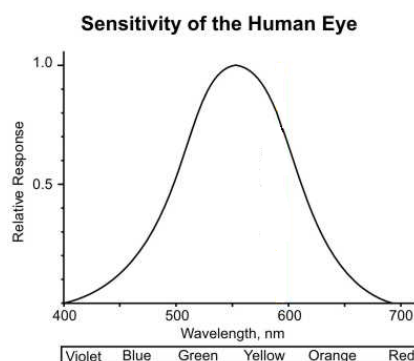


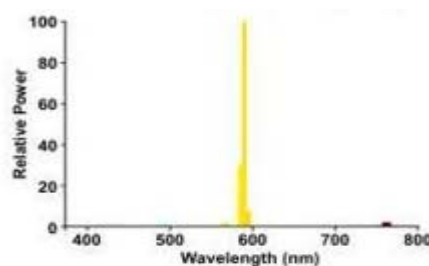
CORNWALL FUTURE LIGHTING STRATEGY FACTSHEET

BACKGROUND HISTORY

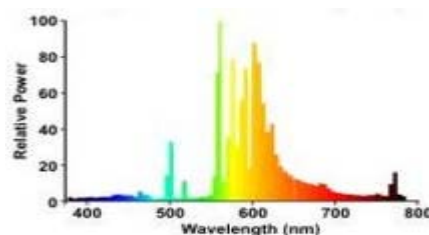
- Since the 1970's Cornwall has been operating mostly Low Pressure SOX (Orange type) lights; In the 1990, in parallel to the column replacement programme (past design life columns) a decision was taken to migrate because of its improved colour properties and better environmental properties (light pollution control) to move to High Pressure SON.
- Cornwall's current operating lighting stock 47,097 units of which:
 - 68% SOX in the 35 to 180 watt range units totalling 31,778 mainly residential roads
 - 32% SON in the 70 to 400 watt range units totalling 15,319 mainly on all main routes



LOW Pressure Sodium - SOX



HIGH Pressure Sodium - SON



- Energy trading has always remained fairly low until the last 5 years when the market demand from the emerging nations has made the energy unit price become very volatile. This volatility in the autumn 2006 prompted Essex County Council to threaten to switch off all of its lights.
- The Essex statement initiated the Institution of Lighting Engineers (ILE) & County Surveyors Society (CSS) to produce a Guidance Document titled "Invest to save". This document outlined the benefits of lighting, but more importantly outlined methods to reduce consumption and cost through different strategies.

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CONSULTATION

- Following publication of the “Invest to save” report in June 2007, Cornwall undertook to review its lighting policy and derived a number of possible options.
 - **Option 1** – Dusk to Dawn (D2D): Photo switches on when light falls to 70 lux and switches off when the light reaches 35 lux.
 - **Option 2** – Part Night Switch (PNS) – Lights switch off at 12:30 am and on at 5:30 if needed
 - **Option 3** – Hybrid: Dimming on Main Roads, PNS on residential and Dawn to Dusk in the Urban areas
- In a 3 month public consultation undertaken to seek opinion on future street lighting policy using the 3 options. The results illustrated that the favoured was **Option 3 – Hybrid (55%)**, Option 1 – Dusk to Dawn (31%) and finally Option 2 – PNS (13%).
- These results were presented to the Environmental Policy Development Scrutiny Committee on the 18th June 2008 where it was resolved to produce an accurate Cost Option Appraisal to be presented to the Capital Advisory Management Group (CMAG).

OPTION APPRAISAL & COMMITTEE PROCESS

- An option Appraisal Report was presented to the CMAG group on the 26th September 2008. The Options presented were evaluated against the following objectives:
 - Service related
 - energy and carbon management
 - Flexible management of stock
 - Community
 - crime and disorder
 - sustainability
 - casualty reduction
 - Highway Asset Management Plan
- The results of each test are indicated at the front of each option. Where there is no number that option has failed to meet all of the appraisal objectives.
 1. (Fail) **Do Nothing**: The council will have no control of consumption and will be at the mercy of the energy market and unit price.
 2. (Fail) **Decommission lights**: There may be additional costs in upgrading road marking, studs and sign quality to compensate for the removal of the street lighting. There may also be an increase casualty figures.
 3. (Pass 65) **Change to new technologies (NT) on Major Group A roads**: A replacement programme on the higher consumption SON lights only, which will bring an approximated 16% reduction in energy consumption.
 4. (Pass 84) **Change all lights to NT and operate D2D strategy**: Selection of this option would see all of the lights operating on the current switching regime but there would be a reduction of 27% approximately in energy consumption.
 5. (Pass 95) **Change lights to NT and operate dimming on the entire road network**: This provides a saving in energy, but there is a need to change the control system at each lighting unit. This would provide flexibility in managing the stock, making it possible to dim lights through the night, or increase light levels in areas identified by the police as being a concern for night time crime

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6. (Pass 84) **Change all lights to NT and operate PNS on the entire road network:** Approximately only 10% of those town/ parish councils supported for part night switching in the consultation. Whilst this would see a large reduction in energy consumption, there would be greater 'wear' on the electronic gear and bulbs which may reduce life expectancy. The Police Community Officer group were wholesale against this option for fear of crime reasons. However this is difficult to substantiate and some indications are that groups of youth disperse in the darkness rather than congregate around the light.
7. (Pass 98) **Change all lights to NT and operate Diming on the entire road network:** A dynamic control system brings about flexibility in managing the stock. This would enable units to dim lights through the night, or increase light levels in areas identified by the police as being a concern for night time crime, PNS in residential communities. The introduction of this operational strategy would result in a saving on consumption of 35% to 50%.
8. (Fail) **Change equipment to Micro-generating technologies:** Limited development of technologies in these areas currently make this option not only unaffordable but limiting currently on performance.

- The CMAG group resolved that a detailed costing including the allowance for Prudential Borrowing rates to quantify the cost of appraised option 7 and where possible payback periods should be calculated against the speculative energy price and service benefits.
- Following negotiations with a number of the leading manufacturers and after evaluating the appropriate new technologies a price delivery framework has been agreed. These prices were secured in December before the decrease in the Pound against the Euro. Due to the fact that the majority of the equipment is manufactured in Europe and assembled in the UK, there is a risk and likelihood that if equipment is renegotiated that prices will increase, adding maybe as much as 30% to the project costs. Tendered prices came in 30% estimate model first taken to the CMAG group in September.
- Estimating the final financial model with the current market information and trends the report was taken back to the CMAG group where it was resolved to recommend that the project be approved for delivery by the Executive Committee.
- The project will be delivered in conjunction with our current routine maintenance operation (most cost effective way of installing equipment) meaning that the project will take 3 years to fully deliver. Installation of the new equipment will begin in the East (Lanivet, Lostwithiel & Torpoint) and West (Porthleven, Helston & St Newlyn East) of the County. However, once the equipment has been changed on site, the benefits of any change in strategy can then be applied immediately as the new equipment is installed, through actual monitoring and charging of energy used not estimated and Diming or Part Night switching strategies can be implemented following discussions with the appropriate communities.
- To date this is the position, with where the Highway Electrical manager is currently discussing with the manufactures the cost of delivering the NT equipment and with the councils Term Contractor on the cost and mechanism for delivery.
- It is expected if the CMAG resolution is agreed that the project will be delivered in conjunction with our current routine maintenance operation (most cost effective way of installing equipment), where each light is visited once every 3 years. Therefore to apply full equipment change will take 3 year programme; once the equipment has been change on site the benefits of any change in strategy can then be applied immediately as the new equipment is installed.
- How are we able to install when other authority models require PFI contracts to do it. The County Council undertook to replace its column stock in the 1990's. This has meant that one of the most costly parts of the asset the column and electrical connection require no alteration. It is just the lantern, lamp and addition of the control system.

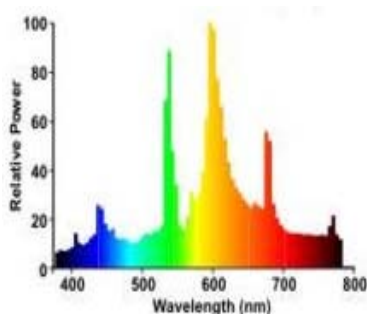
CORNWALL FUTURE LIGHTING STRATEGY FACTSHEET

- Electricity charges for un-metered are estimated based on an inventory profile and a specimen population of the control photocells. It is stated that this can be as much as 16% over on some invoices by nature of the specimen population not being exactly representative of the asset. The proposed control system for this project is in operation in Cornwall (Crackington Trial) and is the only approved direct metering system, this means that we will only be paying for the electricity we use and not what is estimated that we use.
- Adoption of the project will also see savings in service as the control system automatically reports that there is a defect and this can be issued straight to the Maintenance Contractor at the next available opportunity. Future development will also allow for the system to predict failures therefore be a truly proactive service and not reactive

PROJECT DELIVERY

- Strategic Partners to deliver the “Invest to save” Project:
 - Resources and Manpower - SEC
 - Materials and Equipment
 - Luminaires – URBIS the “Evolvo”
 - Control Gear – ZODION “ZEBC”
 - Central Management System – ZODION “Vizion”
- Summary of Estimated Project Costs
 - Prudential borrowing over 25 years
 - Current operational cost profile requirements for next 25 years (incl. CPF, etc) - £148m
 - Revised operational cost profile estimate after I2S project – £94m (incl. borrowing interest)
 - Potential saving up to £54m over 25 years
- Potential Savings (Existing CO₂ emissions 7,949)
 - Do nothing is not and option energy price increase to Cornwall this year 49% -
 - Just changing gear and lamp – 27% energy reduction & CO₂ saving of 2,130 tonnes
 - Integration of Cosmo and Control System – up to 60% energy reduction & CO₂ saving of 4,769t

Cosmopolis Lamp



New Luminaires URBIS – “EVOLO”



Gear & Lamp Replacements of SON equipment

