



LED Lighting

Municipality of Tkon, Croatia

- Replacement with energy efficient solutions
- Encouraging bidders to offer innovative materials on local market
- Improvement of local governments' social responsibility profile and control light pollution

Benchmark Conventional lighting technology

- 1.1 toe/year
- 4.0 t CO₂e/year

GPP 2020 tender

LED lighting

- 0.8 toe/year
- 2.8 t CO₂e/year

Results

Savings:

- 9.0 toe/tender
- 32.0 t CO₂e/tender
- 32% deduction of energy consumption and CO₂ emissions

Contract tendered

- Public street light is a fixed lighting installation intended to provide good visibility to users of outdoor public traffic areas during the hours of darkness to support traffic safety, traffic flow and public security (definition derived from EN 13201).
- The Tender asked for the replacement of the existing not efficient fixed outdoor street lighting in the Municipality of Tkon with new sustainable technology.
- 1 year contract
- Total cost: 100,000 € (excluding VAT)
- Competitive Dialogue
- This tender forms part of the GPP implementation strategy of the Municipality of Tkon.



Procurement approach

Tendering followed the competitive dialogue:

LED Lighting	
<p>Technical specifications</p> <ul style="list-style-type: none"> - CRI (Colour Rendering Index) > 75 - Colour temperature (Kelvin) 3 000-4 000 - General lighting-efficiency (lumen/watt) > 50 - Life-span (hours at L70) > 20 000 <p>Verification: All information available in standard test documentation</p>	<p>Award criteria / Most Economically Advantageous Tender (MEAT) – Calculation (100%):</p> <ul style="list-style-type: none"> - Price: max. 50% - Better energy-efficiency for more than 10% of described: max. 25% - Higher light quality (CRI) for more than 10% of described: max. 20% - Warranty on carried out work: max. 5%
<p>Eligibility of bidders</p> <ul style="list-style-type: none"> - The bidder/tenderer must proof that the installation will be undertaken by personnel with at least three years experience in installation of lighting systems - The bidder/tenderer must proof that the installation will be undertaken by personnel having a suitable professional qualification in electrical and building services engineering - The bidder/tenderer shall supply a list of lighting schemes the bidder/tenderer has installed over the last three years <p>Verification: The bidder/tenderer shall supply a list of the persons responsible for the realisation of the project if awarded, including managerial staff, with specific indication of professional qualification and relevant experience in required fields.</p>	

Contract clauses

Repair and maintenance: warrantee of compliance for following environmental aspects:

- All components must be labelled with CE-mark.
- Upon completion of installation, during the first year of usage, monthly calibration of daylight linked controls to ensure that switch off the lighting when daylight is adequate and to meet visual needs without excessive increase in energy consumption. Upon the first year of usage, supplier will also have to provide an instruction book with specific needs of contracting authority on lowering energy consumption on installed lighting system, with at least information on factors that include energy consumption, lighting measurement during yearly seasons, ways to save energy and related.
- Hazardous waste: implementation of appropriate environmental measures in order to reduce and recover waste produced during installation of new lighting system, all waste lamps and luminaires and lighting control shall be separated and sent for recovery in accordance with the [WEEE directive](#). To assure that these requirements have been met, the bidder/tenderer shall provide written confirmation upon completion setting out how the waste has been separated, recovered and/or recycled.



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Criteria development

The ambition of the public tender was to introduce LED Lighting as alternative technology and to improve sustainable consumption of energy in local government.

Tendering followed the Competitive dialogue procedure in combination with the most economical advantageous tender (MEAT) approach, as a tool to select the contractor that offers the product with the lowest environmental impact, but at the same time bearing in mind financial ponderosity. The MEAT approach includes a juncture of environmental impacts with bidder's offers in order to select the bid(s) with best price-quality ratio.

The contracting authority calculates the benefits of bidder's delivered tenders and those with combined results of calculation as close as possible to total outcome of 100% are chosen (as most desirable tender, most similar to one described in tender documentation).

Furthermore, the environmental specifications were structured and defined using guidances given in:

- WEEE directive
- CIE (International Commission on Illumination) Technical Report CIE-1509
- [CELMA Guide on Obtrusive Light](#)
- Energy Star standards and recommendations

Results

By redefining the characteristics to LED Lighting, it has been possible to achieve a significant reduction of energy consumption and CO₂e-emissions (32%) compared to a conventional street lighting also available on the market.

Energy savings and CO₂ emission reductions were calculated based on GPP2020 methodology for a lifecycle of 25 years. The results are as follows.

	CO ₂ e emissions	Energy consumption
Low Carbon Solution	2.8 t CO ₂ e/year	0.8 toe/year
Benchmark	4.0 t CO ₂ e/year	1.1 toe/year
Savings	32.0 t CO ₂ e/lifetime	9.0 toe/lifetime

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Calculation basis

- 30 new luminaires for the Municipality of Tkon, located in Southern Dalmatia, well known as the sunniest region of Croatia.
- Benchmark: Power per light source: 110 W; operating time: 4 000 hours.
Low Carbon Solution: LED lighting with **two operating levels**: 100 W (2 000 hours) and 50 W (2 000 hours).

Lessons learned

The new procurement method was applied successfully and Municipality of Tkon will continue applying this method in the coming tenders.

As the competitiveness was not compromised, in future, more ambitious criteria on the energy efficiency could be considered as an award criterion and also more ambitious technical specifications set with higher EE weight in the award criteria.

Contact

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About GPP 2020

GPP 2020 aims to mainstream low-carbon procurement across Europe in support of the EU's goals to achieve a 20% reduction in greenhouse gas emissions, a 20% increase in the share of renewable energy and a 20% increase in energy efficiency by 2020.

To this end, GPP 2020 will implement more than 100 low-carbon tenders, which will directly result in substantial CO₂ savings. Moreover, GPP 2020 is running a capacity building programme that includes trainings and exchange. – www.gpp2020.eu

About PRIMES



Across six countries in Europe; Denmark, Sweden, Latvia, Croatia, France and Italy, PRIMES project seeks to help municipalities overcome barriers in GPP processes, many of which lack capacity and knowledge.

PRIMES aims to develop basic skills and provide hands-on support for public purchasing organisations in order to overcome barriers and implement Green Public Purchasing. This will consequently result in energy savings and CO₂ reductions. – www.primes-eu.net



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