Standby & Smart Electricity Meters

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Jim,

I attach a sheet showing the amount of waste in the home due to leaving appliances on standby rather than switching them off at the wall socket. It represents about *a third of the quarterly electricity bill*.

Recommending data like this to B&H council (to suggest everyone take action) is perhaps something the Transition Energy group can do immediately.

I have added an important note saying that many of the cheap 'energy meters' on the Internet give false readings.

Alan

Waste of Electrical Power in the Home

This may be of use to those in B&H council interested in raising awareness of the surprising waste of electrical power in the home by leaving appliances switched 'on' at the wall socket but switched 'off' on the appliance. This still leaves the internal transformers, electronics and any displays still powered up in standby mode.

For the list of appliances below (of one wasteful idiot) the contribution to the quarterly bill (365x24/4 = 2190 hours) is calculated at the current full (SEC) rate of 17.18 p/kWh as follows: for each appliance, a power of 1W represents 0.001x2190=2.19kWh that has a cost of 2.19x17.18 = 37.62 pence per quarter.

Appliance	Power, watts	Cost on ¼ ly bill
TV, top box, VCR, DVD (all on standby)	32.5	£12.23

Kitchen digital radio, off (but wall transformer on)	2.5	£0.94
Bose radio, off (but time display on)	3.0	£1.13
Bedroom clock radio/alarm, off (but clock display on)	1.0	£0.38
Computer, off (but BB box and phone on) (this rises to 80W and £30.10 if monitor on stby)	17.0	£6.40
Telephone in hall on stdby	5.0	£1.88
De-ioniser for water CH boiler, on always	1.0	£.38
Microwave oven, off (but display on)	2.5	£0.94
Toaster, off (but display on)	2.0	£0.75
		Total £25.03

The above values were taken with a Feedback EW604 wattmeter.

It should be noted that many of the cheap 'energy meters' advertised on the Internet give false readings (often too high) in that they do not allow for the power factor of reactive loads.

AC Power = $VI\cos(\varphi)$ and not simply VI.

A typical multimeter will give incorrect results when attempting to measure the AC current drawn by a non-sinusoidal load. A true RMS multimeter must be used to measure the apparent power. To measure the real power or reactive power, a wattmeter designed to work properly with non-sinusoidal currents must be used.