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Highways & Transport Committee

20 July 2023

Street Lighting Energy Savings: Consultation Proposals and Options Update

Report of: Tom Moody, Director of Infrastructure & Highways

Report Reference No: HTC/04/23-24

Ward(s) Affected: All Wards

Purpose of Report

1 To update Committee on the progress relating to the MTFS revenue saving proposals PL23-27 102 (energy saving measures from streetlight).

Executive Summary

2 The Council provide over 40,150 streetlights across the borough. Whilst there have been energy saving measures adopted in respect of retrofitting LEDs we will reduce our energy consumption further by reducing the number and timing of street lighting in the borough either by turning off completely or part night starting Winter 2023 and continuing into 2024/25. Options will be reviewed to consider priorities and safety aspects associated with turning off alternate lights or turning lights off in the early hours of the morning in some areas.

RECOMMENDATIONS

The Highways and Transport Committee is recommended to:

1. Note progress to date in relation to energy savings measures from streetlights.
2. Agree a delegation of authority to the Director of Highways and Infrastructure, in consultation with the Chair of Highways & Transportation Committee, to finalise the initiatives and take all steps to complete public consultation on the energy saving options as set out in Table 1 of the committee report.
3. Note that the outcomes of consultation will be reported to committee in January 2024 together with recommendations on an implementation plan.

Background

3 The Council have over 40,150 streetlights in Cheshire East and since 2015 have replaced 39,492 streetlights with light emitting diode (LED) lanterns. The project was delivered in two phases with both funded through the Salix LED conversion project fund. Phase 1 was replacement of the high wattage lanterns on the inter urban routes (main routes in rural and urban areas) and Phase 2, the lower wattage streetlights in residential areas.

4 There are approximately 1,000 number of streetlights not converted to LED and these tend to be in heritage areas or wall/pole mounted lights where current technology prevents or is prohibitively expensive to replace. It is worth noting that pole mounted lanterns are fixed to timber poles often located in remote and restricted locations that are owned by the three power companies present Cheshire East. To replace these lanterns with LED units the permission of the relevant power company is required and this is generally given by two of the three companies but the policy of the third is to remove these lanterns as and when they find them and not allow a replacement on their asset (effectively this is an involuntary switch off).

5 In addition to the LED replacement programme, the Council invested £1.25 million in 2022/23 in improvements to the street lighting asset. This ranged from cable replacement that are no longer to standard and causing faults on the network, replacement of elements at the end of its serviceable life including concrete columns, and the continuation of LED conversions to replace any lanterns that are not already changed.

6 LED lighting technology on existing streetlights gives the following benefits:

- They have a white light. This improves visibility and colour recognition, improving safety for road users.
- They direct light towards the road and pavement instead of in all directions. This reduces light pollution into homes and gardens and makes it easier for drivers to see hazards.
- They are more energy-efficient than conventional streetlights. This means they are cheaper to run and have a lower carbon footprint.
- They last longer and are more reliable than other types of lights.

7 The current dimming profile is built into the LED driver in each lighting column lantern and it is important to note that the transition between the current dimming profiles is not visible to the naked eye. The profile used is:

- 100% - Switch on to 8pm
- 70% - 8pm to 11pm

- 50% - 11pm to 5 am
- 100% - 5am to Switch off

8 Charges for street lighting tend to be through an Unmetered Supply (UMS), this is provided for electrical equipment where either it is not practical to install a meter and/or the cost of installing a meter is disproportionate to the cost of electricity used by the equipment. Typical unmetered equipment is streetlights, traffic signals, illuminated signs and bollards but can also include CCTV, advertising displays, telecommunication cabinets and Electrical Vehicle charging facilities.

9 The Council also uses a "Photo-Electric Control Unit (PECU) Array" to accurately calculate its energy consumption and is accessed by the Meter Administrator to get this local data and inform the energy bill process. In 2022/23, the all-in rate (includes any pass through and standing charges) applied to street lighting energy usage was £0.265 per kWh. The Council's energy usage across the whole streetlight stock together with illuminated traffic signs, bollards and traffic signals was almost 4,800,000 kWh resulting in energy costs of £1.263 million. Street lighting energy costs are funding through the Council's highway revenue budget.

10 The Council like other councils nationwide is facing a challenging financial position for the 2023-24 financial year. Cheshire East Council met on 22 February 2023 and agreed the Medium-Term Financial Strategy (MTFS) Strategy for 2023-27. The report provides detailed information on the issues facing the Council in the medium term and shows how these are being addressed to present a balanced financial position for the 2023/24 financial year.

11 Street Lighting energy makes up 8.76% of the Highway Service budget and with the increasing cost of energy and the impact of energy generation and consumption on carbon levels, it makes sense for the Highway Service to seek options to making savings in this area. The key objective is to reduce energy consumption across the street lighting asset. It is expected that energy prices will continue to rise during 2023/24, and it has been confirmed that Council's price per unit of electricity will increase by 11% to £0.294 per kWh and the only way to mitigate against increases and / or reduce the annual energy costs related to street lighting is to reduce its energy consumption. This will add a further £137,000 pressure to the existing street lighting energy budget in 2023/24.

MTFS Options consulted upon

12 One of the proposals included in the approved MTFS related to energy savings for streetlights and includes savings of £0.485m over two years based on the 2022/23 energy prices (£0.242m in 2023/24 and £0.243m

in 2024/25). In order, to make these savings the annual streetlighting energy consumption needs to be reduced by 1,900,000 kWh (39.8%).

In the MTFS, several ways were detailed including:

- Option A - Turn off alternate streetlights
- Option B - Turn off streetlights in urban areas in the early hours
- Option C – Turn off all streetlights in urban areas

13 The actual solution implemented across the Borough will depend upon the approach adopted and a review of priorities and safety aspects associated with each.

Energy Saving Options

14 We have reviewed the options detailed in the MTFS options and have refined these as described below.

15 **Option A** - more detailed work has been undertaken and Option A - Turn off alternate streetlights is no longer considered appropriate.

16 Part 1 of BS 5489 Para 4.4.2 'Measures to minimize electrical use', says that: *"Good lighting can contribute to electrical energy and carbon reduction strategies, and should be at the forefront of any electrical energy and carbon reduction strategy developments."* With regard to part-night lighting it further says that: *"Longitudinal uniformity should be maintained during switch off and switch on that occur during the hours of darkness."*

17 Therefore, to switch off alternative lights would be contrary to that standard.

18 **Option B and C -** in order to provide the level of savings required consideration to all streetlights (urban and rural) need to be included and the energy saving proposals that we intend to consult on subject to approvals are shown in Table 1 below:

19 Table 1 street lighting Energy Saving Options

Location of Street Light(s)	Energy Saving - Variable Light Options		
	Leave On	Switch Off	Part Night
Town Centre	●		●
Rural Main Road		●	●
Rural Residential		●	●
Inter Urban Routes	●	●	●
Urban Main Road	●	●	●
Urban Residential		●	●
Conflict Areas[1]	●		
High Crime Area	●		
CCTV Monitored Route	●		
Route with known Road Safety issues	●		
Industrial Area	●		
Town Centre		●	●

[1] Areas of interface between different types of public highway user eg junction, crossings etc

20 The next step is to use the above matrix of energy savings options and highway locations to broadly assess every road with street lighting on the public highway in the borough.

21 This will then be fine-tuned to take account of sensitive receptors including areas of high footfall, bus routes, pedestrian crossing facilities and locations of road traffic collisions or anti-social behaviour etc.

22 It is anticipated that in all areas across the borough that the solution will be a combination of switch off and part night. The hours of part night is to be confirmed but based on the approach taken by other local authorities it is likely to be between 1am and 5am but this is subject to the assessment of the amount of energy saved.

Technical Solutions

23 There are a number of technical solutions that can be utilised to facilitate the implementation of the street lighting energy saving options and these are summarised below:

24 Central Management System (CMS) - is a dynamic and flexible street lighting control system operated from a single location and is the preferred technical solution. To implement requires the existing 'all night' photocell being replace with a CMS node in each streetlight.

- enables us to control the exact switch on/off times of individual and streetlights and vary the lamp power at any time
- reports faults, so we know which streetlights are and are not working in real time
- improves the management of the inventory and accuracy of energy billing.
- Allows for flexibility to turn streetlights in high-risk areas or in the event of an emergency to be turned on.
- Facilitates easier implementation of future policy changes

25 Photocell only (individual columns) - control when the streetlights come on and go off. The existing photocells are 'all night'. To change these to operate 'part night' requires switching photocells in each individual streetlight so the streetlights switch off at certain times (e.g. from 1am to 5am).

- Not centrally controlled
- It isn't possible to dim AND part-night a lamp with one solution. The driver would need to be changed in each lamp to dim it too.
- Not suitable for high footfall areas (town centres) and conflict areas (roundabouts, bus routes, junctions in urban areas)

26 Pull Fuses - from individual streetlights or of a series of columns are fed by a Cheshire East Council supply through a single feeder pillar the fuse is removed at this location).

- This is a binary option: streetlights are on or off for good effectively. It is reversible but requires significant resources to visit each location to replace the fuse. Daily replacement isn't possible,
- If a streetlight is off for a certain amount of time (2 years?) then it MUST be removed from the public highway.

27 The costs related to the technical solution are being developed included options for funding the capital investment to change, details will be included in a future Highways and Transport Committee report. However, it is worth noting that the effect of either turning off completely or part

night light can be achieved in different way each with different benefits detailed above. Subject to finance, the preferred technical option would be a Central Management System as it achieves the objective but gives wider benefits including the option to reverse any changes on either a temporary or permanent basis remotely.

Energy Costs

28 The council has a corporate energy contract which is delivered for it by West Mercia Energy (WME) who manage energy contracts for the public sector. WME track the wholesale energy prices in the market and procure energy contracts dependent on the risk appetite of the local authority.

29 WME have proved to be effective in their energy procurement strategy for Cheshire East as can be seen in the commodity price information below.

2023 /24

	GAS p/therm	POWER £/MWh
Market High	725.62	583.41
Market Average	209.48	190.95
Market current	137.66	142.01
EBDS	313.59	302.00
East rate	176.12	123.85

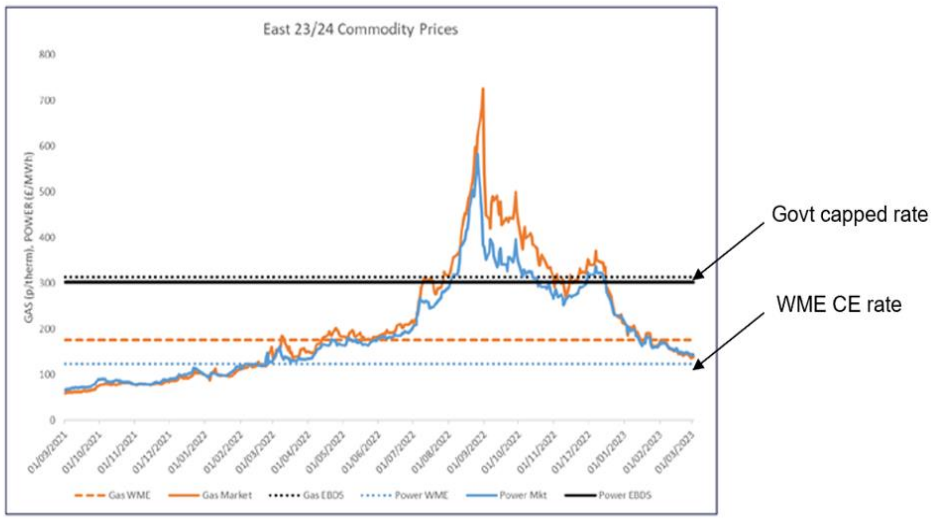

Diagram 1 – Cheshire East Energy Commodity Prices compared to Govt capped rates

30 The WME commodity rates are below the Government Capped rates. Cheshire East WME electricity rate is £123.85MWh compared to the Government capped rate of £302MWh. These are illustrated in the graph by the blue dotted line and black solid line respectively.

31 The energy rates are unlikely to go down below the 2022/23 rates on which the MTFS energy saving proposal is based and this has been confirmed by the 11% increase in the Cheshire East rates for 2023/24.

Consultation and Engagement

32 No consultation has taken place to date on the proposed street lighting energy saving options. These are being developed to deliver the MTFS street lighting energy budget reductions approved by the Council.

33 Any change to the status quo relating to street lighting is sensitive and it is important to share the street lighting energy saving options being considered with the public and key stakeholders such as the emergency services, ward members and town and parish councils.

34 The proposal is to take the street lighting energy saving options out to a public consultation in September/October 2023. The consultation is being developed with guidance from the Council's Research Unit and will be made available through the Council's consultation web page and be publicised through a press release and social media posts. There will also be a separate project web page where information and updates on the project will be posted.

35 There is no statutory requirement regarding the duration of the consultation, but it's proposed that the consultation will be open for a period of 4 weeks.

36 As well as inviting the public to engage with the consultation, specific invitations will be sent to statutory consultees, ward members, town and parish councils etc.

37 The proposals which are to be consulted will be based on the energy saving options being developed as set out in paragraphs 14 to 19

38 There are no specific Trade Union / Staff impacts from the street lighting energy saving proposals, but they will have an opportunity to engage through the public consultation as individuals.

Reasons for Recommendations

39 The recommendations have been made to update Committee on the progress relating to the MTFS revenue saving proposals PL23-27 102 (energy saving measures from streetlight).

Other Options Considered

40 One of the options listed in the MTFS 2023-27 was to switch off alternate streetlights but this has been discounted as a it is important to maintain the longitudinal uniformity of street light as set out in paragraphs 14 and 15 above.

41 The ‘Do Nothing’ option would result in the MTFS option not being achieved and further savings would have to be made elsewhere in the service area.

Option	Impact	Risk
Do nothing	High	High

Implications and Comments

Monitoring Officer/Legal

42 The main purpose of a streetlight is to light the public highway, the Council as the highway authority does not have a statutory duty to provide them. The Council has a discretionary power which it can exercise, in doing so it must act reasonably. The Council must act in accordance with the principles set out in the case of *Associated Provincial Picturehouses Limited -V- Wednesbury Corporation*, that is, it must take into account relevant considerations, it must not have regard to irrelevant considerations, and it must not reach a decision which is unreasonable in the sense that it is so irrational that no reasonable authority could have reached it.

It is envisaged that a public consultation exercise will take place in the near future, the Council should be mindful that such an exercise should be carried out in accordance with the Gunning principles as the consultation is only legitimate when these four principles are met:

1) proposals are still at a formative stage - A final decision has not yet been made, or predetermined, by the decision makers.
2) there is sufficient information to give ‘intelligent consideration’ -The information provided must relate to the consultation and must be available, accessible, and easily interpretable for consultees to provide an informed response.
3) there is adequate time for consideration and response- There must be sufficient opportunity for consultees to participate in the consultation. There is no set timeframe for consultation, despite the widely accepted twelve-week consultation period, as the length of time given for consultee to respond can vary depending on the subject and extent of impact of the consultation.
4) ‘conscientious consideration’ must be given to the consultation responses before a decision is made Decision-makers should be able to provide evidence that they took consultation responses into account.

Section 151 Officer/Finance

43 The highway service budget for street lighting energy has been reduced by £0.485m over two years to help the Council address the financial pressures being faced. In the current financial year that budget has already been reduced by the requisite £0.242m. As a result, it is essential that a suitable energy saving option is allowed to proceed so that the energy costs incurred by the Council for its street lighting can be brought within the approved reduced budget available as set out in the MTFS 2023-27.

44 To deliver the required energy savings all options require expenditure on labour and plant with the part night and CMS options also requiring the purchase of new materials in the form of photocells or CMS nodes.

45 The source of funding for each option may be a factor where an option is revenue dependent i.e., the Fuse out options as there is no improvement in the asset. Whereas the Part night and CMS options require new equipment which will invest in and improve the asset and may be classified as capital expenditure.

46 All the options effectively require investment to save. The Fuse out option is likely to be lowest cost but is a light on or off approach whereas, the Part night and CMS options require more investment but greater potential for acceptance and benefits over the long term.

47 The highway service is currently working with the suppliers in the market to get an estimate of the cost for all three options for the size of the streetlighting asset in Cheshire East and will update the report with these when available. Once this is available then funding options can be determined and considered are available including whether it's feasible to manage some or all within current MTFS budgets.

48 There is no allocation in the MTFS for any additional costs.

Policy

49 The MTFS proposals previously produced are part of the Council's requirement to produce a balanced budget. This report is linked to our aims of:

- Open - An open and enabling organisation
- Fair - A Council which empowers and cares about people; and
- Green - A thriving and sustainable place.

An open and enabling organisation	A council which empowers and cares about people	A thriving and sustainable place
The report is to provide Committee members with an update of work done to date in relation to the MTFS and to be open and transparent	The intention is that the proposals will be consulted upon, this will enable those impacted to comment and feedback considered as part of any future changes	The proposals will result in carbon savings due to less energy being used to operate a significant asset owned and manged by the Council

Equality, Diversity and Inclusion

50 An Equality Impact Assessment has been completed and included as Appendix 1 to this report, this will be maintained throughout the development and implementation of these proposals. Due to the early stages of the project development no specific actions resulting from the Equality Impact Assessment have been listed here.

Human Resources

51 Delivery of the energy saving proposals and any future maintenance would be through the 15-year Highways Service Contract. There is no impact on any directly employed staff from Cheshire East Council.

Risk Management

52 Each option has different benefits and risks will vary and can be influenced by a number varying number of factors local factors. The following tables sets out the high-level risks and summaries their impact and likelihood for each option:

Option A - Turn off alternate streetlights

Risk	Impact	Likelihood
Impact on existing level and standard of lighting	H	H
Reduced customer satisfaction	M	H
Potential increase in collisions on the network	H	M

Increased risk to the public from slips, trips and falls	M	M
Potential increase in crime or the perception that the streets are less safe	M	M
Potential reduction in defence against highway claims.	H	M
Political interest.	M	H
Significant cost and time of changes required to implement solution from limited resource	M	H
Extended response times to lighting defects due to lack of available resource during implementation	M	H
If decision taken to reverse changes in future, there may be an influx of defects to be addressed in a short period	H	M

Option B - Turn off streetlights in urban areas in the early hours

Risk	Impact	Likelihood
Impact on existing level and standard of lighting	M	H
Reduced customer satisfaction	H	H
Potential increase in collisions on the network	M	M
Increased risk to the public from slips, trips and falls	H	H
Potential increase in crime or the perception that the streets are less safe	H	H
Potential reduction in defence against highways claims.	M	M
Political interest.	H	H
Significant cost and time of changes required to implement solution from limited resource	H	H
Extended response times to lighting defects due to lack of available resource during implementation	M	H
If decision taken in future to reverse changes, there may be an influx of defects to be addressed in a short period	H	H

Option C – Turn off all streetlights in urban areas

Risk	Impact	Likelihood
Impact on existing level and standard of lighting	H	H
Reduced customer satisfaction	M	H
Potential increase in collisions on the network	H	M
Increased risk to the public from slips, trips and falls	M	H
Potential increase in crime or the perception that the streets are less safe	M	H
Potential reduction in defence against highway claims.	M	M
Political interest.	H	H
Significant cost and time of changes required to implement solution from limited resource	L	M
Extended response times to lighting defects due to lack of available resource during implementation	M	M
If decision taken in future to reverse changes, there may be an influx of defects to be addressed in a short period	M	M

Rural Communities

53 Streetlights are located across the Borough, with higher numbers in urban areas. Decisions to turn off lights completely or part night in rural areas will be included in future consultations. In addition, street lighting in parishes are a mix of parish council and Council owned assets which may create an inconsistency in approach to lighting going forward and this may be more noticeable in rural areas.

Children and Young People including Cared for Children, care leavers and Children with special educational needs and disabilities (SEND)

54 There are no implications for children and young people arising from this report.

Public Health

55 The proposals are to turn off streetlights for either all or part of the night. Whilst no direct impact for public health the proposals could have a greater (positive or negative) impact on some groups compared to others (e.g. rural vs urban; younger vs older)

56 There is likelihood of increased risk of slips, trips and falls, traffic collisions as actual or perceived risk of crime. There is also likely to have be a greater impact on individuals with particularly protected characteristics, including the elderly, disabled and women. These will be considered as part of the project and factor into the recommendations on options and technical solutions that are consulted on and subsequently presented to Committee for decision.

57 Some options may have a greater potential impact on residents perception that the streets are less safe and their decision making on whether to go walking in the evening during the longer darker autumn/winter months with associated impact on health.

58 It is not expected to impact poorer vs more affluent groups as decision on options to include will be applied consistently across the Borough.

Climate Change

59 The reduction in the street lighting energy budget requires a 39.8% reduction in the kilowatt hours of energy burnt by the Council's streetlight asset each year, which will also see a substantial reduction in quantity of CO2 produced as part of the power generation process and reduce the carbon footprint by 408.72 tonnes by 2025. This reduces to 50.36 tonnes in 2050 as the energy grid is decarbonised.

60 The switch off or change to part night can have real benefits on the health and wellbeing of wildlife and biodiversity. The reduced level of light pollution also helps with dark skies supporting astronomy and giving more people visibility of the night sky which can help support positive wellbeing.

Access to Information	
Contact Officer:	Paul Davies, Contract Operations Manager Paul.davies@cheshireeast.gov.uk
Appendices:	Equality Impact Assessment – Street Lighting Energy Savings V1
Background Papers:	None