# Campaign effects and self-analysis Internet tool

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## Keywords
1000 kWh/year per person, campaign effects, monitoring, Internet tools, household consumption

## Abstract
In October 2006, the Danish Electricity Saving Trust launched a large TV campaign targeting domestic electricity consumption. The campaign was based on the central message "1000 kWh/year per person is enough". The campaign was accompanied by a new internet portal with updated information about numerous household appliances, and by analysis tools for bringing down electricity consumption to 1000 kWh/year per person. The effects of the campaign are monitored through repeated surveys and analysed in relation to usage of internet tools.

## Introduction
Normally no one visits their doctor before they are ill. Similarly, before anyone can be motivated to save energy, they must know they have a consumption that is too high, compared to similar families. Thus, The Danish Electricity Savings Trust (DEST) undertook market research to find out what people know about household electricity use. The market research indicated that only 30 % of the respondents knew their electricity consumption, and only 3 % knew at what level it should be for their household size.

Therefore, DEST investigated the per capita electricity consumption in Denmark for the main dwelling types - flats and single family houses. The statistical basis for the campaign in terms of consumption levels in Danish households, in 2005 figures, was as seen in Table 1.

On average the savings from achieving the 1,000 kWh per year per person would give 170 kWh per year per person for flats, and 535 kWh per year per person for single family houses. In total a savings potential of approximately. 2 TWh per year, or 500 million EURO per year. The equivalent amount of $CO_2$ emissions is around 1 million tonnes for Danish power plants.

The distributions of the consumption by end-uses were also estimated, see Figure 1.

**Table 1. Key figures for electricity consumption in Danish flats and single family houses 2005 [1], [2].**

| Dwelling type | Total annual consumption | No. of dwellings | Average usage per dwelling | Average no. of persons per dwelling | Average consumption per person |
|---|---|---|---|---|---|
| | GWh / year | | kWh / year | | kWh / year |
| **Flats** | 1,891 | 945,900 | 1,999 | 1.71 | **1,170** |
| **Single family houses** | 5,185 | 1,289,400 | 4,021 | 2.62 | **1,535** |
| **Total** | 7,076 | 2,235,300 | 3,166 | 2.23 | **1,415** |

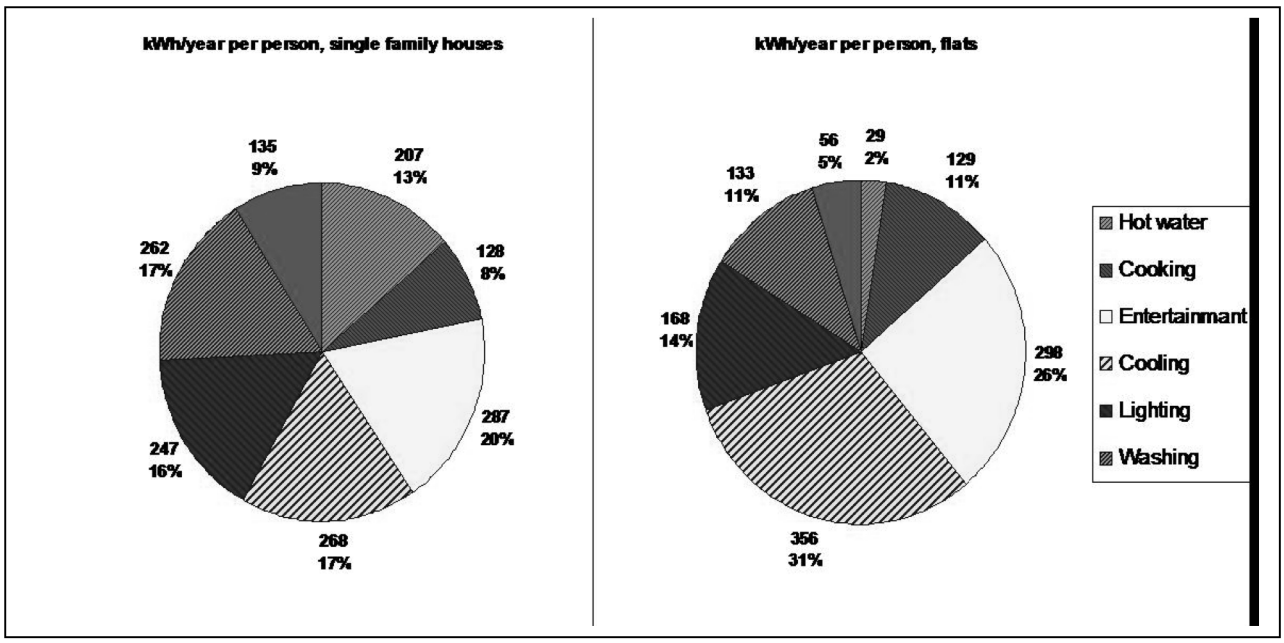


*Figure 1. Electricity consumption distribution by end-uses for flats and single family houses, [3].*

As can be seen from figure 1, the largest difference between flats and single family houses is consumption per person for cooling. This is not surprising at all, since cooling consumption is not shared by as many persons as in single family houses. For hot water the difference is explained by the fact that major parts of flats get their hot water from district heating, hence no electric water heater or similar equipment is installed or used. Another interesting observation is the fact that almost the same absolute consumption per person is seen, when comparing the two dwelling types, for Cooking and Entertainment. In rough terms: PCs and TVs have become the same basic need as food for all individuals.

## 1000 kWh/year per person campaign

A few years ago the Danish National Board of Health launched a campaign for educating the Danes to adopt healthier food habits. The campaign was called "6 a day" and referred to the number of fruits/vegetables every person should eat every day, to comply with healthy living. The campaign is still remembered as a great success, not least because of the simplicity of the central campaign message. This inspired DEST to think of a campaign of a similar simplicity, which would target some of the main problems of electricity saving efforts in Denmark. In autumn 2006, the Danish Electricity Savings Trust (DEST) launched a TV campaign "Get down to 1,000 kWh" targeting private households.

In general, people do not know their own consumption, and they do not care either, since the budget for electricity consumption in the household is a few percent of the total. In order to elaborate on the average consumers knowledge about a normal consumption level, the central message was that 1,000 kWh/year per person in households (1,500 kWh/year for single person households) is fully adequate to maintain a normal comfort level for lighting, usage of PCs, televisions, white goods etc. To support the campaign message, a website called "self check" – also marketed on TV - was developed to enable householders to analyse and understand their household electricity use in more depth. The website has four central elements – comparator information, pre-set profiles, statistics for old appliances, and personalised energy saving advice.

Alongside the campaign and web tool it was decided to monitor various general knowledge indicators in the public, for example, knowledge about own electricity bill; which appliances consume the most energy; and which barriers are the most important to reducing energy consumption. Monitoring public knowledge of electricity used is helping assess the effect of the campaign.

## Updated "Self check" web site

One of the primary tools is a questionnaire-like calculator that provides estimation of consumption for appliances, either for all appliances in a household, or as a single appliance analysis. Along with the questions, relevant background information and savings ideas are shown. Based on the estimations, user specific savings advice are automatically generated. Furthermore, users can compare themselves to other similar households with regard to building type/size, family type/size etc. All input from users, and their navigation behaviour, is saved in a database for the user to return to later on – and for analysis purposes.

In autumn 2003 DEST presented a web site called "Self check" where users could specify information about all domestic appliances in their homes and get specific electricity savings advice in return. The site had three levels of detail, of which two were optional, to meet the different needs of all users. In spite of long lists of appliances that had a distinct engineering approach, more than 5,000 users created a profile in which all their input was saved for later use.

In 2005 it was decided to change the site to be more flexible with regard to analysis of individual appliances, and at the same time to educate the users more about household electricity consumption. Together with the Association of Danish

Energy Companies (ADEC) a development was undertaken which resulted in a site with four simple offers:

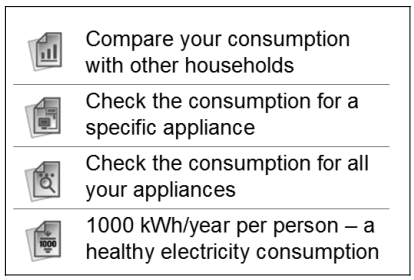


*Figure 2. The four offers on Self Check, [4].*

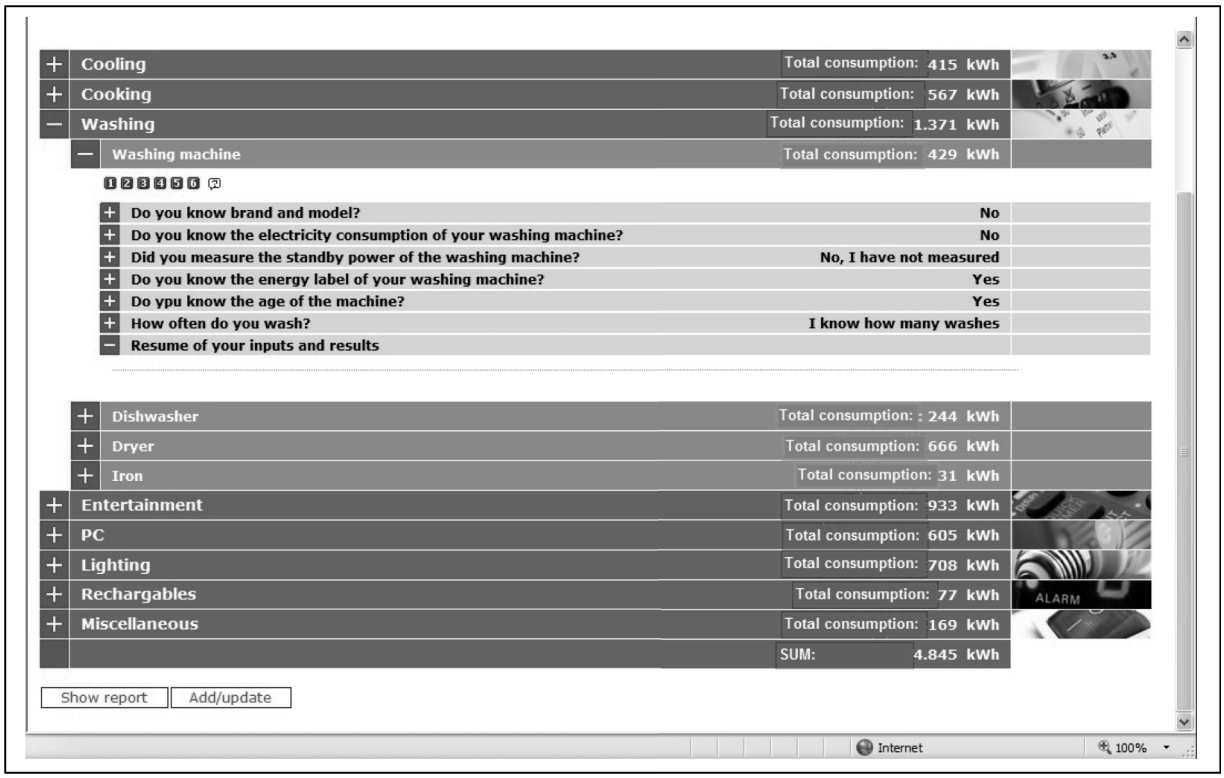


*Figure 3. The hierarchical and questionnaire-like approach for data input, [4].*

The first feature of the web tool, 'Compare your consumption with other households' allows the user to benchmark annual consumption with other households, either in general or as a comparison with households of same type and size etc. These qualifiers can be added successively to refine the comparison. This concept is used throughout the site, letting users get output at any stage of their input, but with better and more specific output, the more input users enter.

The second feature of the web tool, 'Checking the consumption for a specific appliance' is often what the users are really looking for, instead of a full household analysis. They might suspect their old freezer is performing poorly, but have no clue as to how severely it affects their electricity bill. It is possible to look up white goods sold from 1989 till today, and get a good estimate of the actual consumption, as well as all the original information about the model. A new initiative to share private measurements on old appliances between users is in the pipeline.

If the users want a full household analysis this is also possible. For each hierarchically organised appliance there is a questionnaire-like approach, which the user can skip at any point, and still get results presented. In Figure 3 the principle is shown, zoomed in for washing machine:

Each time questions are answered, relevant background information is shown. For example, for the question of age of washing machine leads to information about the average lon-

gevity for washing machines, and statistics based on other users' answers to the same question can also be seen. Both the single appliance and overall household analysis leads not only to consumption estimates, but also to specific savings advice based on the specific inputs from the user.

The fourth feature is the integration of the 1000 kWh/year per person campaign with the site. Firstly, new users can get help to set up a profile for an entire household, by selecting one of seven different family profiles (student with IT preferences, pensioners, divorced family father, family of four, skilled worker family, family of five, well off family). Making this selection, inputs are set for all questions about ages, usage patterns etc. for all assumed appliances in the household. After this, the user can edit all assumptions. Secondly, the users get a revised household report when finished editing appliance input. This means a number of savings advice are listed in order to help the users get down to or below 1000 kWh/year per person.

## Preliminary results

The new site has been online for about two months so it is only preliminary results that are available so far. Some 4,000 unique users have visited the new site, and of these 350 have saved a profile. An update to the 1,000 kWh/year per person questionnaire is still awaited. Coordinated results from the website and campaign questionnaire collected spring 2007 will be presented at the poster session. Here the next steps for the campaign and website will also be outlined.

## References

[1] Danish Energy Statistical Reference 2005.
[2] Statistics Denmark, 2005.
[3] ELMODEL-domestic, 2005.
[4] http://www.selvtjekbolig.sparel.dk