

## Procurement of Intelligent Street Lighting City of Copenhagen

### About this Best Practice Case

Main learning aspect is how the City of Copenhagen used the competitive dialogue procedure to procure Intelligent Street Lighting. This was very challenging, because the LED technology was a new and a fast developing technology. Therefore it was not clear from the beginning, how it could be ensured, that what was procured would be up to date for a long time-span. The description of the case provides a summary of the procurement background, process, key learnings and results.

**Title:** Procurement of Intelligent Street Lighting

**Cluster Topic:** Other

**Country:** Denmark

**Procuring Authority:** City of Copenhagen

**Procedure:** Competitive Dialogue

**Directive:** 2004/18/EC

**TED:** 2012/S 180-296469

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## **City of Copenhagen: Procurement of Intelligent Street Lighting Using the Competitive Dialogue**

### **Key Points**

- **Renewal of the street lighting to a more energy efficient lighting, including a long-term service and maintenance contract, with total budget of 250 Million DKK.**
- **The goal was to reduce CO<sub>2</sub> emission as part of City of Copenhagen's climate-plan to become the first CO<sub>2</sub>-Neutral Capital City in the world.**
- **Through a Competitive Dialog in 2013, the city and the suppliers manage to get a better understanding of each other's needs and thereby create a good basis for a dialog, which in the end ensured that the solution fitted the needs of the city.**

### **The Procurement Objectives**

#### **Brief description**

City of Copenhagen has the ambition to be the first carbon-neutral capital city in the world. To reach this ambitious goal, the city council has adopted a comprehensive and targeted carbon reduction plan. The intelligent street lighting project is a part of the carbon reduction plan to make street lights in Copenhagen more energy efficient, aiming at reducing the energy consumption by 50%. The project can be considered as a complex infrastructure investment. The city had a plan for renewing a large part of the lighting system across the city to optimizing the energy consumption and to renovate the infrastructure. An extra complexity was the fact that the LED world is a fast-developing technology, which required considerations on how to ensure that the solutions procured would be up to data for a long time span and not quickly out of date.

The procurement was carried out using the procurement procedure competitive dialogue in order to ensure a full understanding of the cities needs and what the market could deliver, to ensure conforming requirements and legal/economic conditions, and to ensure appropriate products and system being purchased to safeguard a long term success of the project. A 250 million Danish Kroner (about 33 million euro) contract was awarded for installing the new street lighting system in the city including a 12 year maintenance contract.

## Reasons for this procurement

The City of Copenhagen needed a grand renewal of the street lighting, and they wanted to take advantage of this opportunity to create an energy efficient smart street lighting system. However, they were faced with significant challenges related to the development and implementation of such an innovative system.

First of all, there were no existing off-the shelf products that met the goals of the project. Some parts of the solutions were off-the shelf, however the technology in the fixture and the ICT-surveillance systems were still under development. Secondly, the LED technology is developing fast. It was important to keep the system advance and compatible with the future demands; the City of Copenhagen wanted to reduce the risk of buying a product which might already be out-dated at the moment of realisation. The City of Copenhagen did not have the required knowledge and in-house experiences for such a fast pace development. Finally, the city wanted to combine the renewal of the infrastructure with a long-term service and maintenance contract.

Road lighting plays a central role in the City of Copenhagen, as lighting is important for road safety; for safety and a secure feeling for the citizens and for crime prevention.

Another goal of the renewal and optimization of road lighting was that it should contribute to the municipality's climate target of reducing CO<sub>2</sub> emissions by 20% by 2015 and to making Copenhagen the world's first CO<sub>2</sub> neutral metropolis in 2025. Therefore the tenderers had to explain the planned new lighting solution and/or the design of new energy efficient plans (luminaires, masts and control methods), based on the state of the art and within the Danish road lighting rules.<sup>28</sup>

As an extra feature the City of Copenhagen required that the lighting solutions are adapted to the modern Nordic lighting and design tradition for public urban spaces.

## Innovative Aspects

### **What was procured is innovative:**

The LED technology itself is quite innovative and offers the city the possibility to save energy. Copenhagen also decided to combine the new intelligent street lighting with an innovative Nordic Design that fits to the historical city and is attractive for the citizens.

### **The procurement process itself is innovative:**

As procuring innovative technologies is often not possible via standard contracts, that allow you to buy on-the-shelf solutions the competitive dialogue procedure was chosen. A dialogue with potential supplies was needed to discuss which functional and technological requirement are needed in the contract to fulfil the needs. The contract included among

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<sup>28</sup> Copenhagen Climate Plan, URL: <https://www.energycommunity.org/documents/copenhagen.pdf>

others the development of new lighting solutions; the establishment of new installations and the establishment of a security station.

## The Procurement Process

### Procurement Procedure

#### Key Reasons for using the Competitive Dialogue in this Procurement

The procurement procedure needed to be dialogue based as the contract included a very complex service in which the lighting, economic and energy conditions had to be determined and designed in a close dialogue with the suppliers. The technology also had to be adapted to the Cities needs and to the existing infrastructure. Therefore an easy procurement via a “from the shelf solution” was not possible.

It was also one of the goals of the dialogue to discuss the contract length, the best cooperation model (private and public stakeholders) and financing forms. The Competitive Dialogue was chosen as the procurement procedure for this highly complex project.

#### The Competitive Dialogue in short

The competitive dialogue is a procedure that allows dialogue on all aspects of the contract, which is often needed when tendering complex innovative systems, like here in the LED technology sector. For Copenhagen it was also important to discuss, what the life cycle cost of the solution is (including maintenance of the new system, installation costs, energy consumption, etc.). In the current case it was a three-stage process:

In the first stage (**selection stage**) the public procurer (contracting authority) publishes the contract notice, asking potential suppliers to submit an application for pre-qualification. The pre-qualifications phase includes selection criteria evaluating whether the applicants are qualified to perform the contract. In this competitive dialogue, the City of Copenhagen decided to pre-qualify four suppliers for the second stage – the dialogue phases. The selection criterion for pre-qualification was “best and most relevant experiences in relation to the tasks”.

The second stage (**dialogue stage**) of the competitive dialogue has the huge advantage that during this stage, all aspects of the project can be discussed with the suppliers and the number of solutions can be reduced as part of the process. Once the procuring authority has sufficient confidence that it will receive proposals meeting its requirements, it declares the

competitive dialogue phase closed and invites tenders to submit the final bids (the third stage **award stage**), based on the award criteria “the most economically advantageous tender”.<sup>29</sup>

“Number of candidates to invite to tender

The minimum number of tenderers and the objective and non-discriminatory criteria to be applied must be stated in the contract notice in the two-stage procedures, minimum numbers are as follows:

3 for the Competitive procedure with negotiation and Competitive dialogue procedure”<sup>30</sup>

**The contract award criterion** of the final tender was “the most economically advantageous tender” based on the following sub-criteria:

Sub-criterion
Price
The Business Case
Innovation on Nordic-Design
The planned Partnership
Service-Level

**Pro and Cons of the competitive dialogue** The main benefit of the procedure used in this procurement was the fact that a competitive dialogue gave the opportunity to discuss all possibilities, the needs of the City and technological requirement with the suppliers. The negative aspect was that the process was very time and resource consuming; it is costly for the procuring authority and the tenderers.

## Key Results

### Contract tendered

The contract tendered was a long-term contract that started in mid-2013. The object of the contract was the renewal, optimization, operation and maintenance of all Copenhagen municipalities lighting systems (approx. 45,000 fixtures). The fixtures are located on streets,

<sup>29</sup> Procurement of Innovation Platform, Guidance for public authorities on Public Procurement of Innovation, p. 22-23. URL: [https://www.innovation-procurement.org/fileadmin/editor-content/Guides/PPI-Platform\\_Guide\\_new-final\\_download.pdf](https://www.innovation-procurement.org/fileadmin/editor-content/Guides/PPI-Platform_Guide_new-final_download.pdf)

<sup>30</sup> Crescent Purchasing Consortium 2017, Competitive Dialogue, URL: <http://www.felp.ac.uk/taxonomy/term/265>

roads, trails and public places. The contract also includes the development of new lighting solutions and the installation of these new systems.

**Key achievements:**

- Custom designed urban lantern
- Energy savings of up to 60%
- Substantially reduced maintenance with a 90 000-hours lifetime
- High quality of light for comfort and safety
- Smart lighting controls

## Key Lessons Learnt

1. Using **the procurement procedure competitive dialogue is very resource demanding**. It is more suitable for long-term contracts or contracts that have a high value.

2. **When procuring a new technology, which does not have a fitting of-the-shelf solution**; a dialogue is needed.

3. If the procedure is relatively new to the public procurer, as it was for the City of Copenhagen, it is recommended to **hire external lawyers** and add them to the tender preparation cost.

4. Trying out a procedure that was new for the City of Copenhagen did lead to a significant positive outcome with regards to the knowledge that the city gained in how to deal with this kind of procurement.

5. Through a good **dialogue already from an early stage** the city and the suppliers managed to end up with solutions that fit the needs of the city.

6. Through the **market dialogue** the city and the suppliers got the chance to know each other's need, requirements and limitations better.

7. The exchange **within the market dialogue provided a good understanding that enabled the city to modify some of the classical frameworks** which was hindering the market interest and innovation.

As an example: the city had a fixed framework agreement of the 4 years for service and maintenance; however, the market was interested to invest in a more long term solution, as it was needed to be innovative and the market needed some guarantee for the revenues for investing in such a development. After negotiations and discussions, the city revised their classical framework and designed a new framework which was extended to 12 years. This change not only gives a better flexibility for the city, but also for the suppliers to be able to secure their investment.

## References and Further Information:

1. Copenhagen Intelligent Street Lighting:

[http://www.thornlighting.com/en/about-us/press/thorn-road-lighting-solution-for-copenhagen-1/2016\\_05\\_17\\_case-study\\_thorn-copenhagen\\_en.pdf](http://www.thornlighting.com/en/about-us/press/thorn-road-lighting-solution-for-copenhagen-1/2016_05_17_case-study_thorn-copenhagen_en.pdf)

2. Crescent Purchasing Consortium 2017, Competitive Dialogue,

<http://www.felp.ac.uk/taxonomy/term/265>

3. Procurement of Innovation Platform, Guidance for public authorities on Public Procurement of Innovation, p. 22-23.

[https://www.innovation-procurement.org/fileadmin/editor-content/Guides/PPI-Platform\\_Guide\\_new-final\\_download.pdf](https://www.innovation-procurement.org/fileadmin/editor-content/Guides/PPI-Platform_Guide_new-final_download.pdf)

4. Full tender documentation is available in English at:

<http://ted.europa.eu/udl?uri=TED:NOTICE:296469-2012:TEXT:DA:HTML>

5. Procurement Guidelines:

<https://www.innovation-procurement.org/>

6. Competitive Dialogue step by step:

<https://www.google.at/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&ved=0ahUKEwjEhrmlto bUAhWLVrQKHSyDBsYQFghfMAg&url=http%3A%2F%2Fwww.apuc-scot.ac.uk%2Fuploads%2Fdocs%2FSM%2520-%2520Competitive%2520Dialogue%2520Procedure.doc&usq=AFQjCNGp2ZKwOPzBinp8RXs4sgBN2Qlj8Q&cad=rja>