1 Engage

2 Justify

3 Implement

Buyer's Guide

4 Sustain

# Humble Lamppost

## Buyer's Guide

**Packaged** smart cities solutions

**CONCEPT DOCUMENT**

This is a 20% concept document. It includes only an excerpt of the full 20% draft, and is intended to provide an outline for key stakeholders

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# 1 INTRODUCTION

This Buyer's Guide is intended for **city officers, project managers, procurement personnel, and nominated advisors** that seek to acquire smart lampposts – being one of a number of very tangible smart city solutions. The document was prepared in collaboration with the Sharing Cities programmes, other lighthouse programme partners, and the European Innovation Partnership for Smart Cities and Communities (EIP-SCC) as part of ongoing 'packaging' activities.

A smart lamppost, by design, brings together multiple components in a new configuration, which when combined with different business models presents real challenges for cities to understand the technical and market landscape, and make appropriately informed acquisition decisions.

Cities acting in isolation will spend considerable resource doing market analyses – the structure of which will differ – and thus the sharing of this valuable market information will be minimal. This is neither good for cities, nor industry; and clearly therefore does not deliver the potential transformation of outcomes for society.

## 1.1 OBJECTIVES AND INTENT

**The primary objective of this buyer's guide is to put clear concise information, captured in a consistent manner, at the fingertips of city officers.** It addresses the questions of:

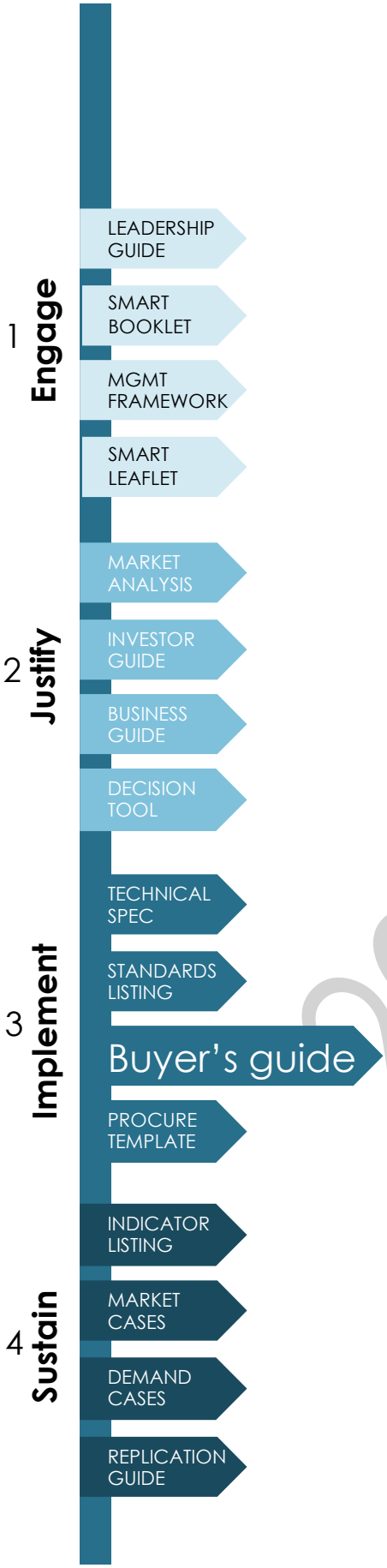
- *Which solution providers should I consider?*
- *What features and functions do their products have?*
- *How do I know which are best for our needs?*
- *How much do the solutions cost, and what range of returns result?*

The document provides objective market information on international and local Smart Lamppost solution providers (i.e. major companies, and niche SMEs). The intention is to publish and improve this database and document through ongoing collaborative use to grow the knowledge base.

More specifically, this Buyer's guide informs cities in three main areas:

1. Offering **knowledge on which solution providers** are available in the market
2. Providing a **structured evaluation of different options** across a variety of use cases and criteria to support market engagement
3. Capturing **indicative information to estimate budgets** and clarify business models

The guide will help build familiarity and confidence to speed and strengthen decision making, inform tender documents, and move the market towards a city-needs-led and demand-driven approach.




## 1.2 PACKAGING

The Buyer's Guide is one document within a growing portfolio that captures approaches, methods, tools and knowledge, to support a city throughout the entire life-cycle of a project; covering: engaging the audience, making the case, implementation, and sustaining value.

Packaging helps cities reduce the use of scarce staff time, speed the process, inform decisions, deliver greater consistency, reduce costs and add value from concept to operation. Packaging provides a trusted familiar source of structured guidance for cities, based on the experience of the lighthouse programmes. This adds value at an individual city level, supports collaboration, and enables scale-up of smart city solutions. It helps reduce risks by basing decisions on proven and tested methods.

For each measure, packaging addresses three themes (i) societal needs, (ii) technical options, (iii) business models and financing. Importantly, it also helps cities adopt or adapt solutions to their specific local context and needs (see figure 1).

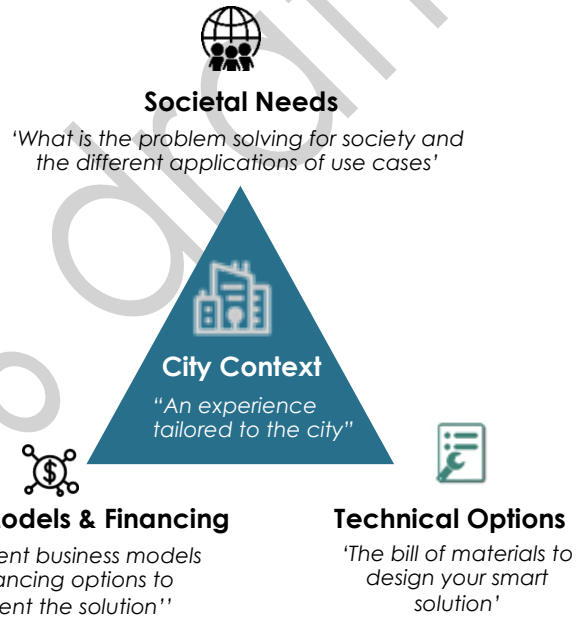



*Figure 1: Packaging Framework*

Packaging addresses the needs of different stakeholder groups: Political Leaders; Policy Advisors; City Officers; City Technicians; Procurement Officers; Advisors; Industry; Investors; and Citizens, as projects progress through their life-cycle stages.

The smart lamppost portfolio represents a growing number of documents covering these 4 project stages (table 1).

The purpose of the Buyer's Guide is to support decision making and implementation. Additional material e.g. procurement; standard listing, technical specifications, and the like are anticipated to be used alongside this document.

*Table 1: Humble Lamppost Portfolio of Documents*

| | | |
|---|---|---|
| **Stage 1: Engaging Stakeholders** |  <br>**Leadership Guide**<br>A 6-pages document clarifying for politicians and city leaders the opportunity of smart lamppost upgrade. Status: 80% draft |  <br>**Smart Booklet**<br>A 10page document targeted at the multiple city service owners that could benefit to provide a basic understanding of the key opportunities. Status: 80% draft |
| |  <br>**Smart Leaflet**<br>A 1-page brochure to raise awareness in the communities who live and experience the city.<br>*Status: 80% draft* |  <br>**Management Framework / 'Playbook'**<br>Support the project lead to align and integrate across the various service lines to support end-to-end project delivery.<br>*Status: 80% draft* |
| **Stage 2: Making the Case** |  <br>**Decision Support Tool Guide**<br>A digital online platform evaluating bankable smart lampposts projects directed for variety of cities decisions markers. *Status: 80% Draft* |  <br>**Investor Guide**<br>An easy read to raise confidence among investors and clarify the potential value of smart lampposts.<br>*Status: 80% draft* |
| | **Business Model & Financing**<br>Short Document capturing the different business models and financing options<br>*Status: No draft* |  <br>**Market Analysis**<br>A quick read capturing the market context for a smart lamppost. *Status: 100% (EIP-SCC)* |
| **Stage 3: Implementation** |  <br>**Buyer's Guide**<br>A market catalogue to inform cities on the different smart lamppost providers<br>*Status: 20% Draft* | **Procurement Template**<br>A Structured procurement template for use by buyer, however known by suppliers to help expedite and improve procurement process. *Status: No Draft* |
| | **Functional Requirements & Technical Specification**<br>~50-100 pages document on detailed specifications and tools; collaboration with BSI and 2 other national standard bodies<br>*Status: Proposal out for sponsorship* |  <br>**Standards Listing**<br>Identify the various applicable standards for design and procurement<br>*Status: 20% Draft* |
| **Stage 4: Sustaining Value** |  <br>**Value Monitoring Indicators**<br>Listing indicators (financial and non-financial) relevant for the Smart Lamppost<br>*Status: 50% Draft* | **Replication and Scale Guide**<br>Short 10-page guide including bench learning, collaboration and replication criteria.<br>*Status: No Draft* |
| | **Demand Aggregation Case Studies**<br>10-20 pages documents to support market aggregation to access economies of scale and support replication from city to city<br>*Status: No Draft* |  <br>**Market Case Studies**<br>*20-page structured document capturing different case studies to ensure awareness of market needs and innovation. Status: 20% Draft* |

## 1.3 THE 'HUMBLE LAMPPOST'

The Lamppost is an asset that is widespread in every city, yet all too often neglected (unless it stops working), and rarely considered of much value. Upgrading luminaires to LED presents cities with very bankable projects with substantive energy and maintenance savings.

The Humble Lamppost initiative was launched under the European Innovation Partnership for Smart Cities and Communities (EIP-SCC) to raise awareness of the hidden potential, and stimulate scale adoption in the market; with a goal to upgrade 10 million lampposts in European cities.

This hidden potential is through multi-purposing this network of powered infrastructure to deliver far wider value. Figure 2 illustrates some of the many use cases that go beyond just light, e.g. connectivity, image sensing, air quality monitoring, electric charging point, or connectivity.

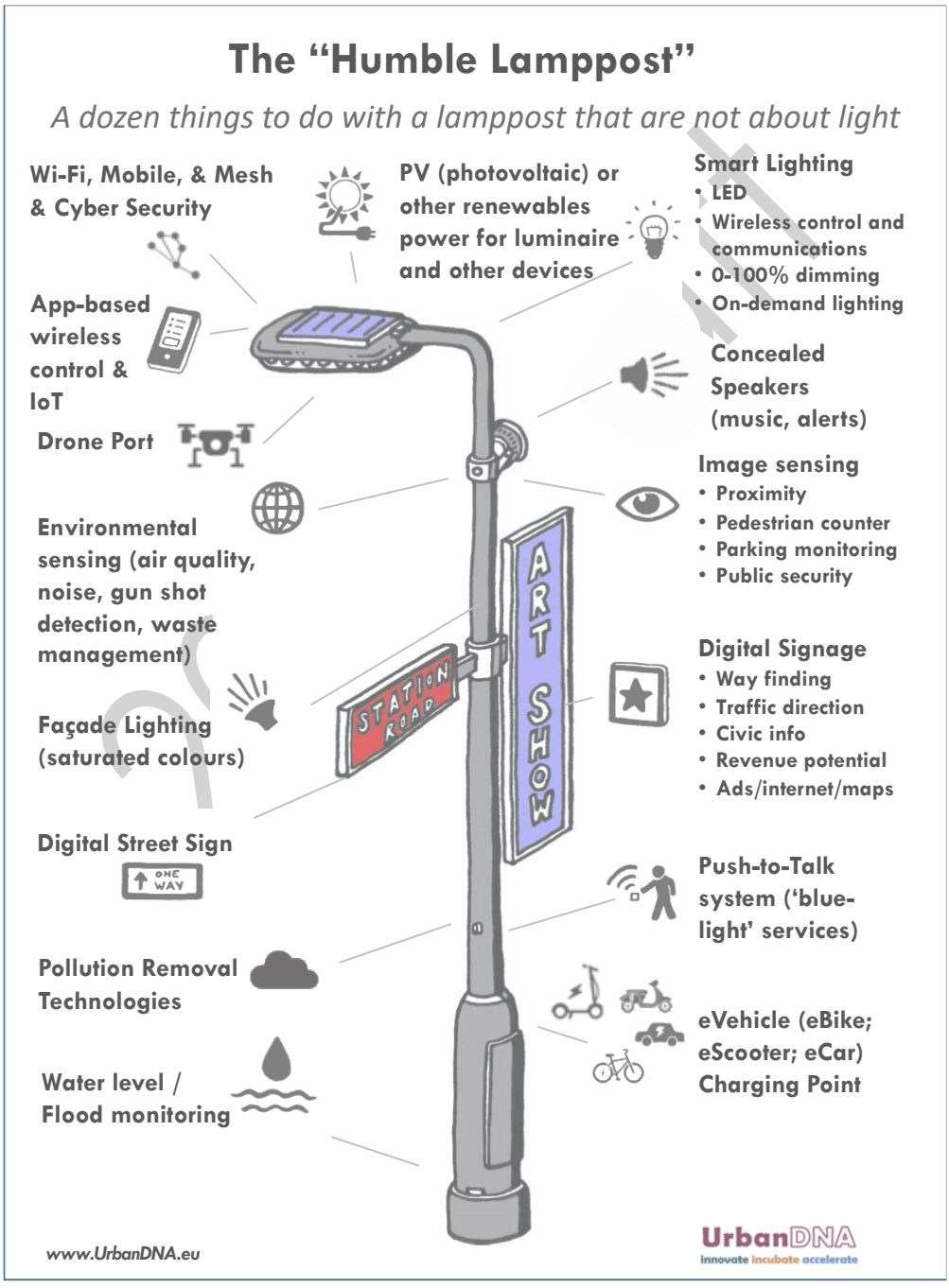



*Figure 2: The Multi-function 'Humble' Lamppost*

The smart lamppost market is still evolving and maturing. What is certain is that the lighting energy efficiency and operational savings are well-proven, globally. The value of smart added services and data are increasingly being recognised, and much potential has yet to be uncovered.

The value can be considered in three broad areas: (i) that related to light, through energy and maintenance savings (ii) the additional services and potentially revenue from smart features and functions that are provided (iii) the potential from the vastly increasing data that results. The value from these three areas is considerable. LED upgrade can deliver 40-80% operational savings – a bankable opportunity on its own. However, the potential from the latter two areas is very significant.

*A **"1-5-10 ratio" has been tabled by** experts[1] as a* ready reckoner *of the scale of potential. The ratio posits that If **one** is the value from LED energy and operational savings, **five** is the value from one plus smart added services, with **ten** is the value potential from data.*

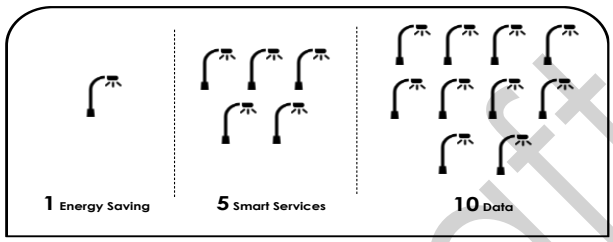



*Figure 3: The 1: 5: 10 Value Ratio*

The ratio is of course significantly dependent on many factors (e.g. ownership; regulation, energy pricing, carrying capacity of existing columns, etc.), however it is indicative of the potential value from looking at these assets through a new lens. This ratio is being further tested however it exposes the important discussion that a city should have about what scope to tackle for their smart lamppost project.

Cities face broadly two choices when it comes to upgrading their lamppost stock:

1. **"Bolt-On":** to upgrade the infrastructure with additional features and equipment, generally outside the pole, however depending on design, also within existing poles
2. **"Replace":** install a new multi-functional pole with light and other ancillary services.

These choices depend on the context of the city and its communities; how old the current infrastructure is; the choice of use cases; aesthetic preferences, and the like.

Given the natural development of any city it is quite likely that the end-result will be a combination of both.

**An open component-based approach and integrated functional design has been assumed.** This neither limits design innovation, nor forces 'one-size-fits-all' solutions. The intention of the component-based approach is to offer flexibility in application for different city contexts and needs; and seek to make the designs 'future proof', given the anticipated ongoing technological advancement of the various components of the solution.

The Smart Lamppost has been built up as **six major components** as shown in figure 4. These may be delivered as bolt-on or multi-functional pole.

[1] Developed at the IPWEA SLSC 2019 Conference Masterclass, April 2019

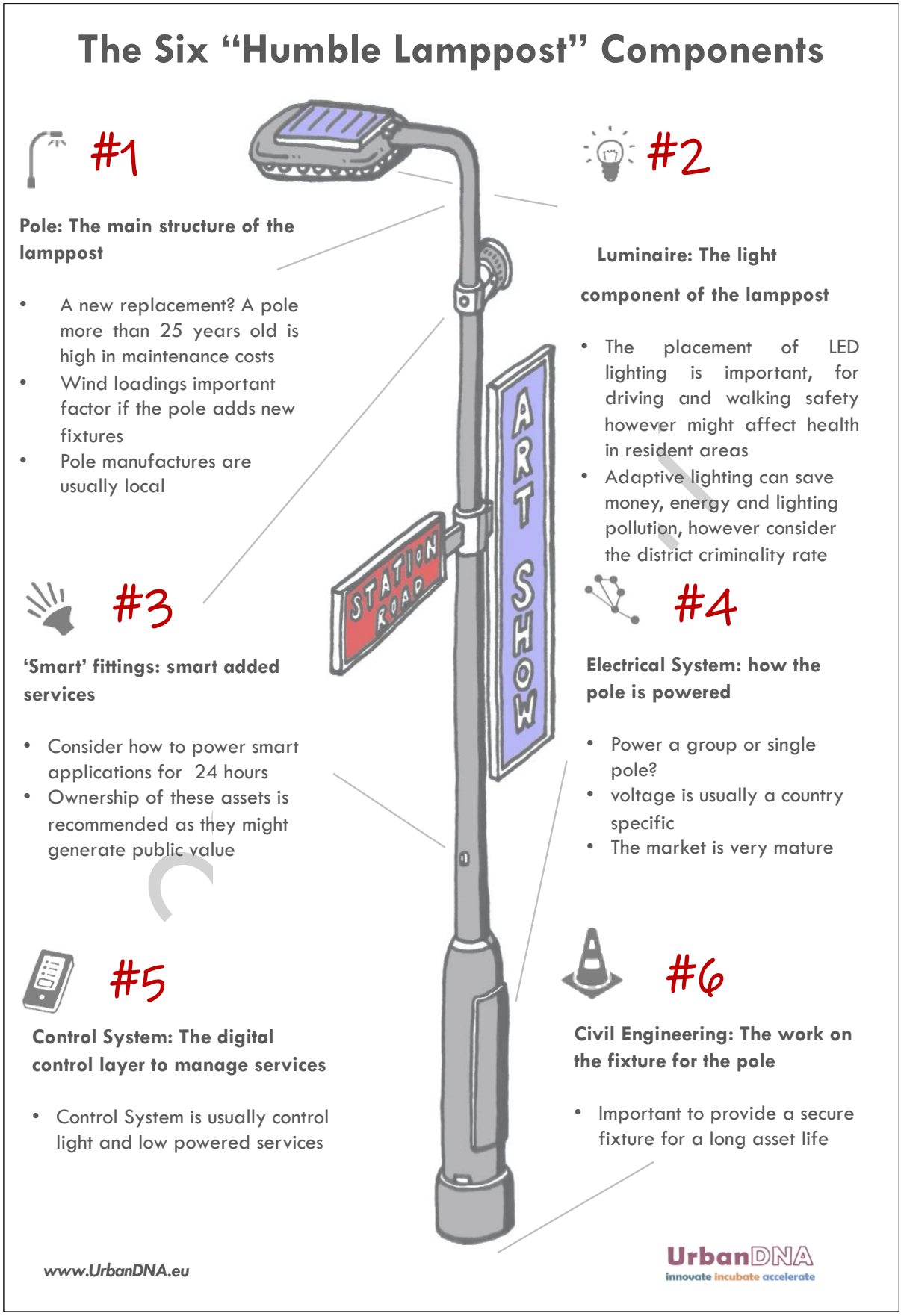



*Figure 4 The six components of the Smart Lamppost*

This structure helps to provide a **common language** for all sectors (cities, investors, industry). Each component has then been broken down into sub-components that are elaborated within this document.

The markets for each component differ: by maturity, geography, level of risk, cost and value delivered, nature of solution (e.g. business model), operational complexity; supplier type (e.g. SME or international provider), and the like.

Cities may wish to consider these components as they construct their strategy for how they define 'lots' for procurement. For a 'replace' strategy (i.e. a multi-functional pole), cities should consider components 1, 2, 3, and 5 as a whole; which will of course influence components 2, and 4.

## 1.4 USING THIS LISTING

This listing is structured in a self-explanatory and easy-to-use manner.

The layout and format where possible are consistent across the 6 main components. The listing provides information in three major forms:

1. **General information on suppliers** in terms of market coverage and solutions
2. **Component-specific technical information**: a more detailed set of facts, features, and criteria on each component.
3. **Price & Value**– a general outlook with a few examples, information such as cost of solutions, business models; ownership; financing options are captured.

## 1.5 LIMITATIONS

This document is neither fully complete nor comprehensive. All information is based on best captured at the time of publication.

The information contained herein is recognised to change regularly and potentially substantially.

**Cities remain fully accountable for validating the facts and figures** as they focus on their specific needs; and for the decisions they make as a result. That said, this does offer a fast start for cities. We are grateful for any feedback and updates.

# 2 GENERAL SUPPLIER INFORMATION

This part will inform the readers on some general facts about the market in terms of supplier options, market capacity, geography and the smart lamppost's components that suppliers are providing.

## 2.1 SUPPLIER INVENTORY

An overview of the current ~210 suppliers that provide predominantly component parts and specific software to support the smart lamppost market is listed in the table below. Advisors and pure services providers are not included.

*Table 2: Total Supplier Listing, by principal country*

| **SMART LAMPPOST PROVIDERS** | ***~210** Suppliers have been identified and characterised* | | | ***Breadth of Smart Lamppost Offering*** *1-Pole; 2-Luminaire; 3-Sensing; 4-Power; 5-Controls; 6-Civils; MPF-Integrated Multi-functional Pole* | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Supplier** | **HQ** | **Coverage** | **Scale** | **1** | **2** | **3** | **4** | **5** | **6** | **MFP** |
| *Alphabetic, by primary country of the headquarter* | *Country* | *Region; Country; International; Global* | *Micro, SME, Large; Conglomerate* | *✓= a supplier provides this / these component(s)* | | | | | | |
| Beonics | Australia | National | SME | | | ✓ | | | | |
| **ENE-Hub** | Australia | National | SME | | | | | | | ✓ |
| Iommiscient | Australia | National | SME | | | ✓ | | | | |
| Pecan Lighting | Australia | National | SME | | ✓ | | | | | ✓ |
| VRT Technologies | Australia | National | SME | | | | | ✓ | | |
| GM Poles | Australia | National | SME | ✓ | | | | | | ✓ |
| Traffic Technologies | Australia | National | SME | | ✓ | ✓ | | | | ✓ |
| Zumtobel Group | Austria | Global | Conglomerate | | ✓ | | | | | |
| HEI Solar | Austria | Global | SME | ✓ | ✓ | | ✓ | | | ✓ |
| Schréder | Belgium | Global | Conglomerate | ✓ | ✓ | | | ✓ | | ✓ |
| DimOnOff | Canada | Global | Large | | | | | ✓ | | |
| LED Roadway Lighting | Canada | National | Large | | ✓ | | | | | |
| Sierra Wireless | Canada | Global | Conglomerate | | | ✓ | | | | |
| Axis | Canada | US/Canada | Large | | | ✓ | | | | |
| Clear Blue Technologies | Canada | Global | SME | | | | ✓ | ✓ | | ✓ |
| Huawei | China | Global | Conglomerate | | | ✓ | | ✓ | | |
| Rongwen | China | Global | Large | | ✓ | ✓ | | ✓ | | ✓ |
| Nedap | China | National | Large | | | ✓ | | | | |
| Huati | China | National | SME | | | | | | | ✓ |
| inels | Czech R. | Natioanl | | | | | | | | ✓ |
| Novalume | Denm | | | | | ✓ | | | | |



**FOOTNOTE**

the database currently holds 210 suppliers across all components of a lamppost, including multi-functional providers; categorised as indicated in this table

# 3 COMP[illegible]ATION

This section addresses the granular details for smart lampposts providers across the different components within a frame of criteria. The information is structured across the 6 six smart lamppost

components and the multi-functional pole. The component #3 'Smart fittings' is also break down into 6 main categories.

## 3.1 COMPONENT CRITERIA

Table 2 provides a list of the main descriptors that will typically be provided by suppliers and that will inform and influence city / buyer choice. Where appropriate these are used as evaluation criteria, and specific criteria are also included for all 6 lamppost components and for component #3 into 6 sub components.

*Tables 3: Component Description (D) & Evaluation (E) Criteria*

| #1 Pole | Description | D/E |
|---|---|---|
| Pole Materials | Materials of construction: mild steel; stainless steel; concrete; composite; wood; aluminium | D |
| Shape | The form of the pole in terms of design and shape; and bespoke / ornamental options | D |
| Heights offered | Ground level to luminaire mounting height - metres | D |
| Mechanical Entry Ports | Number, and size; fixing type | D |
| Base Mounting Type | Ground buried; Ground buried insert; flanged baseplate; etc. | D |
| Principal Standards | National and/or international standards complied with | D |
| Surface Coatings | e.g. painted; galvanised; treated wood… durability of coating to adverse climate conditions | D |
| Warrantee | Period and key conditions provided | D/E |
| Adaptability for Fixtures | Ability to affix components, incl. strength to take additional loads (incl wind) | E |
| Visibility & Accessibility | Pole visibility for pedestrian and car users e.g. Electric Charging Point | E |
| **#2 Luminaire** | **Description** | **D/E** |
| Luminaire Body | Form factor; durability; configuration (e.g. detachable); lens; mounting type / options | D |
| Colour temperature | State options for Correlated Colour Temperature (CCT) – Options should include 3000K or lower | D |
| Ingress Protection (IP) Rating | IP65 minimum requirement | D |
| Control Gear | State options for 0-10V, DALI-1 or DALI-2 enabled control gear | D |
| Connectivity Receptacles | State options for NEMA/ANSI 7 pin or Zhaga Book 18 controls receptacle/s | D |
| Luminaire Mount dimensions | State configuration and dimensions of mounting [illegible] | D |
| Dimensions/ configuration | Dimensions: Sold [illegible] ert (e.g. into bespoke | D |
| LED Optical Modul | | D/E |
| Luminaire Efficacy ( | | D/E |
| Warrantee | | D/E |



FOOTNOTE

This table captures (i) the features that describe the solution and (ii) the evaluation criteria that can be used to assess a product, for the first two components only, to indicate the capture concept.

## 3.2 MULTI-FU[illegible]RIA

Multi-functional Pol[illegible]rged on the market from around 2015. The number of providers is increasing significantly. Their design and offerings vary considerably; and their price points have been seen to reduce since their early introductions, and with the increased competitiveness in the market. A similar approach has been used to describe and evaluate the MFP. This in principle involves a product that combines components #1, #2, #3, & #5 of above.

*Table 4 Multi-Functional Pole criteria*

| Multi-Functional Pole | Description | D/E |
|---|---|---|
| Pole Type | Short text field (informed by #1) | D |
| Luminaire | Short text field (informed by #2) | D |
| Use Cases | Code # for use case (3.1/2/3/4/5 – or 'all') | D |
| Groundwork Conditions | The urban groundwork conditions to install a lamppost e.g. soil stability | D |
| Power Requirements | Power requirements of pole (on/intermittent; load); sensitivity; optional local RES sources | D |
| Connectivity requirements | Does the screen require a connectivity to be controlled and manged? | D |
| Base Fixture Type | Buried insert; Flange plate; etc, Requirements | D |
| Accessibility | Pole visibility; accessibility and inclusivity for pedestrian and car users e.g. Charging Points | E |
| Off-grid Capability | Y/N/Optional | E |

## 3.3 GENERAL CRITERIA

The below descriptions and evaluation criteria are used to characterise each manufacturer and their product(s) for each component.

*Table 5 General criteria*

| General Parameters | Description | D/E |
|---|---|---|
| Delivery Time | The time to implement the solution on the ground from the sign off of the contract | D |
| Standards relevance | The relevant product technical standard(s) used for manufacture | D |
| Capacity | User service capacity to deliver solutions in numbers: High= >100,000 Medium= >10,000 Small= >1000 | E |
| Durability/Robustness | The life of the component and resistance to physical & natural impact (vandalism; climate; accidents) | E |
| Market Coverage | The breadth of geographical market coverage of the supplier | E |
| Integration | Working across a variety of supplier'categories to improve versatility of the offering | E |

## 3.4 USE CASE & SMART FITTINGS ASSET ALLOCATION

This section concerns only the component #3 'Smart' fittings of the Smart Lamppost. It describes a method to allocate different use cases by combining the use of two approaches: District allocation and ratio allocation. The standard allocation is indicative at this stage, this listing will seek to validate these allocations.

**District Allocation**: Different use cases are more logical in different district types. For simplicity, 7 district types were identified to estimate the overall number of smart features needed in each district, and thus approximate costs. This approach is only indicative at this stage however it allows quicker decisions to be made.

*Table 6 Seven district types*

| District Type | Description |
|---|---|
| 1.Central Business District | Predominantly offices, for example "the City" in London; usually crowded during week days, with some walkable spaces and few green spaces |
| 2. Industrial | Area of factories with large plot area buildings, warehouses, e.g. IKEA Centre in Croydon. Few people & walkable and green space & some abandoned areas. |
| 3. Retail | Commercial and shopping centres, such as Oxford Street, or Stratford shopping Centre. Usually large crowds especially in weekends, green spaces, moderate walkable spaces, and some tourists. |

| | |
|---|---|
| 4. Inner City (social) housing | Predominantly residential composed of large tower blocks and multi-resident buildings with significant social and low-income housing. Typically, higher crime rates, and e.g. few electric vehicles (cost). |
| 5. Inner City residential | Mixed residential with a lot of private low-rise buildings and affluent population, and generally more electric vehicles, and less crime |
| 6. Suburbs | Primarily residential and peripheral to city. Typically, large daily in-surge of population to city centre. More green space, less densely populated, artery roads or highways, and poorer connectivity. |
| 7. Culture and Green Blue Spaces | Areas with cultural buildings, public realm, river-side, green spaces / parks etc. Usually a lot of people, including high proportion of tourists, especially at weekends, and a lot of walkable spaces. |

**Ratio allocation**: Not all smart devices are needed in every single lamppost. An established ratio per use case allows the appropriate allocation of these devices according to the present city needs. The table below indicates the standard allocation for each use case on district and ratio. Please note that the indicated allocations were identified during workshops amongst cities as part of the lighthouse programmes activities. Please also note that the allocation will highly depend on some specific use cases conditions:

- Solar PV panel; Wind Turbine; Battery are use cases that will depend on the climate conditions of each city context. (More information of city context is given in the Humble Lamppost Management Framework).
- Camera and image sensing technologies (Traffic and public monitoring) will depend on the acceptance of such system by citizens in terms of privacy rights and also the context on the city in terms of criminality rate per district type.
- eVehicle Charging Points are an emerging market, the future needs will increase
- Advertising may be sensitive for some cities and poorly accepted by some people
- Water Level sensors will be a specific application for blue spaces (Rivers, streams, lakes) and placed in areas of known risk such as flooding, consider

*Table 7 Smart Fittings Typical Asset Allocation 6 subcomponents*

| **Use Cases for component #3 Smart Fittings** | ***District Type*** *1-Centre; 2-Insdutrial; 3-Retail; 4-Social Housing; 5-Residential; 6-Suburbs; 7-Culture and Green blue spaces* | | | | | | | ***Ratio Allocation*** The ratio of smart fittings in the street lighting network e.g. 1: 20 = 1 device every 20 poles in the district(s) allocated |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| | ✓= use case allocated in the district type | | | | | | | |
| **#3.1 Environment** | | | | | | | | |
| Air Quality Sensor | ✓ | ✓ | ✓ | ✓ | ✓ | | | **1: 20** |
| Air Pollution Removal | ✓ | ✓ | ✓ | ✓ | ✓ | | | **1: 20** |
| Dangerous Gas Detection | | ✓ | ✓ | | | | | **1: 100** |
| Noise Sensor | ✓ | | | ✓ | ✓ | | | **1: 5** |
| Water Level Sensor | | | | | | | | **1: 20** |
| Weather Sensor | | | | | | | | **1: 200** |

**FOOTNOTE**

there are 6 sub-categories for smart fittings. This table is illustrative of the first only

## 3.5 SMART LAMPPOST COMPONENT EVALUATION

This section provides a detailed example of each group of suppliers per smart lamppost component following the frame of criteria seeing above. Only one example is provided per component. A full data set is held in a separate database.

### #1 Pole Manufacturers

Pole Manufacturers are usually traditional and local suppliers

| Suppliers<br>Alphabetic order | Solution (s) | Price (Range) | Technical Description | | | | | | | Technical Evaluation | | General Description | | General Evaluation | | | | Overall Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Pole Material | Shape | Height | Entry Ports | Base Fixture Type | Surface Coatings | Warrantee | Visibility | Adaptability | Delivery Time | Standards relevance | Integration | Capacity | Durability/ Robustness | Market Coverage | |
| **Supplier X** | Lighting Column | 250£ | Steel | Standard Shape & | 6 to 8 meters & | EV Charging plug | Not provided | Yes | 25 years | ★★ | ★★ | 8 weeks | BSEN40<br>BD94-17 | ★★ | ★★ | ★★ | ★★ | **70%** |

**FOOTNOTE**

This is illustrative of what is a very full set of tables that provide information about, and evaluation of the 210 suppliers. The intention is to publish the features only initially, and progressively collect and test the evaluation approach to ensure an informed approach that supports both buyer and supplier communities

# 4 PRICE, COST & VALUE

This section offers an indicative view on price and value for different smart lamppost components. This information is based on online research, supplier consultations and a Northeast Group research.

## 4.1 PRICE

Market pricing information varies significantly based on a wide variety of factors. Where there are particularly important pricing fluctuations these are noted. Pricing for budgetary and decision support purposes is provided, generally in ranges.

No pricing is intended or implied to be at a specific supplier level. Where there are obvious technical pricing bands these are indicated. Pricing information is also provided where it is significant and available. Refer to or include the economy of scope and scale chart.

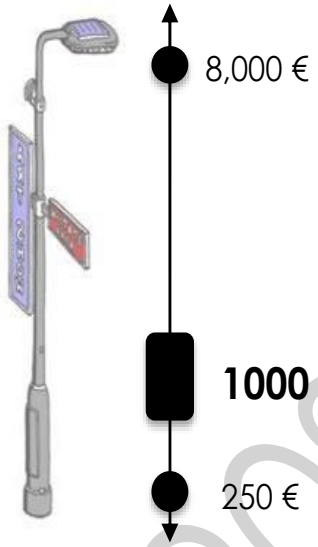



*Figure 5 "Replacement" pricing* for a new multi-functional pole



**FOOTNOTE**

The full document provides budget costs ranges for each of the main elements of a smart lamppost, plus the MFP

## 4.2 VALUE

Multi-purposing smart lampposts can offer new forms of value for public authorities, local businesses, communities and individuals.

The "1-5-10" ratio is indicative for the overall value of the Smart Lampposts in terms energy savings, smart services and data.

There are multiple use cases that can be considered, each with different levels of benefit. the various use cases offer different type of value considering four pillars: financial value (revenues, financial savings), environmental value, social value (health, safety) and economic value (local and business development).

More specifically on the financial value, Lighting, public safety, energy, connectivity, Mobility and Digital Signage use cases offers potential for sources of revenues see figure 6. Note the acronyms are available in the table of contents.

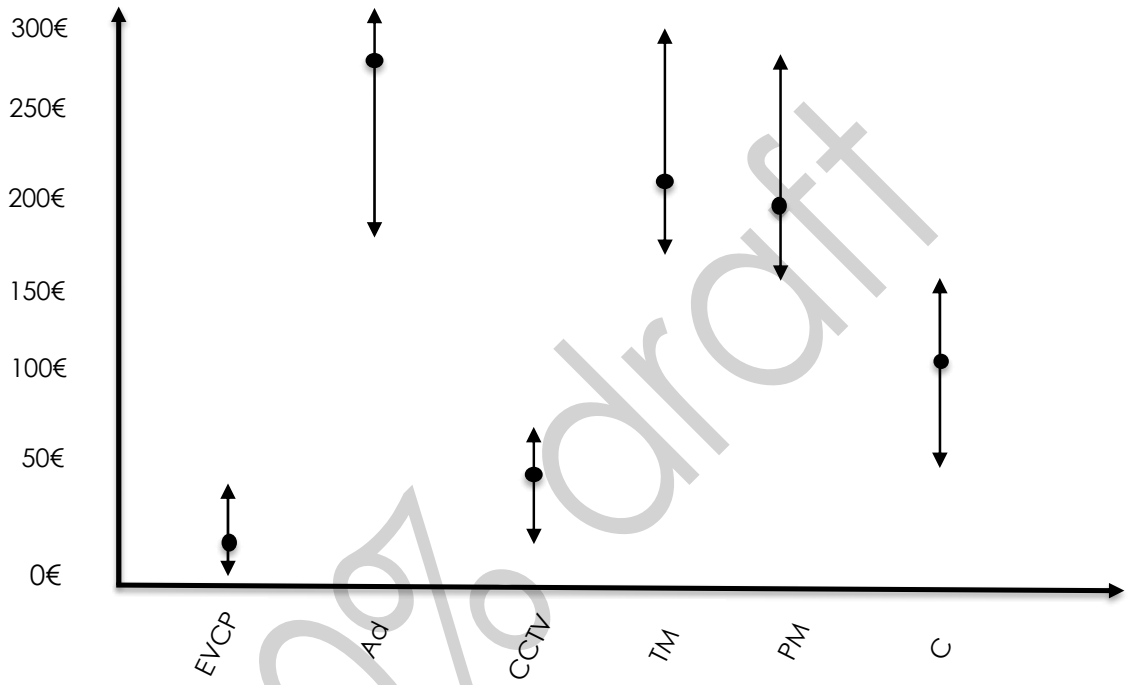



Figure 6 Indicative revenues per month per pole[2]



Acronyms

- EVCP: Electric Vehicle Charging Plug
- Ad: Advertising
- TM: Traffic Monitoring
- PM: People Monitoring
- C: Connectivity

FOOTNOTE

The full document offers information on benefits ranges for each of the additional smart features

# 5 THE SM.

Few (or no) single c portfolio of a smart lamppost solution, from advice through to there are however a wide variety of companies that are broadening their activities to include a more complete proposition. In some cases, these are shifting from offering (pre-configured and/or installed) *product* to a complete *service* (including financing and for instance data or system optimisation services).

[2] Indicative Data from an ongoing research at UrbanDNA

To help make sense of this fast-emerging market, table 8 maps 6 sector types (rows) against 6 relevant capabilities (columns) to provide an emerging picture of the overall market landscape.

This is intended to provide an objectives comparative view to help city officials in their deliberations.

*Table 8 Smart Lamppost Ecosystem players*

| **Company Sector / Type** | **~50** companies identified<br>*The different role that a company may play in the smart lamppost ecosystem* | | | | | |
|---|---|---|---|---|---|---|
| | **System Advice** | **Equipment Provision** | **Ecosystem aggregation** | **Integration** | **System Operation** | **Financing** |
| *Alphabetic order by grouping* | *Provide comprehensive advice on the entire end-to-end service design* | *Provide hardware to enable infrastructure* | *Pulls together a suite of providers to offer a complete solution, or service* | *Combining physical and digital to ensure service operation and provide the capability to optimise it* | *provides operating services across different areas of the lighting network* | *provides business model, financing and funding services* |
| **Original Equipment Manufacturers (OEM)** | | | | | | |
| *Extended offering from a basis of primarily making the component part(s).* | | | | | | |
| Cisco | | ✓ | ✓ | | ✓ | |
| **Major Infrastructure Installer** | | | | | | |
| *Focus on acquiring and installing infrastructures – either of a large and broad scale, or more specifically streetlights, though may not necessarily operate.* | | | | | | |
| Arcadis | ✓ | | ✓ | | | |
| **City Service Providers** | | | | | | |
| *Primarily focused on operating city infrastructures and services and may do some basic installation and/or upgrade work* | | | | | | |
| Amey | | | | | ✓ | |
| **Utilities** | | | | | | |
| Typically provide and operate energy systems, though may provide multi-utility services. May be private, publicly owned, or a hybrid. | | | | | | |
| a2a | ✓ | | | | ✓ | |
| **ESCo / PPP** | | | | | | |
| Energy Savings Company or Public Private Partnership– focused on managing energy savings, so optimising operational performance and financial outcomes; frequently with part public ownership | | | | | | |
| National Grid | | | | | ✓ | |
| **Investors, Funds and project financiers** | | | | | | |
| Companies that pull together the finance for smart lampposts projects | | | | | | |
| EnvironFino | ✓ | | ✓ | | | ✓ |

**FOOTNOTE**

This concept document shows only a handful of the ~50 companies in total

CON

This Buyer's Gui … the different offerings available in a dynamic market.

The Smart Lamppost market has matured somewhat in that it already has several well-established providers supplying a variety of components and playing different roles. There are also a significant number of new actors (typically SMEs) that are fast emerging in the market, often offering innovative and disruptive solutions.

This guide is therefore not a complete capture of the worldwide market, and will develop with collaboration amongst contributing cities, and ongoing input from industry. The guide does

however even in its current form help inform and speed decisions and support scale adoption of smart lamppost solutions.

Managed collaboration amongst cities (e.g. through the ongoing EU-funded SCC01 'Lighthouse' and EIP-SCC activities) offers a basis to collect and curate knowledge in a structured and objective manner that will progressively improve the quality of this guide. Cities, however, still remain fully accountable for the actions and decision they take.

In 2017, only 2% street lights in the world are exploiting Central Management Systems, and the LED uptake still remains modest at a global level.[3] Smart upgrades, represent a very small percentage of current activities, typically deployed as pilots.

Given the modest level of upgrade activity, there are clearly enormous opportunities. Developed world cities have a unique opportunity to join forces and deliver better outcomes by multi-purposing this 'humble' city asset. New-build and city re-developments, as well as emerging countries, can leap-frog and adopt multi-function lampposts from the outset.

To accelerate the adoption at scale:

- **Industry** should continue to openly collaborate within and between sectors and segments to create supply ecosystems that can service scale upgrades
- **Cities** should seek to explore the business case to move to 'smart' solutions, and consider different financing options to speed and ease adoption; additionally, collaboration between cities (notably mid and smaller sized ones) to aggregate demand can bring the scale to market whereby value is substantially enhanced all around
- **Financiers** should continue the process already observed of building greater technical capacity to more legitimately provide advice and help generate scale
- **Standards Development Organisations** (national and international) should take a keen interest in supporting the process

Service demand will change as user needs are shaped and as technologies evolve. For example, the current demand for connectivity and electric mobility; or connected automated driving and drone technologies that will have a marked mid/long-term impact. We are also at the beginning of the solution packaging journey. This guide should be used in that context, and contributions to its improvement actively proffered.



[3] Source available from the link here

1 **Engage**

2 **Justify**

3 **Implement**

Buyer's Guide

4 **Sustain**