Street Lighting Programme Briefing Paper

1.0 Background

1.1 The Scottish Government's second Report on Policies and Proposals (RPP2) maps out to 2027 how Scotland's ambitious climate change targets, set out in the Climate Change (Scotland) Act 2009, and the transition to a low-carbon society will be achieved. It recognises the critical role of the public sector in leading Scotland to achieve this.

1.2 Street lighting can account for up to 25% of local authorities' electricity spend and 25% of electricity related carbon emissions. During 2012/13 Scottish Futures Trust ("SFT") developed two pilot business cases in collaboration with East Dunbartonshire and West Dunbartonshire Councils to explore 'spend to save' financing models to fund energy efficient street lighting within the two local authorities. The aim was to develop structures that could be rolled out across other local authorities in Scotland. The business cases examined relevant technical options, possibilities for leveraging in European funding and the various commercial models which may be applicable to local authority 'spend-to-save' initiatives, as well as identifying the potential savings both in financial and carbon terms. Based on this work, both Councils have incorporated investment in LED lighting as part of their future Capital Investment plans. Further information on the pilot projects can be found at:

- East Dunbartonshire Council Street Lighting Business Case
- West Dunbartonshire Council Street Lighting Business Case

1.3 To help accelerate local authorities to begin work on increasing the energy efficiency of street lighting, in financial year 2013/2014 the Scottish Government provided:

(a) £2 million to be used to support implementation of energy efficient street lighting, for example with business case development;
(b) £5.3m to Salix to fund Local Authorities to carry out energy efficiency works at 0% interest; and
(c) Funding to Resource Efficient Scotland ("RES") to provide 8 Local Authorities with technical advice and support for street lighting condition audits and business case development.

2.0 Street Lighting Toolkit

2.1 Following on from the development of the two pilot business cases, SFT, in conjunction with the Society of Chief Officers of Transportation in Scotland ("SCOTS"), developed a street lighting Toolkit to enable and support Local Authorities to assess the investment need and potential benefits of an energy efficiency investment in street lighting assets, comprising the use of LEDs to upgrade existing lanterns.

2.2 The toolkit is accessible via this web link:

Street Lighting Toolkit

3.0 Pan Scotland Report

3.1 In order to assess the potential investment need and benefits of a pan Scotland implementation of LED lighting, SFT and SCOTs engaged with the Directors of Finance and street lighting professionals of all 32 Local Authorities in Scotland to provide an initial high level indication of the benefits of such an investment. SFT's findings from this engagement were reported to Scottish Government and are available via this web link:

LED Street Lighting Assessment Scotland.pdf

3.2 The analysis in this report is based on the assumptions contained in the street lighting Toolkit and the related financial and technical models. It forecasts that an investment in LED street lighting of **£298m** could generate potential savings in the region of **£1.3bn** over a 20 year operational period before allowing for financing costs. These savings decrease to **£900m** if funded through PWLB (assumed rate of 3.47%) and **£780m** if funded through private finance (assumed rate of 6%).

3.3 The savings are generated from energy savings (62%) and maintenance savings (36%).

3.4 **The investment results in a 67% reduction in energy consumption and 1.35m tonnes of carbon saved over the 20 year analysis period.** The reduction in energy consumption for each Council is between 63.7% and 69.6%.

3.5 Street Lighting is included within Carbon Reduction Commitment Scheme from 1st April 2014. As a result City of Edinburgh Council estimates that will incur a carbon fee of approximately £245,600 per annum. A scheme to convert 6,000 street lights in Edinburgh to LED will generate savings in energy costs which will more than meet that fee.[1] The Scotland LED Street Lighting Report includes Carbon Reduction Commitment savings (2%).

4.0 Other Benefits of Investment in Energy Efficiency Works to Street Lighting

4.1 As well as saving money the new street lights have found favour with the public. For example following the installation of white lighting in the four pilot areas in Edinburgh, an extensive door to door public consultation exercise was carried out on behalf of the City of Edinburgh Council. The results of that consultation showed that of those that took part 89% were satisfied with the new lights and 78% agreed that the new lighting is better than the old lighting.[2]

4.2 LED lighting "produces a brilliant white light that improves visibility, aesthetic appearance and street safety at night." [3]

4.3 Energy savings from LEDs can also cut carbon emissions.

4.4 "....., due to the directional character of LED light, dark sky pollution can be eliminated." [4]

[1] Report to City of Edinburgh Council Transport and Environment Committee on 14th January 2014
[2] As noted in the above report

[3] Report on Global Outdoor LED Trials: Analysis for lighting managers
http://www.theclimategroup.org/_assets/files/LED-Report-Full-FINAL-low-res%281%29.pdf

[4] Report on Global Outdoor LED Trials: Analysis for lighting managers

Newton Stewart before and after LED Installation

4.5 Following a street light replacement programme to change to downward-facing "dark-sky" lighting, Galloway Forest Park became Britain's first Dark Sky Park. This has led to a boost in tourism. A total of 35 businesses in Galloway, including guest houses, bed and breakfasts, hotels and self-catering properties, were surveyed, with 77% reporting an impact on the number of bed nights as a result of the Dark Sky Park. The majority (84%) of businesses said they felt the Dark Sky Park is potentially important in attracting visitors to the area, and 81% said this was relevant, particularly in the "quieter" part of the year. As a result of an increase in visitors, for every £1 spent on transforming the lighting in the area, there was a return on investment of £1.93.[5] Further information can be obtained from Calum Edgar Calum.Edgar@dumgal.gsx.gov.uk

4.6 Twenty six Local Authorities in Scotland propose to invest more than £23.5m in energy efficiency works to street lighting in financial year 2014/2015. This investment in street lighting across Scotland will boost economic development through enhanced business opportunities for the supply chain and additional jobs and training. For example, to contribute to the additional resources required to deliver investment in energy efficiency works to street lighting, Tayside Contracts is providing 8 Highway Electrical Modern Apprenticeships in partnership with Oldham College.

4.7 In addition SFT, RES and SCOTS are working with Scottish Enterprise to run a research and development competition for Scottish businesses. The competition is to look for cost effective retro fit solutions for improving the energy efficiency in street lights and will provide an opportunity to take innovative Scottish technologies to the market.

[5] The Dark Sky Park Economic Impact Assessment, carried out by ekos for Forestry Commission Scotland dated May 2012

4.8 "LEDs contain no mercury and can be easily recycled – semiconductors are typically made of sand"[6].

4.9 Under the UK's Waste Electrical and Electronic Equipment (WEEE) Regulations producers of LEDs pay for the collection, treatment and recovery of waste electrical equipment. The cost of this is included in the price of a new LED lantern. Producers use Lumicom, a not for profit producer compliance scheme to ensure environmentally sound disposal of lighting waste. Currently under that scheme a Scottish based company collects waste street lighting from local authorities and delivers it to a Scottish based recycling facility. With the increase in waste electrical equipment arising from the investment in LEDs the possibilities of establishing additional street lighting recycling business opportunities in Scotland are also being investigated.

5.0 Funding

5.1 There are various sources of funding and finance available for low carbon energy efficiency projects. These include those listed in the table below and outlined in paragraphs 5.2 and 5.3.

Source of Finance	Type of Finance
European Finance	
Scottish Partnership for Regeneration in Urban Centres (SPRUCE) (JESSICA) Fund http://www.ambergreenspruce.co.uk/	Loan Finance and guarantees
European Local Energy Assistance (ELENA) Fund http://www.eib.org/products/elena/	Grant funding for implementation of projects
European Energy Efficiency Fund (EEEF) http://www.eeef.eu/	Loan Finance and guarantees
Private Finance	
Private Sector Finance	Loan Finance
Public Sector Finance	
Salix Finance Ltd http://salixfinance.co.uk/	Loan Finance
Green Investment Bank http://www.greeninvestmentbank.com/	Loan Finance
Central Energy Efficiency Fund (CEEF) http://www.energy-efficiency.org/ceef/CCC_FirstPage.jsp	Loan Finance
Public Works Loan Board http://www.dmo.gov.uk/index.aspx?page=PWLB/Introduction	Loan Finance

[6] Report on Global Outdoor LED Trials: Analysis for lighting managers

5.2 Salix provides interest-free capital for the public sector to reduce their energy costs by enabling the installation of modern, energy efficient technologies and replacing dated, inefficient technologies. To date £6.45m of finance has been provided by Salix to 14 Scottish local authorities to fund 19 street lighting energy efficiency projects. Collectively, these projects will save electricity equivalent to the yearly consumption of all of East Ayrshire Council's street lights. For example, with the benefit of Salix funding, Tayside Contracts on behalf of Dundee City and Perth and Kinross Councils replaced 1289 135w SOX lanterns with LEDs. This project will deliver annual energy savings of 665,447kWh (71%), cost reduction of £73,199 a year for energy, a carbon reduction of 6728 tonnes of CO2 over the 20 year life of the luminaires, greater reliability, reduced maintenance cost and a less than 8 year payback at 2013/14 prices.

1 Dundee before and after

5.3 Green Investment Bank has established a green loan product for local authority spend-to-save energy efficiency projects. The Bank are funding Glasgow City Council's project to replace 10,000 street lights on main roads with LEDs and associated infrastructure commencing September 2014. Further information can be obtained from Iain Watson Iain.Watson@greeninvestmentbank.com

6.0 Support Available

6.1 To support realising the benefits from economies of scale in procurement, and to ensure sharing of approaches and best practice in the implementation of street lighting energy efficiency schemes a Steering Group has been established. The Steering Group comprises a number of organisations and local authorities including SFT, RES, SCOTS, Scotland Excel and COSLA.

6.2 Information on how organisations within the Steering Group can help manage progress on energy efficiency in street lighting is outlined below:-

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Organisation	Main Contact Details	Outline of potential support
West Dunbartonshire Council	Jack McAulay jack.mcaulay@west-dunbarton.gov.uk	Case study and lessons learned from pilot business case
SCOTS/SFT	Lindsay McGregor: lindsay.mcgregor@scottishfuturestrust.org.uk	Technical options and case studies.
SFT	Morag Wallace morag.wallace@scottishfuturestrust.org.uk	Advice and support to local authorities (a) to assess the potential financial and carbon savings that could be captured from a programme of energy efficiency works to street lighting (b) on the financial and commercial and procurement options for delivery and (c) to develop business cases.
RES	Allan Crooks Allan.Crooks@resourceefficientscotland.com	Technical advice and support for street lighting condition audits and business case development.
COSLA	George Eckton george.eckton@cosla.gov.uk	Can support taking forward best practice examples and also issues or blockages with energy efficiency in street lighting where these are shared across local authorities and require a change in policy or strategic direction at a national level to enable local delivery.
SCOTLAND EXCEL	Brian Kyle brian.kyle@scotland-excel.org.uk	Procurement of Street Lighting Materials Framework (including LEDs)