



SMART SPP

innovation through sustainable procurement



Working with the market to procure sustainable solutions

A case study from the London Borough of Bromley

An initiative of:



Supported by:



A SMART SPP project publication (www.smart-spp.eu)

Publisher: The SMART SPP consortium, c/o ICLEI – Local Governments for Sustainability, 2011

Authors: Helena Estevan, Mar Campanero i Sala, Ana Paula Duarte, Ana Cortiçada, Leonor Sota, Paula Trindade, Bente Møller Jessen, Henrik J. Kiel, Peter Joyce, Dave Starling, Kevan Twohy and Kevin Willsher

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Design: Rebekka Dold, Freiburg

Layout: Stephan Köhler, Raimund Tauss, Freiburg

Photos: sxc.hu (pages 1, 12), the SMART SPP consortium (rest)

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Introduction to the case study

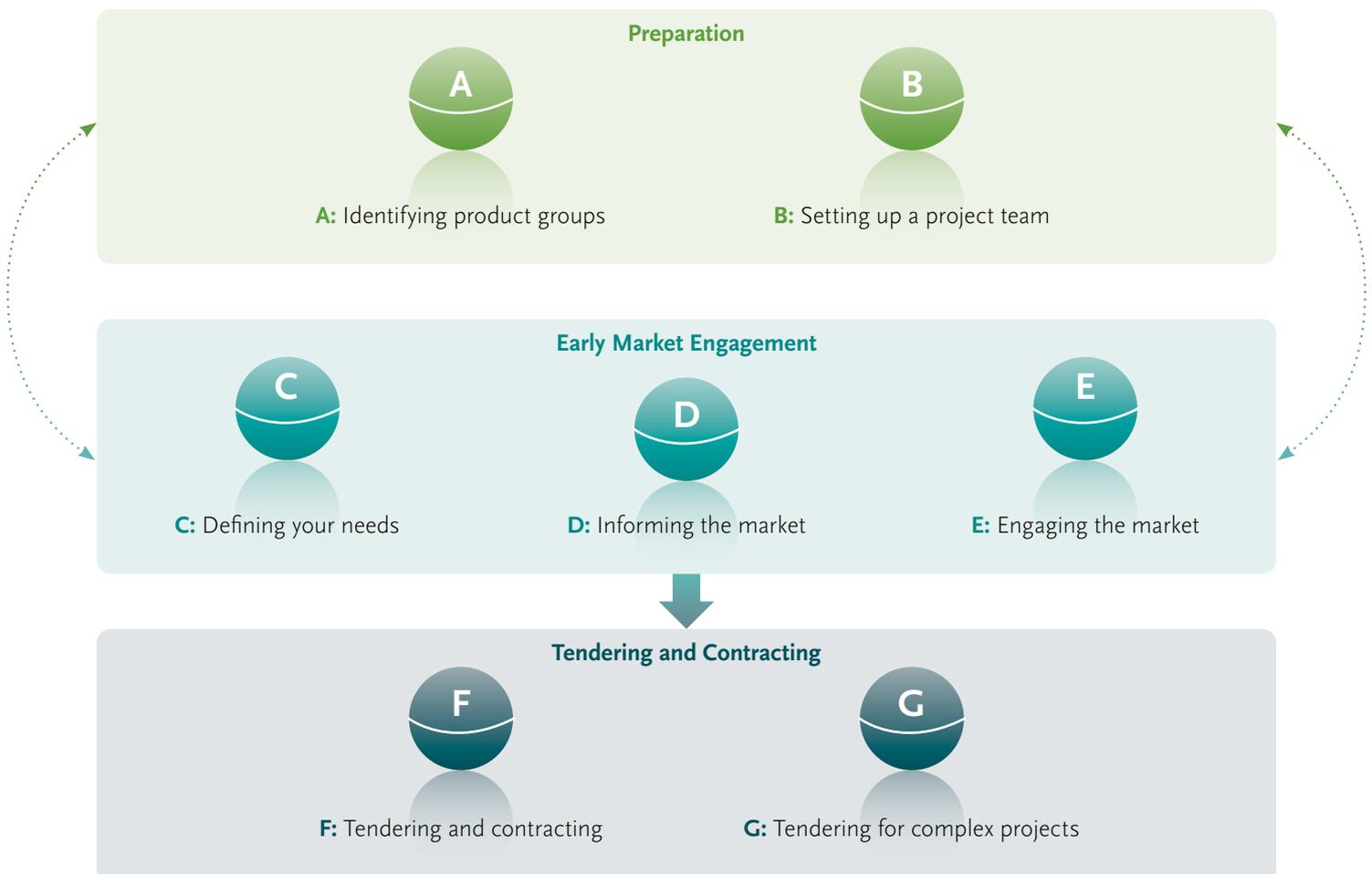
In this case study the London Borough of Bromley (United Kingdom) shares its experiences, conclusions and lessons learned.

London Borough of Bromley has used a particular procurement approach (see figure 1) which focuses on engaging the market effectively before tendering (early market engagement). This includes the assessment of the life-cycle costs and related CO₂ emissions of innovative products such as Light Emitting Diodes (LEDs) indoor and street lighting, energy efficient vending machines and electric mobility. This has been done before, during and/or after tendering.

The SMART SPP guidance includes a guide to procuring innovation, describing different ways to engage with the market, and a tool to calculate the life-cycle costs and CO₂ emissions of products. It can be downloaded at: www.smart-spp.eu/guidance.

Figure 1

Activities to guide authorities through a flexible approach to drive innovation through sustainable procurement



London Borough of Bromley

1. Summary

Through SMART SPP the London Borough of Bromley has been assessing the emerging market for LED lighting technologies.

Bromley has worked with the Eastern Shires Purchasing Organisation and Global to Local sustainability consultants to facilitate a framework of LED lighting suppliers accessible to the wider UK public sector.

Bromley has engaged with a wide range of suppliers, both manufacturers and importers, and lighting consultants. These organisations range from small start-up companies to large multi-nationals. Bromley has trialled LED office lights at two locations in the Civic Centre, tested the SMART SPP LCC-CO₂ Tool and proved the concept to implement LED lights in forthcoming office refurbishments.

The framework notice is forthcoming and will be advertised by ESPO in July 2011.

2. Background

Located to the south east of central London, Bromley is one of the 33 boroughs that make up Greater London. By area Bromley is the largest London borough; covering 58 square miles, 30% larger than the next largest borough. It comprises a wide mix of land use types within both urban and rural settings. The borough has a population of 300,000 people.

Bromley had a number of key drivers for joining the SMART SPP project. Bromley has long prided itself on being 'the clean and green' London borough, a reflection of its relatively rural setting and corporate priority of providing 'a quality environment'. Finance is another key issue for Bromley, the borough has always set one of the lowest local taxation rates in London each year.

Recently the cost of energy has come under increased scrutiny, the borough now spends circa £3 million on electricity and gas, in addition to which, it is also subject to the 'Carbon Reduction Commitment', a UK government levy on energy use for large organisations which will cost a further £300,000 a year. Also, Bromley, like a lot of public sector organisations is experiencing significant cuts to its funding (£30 million over the next two years) and needs to find ways of 'doing more with less'.

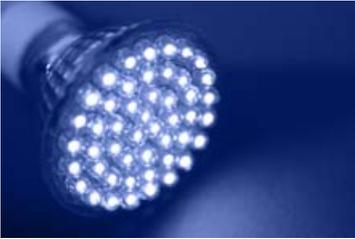
To save money Bromley has recently initiated a programme of office consolidation; refurbishing office accommodation in some buildings to increase capacity and in turn enable the disposal of surplus buildings. This programme has provided the opportunity to investigate and implement options to improve the energy efficiency of the consolidated estate.

This range of factors provided the incentive and opportunity to work on the SMART SPP project, save money and minimise energy use through implementing innovative sustainable technologies.



3. Experiences with the SMART SPP approach to driving sustainable innovation

3.1 Activity A – identifying appropriate product groups



Organisational procedures and policy are vital to successful project outcomes. To lay the foundations for the SMART SPP project Bromley changed its internal contract procedure rules (financial regulations) to base contracting decisions on whole life costs. This commits the authority to assessing the total cost of ownership of a good, work or service, factoring running costs and disposal costs etc. (as well as the usual acquisition cost) into the purchasing decision. Bromley also secured executive endorsement for sourcing innovative technologies via the adoption of a Sustainable Procurement Policy agreed by the Council's Chief Officers.

In addition to this procedure and policy framework, Bromley set targets to reduce energy use. Previously Bromley had successfully achieved a Local Area Agreement with central government to reduce total energy use from its core estate, after which, Bromley proceeded to sign up to the Local Authority Carbon Management Programme. This programme is run and externally assessed by the Carbon Trust. Through the programme Bromley is committed to cutting its carbon emissions across all its activities (travel, suppliers, buildings, staff commuting) by 25% by 2015.

Bromley considered several category groups for the SMART SPP before settling on LED lighting. LED lighting was chosen as it would contribute to reducing the council's energy costs, contribute to carbon reduction targets and the office consolidation programme would provide the opportunity for trials and installation. Lighting is also an ideal product to trial the life-cycle costing approach to tendering.

3.2 Activity B – setting up a project team

The Bromley project team worked closely with the other UK partners, the Eastern Shires Purchasing Organisation and Global to Local, sustainability consultants. The internal procurement team is multi-skilled and had expertise in procurement, supplier management, sustainability and procurement law however external advice and clarification was sought when required. The project team drew on the council's property management division and external lighting consultants to advise and assess the differing lighting technologies. Specific advice on the tool was also sought from the UK Government's Cabinet Office and Improvement and Development Agency. This gave the project the key skills to engage with the market, assess the products (whether they were fit for purpose), assess running costs and environmental impacts and establish the appropriate route to market.

3.3 Activity C – defining your needs

Bromley's needs are relatively simple, low energy office lighting. Current lighting arrangements are typically warm white light fluorescent T5 or T8 tubes. These are a conventional common place lighting solution characterised by a low acquisition cost but high running cost, both in terms of electricity consumption and failure rate. Bromley was looking for a solution which provides the same or improved lighting performance which is suitable for office conditions, but also uses less electricity and has lower maintenance costs.

To benchmark this, current lighting consumption was established from calculations based on the wattage and known usage time of the lights. Overall energy costs are known from electricity bills. Carbon emissions are known from calculations for the local authority carbon management programme and carbon reduction commitment.

3.4 Activity D – informing the market

The project team engaged with the market consistently over the course of the project meeting with small SMEs and large multi-nationals. Potential suppliers were sourced through attending conferences and trade shows, internet searches, sales literature and word of mouth. The UK project co-ordinator organised a supplier seminar to further interest in the opportunity. LEDs are a rapidly maturing market with lots of new entrants. Some suppliers were inexperienced when dealing with the public sector procurement rules. All suppliers were interested in our opportunity though some prioritised simple quick orders over participating in a tendering process.



3.5 Activity E – engaging the market

When engaging the market it became apparent that the market was maturing rapidly and new developments were coming on stream all the time. However there was also a wide variety in the quality of supply. There are no agreed quality standards for LED lighting in the UK or Europe and this has led to some suppliers being poor quality and even dangerous; failing to meet minimum health and safety standards. Due to this there is a need to ensure the performance of all products is adequate and measured in a consistent way to allow fair comparison. After consulting with external expertise a number of performance characteristics will be considered in the tender:

- How is the life of the products defined? This should be stated both in terms of lights loss (performance over time) and physical failures.
- What is the lumen depreciation of the lights?
- What is the colour rendering index?
- How stable is the colour temperature?
- What ambient temperature is the luminaire performance based on?
- What is the photometric distribution
- What is the driver current?
- What is the power factor?

In addition to this we have also installed a number of 8W cool white LED tubes on a trial basis in two offices within the Bromley Civic Centre. These LEDs were retrofitted into existing luminaires and replaced 18W T8 fluorescent tubes on a like for like basis. The luminaires needed to be rewired to have the ballast removed. This was an unusual procedure and took the electrician an afternoon to complete one office. However by replacing an 18W tube with an 8W tube the offices now use 50% less electricity to light. The new lights were also well received by the staff affected who enjoyed being part of the trial.



3.6 Activity F – tendering and contracting

ESPO will be tendering for a framework for sustainable lighting suppliers in July 2011. This is proposed to be an open tender with strict pass/fail quality factors. Competitive dialogue was considered however given the number of SMEs in the market, their unfamiliarity with public sector procurement and the accelerated development of LEDs this was considered unnecessary. Whilst it would be preferable to use outcomes and output specifications, there will have to be a level of technical input specification as the quality of supply is so variable.

4. Life-cycle costing and CO₂ emissions

Describe the outcomes of using the SMART SPP LCC-CO₂ Tool and the results from the process. Include information on the financial results and also note if/how the tender evaluation sheet was used.

Bromley has made use of the tool as a comparator on a recent tender for multifunctional devices (combined printers, photocopiers, scanners and fax machines). Bromley found the tool technically complex to use and that it was difficult to source the information required from the suppliers. The tool was shown to smaller suppliers who also said they would not be able to provide some of the information required, but that they could demonstrate energy saving and payback for their products without using the tool. The tool does provide scope for allowing the different elements of the tender process and options appraisal to be completed and evaluated on a like for like basis, which the different calculation techniques used by the different suppliers did not.

5. Conclusions and lessons learnt

Procurers need a strong risk appetite when sourcing cutting edge innovative solutions; emerging technologies are by their nature unproven and under development.

At present there are no defined quality marks for LED lights and some imported supplies would not meet European safety standards.

The supply market for emerging technologies presents risk when compared to purchasing established products; smaller suppliers can be more responsive and innovative, however they can also cease trading at short notice and may not be able to honour guarantees or maintain technical standards.

A multi-disciplinary team with engineering expertise is vital when assessing product performance and life-cycle costs. The knowledge gained from early market engagement and external advice was crucial when discussing the technical aspects of lighting.

Beware of resistance and conflicting messages on the merits of emerging technologies; some colleagues can take a great deal of persuasion to look beyond conventional solutions. We discovered that there is wide variation in quality; this was used to resist implementing LEDs. However this is not a reason to avoid implementing innovative solutions, but it is reason to research the market thoroughly and specify high quality products.

For LED installations a design and fit approach is preferable to supply only and retro-fitting into existing luminaires. The characteristics of the light cast by LEDs differs from fluorescent tubes, fixing LEDs into existing luminaires can compromise the functional performance of the LED resulting in different light temperatures, unwanted shadows and vacant fittings where LEDs are not required but fluorescent tubes were. Conventional fluorescent tube luminaires also need adjusting by an



electrician to accommodate LEDs, if luminaires are not adjusted correctly the LEDs can be compromised and will consume more electricity and burn out quicker, negating the cost savings and environmental benefits. These difficulties can be overcome but it is preferable to start afresh using a planned lighting design.

Challenging a supplier to achieve a certain level of energy reduction, light level and budget can be a stronger drive for innovation than suppliers working with the confines of a strict input specification.

6. Outlook

Further LED installations throughout the Bromley estate are planned, both internal and external. The borough will also be looking at street lighting applications. Bromley currently spends £1.2 million each year on street lighting, there is scope for significant energy and cost saving in this area.

Beyond LEDs the borough is also looking to take advantage of the new feed-in electricity tariffs to install solar photovoltaic arrays at the Civic Centre site. Feed in tariffs allow on site micro-generation technologies to pass surplus generation back to the grid and claim payment for the electricity. Bromley is engaging in pre-procurement discussions with suppliers to understand the technology, market, business case and scope for installation.

7. Contact

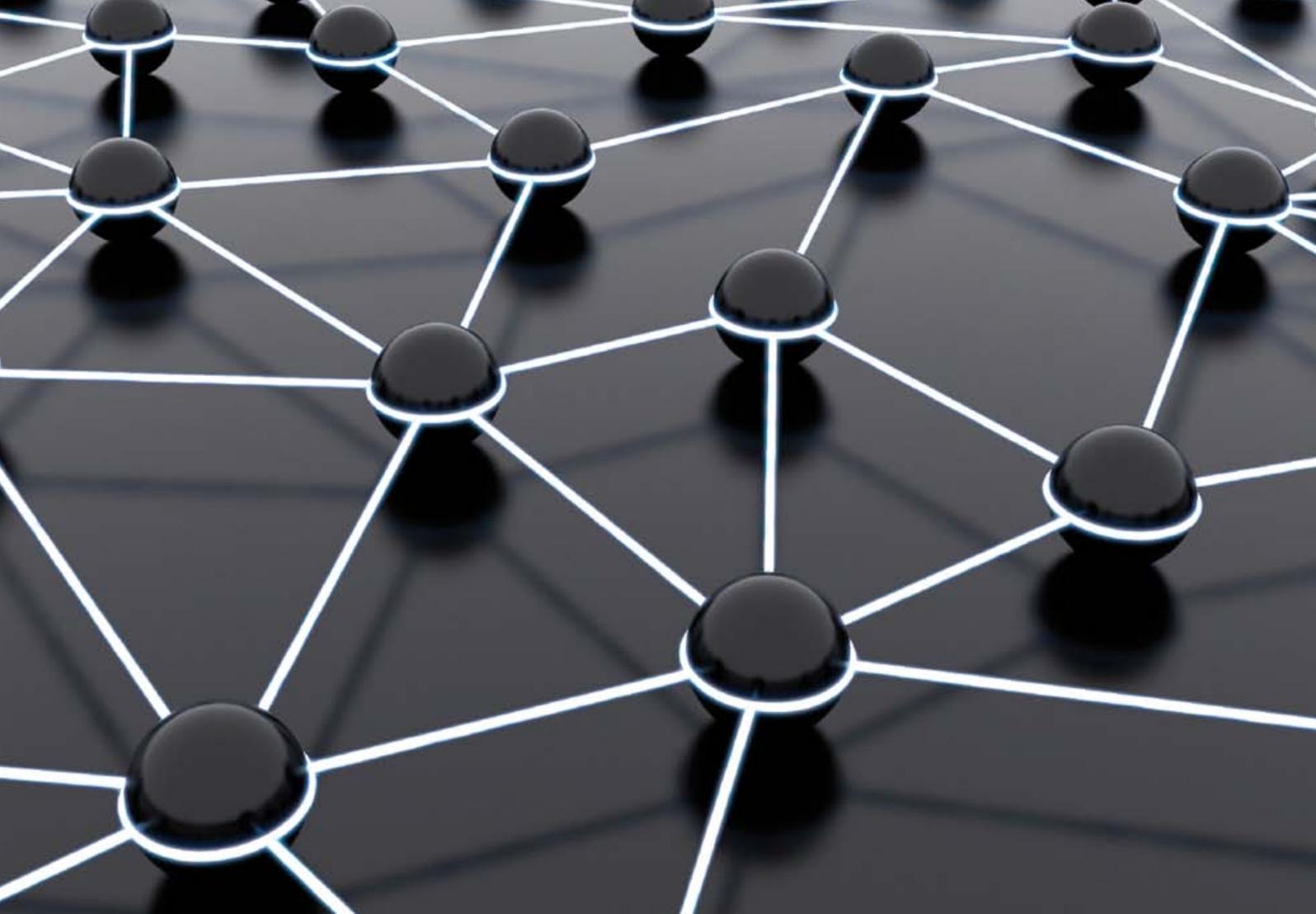
Dave Starling, Head of Procurement, London Borough of Bromley,
dave.starling@bromley.gov.uk



Annex

Main performance specifications for purchasing LED public lighting.

Requirement	Specification
<i>Luminous efficiency (light source + electronic and electrical components + optics)</i>	≥ 80 lumen/W
<i>Overall useful lifespan (MTTF)</i>	$\geq 65\ 000$ hours
<i>Luminous flux depreciation at the end of the useful life of the lamp (L70)</i>	Max. 30 %
<i>Protection index</i>	$\geq IP66$
<i>Mechanical resistance of equipment</i>	$\geq IK08$
<i>Total harmony distortion (THD)</i>	≤ 20 %
<i>Power factor</i>	> 90 %
<i>Colour temperature</i>	Max. 4500 K
<i>Luminance</i>	min. 10 lux
<i>Access to components (in case of fault)</i>	Easy access to components and these can be replaced without difficulty.
<i>Luminous flux regulation capacity of lamp group</i>	Depending on luminosity available and programming
<i>Control and monitoring system</i>	Possibility of future expansion



SMART SPP – innovation through sustainable procurement

Running from September 2008 until August 2011 “SMART SPP – innovation through sustainable procurement” is a three year project which promotes the introduction of new, innovative low carbon emission technologies and integrated solutions onto the European market. This is being done through encouraging early market engagement between public authority procurers and suppliers and developers of new innovative products and services in the pre-procurement phase of public tendering.

SMART SPP is an initiative of the Procura+ Campaign, run by ICLEI – Local Governments for Sustainability and designed to help support public authorities across Europe in implementing Sustainable Procurement and help promote their achievements.

For more information visit www.procuraplus.org

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