

GUIDE FOR UNDERTAKING ENERGY ASSESSMENT VISITS (EAVs)

Prior considerations

SEAP methodology developed by Barcelona Provincial Council includes ten Energy Assessment Visits at municipal buildings or facilities in order to have a better approach that can result in specific and feasible actions. In order to have homogeneous data and to define the minimum data required a guidance to make those visits is done.

This document is a guide for undertaking Energy Assessment Visits (EAVs) at municipal buildings and facilities. It has been produced to facilitate the task and to standardise criteria used by different consultancy firms.

This document should be considered as a script for guidance, which will almost certainly be subject to change on the basis of the experience and contributions of the selected consultancy firms.

The general nature of the guidance contained in the document should be adapted to the characteristics of each building.

Before the EAV

- Get hold of the energy consumption data in order to analyse them (for 2005 and the latest year available, at the very least), as well as the data for energy supply contracts and tariffs in order to compare them with other suppliers'.
- Get hold of the data for the general characteristics of the building (detailed in the data-gathering Excel spreadsheet). If any data are missing, they can be added during the visit.
- Having a plan of the building or being able to consult the building project before arriving on site may facilitate the task.
- Ensure that the person in charge of maintenance accompanies you during the visit.

During the EAV

As a script for guidance, some of the aspects that need to be taken into account during the visit are listed below:

- With the **person in charge of maintenance** / manager / director / caretaker, talk about:
 - The energy habits for the facility: Who maintains the installations? Who turns on/off the lights, the heating, air-conditioning system, other energy-consuming equipment, etc.? Is there any kind of centralised control? Is there a set timetable for turning on/off the heating or air conditioning depending on the time of the year?
 - What prior actions have been taken to raise users' awareness at the facility or to change their habits?
 - Have any renovation works or significant actions been carried out in recent years, or are any planned in the short term?
 - Are there any user complaints about the facility being too hot or too cold at certain times of the year?
 - Has a rule been established to define the average temperature of the facility throughout the year? If so, what is it?

- What are the facility's opening times? (A distinction should be made between when it is open to the public and when it is being cleaned, etc.).
 - Is the facility managed directly by the local council or has its management been outsourced? If it has been outsourced, how often is the contract renewed?
- For the **electrical installation**, take note, among other things, of:
 - The meters: Types of meter, whether or not there is a reactive meter.
 - Distribution board: What divisions (subsidiary circuits) are there?
 - The electricity company's supply point: How far is it from the building?
 - For the **main energy-consuming equipment**:
 - Lighting: Main lights. What system is there for turning them on/off. Are the lighting circuits divided into subsidiary circuits? What is their operating regime? Is it possible to use natural lighting, associated consumption?
 - Office automation equipment: Is there a server room? How many are there? What are their characteristics?
 - Lifts:
 - Others:
 - For the **air-conditioning/heating installation**, take note of:
 - The meters.
 - The boiler room: Boiler power rating, age of equipment.
 - Are the pipes well insulated?
 - Is there a centralised control?
 - What thermal emitters are there (radiators, fan coils, etc.)? And what are their characteristics, in particular their regulation systems (thermostatic valves, etc.)?
 - Is there any cooling equipment? Air conditioning: Look at the equipment power ratings.
 - For **hot water consumption** at the facility:
 - What types of installation are used to heat water? What are their power ratings? Are the installations well insulated?
 - For **windows, doors, etc.**:
 - For windows and doors: Are they airtight? What is the frame made of (aluminium, PVC, wood, etc.)? Is there any breakage in the thermal bridge?
 - Are the main entrance doors fitted with a mechanical closing device? Is there a double door to create an "air chamber"?
 - Is there sun protection?
 - Others: Is natural ventilation possible?
 - If you have a thermographic camera, it would be very interesting to take a photo of the building's façade.
 - Visit the roof of the building: Take note of its accessibility, slope, the space available for a potential thermal or photovoltaic solar installation, the operating regime (stand-alone or connected to the grid), the presence of other equipment, chimneys, roof construction, etc.
 - Does the facility have any kind of energy generating installation? Thermal solar energy, photovoltaic solar energy, cogeneration plants, etc. If so, visit them and describe their characteristics.

- Take photos to illustrate your comments in the energy assessment report.

Energy Assessment Report – **Name of the facility**

Type of facility¹

Basic data

Address: _____ Built area: _____
Date of visit: _____ Roof area: _____
Contact person: _____ Number of users: _____
Phone: _____ Type of management²: _____
Year of construction: _____

Introduction / Remarks

A short introduction to the facility, highlighting the main characteristics.

The following points should be included at the very least:

1. Location and type of building (detached, semi-detached, terraced, number of floors, etc.).
2. Activities carried out in it, and distribution by floor.
3. Opening times.
4. Number of workers and users.

Existing energy sources

Electricity		Biomass	
Natural gas		Thermal solar	
Oil		Photovoltaic solar	
LPG		Others: _____	

Energy contract data

Electricity contracts

	Supplier	Contract number	Tariff	Contracted power	Contract analysis – Remarks
1					
2					
3					

Natural gas contract (if there is one, or others)

	Supplier	Contract number	Tariff	Contract analysis – Remarks
1				
2				

Energy indicators (for each energy source)

	Electricity		Fossil fuels (specify which)	
	2005	2007	2005	2007
Annual consumption (kWh)				

¹ Use the following classification: administration and offices; schools; sports facilities; socio-cultural and civic centres; libraries, others.

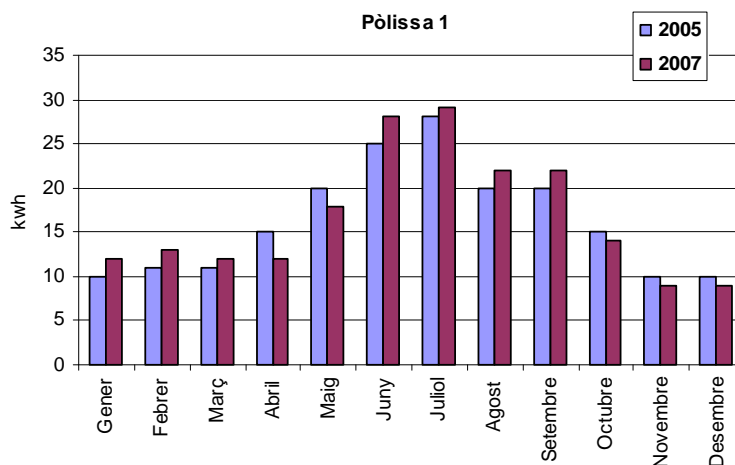
² Direct or outsourced

Annual expenditure (€)				
Consumption / floor area (kWh/m ²)				
Consumption / user (kWh/user)				
Expenditure / floor area (€/m ²)				
Expenditure / user (€/user)				
Tonnes of GHGs (t/year):				

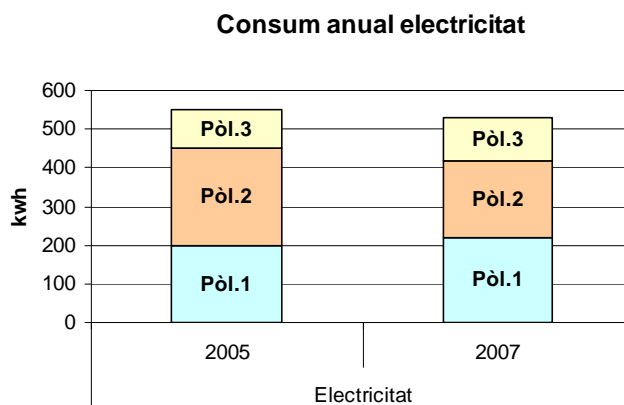
Attach a **chart** of the monthly evolution of electricity and fossil fuel consumption for the years for which data are available (2005 and 2007 at the very least).

If there is more than one contract per energy source, add:

- A chart of the monthly evolution of consumption for the various contracts for the two years in question. A sample chart is shown below:



- A chart of total annual consumption by energy source, with each consumption bar showing the proportion corresponding to each contract. See sample chart:



Description of installations and of the building

- In short, it is necessary to highlight the main characteristics, as described in the EAV guide, for:
 - Air conditioning/heating.
 - Sanitary hot water (SHW).
 - Electrical installation.
 - Main energy-consuming equipment (electrical appliances, office automation equipment, hand dryers, etc.).
 - Windows, doors and types of roof (tiles, flat roof, with or without air chamber, fibre cement, etc.).

- Renewable energy installations: Description of any there might be.
- Others.

- Note the renovations or renewals that have been made.
- Describe the maintenance operations and good energy practices for the management of the facility.

Conclusion for the energy state of the facility

In short, mention should be made of:

- The energy consumption indicators with remarks from the visit.
- The consumption trend (upwards, stable or downwards).
- Equipment that consumes considerably more energy, and the reasons for that.
- Potential for renewable energy installation.
- Reasoning for the most significant actions.
- Other observations made during the visit, or ones that the technician considers relevant.

Proposed actions

A list of proposed actions, either for the application of good practices to energy management or for investment in equipment. Special mention should be made of the potential to install a photovoltaic roof and of all actions to improve the energy efficiency of lighting.

Fill in the following table:

Order of priority	Action description	Approximate cost	Approximate energy saving	Approximate financial saving	t of CO2 saved	Remarks

* The order of priority will be determined by the feasibility of the action, the payback period and the savings obtained (in €, energy and t of CO₂).

ADDITIONAL NOTE:

- Attach photos.
- Attach a thermographic image of the façade (if possible).
- The length of the report should not be much greater than the one foreseen in this specimen.
- It should be short, to the point and understandable.