



Streetlight Refurbishment with Energy Performance Contracting

Checklist

Street lighting can account for up to 30-50 % of the total electricity consumption of municipalities. The recent market introduction of LED technology for street lighting offers high savings with comparatively short pay-back times.

Municipalities are faced with an urgent need to act: nearly 80 % of all currently used street lighting lamps will be "phased out" by 2017, which means they will no longer be available for purchase. In most cases this will entail substantial investments, thus presenting a major problem for many municipalities.

Here Energy Performance Contracting (EPC) can be a solution: energy efficiency investments are pre-financed and implemented by an energy service company (ESCO). The annual energy and maintenance cost savings then cover the investment and capital costs.

The EU-Project Streetlight-EPC is funded by the Intelligent Energy Europe Programme and was launched in April 2014 with the objective of triggering the market uptake of EPC through street lighting refurbishment projects.

Within this project, checklists for municipalities were prepared. These permit a first assessment of whether streetlight refurbishment could be carried out economically and whether EPC might be a suitable option. These checklists are available in the respective languages and for the specific contexts of the project regions (Upper Austria, North-West Croatia, South Bohemia/Czech Republic, Pomerania/Poland, Carlow & Kilkenny County/Ireland, South East Sweden, Podravje/Slovenia, Macedonia, North & Central Spain). This document summarises the information from these checklists in English.



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Why streetlight refurbishment now?

Street lighting is an important contributor to traffic and public safety. However, assuring good visibility during hours of darkness also requires a substantial amount of electricity and money. For municipalities with older, inefficient systems, street lighting can account for 30-50 % of their total electricity consumption. However, the savings potential in this field is enormous – in many municipalities 30-70 % with current technologies.

The high efficiency potential in street lighting was also recognised by European policies, which has led to phasing out requirements (between 2010 and 2017) for many lamp types frequently used for street lighting. Phasing out means that these product groups will no longer be available for purchase. Nearly 80 % of all lamps currently in operation will be affected by the phase out, among them High Pressure Sodium (HPS) and High Pressure Mercury (HPM) lamps.

Municipalities are under strong pressure to act. They have the following principle options:



1. Replacing lamps only - "plug-in" ("re-lamping")

Disadvantages:

for most lamp types only possible until 2015, likely technical problems, low savings



2. Replacing both lamps and ballasts

Disadvantages:

lamps and luminaires then often do not fit well, likely to result in a loss of warranty on the whole system



3. Reducing street lighting services on an ad hoc basis (broken lamps are no longer replaced)

Disadvantages:

Negative impacts on safety and possible risk of liability for accidents



4. Refurbishing the whole system - replacing luminaires (including lamps & ballasts) by efficient & long-lasting LED systems

Disadvantages:

high upfront investment costs

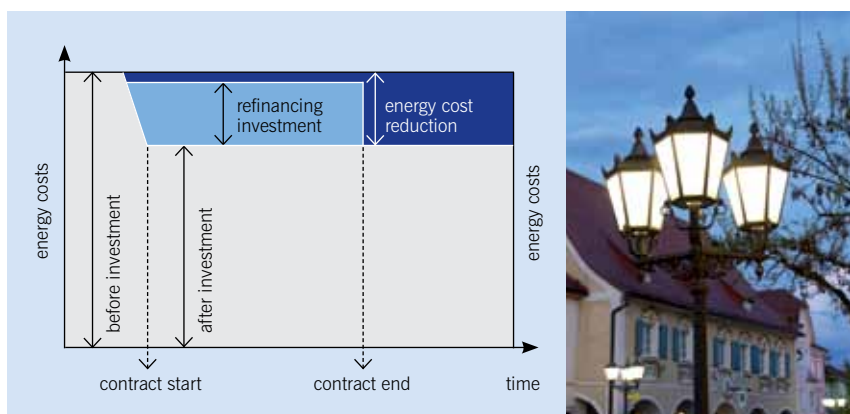
Obviously, refurbishing the whole system is the best solution, however, most municipalities suffer from a lack of available capital.

Energy Performance Contracting

In many cases, Energy Performance Contracting (EPC) can offer a solution to overcome the obstacle of lack of capital.

EPC is a contractual arrangement between a client (e.g. a municipality) and a provider of an energy efficiency improvement measure, a so-called "Energy Service Company" (ESCO). The ESCO finances and implements energy efficiency investments - for example the refurbishment of a street lighting system to LED technology for a whole city or a selected project. The ESCO guarantees the energy savings. The annual energy savings are used to cover the investment and capital costs. After the end of the contract, the client benefits from the energy and cost savings.

The possibilities for EPC projects were greatly improved by the recent market introduction of LED technology for street lighting. LEDs offer high savings with comparatively short pay-back times. They have developed very rapidly in recent years. Today, LED lighting is an economically very interesting option for street lighting refurbishment in many cases, with cost reduction potentials of 50 % and more. However, these benefits can only be reaped if the whole system is well planned.



OK & KO criteria for Streetlight-EPC refurbishment projects

For a first general assessment of the street lighting system and the economic viability of a refurbishment with EPC, the following factors can be checked:

	YES	NO
Lamps/installations are older than 10 years		
Length of lighted street to be renovated is more than 1 km		
The average electricity price is above 0.10 Euro/kWh		
Annual maintenance costs per lamp are higher than 15 Euro		
Operational time is above 3600 hours per year		
No dimming and/or switch off during the night		
Investment costs for refurbishing the street lighting system present a problem		

If all or nearly all questions are answered with "yes", then municipalities can start collecting more data on their street lighting system (or on a section that is most in need of refurbishment).


For a first economic assessment, the following data are very useful:

Data collection	
Municipality (whole system/selected streets)	
Age of street lighting system	
Year of the last comprehensive refurbishment of the street lighting system?	
Condition of the poles [good/bad]	
Length of lighted roads [km]	
Number of light points	
Most frequent lamp types*	
Total installed electric capacity (nominal capacity) [kW]	
Annual electricity consumption for the street lighting system (or the selected project) [kWh/year]	
Total annual electricity costs for the street lighting system (or the selected project) (including all non-refundable taxes) [Euro/kWh]	
Annual maintenance costs (exchange of lamps, repairs) [Euro] (estimate)	
Typical street lighting operation time [from-to] or total operational hours [hours/year]	
Periods of dimming/switch-off during the night	

*HPM: High Pressure Mercury lamps; HPS: High Pressure Sodium lamps; LPS: Low Pressure Sodium lamps; MHL: Metal Halide Discharge lamps; CFL: Compact Fluorescent lamps; FL: Fluorescent lamps; LED: Light-Emitting-Diodes. Please add: pictures of poles & luminaires, electricity bill (at least from the last year), contact person in the municipality

These data can be discussed with an EPC facilitation service (if available in the respective country) to provide guidance on the next steps. Otherwise, municipalities can work directly with ESCOs or with specialised service providers. The guide for "Streetlight Refurbishment with EPC", developed within the context of the Streetlight-EPC project, also provides information on practical steps towards a streetlighting refurbishment project.



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Streetlight refurbishment with EPC – Checklist

EU-Project Streetlight-EPC

The project Streetlight-EPC was launched in 2014 and is funded by the Intelligent Energy Europe Programme. It will trigger the market uptake of EPC through street lighting refurbishment projects.

The project will create demand and supply for EPC projects in 9 regions by setting up regional EPC facilitation services. These services will provide comprehensive support to municipalities and SMEs as potential ESCOs. The project team includes 9 regional agencies/organisations, which will provide the EPC facilitation services, 9 cities and a European network (FEDARENE).



Region	Regional partner	City/county partner
Upper Austria	OÖ Energiesparverband (ESV)	City of Wels
North-West Croatia	Regionalna energetska agencija Sjeverozapadne Hrvatske (REGEA)	Zagreb County
South Bohemia/Czech Republic	Energy Centre České Budějovice (ECČB)	City of Trhové Sviny
Pomerania/Poland	Bałtycka Agencja Poszanowania Energii (BAPE)	City of Gdansk
Carlow & Kilkenny County/Ireland	Carlow Kilkenny Energy Agency (CKEA)	Kilkenny County
South East Sweden	Energikontor Sydost (ESS)	City of Kalmar
Podravje/Slovenia	Energetska agencija za Podravje (ENERGAP)	City of Maribor
Macedonia	Centar za energetska efikasnost na Makedonija (MACEF)	City of Skopje
North & Central Spain (regions of Madrid, Castilla y León, Cantabria)	ESCAN	City of Santander

www.streetlight-epc.eu

