BENCHMARKS EL-EFF
ARENE-IDF

1. HOUSEHOLDS

1-person household, annual electricity consumption, without domestic hot water & heating		
low consumption: less than 1,000 kWh	average consumption: 1,000 - 2,000 kWh	high consumption: more than 2,000 kWh

2-person household, annual electricity consumption, without domestic hot water & heating		
low consumption: less than 2,000 kWh	average consumption: 2,000 - 2,500 kWh	high consumption: more than 2,500 kWh

Family household (3-**4 persons**), annual electricity consumption, without domestic hot water & heating (i.e. thermal use)		
low consumption: less than 3,000 kWh/year (1450 kWh/year in Sidler's family)	average consumption: 3,000 - 4,000 kWh/year (4,000 kWh/year cf Sidler)	high consumption: more than 4,000 kWh

Factors (captive electricity) .
Electricity represents 25% of the final energy consumption of households (degree days included). The overall energy consumption (in kWh/m2) has decreased; but with a constant rise of the captive electricity consumption: it has been multiplied by two between 1973 & 2002 from 13.3 kWh/m2 to 24.6 kWh/m2. Lately this captive consumption has kept on rising: + 1.5% between 2001 & 2002 and + 1.1% between 2002 & 2003.
The causes of this rise are:
-The increase of new equipments (creation of new needs and electricity consumer gadgets)
-The rising penetration rate of those equipments due to a dual income/structural effect: people tend to get richer & the appliances prices tend to decrease.
-Rebound effect: consumption rise offset the technological energy efficiency gains

Electricity saving measures.
-Efficient appliances: campaign to subsidy the change of appliances to A++ (in exchange of the elder one to avoid rebound effect i.e. increase the number of appliances per household, especially fridges). For instance the difference of prices can be spread on the electricity bill of the individual so that the bill stay the same until the person has reimbursed the difference; he would afterwards benefit from the savings. That way the investment surplus, that is still describe as a barrier to such purchases by households, is made « painless » for their budget.
-Stop the standby: raise awareness on the importance of properly switching off equipments that can be (TV, computer screens…); the possibility to use « multiplugs » with switches to

have an easy control on the numerous equipments on stand-by; the purchase of energy saving equipments (energy star label for computers but also hi-fi with energy-saving option…)
-Low energy light bulbs (with an emphasis on where is the right place to use it). Campaigns have been carried out all over the country in many occasion to distribute free or extremely cheap low consumption light bulbs.

OFFICES

Office type 1: air-conditioned standard, without heating, ventilation and building related electricity consumption, electricity consumption/m² or staff		
low consumption: less than 110 kWh/m2/year (good practice=76)	average consumption: 110-130 kWh/m2/year (typical= 117)	high consumption: more than 130 kWh/m2/year (typical is already high)

Office type 2: naturally ventilated open-plan, without heating, ventilation and building related electricity consumption (e.g. elevators), electricity consumption/m² or staff		
low consumption: less than 70 kWh/m2/year (good practice=49)	average consumption: 70-80 kWh/m2/year (typical=75)	high consumption: more than 80 kWh/m2/year (typical is already high)

NB:
The naturally ventilated open-plan typology refers to purpose-built with some cellular space within the building with size ranging from 500m2 to 4,000 m2.
The air-conditioned standard typology refers to purpose-built buildings with an average size of 2,000 m2 to 8,000 m2.

Factors (captive electricity).
The rise of IT equipments (computers, printers, large computer room…) with a large stand-by consumption linked to it.
Too much lightings, too high illuminance compared to the needs, no optimisation of the natural light: tinted windows, small use of compact light bulbs with the consequence of a far too high installed power of lights.

Electricity saving measures and campaigns.
-Decrease the installed power of lightings through the substitution of equipments: use compact light bulbs and tubes (T); have people buying lumens and not watts. Make sure lights are switched off in rooms and overnight, in some cases this can be done with infrared sensors or timers.
-IT equipments should all be energy star compliant, cathode ray tube should be replaced by LCD screens. The installation of “multiplugs” with switches is also an option.
-Staff education as a large role to play as many savings depends on staff behaviour. The best technology can only fulfil its potential if backed up by people’s behaviour.

SHOPS

supermarket (±1,200m2), without heating, ventilation and building related electricity consumption, electricity consumption/m² shopping area (sa)		
low consumption: less than 490 kWh/m2sa/year	average consumption: 490 - 520 kWh/m2sa/year	high consumption: more than 520 kWh/m2sa/year

small shop (part of a larger building), without heating, ventilation and building related electricity consumption (e.g. elevators), electricity consumption/m² shopping area		
low consumption: less than 100 kWh/m2sa/year	average consumption: 100-120 kWh/m2sa/year	high consumption: more than 120 kWh/m2sa/year

Factors (captive electricity).

Supermarkets :

Refrigeration for food conservation is responsible for 56% of the consumption of a supermarket.

Lightings are responsible for 27% of the consumption. The level of lightings consumption is very high because the use of daylight is very poor and because lights are also widely use for marketing purposes.

In the 17% left only 3 posts of consumption account for more than 1% : the bakery oven (4.5%), high pressure washing station (3.1%), the gas station with « rolls » washing station (3%).

Electricity saving measures and campaigns.

-Presentation fridges should be close to avoid cold losses.

On the cold production the use of electronic expansion or batch expansion or multiple inlet port/valve, which all include thermostatic valves. A frequent maintenance is very important to optimise the materials (e.g. control of pressure levels, controls efficiency, regular defrosting…)

The heat produced by the production of cold could be used to preheat hot water

-The light loads in supermarket are one of the highest of the tertiary sector. One reason is the fact that such shops rarely optimise the use of daylight, which does not affect much consumption breakdown between winter and summer. Also the lights are largely used as a marketing tool, some product benefit of a high lighting power load. Switching off lights overnight is therefore an important issue in the market rows as well as the presentation fridges, alongside computers, screens and cashpoints…

Measuring campaigns have been done in the country, allowing to have precise figures of the consumption and its structure. Following the study the national environment and energy agency (ADEME) has set up exemplary action in some of the studied supermarkets and issued leaflets to raise awareness to the whole sector and spread good practice.