

## **Street Lighting Policy**

Report by the Director of Environment, Transport and Development

### **Summary**

At the meeting in November, the Panel agreed to endorse a change in street lighting policy to enable part night lighting. This involves switching off lights for part of the night (midnight to 5am). This reports sets out a proposed way forward for introducing part night lighting in Norfolk.

It is proposed that part night lighting is introduced on roads which are not classed as routes with through traffic value and where crime rates are low; the vast majority of these are primarily residential areas. The proposal is to implement over the next three years as part of the existing programme of lighting replacement and maintenance.

Our 2009/10 annual street lighting energy bill is approximately £2m. The cost of implementing the change will be £274k, over the next three years. This will enable the Council to realise an annual saving of £167k, when fully implemented. The introduction of part night lighting would also help the Council achieve its target for reducing CO2 emissions and reduce light "pollution".

The evidence from other areas is that introducing part night lighting does not result in increased crime, although it may impact on perceptions of safety (the results of the Citizens Panel survey showed that 50% of respondents felt that it would lead to increased crime and road traffic accidents). There could be some local impact in terms of accessibility, particularly for those people who are visually impaired or experience problems with mobility. Careful monitoring of crime and accident data will be carried out during implementation to identify and respond to areas of concern, and there will be opportunities for those with any specific issues/needs to raise them in advance.

The current Budget consultation is relevant to this proposal and the proposal may need to be further developed if the consultation results identify significant issues.

### **Action Required**

That Panel recommend to Cabinet that, if they agree to a change in the street lighting policy to enable part night lighting, and subject to the outcome of the Budget consultation:-

- (i) Part night lighting is introduced on roads which are not classed as routes with through traffic value and where crime rates are low (lighting classes S5 and S6).
- (ii) They approve the delegation of the resolution of relevant issues, including decisions on part-night lighting exemptions, to the Director of Environment, Transport and Development in consultation with the Cabinet Member for Planning and Transportation.
- (iii) They approve the additional investment into street lighting, subject to the conditions above and sufficient funds being available from within the Planning and Transportation budget at the year end, and to set up a new reserve for this future investment.

## 1. **Background**

- 1.1. At its meeting on 4 November 2009, the Panel agreed to endorse a change to our street lighting policy to allow the introduction of part night lighting. Panel also agreed to receive a further report at this meeting to update on the proposals being developed for the introduction of part night lighting in Norfolk, should a change in Policy be agreed.

## 2. **Current considerations**

- 2.1. Part night lighting means reducing the overall amount of street lighting by switching off lights for part of the night, say midnight to 5am, on suitable streets. If we change our policy to allow part night lighting, the County Council could accommodate the necessary changes to equipment under the current PFI contract.
- 2.2. Part night lighting can be achieved by installing part night photo cells into lighting columns. The costs of installing these cells would be £7.42 if fitted as part of column replacement or upgrade during the PFI core investment period (2008 to 2013) or post-core investment period (2013 to 2023). If the cells were retro-fitted, there would be a cost of £12.44 each during routine maintenance and £20.31 if carried out as a separate operation, due to the need to provide plant and labour.
- 2.3. Whereas part night photo cells alone would provide a technically feasible solution, there would be no scope to revert to full night lighting or to change the switch off hours without replacing the cells. As these cells literally switch off in the 'middle of the night' they do not respond to artificial time changes such as British Summer Time. A 'midnight to 5am' cell will therefore become a '1am to 6am' cell during BST, although for a significant part of this period (end of March to end of October) dawn will break before 6 am in any case.
- 2.4. Flexibility to vary the part-night hours, e.g. to anticipate or to respond to concerns or events, could be achieved through the introduction of remote monitoring equipment for some or all part night areas. There would be costs estimated at approximately £59 upwards per light depending on volume and location if remote monitoring were installed.
- 2.5. Reductions in energy achieved through the introduction of part night lighting would contribute towards the Council's carbon reduction targets and its obligations under National Indicator 185, the percentage CO<sub>2</sub> reduction from Authority operations. The level of energy reduction would be directly influenced by the extent of part-night lighting introduced but the conversion of all streets with low traffic volumes would save 850 tonnes CO<sub>2</sub> per year. Taken in conjunction with the other measures being introduced through the Street Lighting PFI contract, the installation of modern energy efficient lamps, and the implementation of trimming and dimming, part night lighting should help to reduce the overall level of light emission from the street lighting system.
- 2.6. ESPO has been consulted upon the effect of significant energy saving measures on our energy supply contract. The supply agreement is for a period

of three years commencing October 2008 (even though the price is agreed at times throughout the contract) and is based on a consumption/demand profile – that is, a volume and associated load “shape” (how much is used and when). ESPO has advised that any material change in the volume or in the load shape could have contractual consequences as;

- it has now purchased 100% of the forecast energy requirement for the 12 months from 1<sup>st</sup> October 2009.
- the contract incorporates a risk premium corresponding to the load shape, i.e. the relationship between baseload, peak and residual volumes and how they were priced in the market at the time of settlement. This premium is fixed for the contract duration. Any material change in the load shape could also lead to a review of the associated premium.

2.7. Clearly, the extent of any changes proposed or agreed would determine whether and to what extent the contractual issues become significant. ESPO has advised that the contract provides for a tolerance around the purchased volume of + or- 10%, which should be sufficient to cater for the introduction of part night lighting during the remainder of the energy contract period (we are predicting a 10% reduction).

2.8. Since the street lighting energy price is a blended price between day and night rates, as more councils turn lights off at night it is possible that, in the longer term, the energy providers may impose a higher unit rate if the low tariff consumption is reduced whilst the day rate consumption remains relatively unaffected. This would obviously be in a competitive market environment, but could reduce the realisable financial benefits.

### 3. **Proposals**

3.1. A number of options for introducing part night lighting have been considered. These are summarised in Appendix A (technology available) and Appendix B (options for implementation).

3.2. In terms of technology, the proposal is to introduce part night lighting by converting lights by installing programmed part night lighting photocells in lights (see para 2 at Appendix A). This represents the simplest way to introduce part night light, as it can be carried out as part of the existing replacement and maintenance programme and does not require additional equipment to be purchased e.g. base stations. However, the degree of flexibility available is minimised by adopting this option as the timing on the cells cannot be changed once they have been installed. As set out in Appendix A, this option represents the most cost effective technology solution, and would require the minimum amount of investment, and therefore the shortest pay back period (see para 5.1 below).

3.3. There is a possible variation on the way that this could be implemented. The proposal is that implementation is carried out over the next three years as part of the existing replacement and maintenance programme – the pay back on

investment required would be in year 4 (see para 5.1). An alternative to this would be for the photocells to be installed as part of the replacement programme over the next three years (in the same way as for the proposal at para 3.2), but for those installed as part of maintenance to all be carried in year 1 irrespective of whether maintenance was planned for that year or not. This would mean that some lights would be converted as part of a specific operation. This alternative option is not proposed as although additional net savings of £31,000 could be achieved, an additional investment of £97,000 would be required (see para 5.2). This additional investment could only be partly funded by the predicted under-spend for the Planning and Transportation budget, leaving a £24,000 shortfall. In addition, although this approach would mean that a large volume of lights being converted would be operational at the end of year 1, it would mean additional disruption for residents because some lights would be visited twice in the three year period (once as part of a special visit to install a photocell cell, and again to carry out the maintenance already programmed for years 2 and 3).

- 3.4. In considering in which areas part night lighting could be introduced, officers consider that not all roads are suitable for the introduction of part night lighting. In particular, the busier streets in terms of pedestrian and/or vehicle traffic and roads in areas with higher crime levels should remain fully lit. Within Norfolk however, only 18 out of 530 Super Output Areas (sub-divisions of District wards and the smallest units used for demographic analysis) were agreed with the Police not to be considered to be 'low crime' when lighting standards were being determined for the PFI contract. This was based on the comparison of local and national statistics and the identification of areas of Norfolk which deviated significantly from the local average. The high and medium crime areas comprised parts of Bowthorpe, Lakenham, Mancross, Mile Cross and Thorpe Hamlet wards in Norwich, Central & Northgate and Nelson wards in Great Yarmouth, Fairstead ward in King's Lynn and Saxon ward in Thetford.
- 3.5. It is proposed that part night lighting is introduced for lighting of type S5 and S6 in low crime areas (a combination of options 3 and 4 from Appendix B). This lighting can be easily identified by officers (see Appendix D). This option enables implementation to be concentrated in those areas where it is considered that they would not be a significant adverse affect in that it would not impact on medium or high crime areas. This proposal has been developed in consultation with the Council's Community Safety Team, who confirmed that implementation in low crime areas only was appropriate, and highlighted that there is a need to ensure that the proposals did not adverse impact on existing crime prevention measures like CCTV. These type of issues are addressed in the suggested criteria and exemptions for the proposals set out in Appendix C.
- 3.6. Type S5 and S6 lighting is the lowest class of lighting in the Council's lighting stock, and is only installed in areas with low traffic volumes i.e. residential roads. The other classes of lighting used in the Council's lighting stock are of a higher standard, e.g. they have brighter bulbs and the columns are generally higher. S5 and S6 lighting is not used on principal or main distributor routes or high crime areas. Taking south Norwich adjacent to County Hall as an example, roads with this level of lighting would include Cecil Road, Grove Road and Trafford Road as well as all the smaller roads and cul de sacs. Roads

such as Martineau Lane, Bracondale, City Road, Hall Road and Southwell Road are lit to higher standards appropriate to their main and distributor road functions.

- 3.7. Roads where both traffic volumes and crime rates are low contain approximately half the County Council's lighting stock (25,000 out of 49,500), ranging from 47% in Great Yarmouth BC to 62% in North Norfolk DC. It is considered that savings of just below 10% of our total street lighting energy would be achieved by the introduction of part night lighting on all these roads. It should be noted that similar lighting across the county is the responsibility of district and parish councils and will therefore remain lit throughout unless other lighting authorities decide to implement part night lighting.
- 3.8. During 2010/11 the 2,500 suitable lights which are being replaced in the Core Investment Period (CIP) would be fitted with part night cells. At the same time, normal maintenance will be carried out on approximately 5,250 suitable lights outside the CIP and their cells would be changed as well.
- 3.9. During 2011/12 another 2,500 lights will be replaced and 5,250 will have maintenance work and their cells would also be changed. The following year, the remaining 2,500 replacements and the outstanding 7,000 lights needing maintenance would be fitted with part night light cells by the end of that year.
- 3.10. We are already consulting on the proposal for part night lighting as part of our budget consultation. In addition, we have written to the district and parish councils that have lighting that would be affected by the proposal, as well as the emergency services, transport operators and other stakeholders, to explain that the County Council has identified part night lighting as a means of contributing towards meeting both energy and cost saving targets. Any feedback received will be reported at the meeting. A list of the parishes that would be affected by this proposal to introduce part night lighting – i.e. those parishes where the existing NCC lighting stock includes S5/6 type lighting – is included at Appendix D.
- 3.11. We are liaising with the Police on these proposals and have not yet received a formal view. Officers will verbally update Panel on this at the meeting.

#### **4. Results from other Authorities**

- 4.1. Leicestershire County Council last year carried out a desk top review of part night lighting progress in other authorities across the country, and this was included as an Appendix in the November report to Panel. Some further updates on other authorities are included below.
- 4.2. Essex County Council has advised that it has realised energy savings in the predominantly rural districts of Maldon and Uttlesford where part night lighting has been introduced (the savings achieved in Maldon and Uttlesford were around 20%). This has been achieved by the introduction of part night lighting to approximately 70% of the lighting stock in those areas. During this period neither crime nor traffic collisions have increased in these areas.

- 4.3. Essex County Council has yet to decide whether the part night lighting pilot scheme in Maldon and Uttlesford should be extended to other parts of the County, made permanent, changed in other ways or abandoned. A street lighting PFI Expression of Interest is being submitted to the Department for Transport and so Essex CC will wait for that decision first. It is not yet possible therefore to provide a formal update of its experience with switching off lights.
- 4.4. Leicestershire County Council's Cabinet considered, on 15 December, a proposal to reduce street energy usage by a combination of lighting removal on dual carriageway routes except at junctions, dimming on main traffic routes (which we are already introducing) and part-night lighting.
- 4.5. Gloucestershire has recently advised that its 3 parish trial is now to be rolled out across the county. This scheme does not however involve switching off all lights in any particular street and is not therefore true part-night lighting.

## 5. Resource Implications

- 5.1. **Finance** : Our current (2009/10) annual street lighting energy bill is approximately £2m.

The unit cost of implementing the change is £7.42 where cells are being added as columns are replaced, £12.44 where lights are converted under routine maintenance and £20.31 otherwise. The financial saving through switching off for 5 hours each night at our current electricity price would be £6.70 annually per light. The total eventual financial saving is estimated at £0.167m per year.

Total investment and savings of installing photocells as part of the current maintenance and replacement programme are shown below; savings will be realised in year 4 (2013/14) onwards.

Year	Volumes (approx)	Investment (£)	Saving (£)	Total for year	Running balance
Year 1 - 2010/11	2,500 replaced 5,250 converted at maintenance cycle	84,000	26,000	-58,000	-58,000
Year 2 - 2011/12	2,500 replaced 5,250 converted at maintenance cycle	84,000	78,000	-6,000	-64,000
Year 3 – 2012/13	2,500 replaced 7,000 converted at maintenance cycle	106,000	136,000	30,000	-34,000
Year 4 – 2013/14	-	-	167,000	167,000	133,000
Year 5 – 2014/15	-	-	167,000	167,000	300,000

Total investment of £0.274m would be required over the next three years to maximise the financial and carbon savings across the service. The planning and transportation budget is currently forecasting an underspend £0.347m against its revenue budget and, subject to the outturn position being in line with the current forecast, a new reserve can be set up to allow for this future investment.

- 5.2. An alternative would be for the any lights being converted as part of maintenance to be implemented in year 1 irrespective of whether normal maintenance is due that year (see para 3.3). Total investment and savings of installing photocells in this year is shown below; savings will be realised in year 4 (2013/14) onwards.

Year	Volumes (approx)	Investment (£)	Saving (£)	Total for year	Running balance
Year 1 - 2010/11	2,500 replaced 5,250 converted at maintenance cycle 12,250 converted special operation	333,000	67,000	-266,000	-266,000
Year 2 - 2011/12	2,500 replaced	19,000	142,000	123,000	-143,000
Year 3 – 2012/13	2,500 replaced	19,000	159,000	140,000	-3,000
Year 4 – 2013/14	-	-	167,000	167,000	164,000
Year 5 – 2014/15	-	-	167,000	167,000	331,000

Acceleration of the installation of part night lighting would require additional investment of £0.097m (i.e. £0.371m instead of £0.274m) over the next three years because so many lights would require part night conversion as a special operation. Taking this into account, net additional financial savings of £0.031m would be achieved but not until year 4. As mentioned in para 5.1 above, the Planning and Transportation budget is currently forecasting an underspend of £0.347m, which can be used to offset some of this investment (a further £24k would be required to fully fund the investment).

- 5.3. **Staff** : There are no direct implications in terms of staff resource required to deliver the highway service. However, it is possible that this change may attract additional feedback and correspondence from local residents which may require workloads to be re-prioritised.
- 5.4. **Property** : None

5.5. **IT** : None

## 6. **Other Implications**

6.1. **Legal Implications** : Street lighting is a discretionary power, not a duty, and the Courts have held that no liability arises where a local authority withdraws lighting for reasons of economy. However if there are non natural obstructions in the highway introduced by the Council, such as tree guards or street furniture, then reasonable care is required to see that they are not a hazard to users of the highway. What is reasonable depends on the balance between the risk of harm from such potential hazards set against the advantages of restricting the hours of street lighting. The risk of claims cannot therefore be eliminated but it is considered that the proposal is nevertheless acceptable provided that appropriate consideration is given to potential hazards in the streets concerned.

In making decisions on individual streets the Council will also have to take into account its duty under section 39 of the Road Traffic Act to promote road safety and prevent accidents and its duty under section 17 of the Crime and Disorder Act 1998 to have due regard to the prevention of crime and disorder.

Gloucestershire's approach of retaining partial lighting throughout the night on all streets carries a greater risk of such claims and would require particular scrutiny.

The proposals outlined in this report can be implemented by our street lighting contractor, Amey, as part of the current PFI agreement.

The recommendations in this report have implications for the Budget consultation which is already underway. Should the results of that consultation impact on the recommendations in this report then this matter would be returned to Cabinet for further consideration.

6.2. **Human Rights** : No foreseeable human rights implications have been identified (note that there are already areas of Norfolk with no street lighting provision).

6.3. **Equality Impact Assessment (EqIA)** : An assessment for the proposed change in policy has been carried out. The assessment has identified that the perceptions and feeling about safety (as mentioned in section 7 below) may be more likely or extreme for people who feel vulnerable, and this may typically be women, older people and some disabled people.

The introduction of part night lighting may also impact on the ability of some local residents to safely access their road and property during the hours when the lights are turned off. This may be a particular issue for those people who are visually impaired or experience problems with mobility; where they may rely on full lighting so that they can clearly see any hazards (e.g. uneven surfaces). There are many locations in Norfolk where street lighting is not currently provided, but those are usually areas where lighting has never been provided – the proposed policy change would affect areas where lighting is currently provided.

It will be important to ensure that, before the change to part night lighting is implemented, affected residents are made aware of the change in advance so that they have the opportunity to discuss any issues or concerns with us, and also to make appropriate adjustments personally, for example adjusting the lighting on their own property. We will review our communication processes to enable improvements in approach to be identified.

- 6.4. **Communications** : We are already consulting on the proposal for part night lighting as part of our budget consultation. We have also written to the district and parish councils that would be affected by this change – any feedback received will be reported at the meeting.

A Norfolk Citizens' Panel survey has been carried out to determine attitudes to switching off street lighting – the results of this were reported to Panel in November 2009.

In advance of the installing any night photo cells, additional general publicity will be required to make the public aware of the change and the reasons for it.

Part of the current process for the light replacement programme includes sending letters to residents a few weeks in advance of any works on site. These letters can be amended so that residents in those streets where night photo cells will be fitted are aware in advance. At present, there is no equivalent process in place for maintenance of lights – work is being done to establish a suitable way process for local residents to be informed in advance if part night lighting is introduced as part of the maintenance programme, this is likely to be by letter drop or posting notices on site.

## 7. **Section 17 – Crime and Disorder Act**

- 7.1. Switching off street lights at night could affect the perceptions and feelings of local residents for example how safe they feel. It is proposed to take this into account by limiting the extent of part night lighting to streets which do not have significant traffic flows and where both night-time pedestrian activity and crime levels are low.
- 7.2. The results of trials in other local authorities do not give any indication that the incidence of crime increases in areas where lights are turned off. In Essex, whilst overall crime figures have increased during their trial, crime has fallen between midnight and 5am. In Gloucestershire, crime has fallen slightly. We will look very carefully at crime levels and road accidents as the proposal is rolled out in Norfolk.

## 8. **Risk Implications/Assessment**

- 8.1. Street lighting can contribute towards improving road safety and reducing crime, and there is a risk that part night lighting could have an adverse affect on this. This is considered to be a low risk (see paras 7.1 and 7.2 for further information).

8.2. ESPO has been consulted to determine to what extent we could realise savings under the current energy supply contract. See paras 2.7 to 2.9 for further information, but careful monitoring will be required.

## 9. **Alternative Options**

9.1. There is no statutory requirement to amend our street lighting policy to allow part night lighting. Cabinet could decide to leave the policy unchanged so that wherever lighting is provided it has to remain illuminated throughout the night. This would not generate any cost savings or help to reduce carbon emissions.

9.2. It is possible to introduce part night lighting on a trial basis, for example in one part of the County. A change in policy would still be required, but this approach would allow this approach to be tested in one area before it is rolled out across the County. This approach means that it would take a longer period of time before the Council is able to realise significant savings. Whilst the results of the Essex trial are not yet available, in Gloucestershire a trial has been completed and their approach is now being rolled out across the county. It is unlikely that a trial in Norfolk would highlight any technical issues that could not be resolved, if they arose, during the three years it is proposed to install the required cells in the relevant lights.

9.3. The part night photo cells could be retro-fitted as a stand-alone operation, i.e. separate from replacement, upgrade or maintenance– but there would be an additional cost (see para 2.2). There would also be an additional cost if remote monitoring cells were introduced to allow flexibility in the hours of operation (see para 2.4).

9.4. A possible variation on the proposed way forward would be to for all lights that would have photocells installed during maintenance to be converted during year 1 (see para 3.3 – and costings at para 5.2). This would require an additional investment of £97,000 to achieve additional net savings of £31,000. This additional investment could not be funded by the Department's under-spend, meaning there would be a shortfall of £24,000. There would also be additional disruption for the public as it would mean some lights would need to be visited twice.

## 10. **Conclusion**

10.1. The introduction of part night light lighting will reduce energy consumption and the extent of implementation will influence the amount of energy saving. This energy saving will contribute towards the Council's carbon reduction targets and should result in cost savings, although these cannot be guaranteed if energy providers amend their rates to reflect changes in usage patterns.

10.2. Norfolk residents have shown quite positive attitudes to switching off street lighting for part of the night, as obtained via the Citizens' Panel earlier this year.

## Action Required

That Panel recommend to Cabinet that, if they agree to a change in the street lighting policy to enable part night lighting, and subject to the outcome of the Budget consultation:-

- (i) Part night lighting is introduced on roads which are not classed as routes with through traffic value and where crime rates are low (lighting classes S5 and S6).
- (ii) They approve the delegation of the resolution of relevant issues, including decisions on part-night lighting exemptions, to the Director of Environment, Transport and Development in consultation with the Cabinet Member for Planning and Transportation.
- (iii) They approve the additional investment into street lighting, subject to the conditions above and sufficient funds being available from within the Planning and Transportation budget at the year end, and to set up a new reserve for this future investment.

## Background Papers

Report to PTEW Overview and Scrutiny Panel November 2009

## Officer Contact

If you have any questions about matters contained in this paper please get in touch with:

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If you need this report in large print, audio, Braille, alternative format or in a different language please contact Chris Kutesko on 01603 223457 or textphone 0844 8008011 and we will do our best to help.

## Part Night Lighting – Technology Available

1. Modern street lights are generally switched on and off by individual photocells which react to ambient light levels falling in the evening and rising again in the morning. There is no central control via timer or radio signal etc, thus there may be slight variations in the on-off times of individual lights along a street. Due to standardised manufacture of the photocells, these variations are usually insignificant however.
2. The simplest and cheapest way to introduce part night lighting in an area is to replace the standard photocell in each light with a part night photocell. These are programmed to calculate the length of night and then to switch off at the “middle of the night” for a preset period, usually 5 hours. Whatever the length of night, the “middle of the night” will always be around midnight GMT (0100 am BST) in UK. Thus the lights will be switched off by the photocells at this time and switched on again 5 hours later, provided it is not already light.
3. As street lighting energy use is unmetered, electricity is paid for by a series of codes representing the different types of lamps available. Most of these codes are for full night burning depending on the time of year, ie we pay more in the winter than the summer. There are however part night codes for a 5 hour switch off period which reflect the lower energy use when lights are switched off in the night. There are as yet no other part night codes currently available: a longer switch off period would still require us to use the 5 hour codes whereas switch off for less than 5 hours would require us to continue to use the full night codes.
4. A more sophisticated part night lighting solution is the use of a remote monitoring system to control light switching. This requires essentially 3 elements, a central system comprising a computer server and user interface located in office or depot, a switching device on each street light and a means of communication between the central server and each light.
5. The communication system can use the electrical cabling to each light, 3G mobile telephone signals or radio communication. There are innate problems with using physical cabling to transmit electronic information, particularly over longer distances such as in parts of Norfolk. A local radio system has advantages over 3G communication which is dependent on mobile telephone satellites. Radio systems do however require the installation of on-street base stations as an intermediate link between computer and street lights together with a telecell on each light instead of a photocell.
6. Remote monitoring can be used to switch lights off and on at any time, ie it is not limited to a “middle of the night” switch off. It can also be used for other purposes, most usually the identification and diagnosis of lighting faults. As each telecell contains an electricity meter, we would be able to monitor the electricity actually used and thus the energy savings achieved. However, although work is underway on this issue, coding mechanisms are not yet in place to realise financial savings from the implementation of part night lighting achieved through remote monitoring telecells.

7. Amey, our street lighting PFI service provider, is already trialling the remote monitoring of lights on the Fairstead estate in King's Lynn. It has already therefore installed at its Brooke depot the remote monitoring software which would be capable of operating part night lighting across the county.
8. Telecells could easily be fitted to street lights at the same time as replacement, upgrade or routine maintenance, at an estimated cost of £50 per unit. The cost of the base stations, per lighting unit served is much more variable however. Each base station costs about £9,000 installed (£5,000 station plus £4,000 works) and could serve up to 10,000 street lights each, provided they were within 2 to 3 km in urban areas or 5 to 8 km in rural areas. At the maximum number of lights served, the cost of the base station per street light served would be under a pound, whereas in rural areas a base station serving, say, only 100 lights would cost £90 per street light.
9. Within Norfolk it would not be possible anywhere to have a density anywhere approaching 10,000 lights capable of part night lighting within a 2-3 km radius of a base station. 1,000 lights would be a more realistic maximum, at which level the base station would cost £9 per street lamp served. In rural areas this density would fall much lower, with a consequent increase in cost per street light served.

An indication of costs of each of these options is provided below:-

<b>Technology Used</b>	<b>Cost per Street Light</b>		
	<b>Installed when light replaced</b>	<b>Installed in routine maintenance</b>	<b>Installed as special operation</b>
Part night Photocell	£7.42	£12.44	£20.31
Remote monitoring (urban area 1000 lights per base station)	£59	£64	£72
Remote monitoring (semi-urban area 500 lights per base station)	£68	£73	£81
Remote monitoring (rural area 100 lights per base station)	£140	£145	£153

## Part night lighting – implementation options considered

In developing a proposal for the implementation of part night light, a number of options for selecting the lights to be turned off have been considered. These are summarised below.

Options for implementation	Potential advantages	Potential disadvantages
<p><b>1. All lighting the County Council is responsible for.</b></p>	<p>Maximum potential to achieve savings in terms of cost and energy (maximum energy saving would be 30-35%).</p>	<p>Maximum amount of investment required.</p> <p>Will not take into account any areas of the county where lighting is considered as essential e.g. high risk accident sites, high crime areas etc.</p> <p>Unlikely to satisfy legal requirements to balance competing factors according to varying area conditions.</p>
<p><b>2. Every other light (or every third light etc)</b></p>	<p>Likely to achieve a high level of savings.</p> <p>If introduced for all lightings/streets, would mean that all those streets that currently have lighting provided would remain at least partially lit for the whole night.</p>	<p>High level of investment required, unless being introduced for specific types of light only.</p> <p>Would mean a patchy approach to street lighting – this approach would not mean whole streets remain lit, just that parts of them do. The new lights being installed as part of the replacement programme are positioned to achieve maximum spread for a minimum number of lights.</p> <p>Will not take into account any areas of the county where lighting is considered as essential e.g. high risk accident sites, high crime areas etc.</p> <p>Partial lighting considered to carry higher risk of accident claims.</p>

<b>Options for implementation</b>	<b>Potential advantages</b>	<b>Potential disadvantages</b>
<b>3. For certain types of lighting class.</b>	Although there are no hard and fast rules, the type of lighting used is generally indicative of the characteristics of the local area. For example, the lowest specification lighting (S5 and S6 type) is generally used in areas with low traffic and pedestrian volumes, with the highest specification lighting used in areas where maximum visibility is important to ensure road safety, for example.	Implementation for certain types of lighting class limits the amount of financial and energy savings that could be achieved. For example, implementation on the lowest standard of lighting (S5 and S6) would generate a 10% energy savings, compared to 30-35% if implemented for the whole of the Council's lighting stock.
<b>4. Based on area demographics e.g. crime rates.</b>	Implementing part night lighting in low crime zone would be least likely to have a negative impact on occurrences of crime.	Will not take into account any areas of the county where lighting is considered as essential e.g. high risk accident sites.
<b>5. In areas that local communities themselves identify as suitable e.g. parish councils.</b>	Likely to be the option with the most support/buy in from local communities.	May require significant officer input to manage the consultation process.  Some areas of the county may be more willing to implement than others.  Communities may not identify a sufficient volume of sites to enable savings to be realised – meaning that there would need to be a further process to identify other areas for implementation.

It is assumed that the selection of an implementation option is not dependent on the technology used (see Appendix A for information on technology available).

## Introducing part night lighting in Norfolk

It is proposed to introduce part night lighting in Norfolk in areas which meet the following criteria:-

- Where the type of lighting current provided is type S5 or S6, currently the lowest specification of lighting provided; and
- Where traffic volumes are 'low' i.e. those streets which are not classed as routes with through traffic value; and
- Are within 'low crime' areas – determined by a comparison of local and national statistics and the identification of areas of Norfolk which deviate significantly from the local average.

Unless one or more of the following possible exemptions applies:-

- Where lights have been installed specifically to aid accident prevention.
- CCTV sites.
- Sites where the Police can demonstrate that there will be an increase in crime if lights are switched off, or where they can demonstrate that switching lights off directly affects the ability to reduce crime.
- Areas with a high proportion of high security premises e.g. banks, jewellers etc.
- Remote footpaths and alleys linking residential streets.
- Unusual hazards.

Note that additional exemptions may be identified during implementation, including to address any significant issues identified by communities.

## Introducing Part Night Lighting in Norfolk - affected Parishes/Towns

The following is a list of the Parishes/Towns that would be affected by the proposal to introduce part night lighting – i.e. those parishes where the existing NCC lighting stock includes S5/6 type lighting.

### Breckland District

Parish/area	No of S5/6 units
Ashill	4
Attleborough	226
Banham	29
Bawdeswell	5
Cressingham Great	3
Croxton	22
Dereham	1128
Ellingham Great	3
Griston	22
Harling East	20
Hockham Great	14
Holme Hale	9
Mattishall	8
Mileham	5
Necton	5
Saham Toney	16
Scarning	187
Shipdham	18
Shropham	7
Swaffham	318
Thetford	1404
Watton	72
Weeting	3

### Broadland District

Parish/area	No of S5/6 units
Acle	67
Aylsham	36
Brundall	190
Burlingham (inc Lingwood)	3
Cawston	14
Coltishall	2
Drayton	36
Foulsham	8
Freethorpe	20

Hellesdon	78
Horsford	197
Horsham & Newton St. Faith	30
Old Catton	126
Plumstead	104
Postwick	14
Rackheath	87
Sprowston	132
Taverham	665
Thorpe St. Andrew	427
Witchingham Great	3

### Great Yarmouth Borough

Parish/area	No of S5/6 units
Belton	389
Bradwell	636
Caister on Sea	235
Caister West	7
Great Yarmouth (North) – unparished	396
Great Yarmouth (South) - unparished	963
Hemsby	60
Hopton	204
Martham	61
Ormesby St. Margaret with Scratby	90

### King's Lynn and West Norfolk Borough

Parish/area	No of S5/6 units
Bircham	3
Burnham Market	21
Burnham Overy	3
Clenchwarton	27
Denver	7
Dersingham	261

Docking	8
Downham Market	668
Emneth	40
Feltwell	8
Fincham	4
Gayton	33
Grimston	48
Heacham	2
Hilgay	36
Hockwold	6
Hunstanton	389
Hunstanton Old	22
King's Lynn	2553
Marham	12
Methwold	15
Middleton	19
Northwold	7
Outwell	1
Pentney	1
Sedgeford	1
Snettisham	2
Southery	4
Stoke Ferry	19
Terrington St. Clement	87
Terrington St. John	23
Thornham	3
Tilney all Saints	2
Tilney St. Lawrence	15
Upwell	25
Walpole	30
Walsoken	29
Walton West	11
Watlington	74
Wereham	6
Wiggenhall St. Germans	9
Wiggenhall St. Mary Magdalene	5
Winch East	19
Winch West	102
Wootton South	38
Wretton	4

#### North Norfolk District

Parish/area	No of S5/6 units
Bacton	3
Beeston Regis	7
Blakeney	2
Briston	60

Cromer	360
Fakenham	308
Hempton	12
Holt	183
Hoveton	15
Langham	26
Mundesley	73
Runton	7
Ryburgh Great	10
Sculthorpe	3
Sheringham	616
Southrepps	5
Stalham	79
Sutton	27
Trunch	2
Tunstead	3
Walsham North	786
Walsingham	10
Wells Next the Sea	55
Weybourne	3

#### Norwich City

Parish/area	No of S5/6 units
Norwich Central – unparished	222
Norwich East – unparished	1234
Norwich North – unparished	1398
Norwich South – unparished	1505
Norwich West - unparished	3029

#### South Norfolk District

Parish/area	No of S5/6 units
Bawburgh	2
Chedgrave	88
Colney	8
Costessey	524
Cringleford	58
Dickleburgh	14
Diss	359
Ditchingham	37
Earsham	14
Harleston	47
Hempnall	2
Hethersett	140

Keswick & Intwood	8
Loddon	293
Long Stratton	156
Mulbarton	6
Newton Flotman	28
Poringland	76
Pulham Market	18
Roydon (Diss)	71
Scole	4
Tharston	30
Thurton	5
Trowse Newton	80
Wymondham	764