementation issues (such as formulating and introducing assessments and appeals procedures), with the majority of the nominated part-night lighting units being located within urban areas. This will allow the agreed £160k saving to be made in 2016-17, whilst the part-night lighting process is formulated, reviewed, agreed and implemented.

10.2 The savings to be made from Part-night lighting in non-conflicted zones can amount to approximately £160k in energy savings per annum; if it is agreed that this proposal forms part of the MTFP 2017-18, it should provide sufficient time for the required processes to be reviewed, agreed and implemented.

10.2 Recommending Option 2a will mean that more lighting units can be replaced under this proposal, with the possibility of replacing the CPO Halide stock in 5-7 years' time when the cost of LED replacements should have decreased (given current market trends).

10.3 Option 3a is recommended as it will follow on from Proposal 2a and give an opportunity to replace up to 40% of the remaining lighting stock (i.e. not part of the 'conflicted areas').

11. STATUTORY POWER

11.1 Highway Act 1980.

Author: Graham Parry, Highway Operations Group Manager
Consultees: Cllr T Williams – Cabinet Member for Highways, Transportation & Engineering
Cllr D T Davies – Chair of Regeneration and Environmental Scrutiny Committee
Cllr E Aldworth – Vice Chair of Regeneration and Environmental Scrutiny Committee
Chris Burns – Interim Chief Executive
Christina Harray - Corporate Director – Communities
Nicole Scammell, Acting Director of Corporate Services and S.151
Terry Shaw – Head of Engineering Services
Gail Williams – Interim Head of Legal Services/Monitoring Officer
Stephen Harris – Interim Head of Corporate Finance
Rob Hartshorn – Head of Public Protection
Mike Eedy – Finance Manager
Trish Reardon – HR Manager
David Thomas – Senior Policy Officer (Equalities and Welsh Language)
Steve Hodges – Network Management Manager
Thomas Llewellyn – Senior Assistant Engineer

Background Papers:

Highways Act 1980
London School of Hygiene & Tropical Medicine in partnership with University College London
(published in the Journal of Epidemiology and Community Health - July 2015)
Torfaen Cabinet Item 8 – Street Lighting – Our Strategy for the Future – July 2011

Appendices:

Appendix A – An extract summary of Highways Act 1980 (Sections 97 & 98)
Appendix B – Method of assessing the Part-Night Lighting Savings
Appendix C – Future Energy Savings Proposals
Appendix D – APSE Briefing Note 15-43 – Street Lighting Switch-off Outcomes
Appendix E – Energy-Cost Comparator
Appendix F – Lighting Options Summary