Energy Performance Contracting and maintenance service


- Energy performance contract (EPC) with guaranteed energy savings
- Four years contract with a guaranteed annual reduction of 20% of energy consumption and 10% of water consumption

Standard product
- There wasn’t an EPC with guaranteed energy savings
- Energy consumption and CO₂ emissions:
  - Electricity: 689 toe/year
  - Natural gas: 236 toe/year
  - 3,270 tCO₂/year

GPP 2020 tender
- EPC with guaranteed energy savings (20%)
- Energy consumption and CO₂ emissions:
  - Electricity: 531 toe/year
  - Natural gas: 236 toe/year
  - 2,616 tCO₂/year

Results
- Energy savings:
  - Electricity: 138 toe/year; 551 toe/contract (4 years)
  - Natural gas: 59 toe/year; 236 toe/contract
  - Energy savings: 788 toe/contract
- CO₂ savings:
  - 654 tCO₂/year
  - 2,616 tCO₂/contract (4 years)
Contract tendered

- The National Art Museum of Catalonia (MNAC), from the Ministry of Culture of the Government of Catalonia, tendered the Energy efficiency and maintenance service.

- The tender uses the Energy Performance Contracting (EPC) model, with guaranteed energy savings. A minimum of 10% in energy cost reduction and 5% in water cost reduction is mandatory.

- The contract runs over 4 years and has a value of 2,999,560 € (VAT excluded). Out of this amount 531,300 € corresponds to the energy efficiency service and 2,468,260 € to the maintenance service (1,998,460 € ordinary maintenance service; 129,800 € on-call service; 340,000 € materials).


Procurement approach

Procedure used
Open procedure, subject to harmonised regulation.

Technical specifications
The purpose of the contract was divided into two major services:

- The provision of conduct, preventive and corrective maintenance service in the building installations and the execution of those tasks consisting in the repair of constructive building elements.
- The provision of energy efficiency service, including:
  - The implementation of Energy Conservation Measures (ECM’s).
  - The technical and energy management of the installations, optimising the resources with the aim of improving the energy efficiency.
  - Measurement and verification of the guaranteed savings by using the International Performance Measurement and Verification Protocol (IPMVP).
  - Training and awareness in energy and water good practices addressed to the users of the building.
  - Implementation in the building of procedures and requirements of the international standard ISO 500001.
  - Building Energy Performance Certificate during the first four months after the signing of the contract and the second year of the contract to see the improvements due to the implementation of the ECM’s.

The energy consumption from June 2014 to May 2015, with 2015 tariffs, was taken as the baseline. On this basis the following minimum percentage of energy and water savings cost has to be achieved with the proposed actions and measures:

- 10% in energy.
• 5% in water.

**Award criteria**
The following award criteria were applied:

A) Award criteria evaluable through a value judgement (40 points):

1. Criteria for the maintenance service valuation (25 points):
   • Maintenance team (6 points).
   • Transition service plan (5 points).
   • Quality and environmental control procedures (3 points).
   • Training plan (3 points)
   • Additional improvements (8 points).

2. Criteria for the valuation of the proposed ECM’s (15 points):
   • Presentation of ECM in all the scopes proposed in the tender.
   • Technical proposal: technical quality of the equipments, level of detail of the presentation of each ECM, global energy efficiency of the installation
   • Implementation timetable.
   • Level of data automation and computerisation.
   • Training and awareness plan addressed to building users and building manager.

B) Award criteria automatically measurable (55 points):

1. Economical value of the improvements in the maintenance service (5 points).

2. Economical criteria: valuation of the direct annual economic saving for the museum (55 points):
   • Annual economic saving (in €) (47 points).
   • Man-hour price of the on-call service (5 points).
   • Annual Bonuses for workers (3 points).

**Contract clauses**

*Minimum guaranteed savings and technical management of the installations*

The awarded company has to achieve the guaranteed savings during the execution of the contract, accomplishing with conditions of lighting, air conditioning and operation of the building as specified in the tender. The air conditioning service has to be continually guaranteed into the established set points margins, because is a key aspect to develop properly the museum activity.

The technical management service of the installations will include the monitoring of the building energy expenditure with counters and sensors, as well as open software compatible with the existing systems of the building.

**Penalties**
The penalties for the contractor for not achieving the total guaranteed saving are:

• If the achieved savings are between the 76% and the 100% of the guaranteed savings, the penalty will be the corresponding to the cost of the not saved energy (=kWh not saved x energy cost according to the current tariff).

• If the achieved savings are under the 75% of the guaranteed savings, the penalty will be the corresponding to the cost of the not saved energy increased by a 50% (=kWh not saved x energy cost according to the current tariff[€/kWh] x 1.5).
Measurement and verification plan
The bidding companies had to present and, where appropriate, execute a measurement and verification plan. This had to be done for each of the proposed actions, using the International Performance Measurement and Verification Protocol (IPMVP) EVO 10000 – 12010.

Contract monitoring
For the right contract monitoring it is important that the awarded company implements all the necessary equipment (sensors, meters, etc.) that allow the proper monitoring of energy consumption, comfort conditions and correctly verifying the achieved savings.

The awarded company will submit a monthly and an annual report that will include, among other, the following information:
- Evolution (in detail) of the ECM’s implementation.
- Real monthly and daily consumption for each energy source and water.
- Real monthly savings for each energy source and water.
- Real monthly economic saving.
- Energy prices used for the calculation of the achieved savings.

Criteria development

The standard tender specifications for energy efficiency services of the Catalan Government buildings has been further worked on with the stakeholders of the energy services market. The aim was to obtain a successful tender specification model and give confidence to the market, which is still immature in Catalonia.

The recommendations made in the audit do not have the character of a “closed list” and the bidders can propose other measures that would deem appropriate (technically and legally possible). The building energy consumption from June 2014 to May 2015 has been taken as baseline to calculate the energy saving minimum requirements. Once the tender documentation was published and before handing in their offers, the ESCO companies have been able to make a visit to the building and its installations.
Results

<table>
<thead>
<tr>
<th></th>
<th>CO₂ emissions</th>
<th>Energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>With energy efficiency</td>
<td>2,616 t CO₂/yr</td>
<td>Electricity: 551 toe/year Natural gas: 236 toe year</td>
</tr>
<tr>
<td>service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without energy efficiency</td>
<td>3,270 t CO₂/yr</td>
<td>Electricity: 689 toe/year Natural gas: 296 toe year</td>
</tr>
<tr>
<td>service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual savings</td>
<td>654 t CO₂/yr</td>
<td>Electricity: 138 toe/year Natural gas: 59 toe year</td>
</tr>
<tr>
<td>Total savings</td>
<td>2,616 t CO₂</td>
<td>Electricity: 551 toe/year Natural gas: 236 toe year</td>
</tr>
<tr>
<td>(4 years contract)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Calculation basis

- The guaranteed energy consumption savings (20%) is obtained from the winning bid.
- The CO₂ emission reductions have been calculated using the following conversion factor:
  - Natural gas: 247 gCO₂/kWh. Source: GPP 2020 energy contracting calculator.
- It is foreseen to have savings in the water and energy cost of the building accounting for 10% and 20% respectively, equivalent to 145,000 Euros/year.

Lessons learned

The realisation of this tender has allowed continuing working in this strategic action line of the Government of Catalonia, learning different aspects that will help to improve the tender specifications of future projects:

- The importance of the right definition of the current consumptions of the building and its daily energetic behavior, knowing the hours of higher consumption and the reasons, what are the installations that represent the higher percentage of the energy consumption, etc.
- How to define the energy efficiency fee from the guaranteed energy savings.
- Which are the most important criteria to evaluate the bids.
- How to define measurement and verification protocol in order to check annual savings.
- Contributing to standard tender specification for EPC in the museum sector.
- Comparison of the performance between buildings.

Contact

Catalan Institute for Energy
Government of Catalonia
icaen.gencat.cat | Francesc Vidal: francesc.vidal@gencat.cat
Data as of 16 April 2016
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 organizations in order to overcome barriers and implement Green Public Purchasing. This will consequently result in energy savings and CO₂ reductions. – www.primes-eu.net

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.