

Energy efficiency through performance contracting, Government of Catalonia

Background

Since 2011, the Catalan Institute for Energy (ICAEN) has been the designated body responsible for promoting energy services for all of the Catalan Government's public buildings. ICAEN was assigned this responsibility as a result of the region's Energy Efficiency and Savings Plan for Public Buildings (2011). The Plan was set up and aligned with the [EU Energy Performance of Buildings Directive](#) in response to the fact that many public buildings were in need of renovation. The Plan's main goals are thus to reduce energy consumption and all associated costs. Goals for 2017, among others, are to achieve reductions in energy consumption of 14% and create an energy service market worth 120 million euro in investments.

ICAEN works to create market demand by pooling knowledge, and developing an integrated tendering model based on guaranteed energy savings for use in energy performance contracting (EPC). The model was developed as part of a broad stakeholder consultation process involving energy service companies; building owners, managers and users.

Procurement objectives

In order to improve the energy performance of its building, the Agri-food Laboratory – an agency attached to Catalonia's Ministry of Agriculture, Livestock, Fisheries, Food and Natural Environment - published a tender in 2014 for both building maintenance services and energy efficiency services. Minimum reductions of 10% in energy costs and 3% in water costs were mandatory. The Laboratory set out not only to procure these services but also to establish a successful tender model to be used by others which instils confidence in a market that is still in the early stages of development in Catalonia.

Criteria used

Pre-procurement phase

An energy audit of the building and its installations was carried out prior to the start of the procurement process to establish the needs in terms of energy efficiency. The results of the audit were included as an annex to the tender specifications, however, the recommendations made in the audit did not have the character of a "closed list" and the bidders were free to propose other measures they deemed technically appropriate. Once the tender documentation was published, and prior to submitting bids, the bidders were able to visit the building and its installations. The Laboratory building and its installations cover a total surface area of 3,456 square metres, which includes the ground floor and three other levels.

Technical specifications:

The tender was published in 2014 as an open procedure and covered two major services:

1. Provision of routine, preventive, corrective and regulatory maintenance services of the building installations
2. Provision of energy efficiency services, including:
 - Implementation of energy conservation measures (ECMs) for lighting; producing and distributing heating and cooling; managing and supervising water saving measures;
 - Management of technical and energy related aspects of the building installations, optimising the resources available with the aim of improving energy efficiency and achieving the desired operating conditions. Additionally, provision of technical assistance for the monitoring and controlling of energy purchased;
 - Measuring and verifying guaranteed savings by using the International Performance Measurement and Verification Protocol;
 - Training and awareness raising sessions in energy and water use targeting building users. Training for the building's Energy Manager;
 - Implementing requirements of the international standard [ISO 50001](#) on energy management; and
 - Certification of the building in terms of energy performance following implementation of the ECMs.
 - The levels of energy and water consumption from 2013 were taken as the baseline. On this basis, 10% savings in electricity consumption and 3% savings in water consumption were required as a minimum.

Award criteria:

1. Quantitative award criteria (55 points in total):
 - Economic criteria: Guaranteed economic saving per year (25 points)
 - Technical merit criteria for energy efficiency (30 points): Annual electricity savings (25 points) and annual water savings (5 points).

2. Qualitative award criteria (45 points in total):

- Criteria for the maintenance service (20 points): Maintenance project; quality control procedures; maintenance team; transition service plan
- Criteria for evaluation of the proposed ECMs (25 points): overall presentation and level of detail in ECMs; technical quality of the proposed equipment; level of data automation; and implementation timetable.

Contract performance clause: the contracted company was required to achieve the guaranteed savings specified in their bid during the execution of the contract.

Penalties

Should the contracted company not achieve the total guaranteed saving:

- Savings achieved between 76% and less than 100% of the guaranteed savings - Penalty would be to pay the corresponding cost of the energy not saved (=kWh not saved x energy cost according to the current tariff)
- Savings achieved under 75% of the guaranteed savings - Penalty would be to pay the corresponding cost of the energy not saved plus 50% (=kWh not saved x energy cost according to the current tariff [€/kWh] x 1.5).
- Additional financial savings were passed on to the building owner, in this case being the Laboratory.

Contract monitoring

The contracted company is required to inform the Laboratory about maintenance issues on a daily basis and submit a monthly and an annual report including information on: development of the implementation of the ECMs; energy consumption and levels and financial savings achieved for each installation on a monthly basis; monitoring of consumption for each ECM implemented, in order to verify the guaranteed savings; explanation of the achieved savings; and energy prices used for the calculation of the savings reached.

Results

One bid was received in response to the tender. The winning bidder committed to achieving a guaranteed reduction in energy consumption of 15%. The contract runs over five years and has a value of €306,800 (VAT excluded), of which €260,000 corresponds to the maintenance service and €46,800 to the energy efficiency service.

The Laboratory predicts an annual economic saving of 7% during the five year contract, including the maintenance and the energy efficiency services and the cost of water and energy, equivalent to €8,420 a year. The savings, only on the costs of water and energy, will account for 14.28%, equivalent to €10,463 a year.

Environmental impacts

As a result of the energy efficiency service, annual reductions in CO₂ of 15% are predicted, equating to 135 tonnes of CO₂ emissions (in total) by the end of the contract term (five years). This reduction is higher than the minimum required in the tender requirements. The reductions in CO₂ emissions were calculated using a conversion factor for electricity which has been developed by the Catalan Office for Climate Change of the Government of Catalonia (267gCO₂/kWh (Iberian Peninsula mix for 2014)).

Lessons learned

The successful award of this tender has enabled the Government of Catalonia to continue working on this track and gain valuable insights into how they can improve their tenders for similar projects in the future.

The Laboratory recognises the importance of correctly defining the current energy consumption of buildings (to act as a baseline) in its tenders, including the daily consumption patterns (i.e. when is consumption likely to be higher and why, which appliances are the most energy consuming) and what the best approaches are for defining the levels of efficiency from the guaranteed energy savings. Also, the Laboratory has now established what the most important criteria are to evaluate bids and how to best measure and verify the annual savings guaranteed by bidders.

Furthermore, the Laboratory has contributed to the development of a standard tender specification model for EPC in the wider laboratory sector. In terms of the maintenance service, temperature and humidity levels of the working areas are specific to this type of building; however, these are still within the usual parameters of a building.