



Lighting – An Endangered Species

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SKANSKA

Introduction



Topics to be covered

- Research, Development and New technologies
- Local Authorities and The Private Sector Working together.
- Education & Competency
- Where will we be in 10 years

Research

- The ILP/LANTERNS project, launched in April 2013,
- A research collaboration between local authorities in England & Wales and researchers at the University of London.
- Currently 44 local authorities already provided, or have agreed to provide their data.
- We aim to include every local authority in this important national evaluation.
- If you would like to discuss how you can also participate, please contact us at LANTERNS@LSHTM.ac.uk.



- **Methodology**
- The LANTERNS project has four components:
- **1. Nationwide analysis of street level data**
- **2. Public views of streetlight and reduction schemes**
- **3. Costs and benefits of streetlight reduction schemes**
- **4. Stakeholder engagement**

- **Aims**
- By working together in collaboration with all local authorities of England & Wales, the LANTERNS project aims to answer reliably the important question of whether reducing night-time streetlight for environmental and energy reasons, has any impact on road traffic crashes and crime.
- **Objectives:**
- Collate information across the country on streetlight reduction schemes
- Statistically examine whether reduced streetlight at night has any effect on road traffic crashes and crime
- Explore public opinion on streetlight provision and the potential for reducing streetlight at night
- Investigate whether streetlight reduction schemes offer value for money
- Create a resource for all local authorities interested in implementing streetlight reduction schemes

Research



- University of Sheffield
- Spatial Brightness and the effect of different S/P ratio's
- Extensive work in lighting for pedestrians

- ILP
- PLG's etc

- LIA/LLG etc
- Lighting for health

What has been published

What is in the pipeline to be published

Other downloads and free publications

Professional Lighting Guides



- PLG02

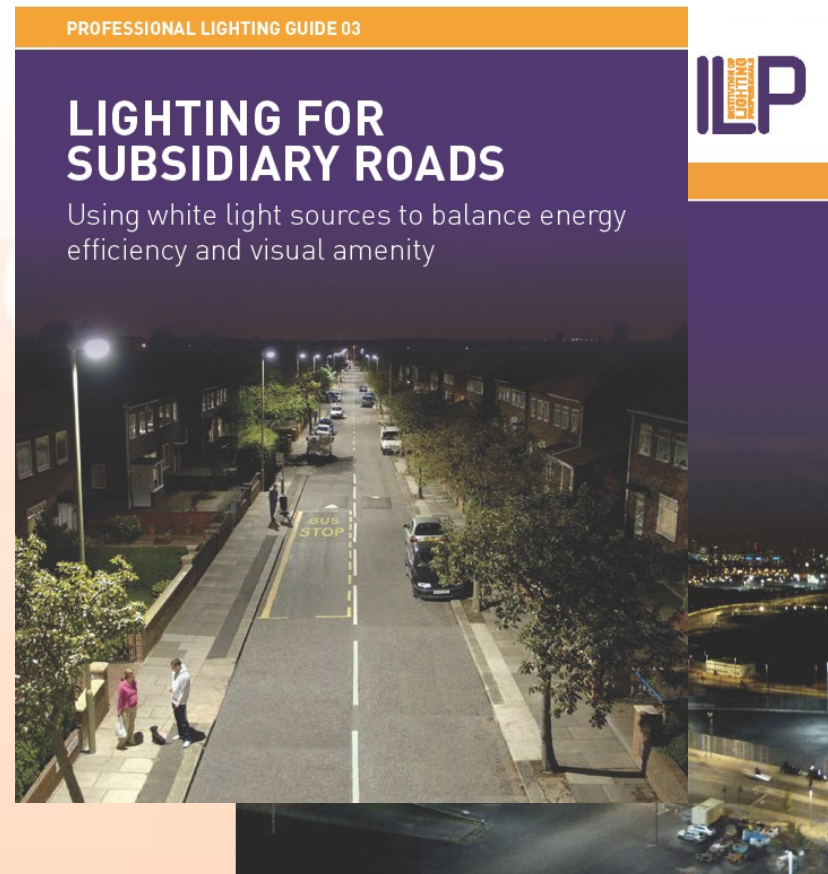
The Application of Conflict Areas On The Highway

- PLG03

Lighting for subsidiary Roads

- PLG04

Guidance On Undertaking Environmental Lighting Impact Assessments

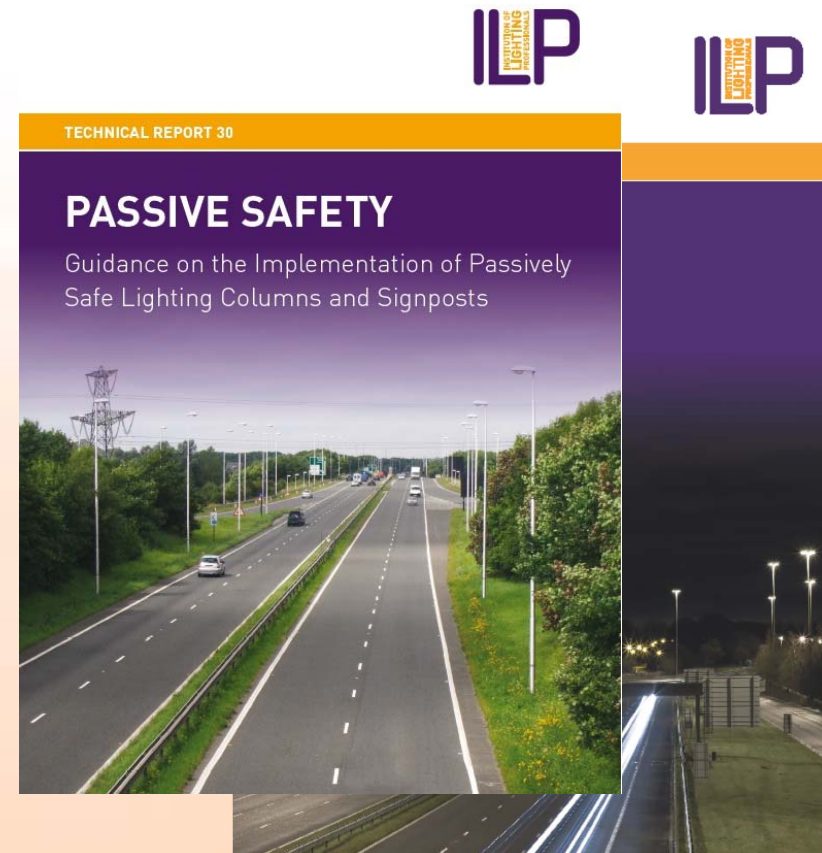


Professional Lighting Guides



- PLG07
High Masts For Lighting and CCTV (2013)
- TR24
Lighting Policy Guidance
- TR30
Passive Safety

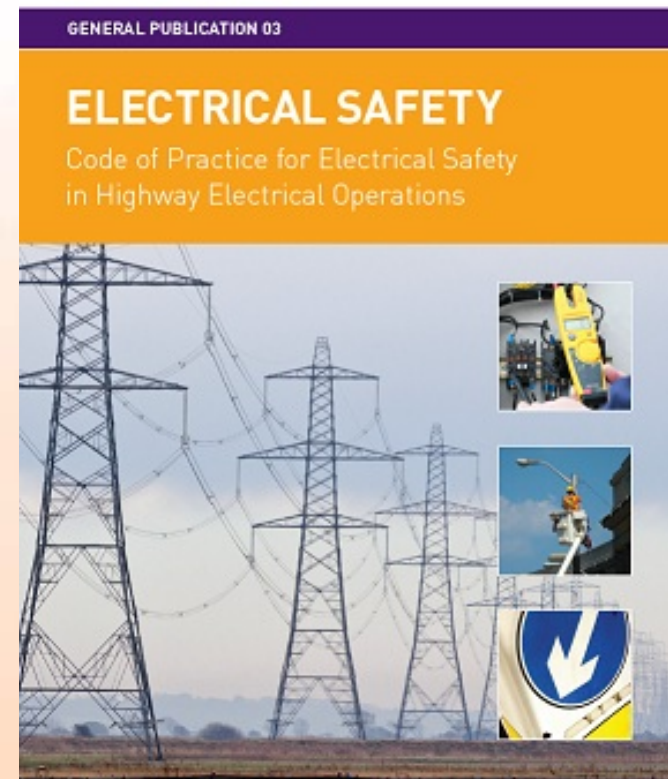
All Published and available



General Publications



- GP03 Electrical Safety on the Highway



Professional Lighting Guides



- **PLG01 CMS**
Final panel meeting to be convened
Publication for 1st quarter 2014
- **PLG05 (TR5) Illuminated advertising displays**
Final comments awaited
Publication anticipated for 1st quarter 2014
- **PLG06 Festive Lighting and supporting structures**
Publication anticipated during 1st quarter 2014
- **PLG08 (TR7) Adaptive Lighting**
Final draft submitted - currently being proof read
Publication anticipated 1st quarter 2014

In the pipeline



Panels currently set up

- Lighting Levels - Steve Fotios
- Business Case Development for New lighting - Dave Johnson - initially intended to be complete by Easter 2014
- Photometry of LED Luminaires Nigel Monaghan to produce a Fact Sheet

Volunteers Required



Panels to be set up for which we are looking for Panel Members

- Guidance on Car Park lighting
- Colour Temperatures of LEDs
- Electrical Street furniture
- *Re-visit OLD Technical Reports*
- TR22.- AL Tanriverdi to chair panel

Available to Members on the Website



PROFESSIONAL LIGHTING GUIDE DOWNLOADS FOR ILP MEMBERS ONLY

These publications have been prepared by the Institution's Technical Committee for study and application. The documents report on current knowledge and experience within the specified field of light and lighting described and are intended to be used by the ILP membership and other interested parties. It should be noted, however, that the status of these documents is advisory and not mandatory. The ILP should be consulted regarding possible subsequent amendments.

Any mention of organisations or products does not imply endorsement by the ILP. Whilst every care has been taken in the compilation of any lists, up to the time of going to press, these may not be comprehensive.

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DOCUMENTS

-  [PLG02 The Application of Conflict Areas on the Highway](#)
4402kb PDF
-  [PLG03 Lighting for Subsidiary Roads](#)
1227kb PDF
-  [PLG04 Guidance on Undertaking Environmental Light Impact Assess](#)
3203kb PDF

- PLG02 - The Application of Conflict Areas On The Highway
- PLG03 Lighting for subsidiary Roads
- PLG04 Guidance On Undertaking Environmental Lighting Impact Assessments
- Lighting Journal

Free Publications on Website



Guidance Notes for the Reduction of Obtrusive Light

January 2012

Guidance Notes for the Reduction of Obtrusive Light GN01:2011



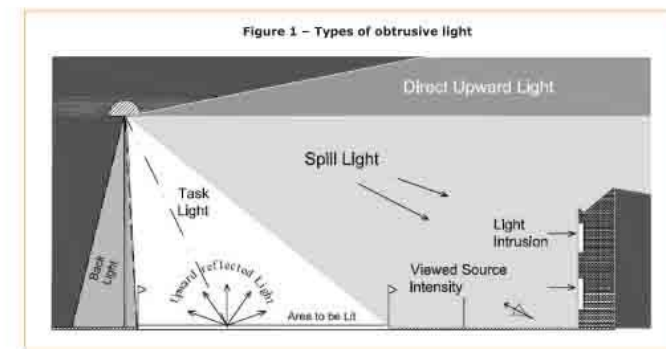
GUIDANCE NOTES FOR THE REDUCTION OF OBTRUSIVE LIGHT

"Think before you light - The right amount of light, where wanted, when wanted."

Man's invention of artificial light has done much to safeguard and enhance our night-time environment but, if not properly controlled, **obtrusive light** (sometimes referred to as light pollution) can present serious physiological and ecological problems.

Obtrusive Light, whether it keeps you awake through a bedroom window or impedes your view of the night sky, is a form of pollution, which may also be a nuisance in law and which can be substantially reduced without detriment to the lighting task.

Sky glow, the brightening of the night sky, **Glare** the uncomfortable brightness of a light source when viewed against a darker background, and **Light Intrusion** ("Trespass"), the spilling of light beyond the boundary of the property or area being lit, are all forms of obtrusive light which may cause nuisance to others and waste money and energy. Think before you light. Is it necessary? What effect will it have on others? Will it cause a nuisance? How can you minimise the problem?



Do not "over" light. This is a major cause of obtrusive light and is a waste of energy. There are published standards for most lighting tasks, adherence to which will help minimise upward reflected light. Organisations from which full details of these standards can be obtained are given on the last page of this leaflet.

Free Publications on website



Hot Dipped Galvanised Steel Lighting Column Root Protection

September 2012



HOT DIPPED GALVANISED STEEL LIGHTING COLUMN ROOT PROTECTION

"PROTECTING THE VULNERABLE ROOT"

Scope

To provide up to date guidance on root protection of galvanised lighting columns in the light of changes in available paint systems. It was recognised that most root protection was by applied paint or bitumen systems but that Thermoplastic coatings are also available and have been in use for some time.

Introduction

Over the years changes have taken place to the design of steel lighting columns. Improvements were made to designing out known problem areas for trapping and retaining moisture, particularly around the swage and bracket fixing areas, which contributed to corrosion cells forming.

Some 40 years ago steel lighting columns would probably have been primed in a variety of single pack materials and usually finished painted on site with single pack paint, often alkyd type finishes.



Additional root protection would have come from the application of a Bitumen solution. However, lighting columns were manufactured from the structural sections available and this would generally result in the column having a high residual strength.

The early 70's saw the introduction of the Metal Spray System being applied to the external surfaces of steel lighting columns.

Free Publications



October 2012

LED Product Specifications 2012

October 2012

A Guide to the Specification of LED Lighting Products 2012

This Guide has been produced under the umbrella of the Lighting Industry Liaison Group and is endorsed by its member organisations:



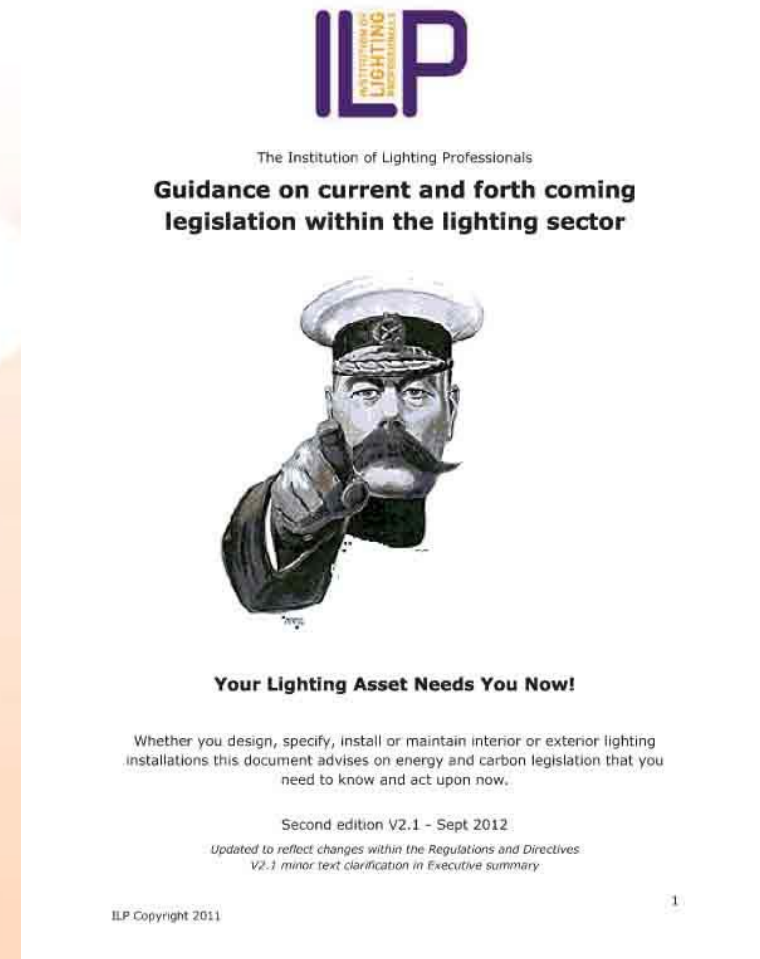
Free Publications



Guidance on Current
and Forthcoming
Legislation within the
Lighting Sector 2012

September 2012
(updated)

Continual updating as new legislation is
published



Free Publications on website



- A Review of the Impact of Artificial Light on Invertebrates
- Artificial 'Daylight' Lighting in the Office: Case Study
- Bats and Lighting in the UK
- Crime
- CSS SL1 - Class and Quality of Street Lighting
- CSS SL2 - Invest to Save
- CSS SL3 - Maintenance Factors
- CSS SL4 - Passive Safety
- CSS SL5a - Illumination of Traffic Signs
- CSS SL5b - Guidance on the Lighting Requirement for Traffic Signs and Bollards
- Street Lighting – Invest to Save
- TR28 Site Photometry Record Sheet
- Unmetered Electricity

Free Publications on website



Publications in association with the London Lighting Engineers Group –LoLEG

Prioritising investment in public lighting -
'A Framework for developing a
Street Lighting Value Management Model'

Illuminating the Public Realm -
'The Importance of Public Lighting'

Technology



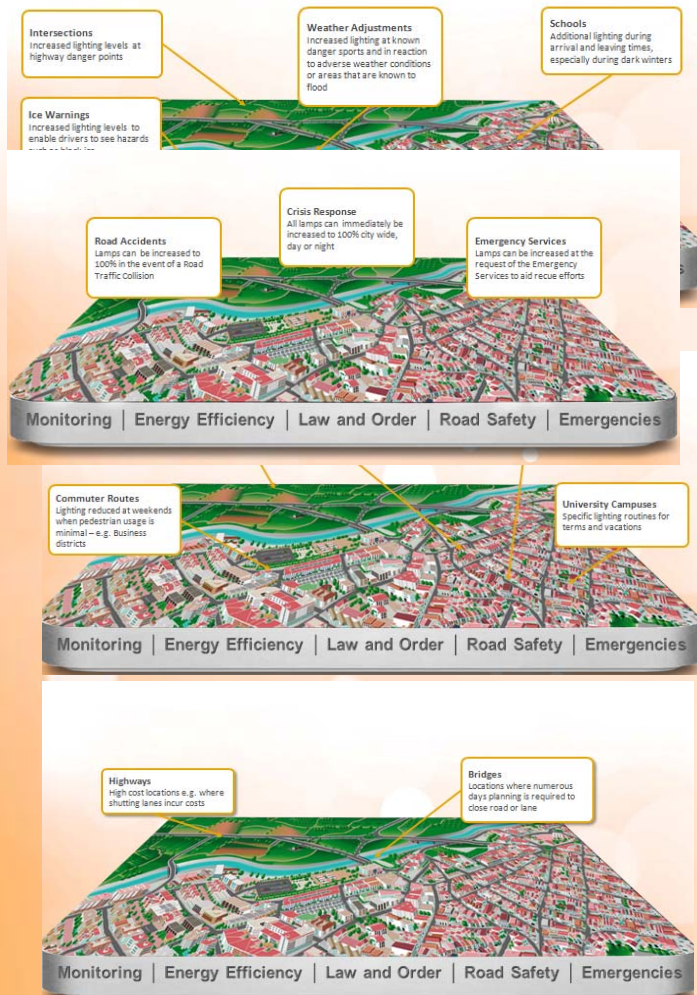
Dynamic control via CMS/sensors/traffic loops

HA trials Traffic Flow Activated Lighting at Longbarrow (Stonehenge)

Smart Cities



Real Time Monitoring



- Enables Proactive maintenance
- Dimming and trimming.
- Reducing energy cost.
- Reducing CO2 emissions
- Reducing Crime
- Social disturbance
- Adjusting for road dangers and adverse weather conditions
- Real time responses to emergencies
- 100% lighting everywhere, even when lamps normally run dimmed

Local Authorities and the Private Sector



- Funding streams
 - Green Investment Bank
 - Scottish Futures Trust
 - Salix
 - PFI's being revisited for Energy Saving

Local Authorities and the Private Sector



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Local Authorities and the Private Sector

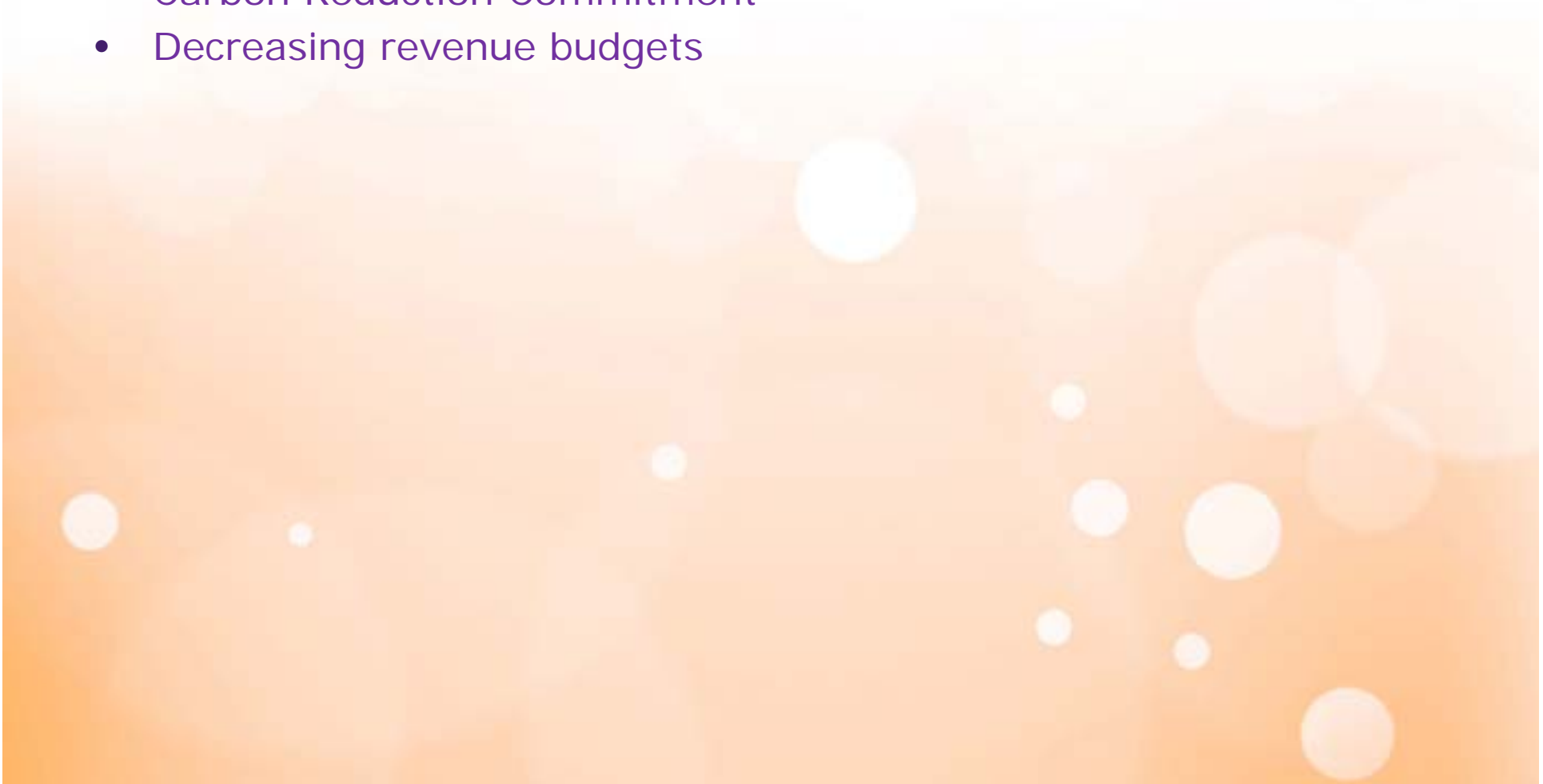


- **PFI's revisited**
- Energy reduction
- Switch off / links to crime and safety
- Lighting levels
- Large scale LED replacement projects
- Multi level energy charging (DUOS)

Local Government Pressures



- Energy prices increasing
- Carbon Reduction Commitment
- Decreasing revenue budgets



Local Government Pressures



- **Pressures:** Energy prices increasing
- Carbon Reduction Commitment applies to public lighting from 1st April 2014 @ £16 per tonne CO2 (only fixed until 2016) then its index linked to RIP and from 2020 it market force driven
- Decreasing revenue budgets
- **EU Directives / legislation drivers:**
- Drive to improve the performance of energy using products through the Energy related Products (ErP) Directive, for lighting this includes the lamp, ballast, control gear and also the luminaire (good optical control for the task)

Green Public Procurement



- **Green Public Procurement (GPP)**
- *“a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured*
- GPP looks to:
- A sustainable lighting solution is not a product it is the application of good lighting practice
- Right light, right place at the right time controlled by the right system
- Right lighting scheme design for the place, installed and operated by the right system
- Scheme to fulfil the lighting requirements specified in the relevant standards using energy efficient equipment

Green Public Procurement



GPP requires the right approaches to:

- Design
- Installation
- Maintenance
- Competency designers and contractors
- Ensuring that the installation is installed and commissioned correctly
- On the installation and operation side it calls for:
 - Competent contractor, subcontractors and operatives
 - Verification of competency
 - Appropriate environmental measures to reduce and recover waste during construction (WEEE)
- All equipment installed as specified in the original design
- All controls commissioned
- Maintenance personnel trained in the control system

Green Public Procurement



- **GPP also addresses the need for Good Asset management.**
- This is based around energy and carbon savings but to achieve these we must be able to measure the current position and understand the assets we have and how they are used. Unless we can establish a base line position we cannot measure what and how changes to the service be they through new technologies, operational profile or changes in maintenance regimes will bring about savings in energy, carbon, maintenance and the like.
- Good asset management is therefore key and hence an accurate inventory is important with the right attributes recorded.

- **Asset management.**
- Energy and carbon savings are discussed within the GPP but to achieve these we must be able to measure the current position and understand the assets we have and how they are used. Unless we can establish a base line position we cannot measure what and how changes to the service be they through new technologies, operational profile or changes in maintenance regimes will bring about savings in energy, carbon, maintenance and the like.
- Good asset management is therefore key and hence an accurate inventory is important with the right attributes recorded.
- ILP updating TR22 to reflect the changes

DUoS

Distribution Area	Half Hourly Tariffs			
	p/kWh	p/kWh	p/kWh	Average p/kWh
ENW	42.508	2.471	1.622	3.179
NPG - Northern	25.830	1.239	0.143	1.859
NPG - Yorkshire	22.758	0.857	0.051	1.543
SP - Scotland	22.453	1.011	0.591	1.913
SP - Manweb	31.591	1.024	0.448	2.326
SSE - Southern	20.569	1.759	0.426	1.464
SSE - Hydro	14.450	2.577	1.193	2.860
UKPN - Eastern	19.845	0.631	0.539	1.530
UKPN - London	19.805	1.013	0.435	1.572
UKPN - South East	25.882	0.731	0.519	1.843
WPD - East Mids	29.914	1.253	0.669	2.202
WPD - SWales	42.645	2.546	0.959	3.118
WPD - SWest	78.944	1.179	0.904	3.613
WPD - Midlands	32.872	1.377	0.728	2.413

DUoS – WPD East Midlands



Western Power Distribution
(East Midlands) plc

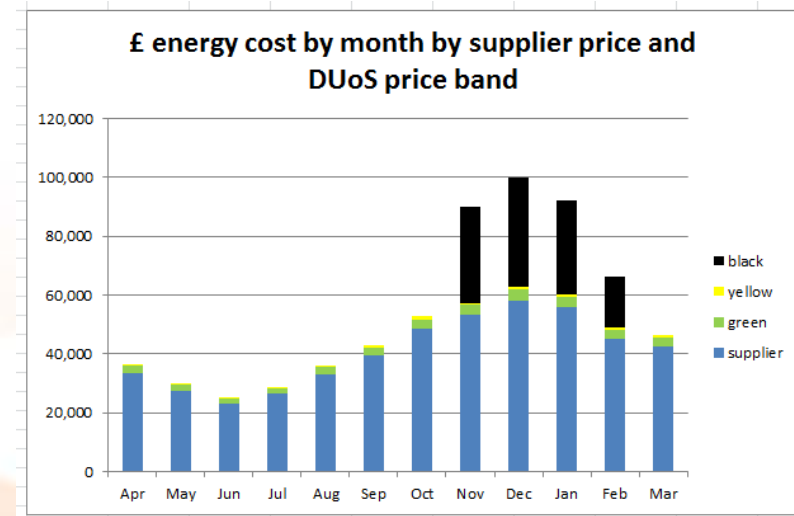
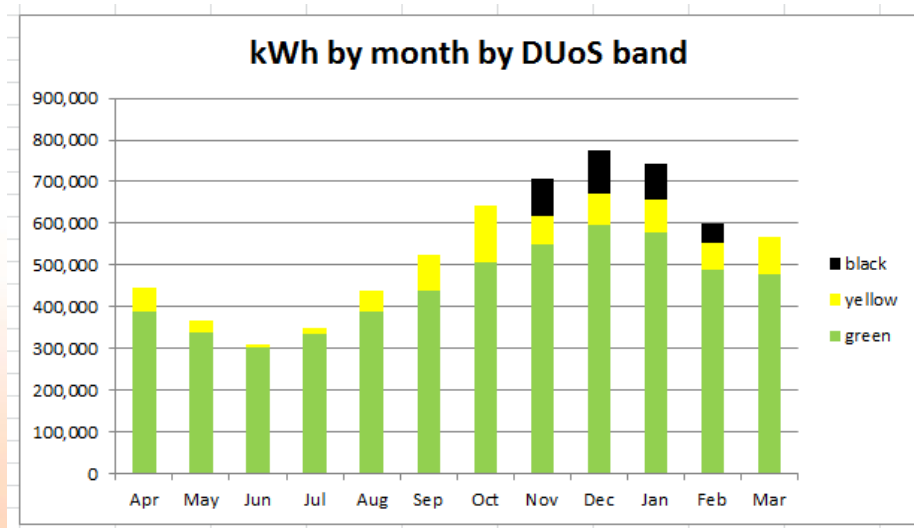
Use of System Charging Statement

Time Bands for Half Hourly Unmetered Properties			
	Black Time Band	Yellow Time Band	Green Time Band
Monday to Friday Nov to Feb	16:00 to 19:00	07:30 to 16:00 19:00 to 21:00	00:00 to 07:30 21:00 to 24:00
Monday to Friday Mar to Oct		07:30 to 21:00	00:00 to 07:30 21:00 to 24:00
Weekends			00:00 to 24:00
Notes	All the above times are in UK Clock time		

Annex 1 - Schedule of Charges for use of the Distribution System by LV and HV Designated Properties

	Open LLFCs	PCs	Unit rate 1 p/kWh (red/black)	Unit rate 2 p/kWh (amber/yellow)	Unit rate 3 p/kWh (green)	Fi p/
NHH UMS category A	800	8	1.867			
NHH UMS category B	801	1	2.491			
NHH UMS category C	802	1	4.115			
NHH UMS category D	803	1	1.402			
LV UMS (Pseudo HH Metered)	804	0	36.992	1.074	0.619	
LV Generation NHH	986	8	-0.712			

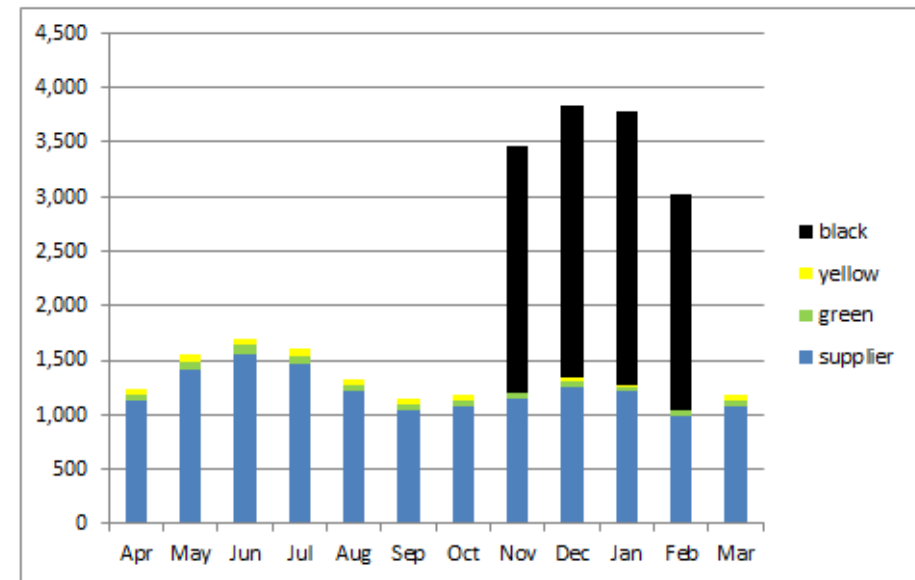
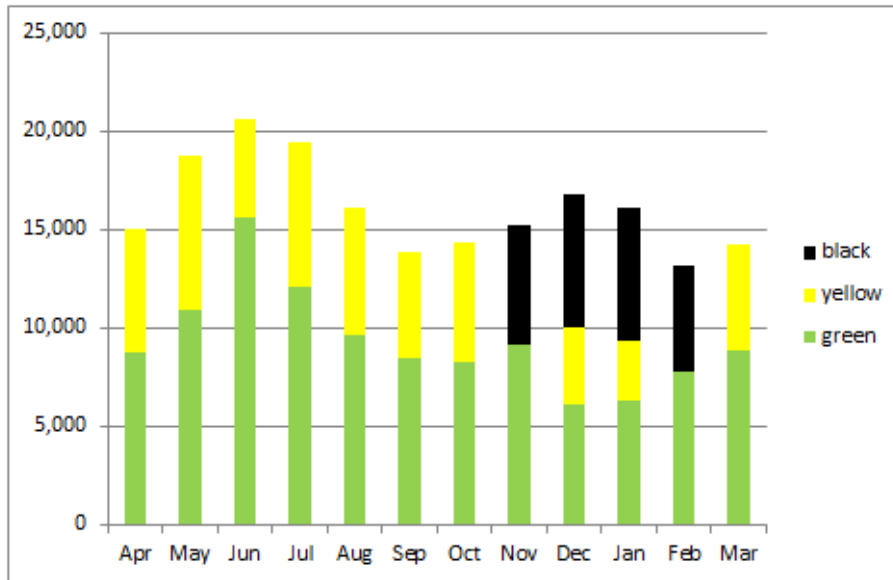
Effect of DUoS – base load



- allocate kWh across DUoS time bands
- work out total £ of DUoS;
- avg is 2.49p per kWh

- assuming total kWh tariff is 10p, subtracting DUoS gives base load total £, from which we derive base load tariff as 7.51p per kWh
- chart shows the resulting make up of £ payable through the year as base load tariff (blue £630k) and DUoS tariff (green £33k, yellow £8k, black £119k)

DUoS - trimming



– allocate trimming kWh saved across DUoS time bands

– work out monetary savings:
DUoS + base tariff components

- in winter, savings from trimming occur in the expensive (black) DUoS period
- overall, monetary saving is higher than the pro-rata energy saved
 - kWh saving 3.0%; monetary saving 3.86%

Education and Competency



- ILP Exterior Lighting Diploma
 - Flagship Industry recognised course
- Series of 1 day courses
- Competency Scheme
- Loss of competent Staff
- CDM requirements

FUNDAMENTAL
LIGHTING COURSE

FUNDAMENTAL
LIGHTING ELECTRICAL
COURSE

FUNDAMENTAL LED
COURSE

NEW BRITISH
STANDARD FOR
LIGHTING BS5489
TRAINING

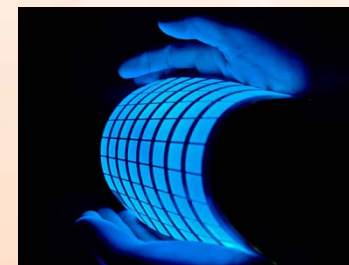
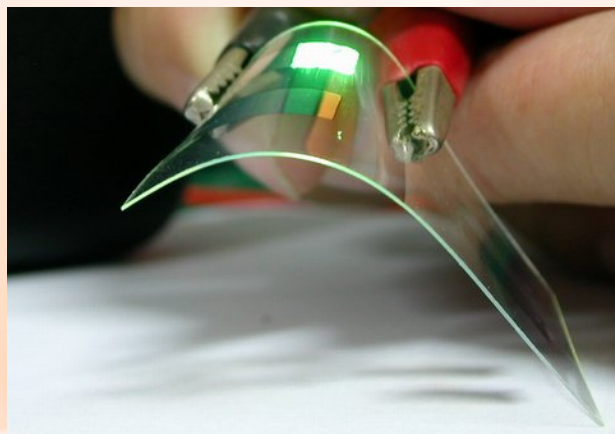
ILP INTERNATIONAL
STREET LIGHTING
CERTIFICATE

EXTERIOR LIGHTING
DIPLOMA

LET DIPLOMA IN
LIGHTING

The Future in 10 years!

- Links to Lighting and Health
- OLED's
- Dynamic Lighting
- No Lighting!!



Summary



- Research, Development and New technologies
- Local Authorities and The Private Sector Working together.
- Education & Competency
- Where will we be in 10years

So I ask you “Is Lighting an Endangered Species”!!!!

- Thank You for Listening

