TRAINING MANUAL - ANNEX 1

HES E-toolkit user manual

HOTEL ENERGY SOLUTIONS

Energy Efficiency and Renewable Energy Applications in the Hotel Sector

Hotel Energy Solutions Official Partners

UNWTO · UNEP United Nations Environment Programme · ihra International Hotel & Restaurant Association · ADEME French Environment & Energy Management Agency · EREC

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ENERGY EFFICIENCY AND RENEWABLE ENERGY APPLICATIONS IN THE HOTEL SECTOR

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Please cite this publication as

Hotel Energy Solutions (2011), Energy Efficiency and Renewable Energy Applications in the Hotel Sector, Hotel Energy Solutions project publications

First edition: 2010
Revised version, July 2011

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Hotel Energy Solutions (HES) Project Basics

Full name: Excellence in Energy for the Tourism Industry – Accommodation sector: SME hotels (EETI)
Contract N°: IEE/07/468/S12.499390

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ANNEX I. HES E-TOOLKIT USER'S MANUAL.

The web toolkit can be accessed at the following URL:
http://hes.e-benchmarking.org/index.html

As the user, you would then press "*It's free, get started*", which will open a screen requesting login and password. First-time users must register in order to create an account. This is necessary to utilise the e-toolkit.

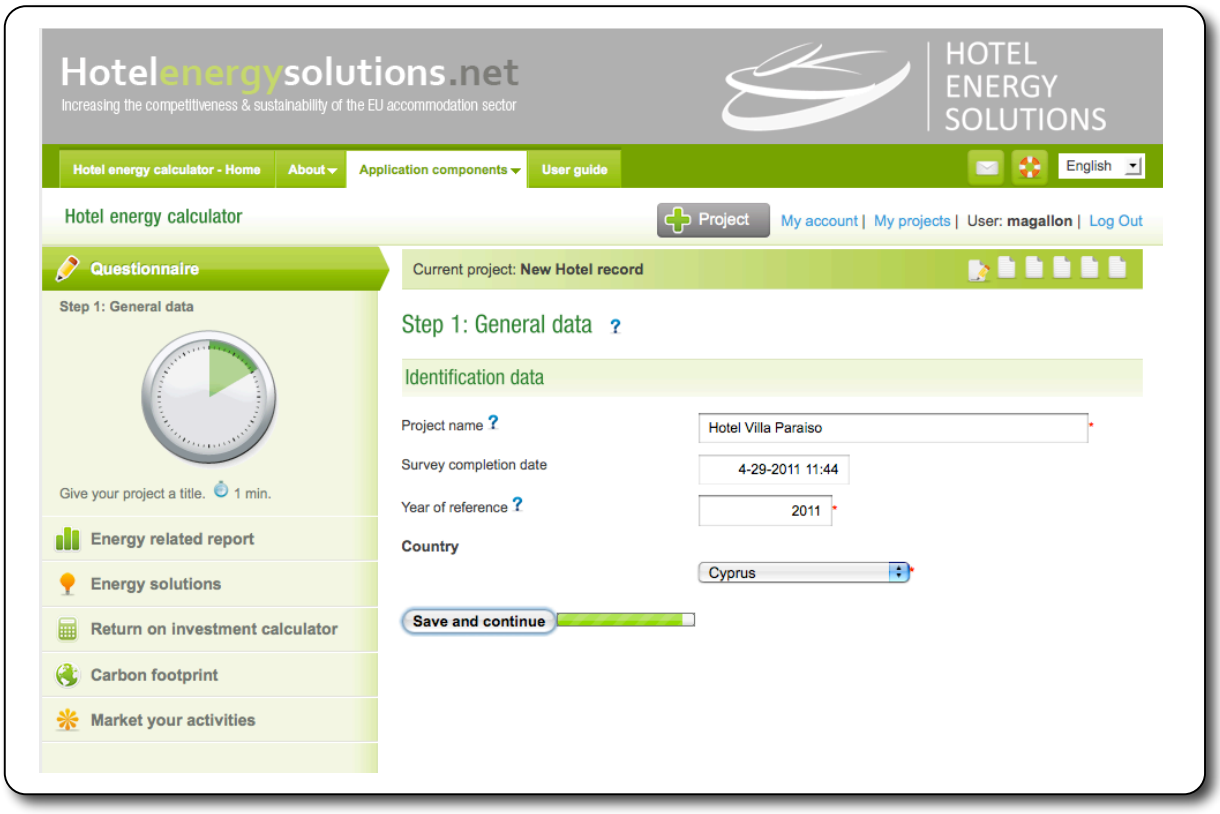
Once registered, you can enter login and password to connect to the e-toolkit. The platform will request verification of your account information.

Inside the e-toolkit platform, you will see a "+ project" option in the menu that allows you to create a new project. It is useful to note that you can have several projects stored simultaneously, with the information saved in your online account. To consult other projects, go to the "My projects" tab that is located on the main menu.

1.01 QUESTIONNAIRE

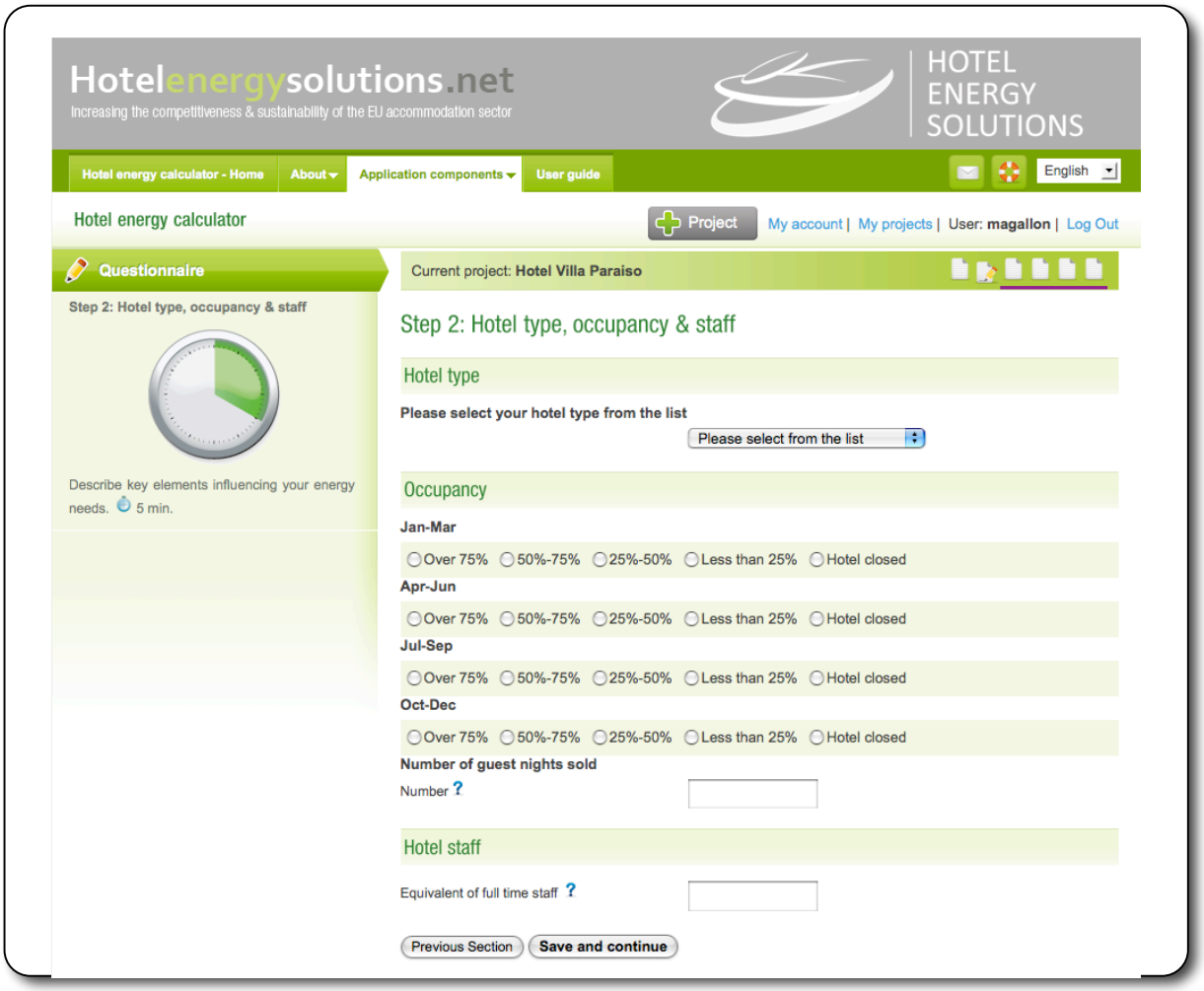
To start working with the e-toolkit system, you will need to complete a questionnaire that gathers information about your hotel that is needed to evaluate a project. The questionnaire is divided in the following six steps:

Step 1: General information
In this section, you will need to define the name of the project, the year of reference, and the country where the project is based. The system will automatically fill out the survey completion date. To continue to the next section and store the entered information, press the "Save and continue" button.



Step 2: Hotel type, occupancy & staff

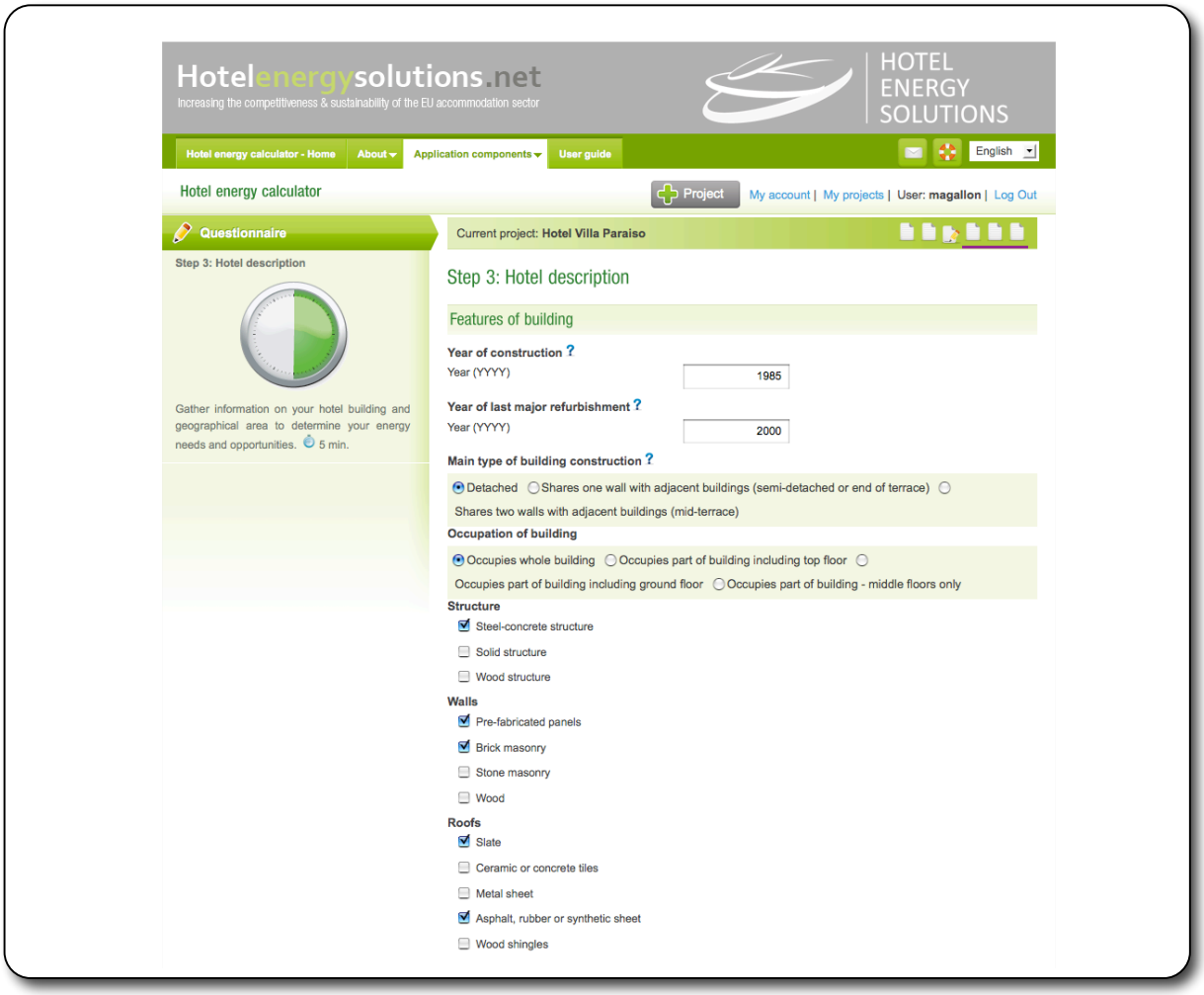
This section asks for information about your hotel, such as the hotel type (e.g. hostel, motel, resort hotel, inn, etc.), the average occupancy in a given period, the number of guest nights sold during the last year, and the number of full time staff in the same period.



Step 3: Hotel Description:

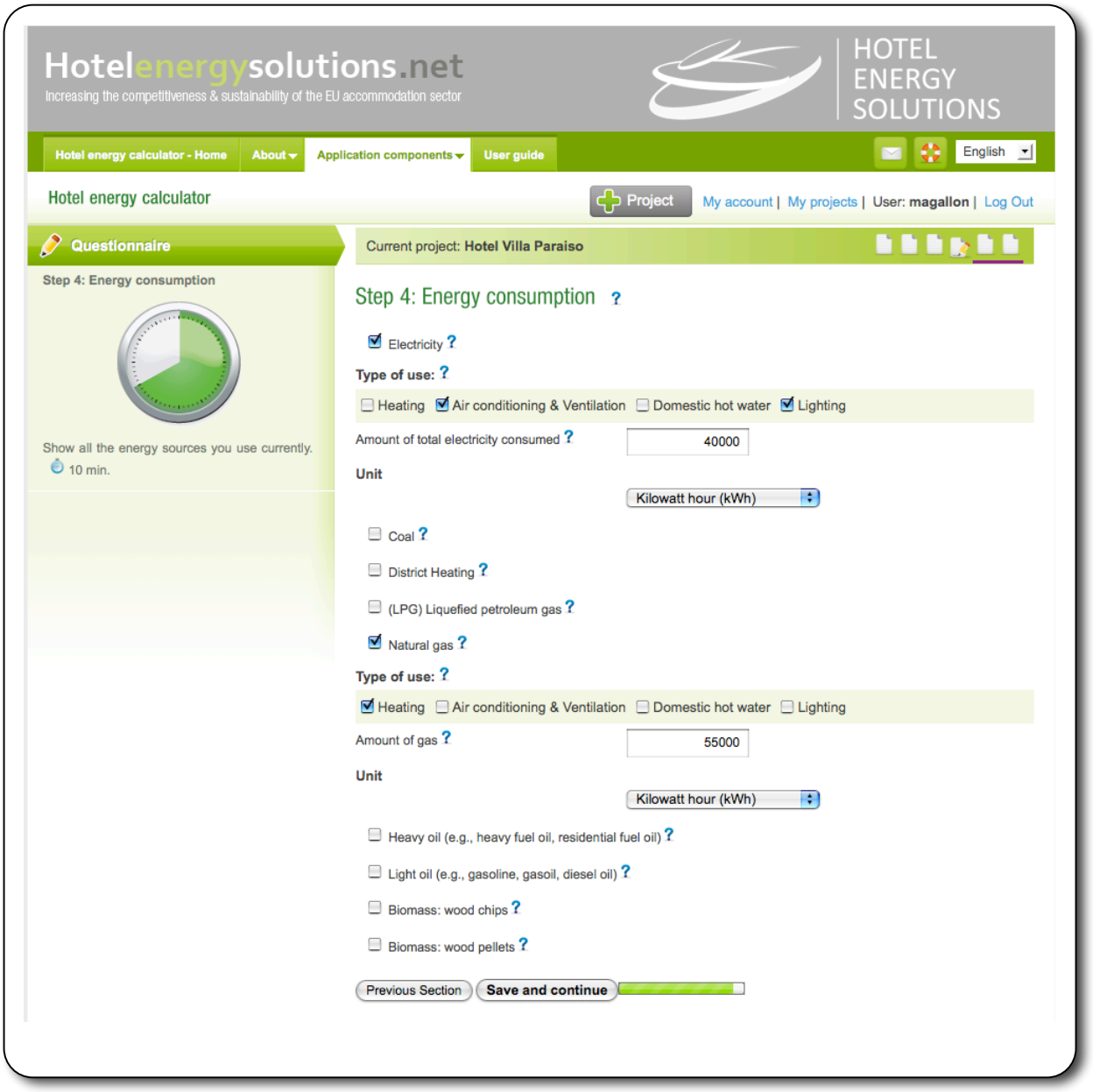
This section asks about:

- Features of the building, such as: year of construction, year of last major refurbishment, main type of building construction, current occupation of building, construction system of the building (structure, walls, and roof);
- Geographical area: whether the hotel is located in a coastal, mountain, rural, or urban area;
- Climatic conditions: approximate number of months in which outside temperature exceeds 30°C, and the approximate number of months in which outside temperature is bellows 10°C;
- Hotel size and facilities (total floor area, area of guest rooms, number of beds, etc);
- Type of package offered: whether the hotel offers full board, half board, self-catering, etc;
- Hotel star rating (5 stars, 4 stars, 3 starts, etc.);
- Other guest facilities: whether the hotel has a restaurant, lounge & bar, laundry, and so on;
- Air conditioning: whether the hotel uses an air conditioning system.



Step 4: Energy consumption

This section gathers information on energy consumption by type of energy, such as: electricity (and its use – whether for lighting, water heating, etc.), coal, district heating, liquefied petroleum gas, natural gas, heavy oil, light wood chips or pellets. For every option selected, the system displays additional questions on the amount of energy used, and the units used to measure that energy (e.g. KWh, m^3, etc.).



You can obtain information about the hotel's electricity consumption from your electricity bills. These show the consumption during certain periods of time (in KWh) – see chapter 4.4 of the training manual for more information on how to read your hotel's electricity bills.

To compile the information requested, you will need to have available electricity bills from the last 12 months, and sum the total electricity consumption for each period (normally in KWh). The total electricity consumption will be requested in the "Amount of total electricity consumed" box. The user will be requested to indicate the type of use of this electricity, e.g. it could be that the hotel has an air conditioning system that is powered with electricity, or that the heating system requires electricity to run.

The same procedure has to be followed with the other energy sources or fuels.

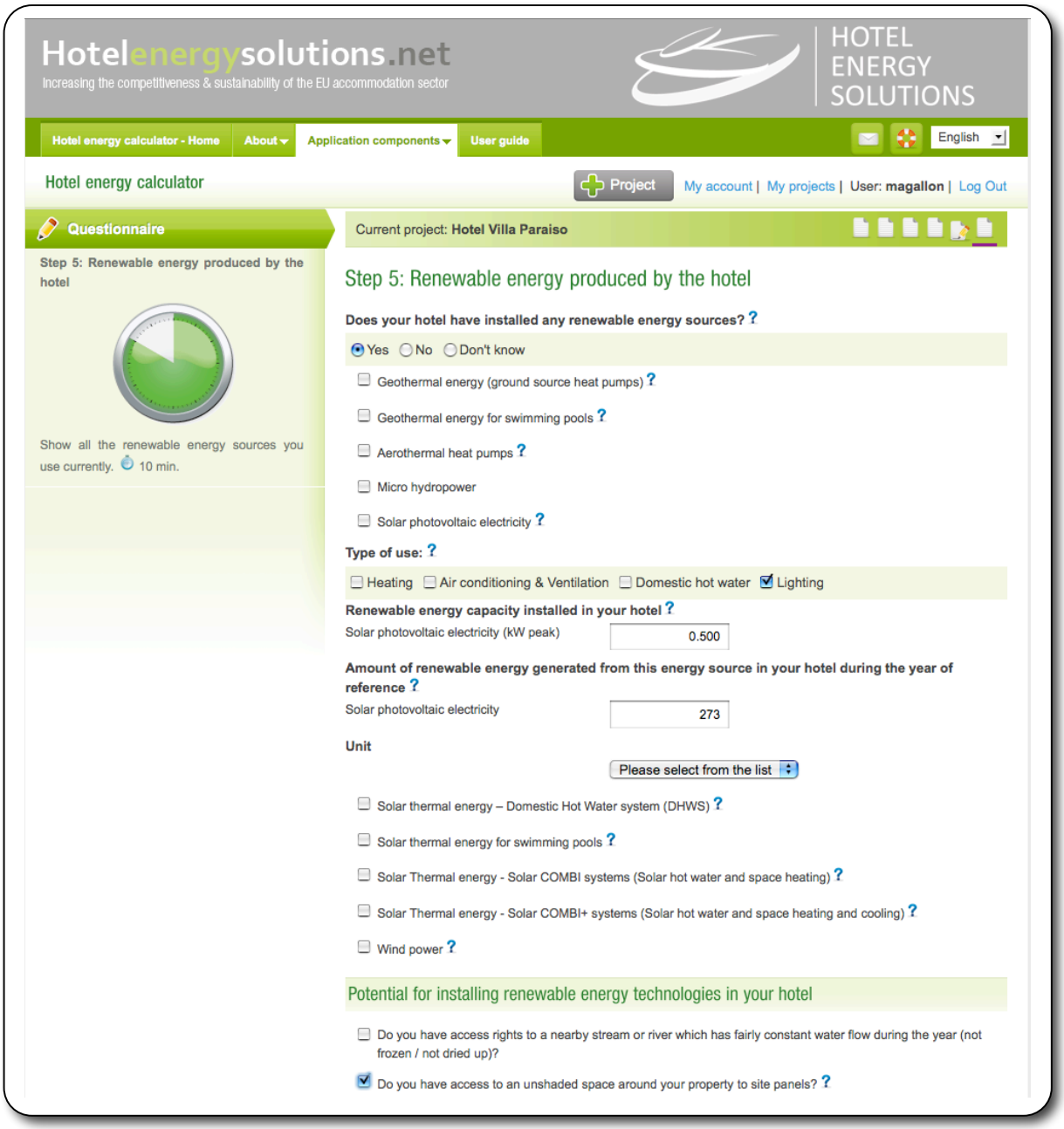
Step 5: Renewable Energy

This section gathers information about existing renewable energy systems that the hotel has in place. The window is divided in two parts, the first being a list of different renewable energy technologies. If you select a technology, the system will ask questions regarding the installed capacity of the technology selected, the amount of renewable energy generated, and the units used (e.g. KWh). The second part aims to identify the natural resource potential and the space available space at the hotel for installing new renewable energy technologies. These considerations include: access to a river, enough water flow in the river, enough area to install a hot water tank, and/or enough space to place a wind turbine.

If the hotel has surrounding ground area, you will be requested to specify the size of the area around the hotel.

The following table provides recommendations on where to obtain some of this information:

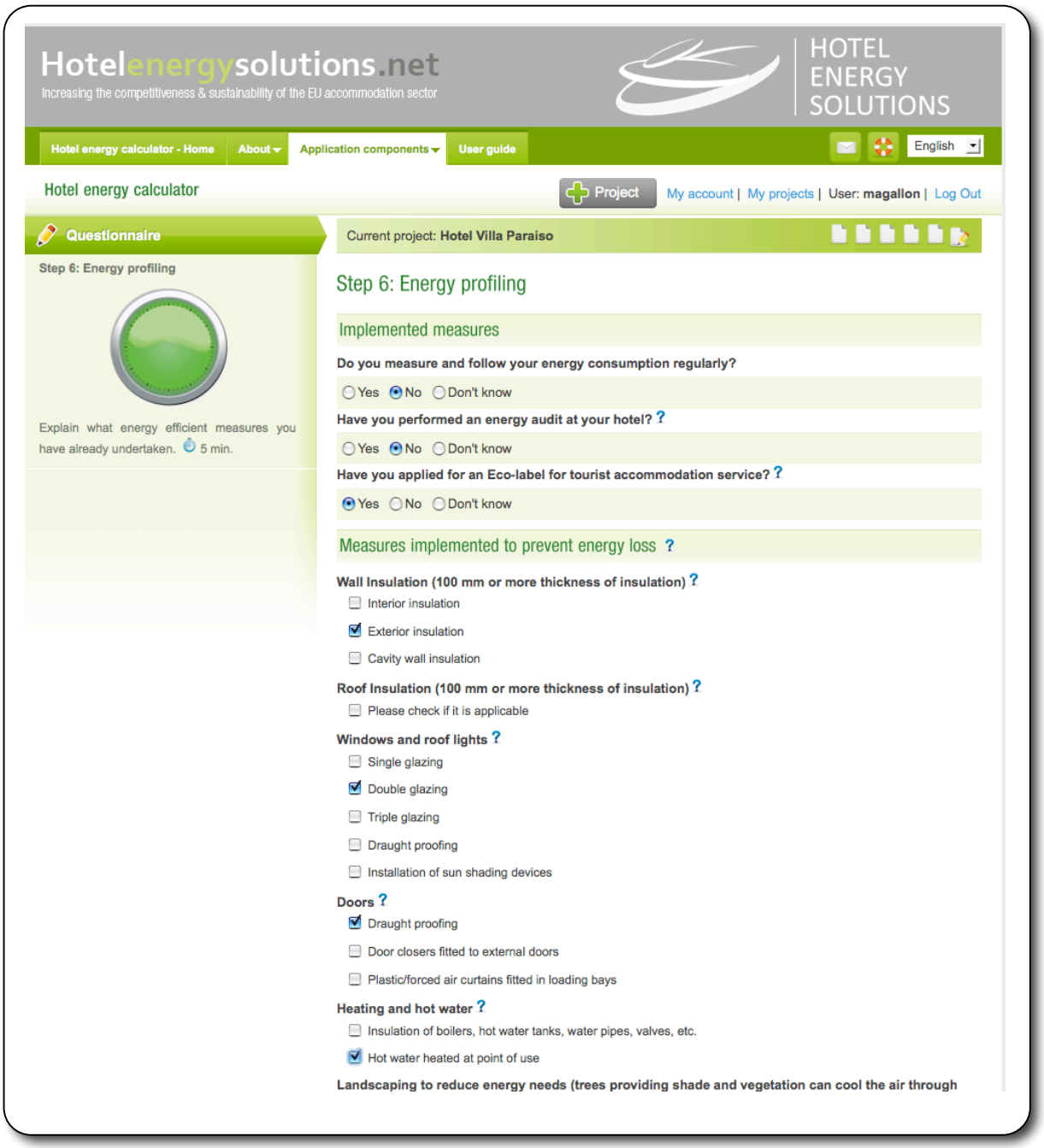
Access rights to a nearby stream or river	This information can normally be obtained from the local authorities or regulatory entity. Contact your local authorities to see what rules apply.
Water flow of the river	Local or state governments, or national entities, are normally in charge of monitoring river water levels and flows, and other characteristics of the river.
Un-shaded space on which to site solar panels	This information can be gathered with a simple visual analysis of the surrounding area of the facilities, identifying areas where sunlight is not blocked e.g. by trees, neighbouring buildings, large equipment and so on.
Unobstructed flow of wind to install a building-mounted wind turbine or a mast-mounted wind turbine	This information can be gathered through simple analysis of the surrounding area of the facilities, identifying e.g. neighbouring buildings, mountains, and large trees that obstruct wind flow.



Information related to the area and space available inside the hotel may be obtained from the hotel's architectural plans. If you don't have these, you will need to measure the area of the available space (width, length and height).

Step 6. Outcomes

This section will compile information about the energy measures that are already implemented in your hotel, including relevant characteristics of your hotel's insulation, lighting system, energy efficiency equipment, heat production system, boiler, temperature controls, space cooling systems, information for guests and staff, and any future plans for major refurbishment.

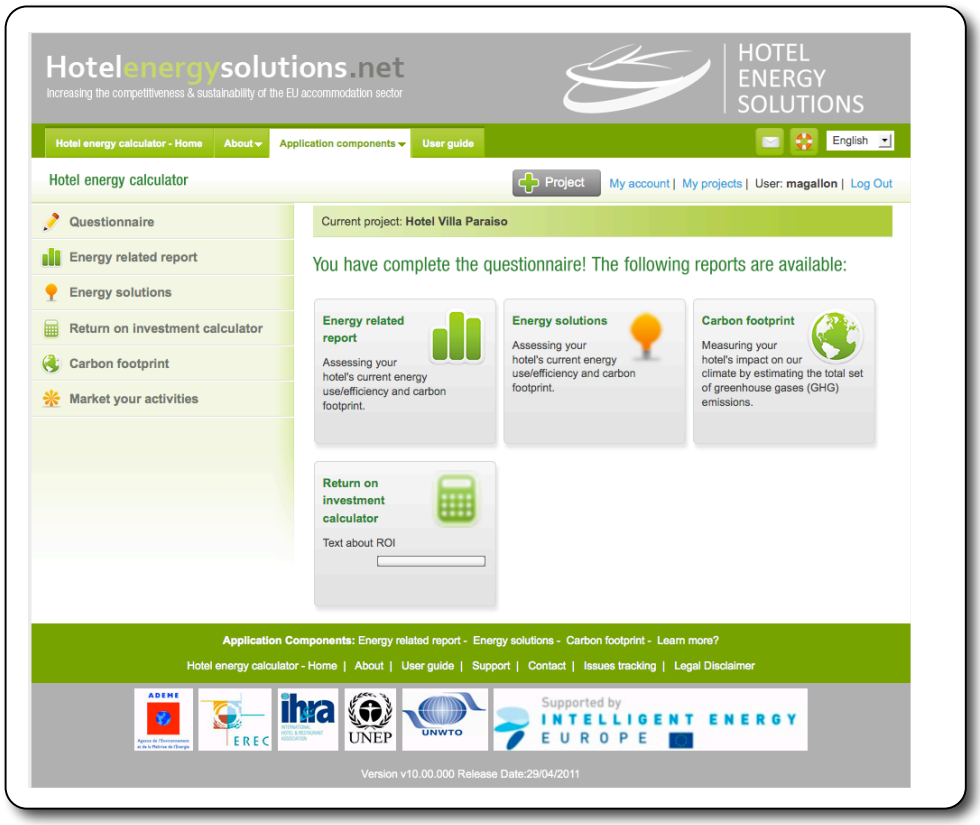


This information can be obtained from a visual inspection of the hotel, by reviewing relevant files and archives related to implemented measures, or from equipment manufacturing manuals. (If you don't have the equipment manuals, you can usually obtain the same information from the Internet or by contacting the manufacturer.)

1.02 REPORTS

Once the questionnaire has been completed, the e-toolkit automatically performs calculations to produce three reports:

- Energy-related report
- Energy solutions
- Carbon footprint



ENERGY RELATED REPORT

The energy-related report provides information on the hotel's current energy performance, and compares this with a predefined benchmark.

The HES benchmark has been set based on review and analysis of data available on energy use by hotels in Europe. This analysis indicates that for most hotels, energy use falls in the range

200-400 kWh/m2/yr. This is consistent with the main range of energy performance differentiation in published energy benchmarks (e.g. by Accor, Nordic Swan scheme, LowE project, WWF/IBLF, or the Thermie programme), which is also between 200-400 kWh/m^2/yr.

A statistical meta-analysis combining data from available studies indicates that average energy use by hotels is in the range of 305-330 kWh/m^2/yr. The data indicates large variations in energy use levels. Overall, it is evident that the variation between the hotels within each sample is far greater than the differences between the averages for different samples. There is no evidence that there are any statistically significant differences in levels of energy use intensity (kWh/m^2/yr) between hotels or other accommodation with different star ratings.

The analysis also indicates that kWh/m^2/yr is a more widely reported and useful comparative measure of energy use levels than kWh/guest-night, as the latter measure is susceptible to large variations due to changes in hotel occupancy levels in different years as well as variations in room sizes between different grades of hotel, although it is useful for managers when considering business performance. There was insufficient data to derive benchmark values for kWh/guest-night (and given the variations to which this measure is subject, benchmarks for this measure would be of limited comparative value in any case).

The HES benchmark has been set based on quintiles of the data from the meta-analysis referred to above, and are as follows:

	Range	kWh/m2/year	Quintiles
Excellent	< 195 kWh/m2/year	195	20%
Good	195 - 280 kWh/m2/year	280	40%
Average	280 - 355 kWh/m2/year	355	60%
Poor	355 - 450 kWh/m2/year	450	80%
Very poor	> 450 kWh/m2/year	>450	

The e-toolkit Energy Report shows and benchmarks energy use intensity (measured in kWh/m2/yr) for each hotel. It also shows, but does not benchmark, both kWh/guest-night and kWh/guestroom/year, as these are useful measures for managers when considering business performance.

Other points to note are that overall energy use levels can be relatively constant except in the most extreme climatic zones, since reduced need for heating is balanced by increased use of air conditioning. Although increases in energy for heating and less for cooling (and vice-versa) balance out over quite a wide climatic range, there will be significant differences in the necessary technologies to reduce energy use in different climatic zones.